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External Debt Overhang and Crowding Out Effect on Investment in Nigeria Economy

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Abstract
This study examines the impact of debt overhang and crowding out effects hypotheses on investment in Nigeria for the period of 1981 to 2018. A three–stage least squares (3SLS) estimation technique was used after the identification condition was carried out. Simulation was also conducted on the macroeconomic model. The coefficient of the National Income (GDP) is in line with the apriori expectation and also the other explanatory variables. From the results obtained, the variables were stationary at first difference I(1). From the estimated model, all the variable became significant at the 0.05 per cent level. There was no autocorrelation in the estimated model. The simulated results indicate that 10 per cent reduction in the external debt overhang show a negligible impact on investment. When the 50 per cent reduction of external debt overhang was tested, it indicates a higher level impact of 34.18 per cent. Based on these findings, it is therefore recommended that, the government should ensure that external loans are optimally deployed into investment in order to increase the volume of export goods and our National Income so as to enable debt repayment and use the balance to increase the productive investments in the economy.

Keywords: External Debt, Investment, Crowding-out, Error Correction Mechanism
JEL Classification: E20, H60, H63

1. Introduction

Every government of a nation requires economic growth and development through investment increase for the purposes of improving the welfare of their citizens and to enhance the development of their countries. In the desire to achieve this target through investments, governments formulate and implement various policies which can encourage an enabling environment for the local and foreign investors. In addition, government can equally undertake investment programme in the economy, like social services and infrastructures such as education, health, roads, social-securities, rail and air ports etc. As a result of this, government inevitably obtained external loans to finance the needed investment necessary for development (Adesola, 2017). Developing countries like Nigeria are also faced with the issue of capital scarcity, as such, forcing the country to acquire external

loan in order to supplement or fill the saving-investment gap or export-import gap (dual gap) which as a result of the fall of the export prices especially the oil shock of 1970s, 80s and till date.

Sachs (2013) argues that growth will not take place until the capital stock has risen to a given threshold of 20 – 30 per cent of GDP, particularly in the developing countries like Nigeria. According to his view, increase in savings and investments accelerate economic growth. In addition, as capital rises, investment and outputs rises, so in a vicious circle, hence the level of savings will continue to increase. Being that as it may, after a given threshold of 16 per cent of GDP, further increase in capital and savings will be enough to achieve golden age growth path of an economy. External borrowing remains the bases for the developing nations to achieve a greater volume of investment possibility (Wahiba, 2014).

The rationale for choosing external borrowing as a means to ensuring sustainable development instead of utilizing the domestic resources is given in the 'dual-gap' analysis (Egbetunde, 2016). Though, public debts is simply referring to debt within country, from other countries, banks, and non-banking financial institutions, private individuals and associate friends (Dewett & Navalur, 2015). External debts on the other hand are debts that are obtained from the foreign creditors and they do not translate into burden when the borrowed funds are optimally deployed into investment areas in the economy.

There is no country in the world today that is completely free from debt issue. However, the question that always comes to mind is that, is external loan worthwhile or deleterious to a country's well-being or should countries embark on external borrowing? There appeared to be no ready answer to these questions, ideas are divided among different scholars. Having put these questions to the ordinary Nigerian citizens, the answer is always 'debt is harmful to their welfare. They will not sympathize on the strength of historical debt antecedent of Nigeria and the deleterious effects it had caused on the well-being of the citizens and the country at large. In fact, external borrowing is a supplement to domestic savings as a means to bridge investment-savings gap. The rationale for dual gap analysis (investments-savings) and export-import (X-M) that is foreign exchange gap indicate foreign loans can also be seen as a supplement to foreign exchange earnings in order to achieve a faster growth rate needed for development. Often time, the gap between the foreign exchange earnings is larger than domestic investment-savings gap, and the domestic resources are not easily available for the required investment. In order to achieve the needed investment for the economy to drive, external loans have to be obtained to fill the gaps.

The beginning of the Nigeria external debt can be trace back to 1968 when amount of $28 million was borrowed for railway construction.Debt was not a problem in Nigeria until 1982, this was as a result of the collapse of the oil prices and the pressure on the government to finance huge capital project and to support balance of payments deficits (Adesola, 2014).Based on this, Nigeria debt profile had been on the increase with a huge debt service problem. The debt burden service issue has remained a sensitive issue among various scholars in Nigeria. Onyeiwu (2012),

considered this as a malignant issue affecting the Nigerian economy, meanwhile Okoduwa (2011), saw it as a gun powder that threatens economic fortunes of the developing countries particularly Nigeria. Anyinwe (2012), was disturb at heart by asking what legacy of the type the present generation will bequeath to the future generation with a huge sum of debts owed to the foreign creditors. Ajayi (2013), pointed out that the great children of the current generation will bear the burden of servicing these external debts and he further described this as 'evergreen' for the creditors and 'unlimited hell' for the borrower.

Ndubuisi (2011) examined the Effect of External Debt Relief on Sustainable Economic Growth and Development in Nigeria using Chi-square, Regression and Correlation analysis to test the relationship between external and internal debt stock in relation to debt relief, but the present author proceeds to bridge the gap by using Three-stage Least Square (3SLS) regression technique.

The above assertions coupled with the debt servicing issues are associated with the external debt borrowing, particularly the foreign debt crisis of the 1980s which still lingers on till today in Nigeria. The external debt owed to the foreign loan owners as at 1981 is ₦2331.2 million and over the years the debt has been on the increase. In 2004, Nigeria witnessed external debt reduction from ₦489029 billion to ₦43889 billion in 2007 (CBN 2018). Sudden rise of external debt to ₦775920 billion and the servicing cost to ₦216137 billion in 2018 remained a matter of serious concern (CBN 2018). Debts do not translate into burden if the borrowed funds are optimally deployed into investment areas in the economy. This study aims to contribute to the understanding of external borrowing for the Nigeria development goals and also other developing nations in the world. Therefore, this study tends to investigate the effect of external debt overhang and its crowding out effect on investment in Nigeria economy. This paper consists of five sections. The next is the literature review. Section 3 takes a look at the methodology. The results and discussion of findings in section 4 while conclusion and policy recommendations are in section 5.

2. Literature Review

Conceptual Issues

Crowding out Effect Hypothesis: The crowding out effect hypothesis refers to accumulation of external debt which leads to adverse effects on economic growth of the debtor country hence there exist an inverse relationship with economic growth. The reason being that, a part of the foreign exchange earnings has been used for the external debt service payment and is not available for investment oriented programs. The issue refers to the fact that heavily indebted countries are likely to be bedeviled by financial constraint which is found to be tantamount to high interest rate and can adversely affect the level of investment in the developing country like Nigeria. Increase in interest rate coupled with inflationary pressure worsen the aggregate macroeconomics performance and this further worsen investment and limit rate of economic growth. Cohen (1997), asserts that the liquidity constraint is captured as a 'crowding out' to debt impact on investment since it leads to the reduction of foreign exchange earnings which would have been

available for further investment. He added by saying that a reduction in the current debt service would stimulate investment growth. Taylor (2003), considered the consequential effect of external debt service on the government expenditure. He found out that the damaged effect of debt service is as a result of dearth capital occasioned by debt-induced liquidity squeeze.

Kambor, Classn and Detragiach (2016), opine that for the reason being huge amounts is utilized for debt service limit investment by way of hindering access to international financial markets. However, public expenditure has remained the major determinant of economic activities of other sectors in the economies of the developing nations. By implication, any liquidity squeeze by the debt servicing countries will definitely shift away public investment (Fosu, 2017).

Moha (2009), considered the effect of crowding out and disincentive on the economy as a result of the mounting debt accumulation pressure which depresses investment in Nigeria. In due cause, Krugman (2008), states that crowding out effect of external debt arises from the fact that a number of poor countries often divert foreign exchange earned and also foreign aids for the accumulated debt service obligations.

External debt does not only lead to crowding out public investment but also dampen growth by way of crowding out private investment. Similar to the same line of reasoning, Clement (2013), explains that increase in debt service raises the government interest bill and also leads to budget deficit, and this also leads to decrease in savings which in due time warrants increase in interest rate for private investment. Greater debt service payment has adverse effect on public expenditure by squeezing the resources available for the purpose of infrastructural development. By these activities, no doubt that external debt remained the key barrier for meeting human basic requirement in Nigeria.

Debt overhang Hypothesis: Various researchers explained debt overhang hypothesis at different times. Borensztein (1996), described debt overhang as a situation when countries found it difficult to service their debt in full and payments are determined by negotiation process with the creditors.Ugwuanyi (2017) states that many developing countries among the sub-Saharan Africa has been trapped by huge external debt which they finddifficult to pay. In his view, the problem was compounded by more external loans obtained from the foreign creditors as the deteriorating world prices of primary export goods hindered them to have favourable balance of payments which will enable them to fulfill debt service obligation.

This type of situation in Nigeria called for debt-rescheduling, debt service restructuring, negotiation for debt forgiveness and debt equity swap. All these were pursued in order to reduce the negative effects of debt overhang. Bhattacharya, Clement and Nguyen (2013) exert that in a theoretical literature on the relationship between the stock of external debt and growth focus on the adverse effects of debt overhang.

Krugman (2008), had it that debt overhang is a situation where the expected repayment of external loan falls short relative to the contractual value of debt. By this, it is explained that the country debt level exceeds the country's debt repayment ability being that debt service remains an increasing function of the country export earnings. Note that some of the local investment goods are heavily taxed away by the foreign creditors, some of the foreign earnings from the exported goods are available for investment.

In the view of Sahmano and Serven (2001), explain that debt as an act of anticipated foreign tax is a way of reducing the incentive from investment and savings thereby promoting capital flight. Being that as it may, the combination of vicious circle of external debt stock and debt service burden, Iyoha (2002), view it as a problem affecting the developing countries in the sub-Saharan Africa as it leads to low foreign exchange earnings, which further results to import strangulation. Import strangulation holds back export growth by a way of limiting import goods. Therefore, the debt overhang arising from debt further reduced investment. Reduction in investment along with the short fall in the essential imports goods lead to a decline in the real output. Reduction in output therefore and current account deficits results to a rise in debt service obligations. All these as a whole account for the debt overhang and crowding out effect of external debt on investment in the economy.

Empirical Issues

External borrowing has in recent time become a source of government finance. Budget deficit explained the excess of government expenditure over its revenues and debt; therefore budget deficit can be regarded as accumulated values of previous deficits (Rosen, 2009). However, the major area of interest is whether or not external borrowing warrant investment. Researchers do not have the same view on this as indicated in our literature. Calvo (2009), opines that a high level of initial debt is associated with high tax burden during the process of debt service, as a result, a lower rate of return on investment will occur. A high economic growth reduces the impact of such debt service payment. When the value of debt exceeds the necessary rate of returns, the economy settled in a region characterized by low growth. If the growth rate of the economy is found lower than debt itself, the tax burden will become high and the rate of capital accumulation will become low which will further contribute to low growth of the economy.

In another study carried out by Ndubuisi (2011) on the Effect of External Debt Relief on Sustainable Economic Growth and Development in Nigeria used Chi-square, Regression and Correlation analysis to test the relationship between external and internal debt stock in relation to debt relief, the study found out that there is a relationship between external and internal debt stock in relation to debt relief, it also discovered that, debt relief affected the economic growth of the economy and that gradual reforms and investments will help to bring back a healthy economy for the nation. In the study by Mohd-Daud, Halim-Ahmad and Azman-Saini (2013), empirical analysis was employed to account for the impact of external debt to the Malaysian economy. Autoregressive Distributed Lag (ARDL) and bound test were conducted in line with objectives of the study. Furthermore,

the existence of the threshold effect was examined in order to determine the optimal level of external debt. The results reveal that the accumulation of external debt is associated with the level of increase in economic growth in Malaysia up to an optimal level, and further rise in external indebtedness beyond the level will adversely affect the Malaysia economy.

Faraji and Mkame (2015), examined the impact of external debt on economic growth of Tanzania beginning from 1990 to 2013. The study makes use of time series data on external debt and other macroeconomics performance. The results obtained in the study reveal that there exist significant impact of the external debt and debt service payment. Wamboye (2016) examined the impact of government external debt on the economic growth of forty less developing countries. The author used Arellano-Bond SGMM technique on unbalanced panel data, spanning from the period of 1975 to 2014. A comparative analysis based on different specifications was provided. The results revealed that high external debt depresses economic growth. The study therefore adds that debt relief initiatives have remained important evidence of low debt effect on growth. Al-Zeaud (2016) investigated the impact of external debt on the performance of the Jordanian economy. Clear evidence from the empirical results showed that increase in the population growth and external debt has demonstrated a non-significant and significant role respectively towards economic growth in Jordan. The results added that, external debt enhances growth while the population increase hinders it. The study therefore recommends that in order for Jordan to attain a sustainable economic growth, population increase should be discouraged while population decrease should be encouraged.

Edimeligil and Mucuk (2017) investigated the impact of external debt on economic growth in Turkey by using Vector Auto Regressive (VECM) technique with quarterly data for a period of 2000:01 – 2015:04. The results of the co-integration test, Variance Decomposition test, Impulse Response Function show that, there exists co-integration among the variables used. Ben Ali and Sadraoui (2017) investigated the relevance of external loans in financing economic development in African countries. The study was modelled by Patillo et al (2007) and it employed technical panel and thereby combined countries that are highly indebted in addition with the major determinants of growth. The results reveal that for the North African countries, external debt is not a barrier to development when it is within a reasonable limit. However, a rise in debt service payment leads to inverse impact on growth and the impact of this, depends on investment on which the external loan is used. Sen, Kasibhatia and Stewart (2017) investigated the impact of debt overhang on economic growth in Asia and Latin America. In the study, panel data was employ to test the existence of debt overhang in the two countries. The results showed that debt overhang reduced the growth in the Latin American country and the impact on the Asian country was found to be moderately negative.

In addition, Pervin and Shad (2018) examined the significance of dependence of the Bangladesh economy on external borrowing to account for the period 1974 to 2016. In order to properly account for the debt overhang and crowding out effect of external debt, they segmented the external debt burden into external debt service

and external debt stock. The results obtained showed that there is a long-run significant relationship between external debt stock and external debt service on economic growth. The results never found issues of debt overhang. However, the results reveal that crowding out effect was because of the presence of foreign debt service payment within the period. Kasidi and Said (2018) investigated the impact of external debt on economic growth of Tanzania covering the period of 1990 to 2016. They estimated a growth model utilizing GDP, external debt and debt servicing. Ordinary Least Squares technique was used. The results revealed significant effect of external debt and debt service on the economic growth.

Many of these studies literature reviewed above concentrated on external debt and economic growth, they did not focus on examining the validity or otherwise of the debt overhang and crowding out of the external debt in Nigeria economy. Sen, Kasibhatia and Steward (2017) studied the impact of external debt overhang on economic growth in Asia and Latin America economy using panel data technique. Therefore, this study attempt to bridge the gap discovered in the literature by investigating the impact of external debt overhang and its crowding effect on investment in Nigeria economy using Three Stage Least Squares (3SLS). This technique will enable the researcher to validate the presence of external debt overhang and crowding effect on investment in Nigeria.

3. Methodology

Theoretical Model

Investment-Saving Gap: In Investment-Saving Gap, external borrowed funds must be adequate for the short fall from domestic savings for us to obtain the target rate of investment relevant for growth in the economy. The area of emphasis is to determine the weight of the gap that is necessary to be filled by the external loans. Hence ‘r’ which is our target growth rate necessary for the foreign loans in the base year is given as:

$F_0 = I_0 – S_0 = Y_0cr – Y_0s_a = Y_0(cr\text{-}s_a)$ …………………………………………….. 1

Where, I_0 is the investment during the base year, S_0, is the savings in the base year period, Y_0, is the income during the base year, c, is the incremental capital-output ratio, S_a, is the average savings ratio and r is the target growth rate.

For the fact that savings is required to rise over time, we can state the savings function as:

$S_t = S_aY_0 + S^1(Y_t\text{-}Y_0) = (S_a\text{-}S^1)\ Y_0+S^1Y_t$ …………………………………………. 2

Where ‘$S^{1'}$is the savings ratio. We can rewrite the investment function with respect to‘t’ as: $I_t = Y_tc_t$ ……………………………………………………………………. 3

Combining equations (2) and (3) the net inflow of the amount of capital in time is therefore guaranteed at time’s’ which is stated as

$F_t = Y_tcr\text{-}\ [(S_a\text{-}S^1)Y_0+S^1Y_t]$ ………………………………………………………. 4

The difference between equation (2) and (4) which is referred as the difference between the loans required during the base year and amount of loans needed at time 't', hence we can have $C_r(Y_t-Y_0) - S^1(Y_t - Y_0)$ …….... 5

Therefore, this can be regarded as:

$F_1 - F_0 = \Delta I - \Delta S$ ……..…. 6

This is taken as an external capital finance, which is the difference between a rise in the amount of savings generated as a result of increase in income and investment needed in the economy. A reduction in foreign aids i.e. $F_1 < F_0$, ΔI is found less than ΔS. When this occur, the investment-saving gap will seize to exist and there will be an increase in savings necessary to generate a rise in investment.

From equation (4) the amount of growth in investment is realizable by the inflow of external capital, i.e.

$Y = \frac{1}{C}[(Sa - S1) \frac{Y0}{Yt} S^1 + \frac{F0}{Yt}]$ ……...…. 7

The derivative is positive; the inflow of external capital is achieved with a better growth so long as there is absence of increase in the $\frac{Y}{K}$(capita output –ratio) a fall in the marginal rate of savings.

Therefore, equation (5) becomes at a given year say nth Fn = 0

$(cr - s^1) Y_n + (s^1 - s_a) Y_0 = 0$…… 8

$(s^1 - s_a) + (s^1 - s_a) Y_a$

Hence,

$(s^1 - s_a) Y_0 = + (s^1 - c_r) Y_n$

$Y_0 = [\frac{s1 - sa}{s1 - cr}] Y_0$ …… 9

Since $Yn = Y_0 (1+r)^n$ …….. 10

So that,

$(1+r)^n = \frac{s1 - sa}{s1 - cr}$ …… 11

Taken a look at equation (9),it can be established that 'n' can be obtained to enable increase in investment.

The type of macroeconomic model to be considered in this study is a stochastic equation which comprises of debt overhang and crowding out effect variables of external debt. The equation is investment type. The technique of analysis used in this research study is the Three Stage Least Squares (3SLS). This requires full information method and complete specification of the model is taken into account explicitly. The rationale for this technique is base on the fact that the system estimator uses more information, therefore, the technique yields estimates that are

consistent and efficient (Iyoha, 2004). This will enable the study to validate the existence of debt overhang and its crowding effect on investment in the economy.

Many economists are of the opinion that poor investment performance of the highly indebted developing countries since the beginning of the debt crisis which erupted in 1982 can be attributed to dis-incentive effect arisen from the external debt burden (Iyoha, 2002).Montiel and Agenor (2006) had it that much stock of external debt is likely to cause high expectation that debt service could be financed by tax revenue or cut from the productive public investment. Harmonize with theoretical model

Based on the theoretical evidence on debt overhang and crowding out effect, this study uses annual time series data for the period of thirty-eight (38) years that is 1981 to 2018. The study obtains the data mainly from various secondary sources such as National Bureau of Statistics, Annual Report and Statement of Accounts and other documents of the Central Bank of Nigeria. Calve (1998), Krugman (1988), Iyoha (2002) and Elbadawi (1996) specified external debt and public investment in Nigeria. In the model, the following variables were included: ratio of debt service to export (DSE_t), Public investment GDP ratio ($GPUIV_t$), lagged values of foreign private investment ($FPUIV_{t-1}$), external debt to GDP ratio ($EXDGDP_t$) and human capital development (HCD_t). These were measured using Ordinary Least Squares technique. Considering the above, the model for this study is therefore specified by including our variables of interest which are found relevant in the study:

$IVT_t = f\{INT_t, GDP_t, (D/X)_t, (D/GDP)_{t-1}\}$ …….. 12

From equation (12) above, the model is formulated as

$IVT_t = \partial_0 + \partial_1 INT_t, + \partial_2 GDP_t, + \partial_3 (D/X)_t, + \partial_4 (D/GDP)_{t-1} + U_t$ …… ……..13

$\partial_2 > 0$, ∂_1, ∂_3 and $\partial_4 < 0$

Where: IVT_t = Investment, INT_t = Interest rate, GDP_t = National Income, $(D/X)_t$ = External Debt Service–Export Ratio, $(D/GDP)_{t-1}$ = Lagged values of External Debt – Income Ratio, U_t = Error term

Given equation (13), it is hypothesized that only the coefficient ∂_2, has a direct relationship with the endogenous variable that is, increase in national income directly influence investment. All other coefficients such as ∂_1, ∂_3 and ∂_4 indicate inverse relationship with IVT_t. The reason being that a high debt Service–export ratio (D/X)t will crowed out investment, while the coefficient of interest rate '∂_1' also indicates similar relationship with IVT_t, being the cost of investment.

The debt overhang hypothesis has it that the accumulated external debt of the developing countries acts as a tax on future investment earnings, thus reduces investment. Montiel and Agenor (2006) therefore opine that much stock of external debt is likely to cause high expectation that debt service could be financed from the revenue of productive investment.

4. Results

Unit Root Tests

The examination for ascertaining the presence of unit roots is often conducted to determine the time series behavior of the variables used in a study. The unit root test ascertains the order of integration of both endogenous and exogenous variables in a given model. Therefore, the study tested for the presence of unit root using Augmented Dickey-Fuller test for the purpose of overcoming the problem of spurious regression which is often associated with non-stationary time series. The order of integration would enable the study to ascertain a number of time a variable will be differenced in order to achieve stationarity. It will also give the study the standing ground to make meaningful inferences from the estimation of the variables under investigation. In order to do away with pitfall of incorrect inference arising from the non-stationary regression, the time series data used in our research study were rendered stationary. In this our research study, 0.05% test critical value is applied. Hence, the findings of the unit root test obtained are in table 1 and 2 underneath.

Table 1: Unit root test results at level using Augmented Dickey-Fuller Criterion

Variables	ADF test Statistic at Levels	ADF at 5% Critical Value	Order of integration
IVT	3.7297	-2.9530	I(0)
INT	-4.5115	-2.9561	I(0)
GDP	4.1136	-2.9677	I(0)
D/X	-0.5916	-2.9728	I(0)
D/GDP	-0.5570	-2.9728	I(0)

Source: Author's Computation from the Estimated Results

Table 2: ADF Unit root test results at 1^{ST} Difference

Variables	ADF test Statistic at Levels	ADF at 5% Critical Value	Order of integration
IVT	-5.2602	-2.9571	I(1)
GDP	-4.5214	-2.9605	I(1)
D/X	-2.9774	-2.9718	I(1)
D/GDP	-3.8328	-2.9658	I(1)

Source: Author's Computation

The results in Table 2 above show that Investment (IVT),National Income (GDP), External Debt Service-Export Ratio (D/X) and External Debt-GDP Ratio (D/GDP) are found stationary at first difference while in table 1, only Interest Rate variable is stationary at that level. Therefore, the H_0 (null hypothesis), 'which states that the variables are characterised with unit root', following Box-Jenkins (1978) proposition of differencing can be rejected at 0.05% significance level.

Table 3: 3SLS Estimated Equation with Investment (IVT) as Dependent Variable

Variables	Coefficients	T-statistics	Prob-value
C	277.5515	0.5602	0.4132
$DINT_t$	-0.3441	-2.5249	0.0158
$DGDP_t$	4.1522	2.0611	0.0034
DD/X_t	1.5630	3.1245	0.0011
DD/GDP_{t-1}	12.0533	7.5484	0.0013
$R^2 = 0.84$			
$R^{-2} = 76$			
D.W = 1.78			

Source: Author's regression output

The estimated investment model given in table 1 above indicates that out of the four exogenous variables, three of them have direct relationship with investment (IVT) being the dependent variable, viz; current value of National Income (GDP), Debt-Export Ratio and Lagged values of External Debt – Income Ratio. However, Interest Rate exhibits indirect relationship with the dependent variable IVT for the reason being that a rise in interest rate will crowd out investment.

Besides, the exogenous variables employed in our model are highly significant at the 0.05% level given the probability values. The goodness of fit is okay as it shows 84% of the systematic variation in the dependent variable caused by the independent variables, by the reason of the value of the coefficient of determination (R^2). The result of the coefficient of determination was further attested to by adjusted value of the coefficient of determination (R^{-2}) which reveals that about 76 per cent of the variation in IVT was accounted for by the independent variables after adjusting for the degree of freedom. In general, our estimated model performed satisfactorily as all the variables met their a priori expectations. And they are all statistically significant at the 5% level; the estimated model did not see any evidence of crowding out investment. Research method of this study differs from most studies that were reviewed in this study, the reason being that most of the studies used Ordinary Least Squares (OLS) technique, thus making comparison a little weak. For example, the result of Al-Zeaud (2016) had it that, external debt does not contribute to GDP and GDP does not contribute to external debt. Adesola (2017) concludes that, debt repayment servicing to creditors actually affects growth directly while Calvo(2009) study conclude that there, is no causality between external debt and economic growth in Nigeria.

The coefficient of D/X i.e. the ratio of external debt Service to Export is directly related to investment but contrary to our expected prediction, though found statistically significant at the 0.05% level. The meaning is that a high proportion of export to external debt payment accounts for a rise in investment outputs. This been the case, implies that the external loans were optimally deployed to domestic investment to increase our export goods. Hence the rise in export enabled debt service obligation and the balance for investment growth. The findings of this study are in line with Al-Zeaud (2016), who investigated the impact of external debt on the performance of the Jordanian economy. Clear evidence from the empirical

results showed that, increase in external debt have demonstrated a significant role in investment output of Jordan economy.

In addition, the coefficient of External Debt-Income ratio (D/GDP) show a direct relationship with investment output (IVT) and statistically significant at the 5 per cent level. This is contrary to our expected prediction because given the results obtained implies that as the proportion of National Income to external debt payment increases, the level of our investment output rises. The justification for this might be that there exist a continuous increase in the GDP hence there was enough balance after debt repayment for investment drive in the economy. However, the result is contrary to the work of Calvo (2009), who opines that a high level of initial debt is associated with high tax burden during the process of debt service; as a result, a smaller rate of return on investment will occur. The findings of this study contradict the findings of Calvo (2009), for the reason being that, there exists a continuous rise in the National Income.

The results of the Investment equation further show that there is no autocorrelation in the estimated model as the Durbin-Watson statistical value of 1.78 can b approximated to 2.0

Table 4: Historical Simulation

Model	Theil's Inequality Coefficients	Theil's Inequality Test Coefficients Theil's Inequality Test Decomposition		
		Bias Proportion	Variance Proportion	Covariance Proportion
Investment	0..2344	0.0000	0.0954	0.9132

Source: Author's regression output

For the researcher to examine the forecasting power of the model of this study, Theil's Inequality test was used. This goes deep to facilitates the evaluation of the reliability of the estimated model. The output obtained is thereby summarized in table 4 above, indicating that Theil's Inequality Coefficient of the estimated model been decomposed into bias, variance and covariance in proportions. Given the equation, the estimated model performs very well the reason being that the values of the Theil's Inequality Coefficient indicate less than one. The same holds for the bias, variance and covariance proportions of the given model. The interpretation of these indices is that our model for this study is good and robust for forecasting and also policy simulation.

Table 5: Simulation Outputs

Simulation Experiments Having a Reduction in External Debt Overhang	
IVT (%)	
10%	6.47
50%	34.18

Source: Author's regression output

For us to ascertain the degree of the impact of reduction in the external debt overhang on investment in Nigeria from our estimated model, a simulation

experiment was carried out. Two cases of 10% and 50% reduction in the external debt overhang was conducted given the summarized results in table 5 above.

The 10% reduction in the external debt overhang only yields 6.47 per cent impact on investment. In the same line of reasoning, when the test was conducted using 50% reduction in external debt overhang, investment rose to34.18%. By implication, reduction in the Nigeria external debt overhang is necessary as this will induce investment in the Nigerian economy.

5. Conclusion and Recommendations

The coefficients of the estimated model agree with the a priori expectation which indicates absence of crowding out investment in the Nigerian economy. On the basis of this, Nigeria should accommodate external loans obtained from the foreign creditors because, if the borrowed funds are optimally deployed into investment areas in an economy, the returns will be adequate for debt repayment and the balance for investment expansion. For this purpose, the policy makers need to appraise today debt situation for the purpose of appreciating the enormity of the problems. In order to do this and from the results of our study, this study recommends that Nigeria, external loans should be optimally allocated to the productive investments for the reason of increasing the volume of export goods so as to enable debt repayment and use the balance for the productive investment in Nigeria. A low rate of interest is necessary for the reason of sustainable investment, and efficient and effective utilization of various factor inputs are important for investment expansion.

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