

EXTERNAL DEBT AND FOREIGN PRIVATE INVESTMENT IN NIGERIA: A TEST FOR CAUSALITY.

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Abstract

The paper investigates the causal relationship between External Debt and Foreign Private Investment in Nigeria between 1970 and 2003. The source of data for the study is the publication of the Central Bank of Nigeria Statistical Bulletin (volume 14, 2004) issued annually by the Research Department. The variables used in the study were tested for stationarity using the Augmented Dickey Fuller and Philip Perron test. The result shows that the variables are stationary at first differencing. Cointegration test was also performed and the result shows that the variables are not related in the long run using the likelihood ratio as a measure of significance. The result of the cointegration determines the use of vector autoregressive model to test for causality, which resulted in a bi-directional relationship between external debt and foreign private investment in Nigeria.

Introduction

Many developing countries particularly Nigeria is found to be wallowing in debt. The external debt problem facing Nigeria has been receiving increasing attention in which adequate solutions are yet to be found. A clear and persistent lesson of the debt crisis has been that adequate debt management is essential if external resources are to be used efficiently. Many developing countries resort to external borrowing to bridge the domestic resource gap in order to accelerate economic development. It then means that any developing country can resort to

external borrowing provided that the proceeds are utilized in a productive way that will facilitate the eventual servicing and liquidation of the debt.

In the 1950s, countries were encouraged to borrow abroad and create an environment conducive to foreign investment to boost her economic growth. In the process little attention was paid to the liabilities side of the current account deficit, which increased the external indebtedness of these countries (see Maureen Were 2001). As a matter of fact, foreign borrowing can be explained in terms of the technical, managerial and financial requirements necessary to support development programs and economic growth. Between the 1960s and 1970s, deficit in the current account financed by borrowing abroad were highly favored as a way of boosting economic growth.

In the light of increasing indebtedness of the less developed countries (LDCs) in general and Nigeria in particular, the question arises as to whether external debt contributes or has any impact on foreign private investment in Nigeria. It is particularly important to investigate the relationship between indebtedness and foreign private investment and indeed economic growth, given the huge amount of foreign exchange earned from oil exports (see table 1.1). Also the huge burden of external debt constitutes a serious obstacle to growth and employment creation, as investment resources have to be used to meet external debt obligations. This as a result will hinder the growth of foreign direct investment in Nigeria.

Most of the studies carried out so far in this area have focused on the impact of external debt on foreign direct investment and economic growth both in the developed and less developed countries but has failed to examine if there is any causal linkage between external debt and foreign private investment over the years. This is a very serious loophole in most of these studies. This study therefore aims at examining the causality between external debt and foreign private investment in Nigeria.

The study is divided into five sections. Section two takes a cursory look at the empirical literature. Section three focused on the methodology where the models to be used for the study is specified while section four interprets the result of the estimated model and section five gives the policy recommendations and conclusions to the study.

Literature review

There have been several studies on the relationship between external debt and economic growth. Most of the empirical studies include a fairly standard set of domestic debt policy and other exogenous explanatory variables. Majority of the study find one or more debt variables to be significantly and negatively correlated with investment or growth depending on the focus of the study. Borensztein (1990) found that debt overhang had an adverse effect on private investment in Philippines. The effect was strongest when private debt rather than total debt was used as a measure of debt overhang. Iyoha (1996), was of the opinion that heavy debt burden acts to reduce investment through both debt overhang and the ‘crowding – out’ effect. His results were similar for Sub-Saharan African (SSA) countries. Cohen (1993), argued that the results on the correlation between less developing countries (LDCs) debt and the investment in 1980s showed that the level of stock of debt does not appear to have much power to explain the slow down of investment in developing countries during the 1980s. It is the actual flows of net transfers that matter. He found that the actual service of debt ‘crowded out’ investment.

For a country aspiring to achieve a particular target rate of growth, such growth may be limited by lack of domestic savings or foreign exchange (Obadan, 2001). Growth as he argued is limited by the domestic resource gap of the foreign exchange or external sector gap and foreign borrowing is required to meet the

larger gap. If foreign exchange is the dominant constraint, dual gap analyses stressed that additional role of foreign borrowing in supplementing foreign exchange without which a fraction of domestic savings might be unutilized because actual growth would be constrained by the inability to import necessary input.

Claessens et al (1996), also noted that under such circumstances, the debtor country shares only partially in any increase in output and export because a fraction of that increase will be used to service the external debt. The theory implies that debt reduction will lead to increased investment and repayment capacity and as a result, the portion of the debt outstanding becomes more likely to be repaid.

Furthermore, Ajayi (1995) posited “Debt is without any vestiges of doubt, an obstacle to the restoration of growth in many third world countries today”. In his view the external debt of the third world countries rises to USD 1.32 billion at the end of 1998, this is equal to about half of their combined. Gross National Production (GDP). The situation in Africa is particularly pathetic. Sub-Sahara African’s external debt was USD 161 billion at the end of 1986 out of which the low income, debt distressed countries owned USD 45 billion or 45% of indebtedness. Iyoha (1999) supported the argument made by Ajayi when he said that the two issues; debt and lack of growth are clearly inter-related. Indeed, excessive stock of external debt retard growth and hamper the socio-economic development of Sub-Saharan African countries. The large debt stock and crushing debt service burden have now introduced a new vicious circle to the analysis of the development problem of Sub-Saharan African countries, debt servicing in the face of inadequate foreign earning leads to severe import strangulation. Import strangulation hold back export growth thus perpetuating import shortages. The debt overhangs created by the debt situation further depress investment.

Anyanwu (1986), was of the opinion that a whole scale of some white elephant development projects in the country is the root cause of our external debt problem. He says instead of emphasis being placed on small scale rural development projects so as to reverse the chaotic trend of urbanization and lessen the opportunity for corruption, Nigeria government started embarking on many illusory projects of which many are not productive.

Fajana (1993) sees nothing wrong with external or foreign borrowing but that the debt crises arise due to the mismanagement of such funds. In fact he believes that borrowing is desirable and also unavoidable because external borrowing is the first order condition for bridging the domestic gap, the second order condition is that such funds be invested in viable projects whose rate of return is higher than that of the interest rate on the loan. He summed this up by saying that for external debt to serve as an engine of growth it has to be well managed and the resources it makes available needs to be prudently and efficiently utilized.

Ogwuma (1995) says that external debts arise from loans and credit procured by the residents of a country from the rest of the world intended to bridge the saving – investment gap. According to him when such resources are productively deployed they do not constitute a problem or a drain on the future resources. In order to ensure sustainability of debt servicing, borrowing countries need to adopt efficient external debt management strategies, which entail carefully planned schedules of external debt acquisition, deployment and retirement. He observed that problem usually exist when more and more resources are deployed to serve the loan.

Furthermore, Nair and Frazier (1988) attributed the problem of LDCs debt to their dwindling foreign exchange earnings and increasing rate of interest that are attached to the loans obtained. To them the debt burden could be alleviated and they recommend that indebted countries must ensure that their exchange

earnings grow faster than the foreign interest payment on loans and that new capital inflows must be directed mainly on productive investment rather than using them for debt servicing.

Elbadawi, et al (1996) made use of cross section regression for 99 developing countries spanning SSA, Latin America, Asia and Middle East to study the impact of debt overhang on economic growth. Three direct channels in which indebtedness in SSA works against growth were identified. These include, current debt inflows as a ratio of GDP (which should stimulate growth), past debt accumulation (capturing debt overhang) and debt service ratio. The fourth channel was an indirect channel, which works through the impacts of the above channels on public sector expenditure. They found out that the debt burden has led to fiscal distress as manifested by severely compressed budgets. Using data for Cameroon, Mbanga and Skiod (2001) found that there exists a debt overhang and crowding out effect of external debt on growth.

From the literature, the channels through which indebtedness works against growth are identified as current stock of external debt as a ratio of GDP, which may stimulate growth; past debt accumulation, which captures the debt overhang and therefore deters growth; and debt service ratio to capture the crowding out effects. Debt service payments reduce export earnings and other resources and therefore retard growth. According to Elbadawi, et al (1996), these debt burden indicators also affect growth indirectly through their impact on public sector expenditures. As economic conditions worsen, government find themselves with fewer resources and public expenditure is cut. Part of this expenditure destined for social programs has severe effects on the very poor. Most studies confirm debt overhang/crowding out effects. Studies that have shown favorable effects of external debt are rare.

The mechanism through which external debt affects economic growth is through investment. Investment behavior is adversely affected by debt servicing,

especially in heavily indebted economies. A study by IMF (1989) on investment behaviour found investment to be lower in heavily indebted countries, and after analyzing the different explanations for the decline in investment conclude that "... poor performance of investment in countries with debt servicing problems is generally consistent with the presence of debt overhang (dis) incentive".

Onah (1994) also view that the debt burden can depress investment, and hence economic growth, through illiquidity and disincentive effects. The illiquidity effect results from the fact that there are only limited resources to be divided among consumption, investment and external transfers to service existing debt. He then concluded that the disincentive arises because expectations of future burdens tend to discourage current investment.

Akinlo (2004) investigates the impact of foreign direct investment (FDI) on economic growth in Nigeria, for the period 1970 - 2000. The study made use of error correction modeling in investigating the relationship. The results of the study show that both private capital and lagged foreign capital have small and not a statistically significant effect on the economic growth. Also, the results show that export has a positive and statistically significant effect on growth. The findings of the study suggest that there is the need for labour force expansion and education policy to raise the stock of human capital in the country.

Most of the studies reviewed above studies the relationship between debt and economic growth, private investment and growth. It is very clear from the literature that huge external debt negatively impact on foreign private investment but the direction of the relationship is yet to be explored. This study therefore intends to look at the direction of causation between external debt and foreign private investment in Nigeria.

The Model Specification

The objective of this study is to examine the causality between foreign private investment and external debt in Nigeria. There is the possibility that the relationship that existed in the theory may not work in the econometric world as a result of some factors, which may not be clearly identified in the theory. This necessitated the need for the use of this method of analysis. This section therefore discusses the sources of data and method of analysis for the study.

Sources of Data and method of analysis

The data used for the study is basically secondary in nature. This data is obtained from the publications of the Central Bank of Nigeria Statistical Bulletin (2004). The data for the study are time series data covering the period 1970 to 2003. Data will be collected on the variables of interest mainly Foreign Private Investment (FPI) and External Debt (ED).

Test for Causality

The concept of causality is essentially of importance in econometric analysis. It is important to know whether a past change in one variable X causes a current change in another variable Y or whether the relation works in the opposite direction. In econometrics the most widely used operational definition of causality is the Granger definition of causality (Granger 1969). Geweke (1984) pointed out that these causality tests might be valid if the form of nonstationarity of the variables can be captured by the inclusion of deterministic trends and or logarithm transformations. In doing this, the variables will be tested for stationarity to show their order of integration after which cointegration test will be performed to know if the variables cointegrate in the long run. This will enable us to determine the appropriate model to be used in implementing the causality test. From the result of the model, the conventional F-test will be used to determine the causality.

Causation is said to run from x to y if the past and present value of x are significantly different from zero as a group. The same applies to causation from y to x. (see equations 1 and 2). If the result from equations 1 and 2 are significantly different from zero, it means that causation runs from both sides.

The model for the causality test is as shown below:

$$y_t = c + \sum_{j=1}^k \alpha_j x_{t-j} + \sum_{j=1}^k \beta_j y_{t-j} + \varepsilon_{1t} \quad (1)$$

and

$$x_t = c + \sum_{j=1}^k \delta_j y_{t-j} + \sum_{j=1}^k \lambda_j x_{t-j} + \varepsilon_{2t} \quad (2)$$

where x and y represents the variables to be considered. That is, External Debt (ED) and Foreign Private Investment (FPI), k is the appropriate lag length, and ε_t represents the error term.

Unit Root Test

In this section, we perform a unit root test on each of the variable since the variables are time series in nature. The study makes use of the Augmented Dickey Fuller (ADF) referred to as the conventional or the classical unit root test and the Philip Perron (PP) test to determine the order of integration of the variables. This enables us to avoid the problems of spurious result that are associated with non-stationary time series models. The results of the unit root test are shown in tables 1 and 2.

Presentation and Interpretation of Empirical Results

The results of the unit root test on each variable are presented in Tables 1 and 2. In table 1, it was observed that the null hypothesis of stationarity is rejected

at 5% critical value of -2.9558 and -2.9527 for ADF and PP respectively. This means that the variables are non-stationary at levels, hence the need for first differencing of the variables. The results obtained in table 2 shows that the variables are stationary and are of I(1) series though the PP test shows a superior result when the values are compared together.

Table 1:
 Unit root test using Augmented Dickey Fuller (ADF) and Philip Perron test (PP)

Variable	ADF	PP
LFPI	1.215503	0.952823
LED	1.690534	2.877130

Table 2:
 Unit root test using Augmented Dickey Fuller (ADF) and Philip Perron test (PP)

Variable	ADF	PP
Δ LFPI	-2.830676	-5.285901
Δ LED	-3.195845	-4.220851

Table 3:
 Result of the cointegration test

Eigenvalue	Likelihood ratio (LR)	Critical Value 5%	Critical Value 1%	Hypothesized No of CE(s)
0.140826	5.384892	15.41	20.04	None
0.016359	0.527827	3.76	6.65	At most 1

*(**) Denotes rejection of the hypothesis at 5 %(1%) significance level.

Following from the above results, we now tested for cointegration, which shows whether the variables are related in the long run. The result of the cointegration test in table 3 rejects the null hypothesis of at most one cointegrating variable at 5% critical value. LR rejects any cointegration at 5% significance level when compared with the critical values.

Since the variables are not cointegrated in the long run, our model then make use of the unrestricted Vector Autoregressive (VAR) model to test the causality between FPI and ED or vice versa. The result of the causal relationship between Foreign Private Investment (FPI) and External Debt (ED) is as presented in tables 4 and 5 respectively.

Table 4:
 Results of the Causality Test from Foreign Private Investment to External Debt

Variables	Coefficient	Std. Error	t- Statistic
LogPinv(-1)	1.023287	0.18621	5.49528
LogPinv(-2)	-0.170091	0.17711	-0.96038
LogDebt(-1)	-0.022322	0.10167	-0.21955
LogDebt(-2)	0.096329	0.10727	0.89799
C	0.777811	0.36494	2.13136

$R^2 = 0.9844$, Adj. $R^2 = 0.9820$, F-Statistic = 424.6447, Log Likelihood = 4.6552
 Schwarz criterion = 0.2506, S.E. regression = 0.2278 Akaike AIC = 0.0216

Table 5:
 Results of the Causality Test from External Debt to Foreign Private Investment

Variables	Coefficient	Std. Error	t- Statistic
LogDebt(-1)	0.968084	0.18927	5.11482
LogDebt (-2)	0.030770	0.19969	0.15408
LogPinv(-1)	-0.209862	0.34665	-0.60540
LogPinv(-2)	0.181490	0.32970	0.55047
C	0.635201	0.67936	0.93500

$R^2 = 0.9861$, Adj. $R^2 = 0.9841$, F-Statistic = 480.3045, Log Likelihood = -1523
 Schwarz criterion = 1.493, S.E. of regression = 0.4240, Akaike AIC = 1.264399

Based on the result from tables 4 and 5, it could be observed that the t-statistic of the past values of foreign private investment and external debt show a value of 5.49528 and 5.11482 respectively. Also the result of the F-statistic, which shows the overall significance of the model at 424.6447 and 480.3045, was highly significant at 5%. In addition, the model is a good one with the R^2 of 0.984353 and 0.984088 respectively. The conclusion from the findings is that bi-directional relationship existed between ED and FPI.

Conclusion

The main objective of this study is to specifically examine the causality between External Debt and Foreign Private Investment in Nigeria between 1970 and 2003 without considering its impact on economic activity. This enables us to determine the direction of causation among the variables. In the study, stationarity test was performed using the ADF and PP test, which shows that the variables are of I (1) series. Cointegration test was also carried out to determine the long run relationship of the variables but the result of the analysis rejected the null hypothesis of cointegration at both 5% and 1% significance level (see table 3). The absence of cointegrating equations determines the use of unrestricted vector autoregressive model, which gives the result of the causality, presented in tables 4 and 5 respectively.

It is evident from our findings that there existed a bi-directional relationship between external debt and foreign private investment in Nigeria. This implies that both external debt and foreign private investment leads to one another. The result of the analysis suggests that external debt contribute significantly to foreign private investment in Nigeria. In the same vein, foreign private investment can be a very significant factor or determinant of external debt. The policy implication of this result is that current debt flows into the economy will stimulate investment

but over reliance on external debt will deter foreign investment because more resources will be needed to repay and service the debt. Also for the economy to grow there is the need for external assistance in the form of additional resources, which could stimulate private investment. Furthermore since Nigeria has been recently considered for the debt relief, the government can divert the resources obtained at productive public investments with the resultant crowding in effects on private investment and social spending for the poor.

In conclusion, our empirical result has shown that a bi-directional relationship existed between external debt and foreign private investment in Nigeria. This differs from the result of most of the authors in the literature that studies the relationship between external debt and economic growth or foreign private investment and economic growth. This study therefore suggests further research the impact of external debt on foreign private investment in Nigeria: A simultaneous equation approach.

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Appendix 1:

Oil Revenue, External Debt, Private Investment and Gross Domestic Product (GDP) for selected years (in Million Naira).

YEAR	OIL REVENUE	EXTERNAL DEBT	GROWTH RATE OF EXTERNAL DEBT	FOREIGN PRIVATE INVESTMENT	GROWTH RATE OF FOREIGN PRIVATE INVESTMENT	GDP
1970	166.6	175.0	-----	1,003.2	-----	54,148.9
1973	1,016.0	276.9	36.8	1,763.7	43.1	73,763.1
1975	4,271.5	349.9	20.9	2,287.5	22.9	79,988.5
1980	12,353.3	1,866.8	81.3	3,620.1	36.8	96,186.6
1981	8,564.4	2,331.2	19.9	3,757.1	3.65	70,395.9
1985	10,923.7	17,300.6	86.5	6,804.0	44.8	68,916.3
1986	8,107.3	41,452.4	58.3	9,313.6	26.9	71,075.9
1990	71,887.1	298,614.4	86.1	10,436.1	10.8	90,342.1
1995	324,547.6	716,865.6	58.3	119,391.6	91.3	103,510.0
1999	724,422.5	2,577,383.4	72.2	154,188.6	22.6	116,400.0
2000	1,591,675.8	3,121,725.8	17.4	157,535.4	2.12	120,640.0

Source: Central Bank of Nigeria Statistical Bulletin (December 2000)