

# **THE IMPACTS OF EXTERNAL DEBT BURDEN AND FOREIGN DIRECT INVESTMENT REMITTANCES ON ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM NIGERIA**

Chinedu B. Ezirim, Emmanuel Anoruo, Michael I. Muoghalu  
University of Port Harcourt, Coppin State University, Pittsburg State University

## **Abstract**

The Economies of LDCs have been bedevilled, among others, by the twin external eco-financial crises of mounting debt burden and foreign investment inadequacies accompanied by more than proportionate FDI income remittance out of these economies. The worst hit by these trends are the highly indebted poor Sub-Saharan African Countries, including Nigeria. Against this background, this study sets out to investigate the causal relationship between external debt crisis and foreign investment crisis plaguing these countries, using Nigeria as a test case. It also attempts to x-ray the relationship between these two external sector crises and the GDP of the country. Use is made of the modified Granger causality procedure to derive the relevant models while estimation followed the log-linear least squares procedure against annual Nigerian data from 1970 through 2001. The diagnostic test results indicate that the specified models possess satisfactory forecasting and explanatory powers. The relative statistical results indicate the existence of dual causality between external debt and foreign investment burdens in the country. Evidently, the two economic problems do not contribute positively and significantly to growth in the output levels of Nigeria, *ceteris paribus*.

## **Introduction**

The Economies of least developed countries (LDCs) have been bedevilled by the twin economic crises of mounting debt burden and foreign investment

inadequacies accompanied by more than proportionate FDI income remittance out of these economies. The debt problem is incredibly odious and appears to have no remedy. The ratios of debt service to exports of LDCs gravitated between 16% and 19% since 1990 till 1998. Those of Nigeria ranged between 11.6% and 36% from 1990 through 2001. These economies suffer undue pressures to breaking points as a result. One of the natural resorts for the LDCs is the foreign investment capital angle. Contrary to expectations, this appears to have become a double-edged sword for these economies. The size of remittances of income accruing from foreign investments has been unnoticeably alarming. The observed trend is that foreign investors come in with a small amount of money, which is further magnified by the depreciating exchange rates, and end up carting away huge sums of money out of the host countries in form of investment income. These funds are reinvested in the capital markets of developed countries to the detriment of domestic markets. The resulting capital flight further exacerbates the crisis relating to the generation of foreign investment income. This keeps the less developed countries from ever enjoying the freedom associated with plough-back capital reinvestments and subjects them to the condition of always wooing foreign investors for capital inflows. It appears from raw statistics that the worst hit by these trends are the highly-indebted poor Sub-Saharan African Countries, including Nigeria. For instance, the ratio of remittances of foreign investors to external reserves of Nigeria increased from 97.7% in 1970 to 221.5% in 1980, 7446.7% in 1990, and 14456%. These are incomparably high when one considers that the rate of growth of output of the country were only 35%, 18%, 16%, and 3.3% respectively during the same periods.

Questions that remain to be addressed include: i). Is there any decipherable causal relationship between external debt burden and investment income remittances of foreign direct investors? ii). Are there any links between these conditions and the growth of the economies of the LDCs? This study, in response

to these questions, sets out to investigate the causal relationship between external debt crisis and foreign investment crisis plaguing the developing countries, using Nigeria as a test case. It also attempts to x-ray the relationship between these two external sector crises and the GDP of the country.

## **Literature Review**

### **External Debt and Foreign Investment Burdens**

Conventional economic and finance literature define external debt burden in terms of the ratio of external debt service to total exports, total external reserves, or total output or income of a debtor-country. By implication, it addresses the question of how much of the country's external obligations due (in terms of principal repayments and interest) is financed from exports proceeds for instance. Debt service payments represent the 'returns' on the 'investments' of the creditors. When the debt service payments are high compared to the volume of export proceeds, in which case total debt is equally high, the burden becomes great for the debtor country. What then should be the desired level or magnitude of external debt for LDCs.

Williamson (1999:15) proposed a rule of thumb answer to this question. Accordingly, "external debt should not exceed 40% of GNP or 200% of exports, and that the debt service ratio (ratio of debt service to exports) should not exceed 25% ... and they are consistent with the third (rule of thumb) when debt service (interest plus amortization) costs 12.5% of debt each year". It important to point out that these rules lack analytical foundations. However, if staying power is anything to go with, they provide a rough guide for a country's debt management. It would also mean that in any year, for instance, the debt service ratio (DSR) is higher than 25%, the country can roughly be described as experiencing excessive debt burden, or is simply in external debt crisis. For a typical LDC such as Nigeria, available statistics would show that the country has been wallowing in

debt crisis for most of the last two decades (see Ezirim and Muoghalu, 2005, p. 28).

Just as debt service payments are important in explaining future movements in external debt, investment-income remittances are similarly crucial in predicating foreign direct investments. This is because the income remittances represent a kind of ‘returns’ on the FDI outlay. When the foreign investment remittances are high compared to what was earlier invested (or the export earnings, or the external reserves), the host country suffers tremendous investment burden or crisis. This is so much so since there would be need for foreign exchange (generated through exports or reserves) to cover the requirements of income remittance out of the country. This also applies when the country needs to settle debt service obligations. From this angle, debt service payments and investment remittances are thus “returns” from the same portfolio of assets (debts and equity securities). It is noteworthy that when the remittances are so much that the host country suffers huge drain of investible capital, it succumbs to the tyranny of investment burden or crisis.

Literature is rife with works that link external debt burden or crisis with investments (domestic or foreign). Warner (1992, p.1) for instance attempted to answer the question of whether debt crisis causes the investment crisis in the Heavily Indebted Poor Countries (HIPCs). His work was premised on the existence of “a large literature that attributes the investment decline in the HIPCs to the effects of the international debt crisis which began in 1982”. The paper underscored that the HIPCs equally faced falling export prices and high real interest rates during the period, and argued that these shocks could have directly caused investment to decline. In order to eliminate the effects of these shocks, the paper specified equations that were devoid of debt-related information to see whether they could forecast investment declines experienced by the HIPCs. The results indicated that such equations explained investments in many HIPCs.

Impliedly, sufficient doubts were casted as to the efficacy of explaining investment declines by debt-related explanations.

Iskan (1998, p. 1) extended Warner's enquiries to Mexico. The central question of the paper was: "To what extent can financing constraints account for low investment rates in Mexico after 1982?" The paper utilized a cost-of-adjustment model of investment and annual panel data of Mexican manufacturing industries from 1970 to 1990. The results showed that part of the debt-crisis-effects on investment may be attributed to building financing constraints in Mexico.

Ezirim, Muoghalu, and Emenyonu (2004) challenged the substantiability of the long-standing argument that external debt burden discourages investments. Specifically, the question raised relates to whether external debt stock and associated service payments discourage domestic investments in LDCs. Use was made of a comparative modelling approach involving distributed lag and autoregressive models. Comparative estimations methods included the OLS, Cochrane-Orcutt, Maximum Likelihood and instrumental variable techniques against time-series data from 1970 through 2001. The results, among others, showed that both external debt stock and debt service are not always disincentives to domestic investments. It results further revealed that the debt burden (debt service) variable particularly holds some positive effects for Nigeria's domestic investments especially when such payments attract further cost-effective capital inflows, and the externally-borrowed funds are put to best economic uses. This finding contradicts the conclusions reached by Levy and Chowdhury (1993), Savvides (1992) and UNECA (1998) that incentives to invest are weakened by compulsory debt service payments paid by the LDCs. It, however, agrees with the findings in Ezirim, Muoghalu, and Elike (2004) and Elbadaawi, Ndulu, and Ndungu (1997), where it was equally established directly or inferentially that debt service payments by LDCs do not always act as disincentives to investments.

The present paper attempts the relationship between debt burden and foreign direct investment burden (perceived in the light of the pressures on the economy created by the foreign investment remittances). The first cardinal research question of this present work thus relates to whether debt burden causes investment burden and vice versa. On extreme considerations we loosely ask: does debt crisis cause investment crisis in LDCs, and vice versa? This is the first major thrust of this paper. We have taken liberty to assume that burden can be used interchangeably with crisis in the light of the definitions and explanations made above.

### **Economic Growth Angle**

The second cardinal point of our present study extends the enquiry to the possible relationship between economic growth of LDCs and prevalent conditions of external debt and foreign investment burden. Several independent works have been carried out in an attempt to establish the effects of external debt or debt service on aggregate output, income, or growth. Ezirim, Muoghalu, and Emenyonu (2004) employed the St. Louis Modeling procedure to show that the total external debt stock has an immense potential to affect the GDP of Nigeria both positively and significantly, with the full-scale influences felt in the third and fourth years of the lives of such external capital. The study also shows that huge debt service payments by the country negatively affected growth. The negative effect of the debt burden variable turned positive after about four years of faithful debt service payments. This result supports the findings in Metwally and Tamaschke (1994). Olgun et al (1998) however, showed that debt service (the debt burden variable) did not affect the rate of economic growth. Geiger (1990), Sawada (1994) and Rockerbie (1994) found that the relationship between debt burdens (and in fact over all external debt obligations) is both inverse and significant. The question becomes that with the interplay of such important

variable as foreign direct investment operations alongside their income remittances implications; will external debt burden inversely affect economic growth?

Pettis (1998, p. 1) argued that economic growth does not cause capital inflows (including debt and FDI), instead capital inflows cause growth. In defence, he appealed to history, which suggests that, the amount of foreign capital flowing into LDCs as not a function solely of domestic economic behaviour but, also reflects external events that have little to do with domestic policy. This contradicts conventional economic thought that explains the rationale of foreign capital inflows in LDCs in terms of the perception of attractive growth opportunities, caused by dearth of opportunities in the rich countries or by expectations of rapid growth in the poorer countries.

Clements, Bhattacharya, and Nguyen's (2003) work examined the channel through which external debt affects growth in low-income countries. The results suggested that substantial reduction in external debt for the HIPCs would directly increase per capita income growth by about 1% per annum. Further, it was shown that reductions in external debt service could also provide an indirect boost to growth through its effects on public investment. They contend that if half of all debt-service relief were channelled to such purposes without increasing the budget deficit, then growth could accelerate in some HIPCs by an additional 0.5% point per annum. Following from this, it can equally be argued that if half the amount of income remittances accruing to FDI were reinvested in the host economy, instead of taking them away to other countries, the growth rate would be higher than the above estimate. This is an issue of empirical concern. Thus, we ask the second research question of this study: What is the direction and impact of the interplay of external debt burden and foreign investment burden on the economic growth of a LDC?

## **Methodology**

### **Analytical Techniques and Estimation Methods**

The paper employed distributed-lag and autoregressive modelling to derive modified Granger-type causality regression equations of linear and log-linear constructs. Six models were specified in all. Estimation methods followed the least squares and fully modified Philips-Hansen approaches. For the Least Squares method, conventional global and relative statistics were derived. Diagnostic tests were carried out for serial correlation, functionality, normality, heteroscedasticity, and unit roots. The fully modified, trended-case Philip-Hansen method utilized the Bartlett weight procedure, with truncation lag equals zero. Computations were done using the Microfit 4.0 software, while descriptive statistical analysis was done using the Microsoft Excel software. In general, analysis was done in three parts: global analysis of the utility of models specified, relative statistical analysis of effects of predictors, and the descriptive analysis of data collected.

### **The Models**

Following our first research question earlier stated in section 2 and the underlying theoretical arguments, it can be hypothesized that a two-way causal relationship exist between external debt burden and foreign investment burden of a typical developing country. More succinctly stated, there is a bi-directional causality between the ratio of external debt service to export earnings (the debt burden variable) and the ratio of foreign direct investment income remittances to external reserves (an investment burden variable) of an LDC. Employing the Granger (1969, 1977) causality condition, it can be hypothesized that the debt service export ratio (DSX) would Granger-cause the remittances external reserve ratio (RER) and vice versa. Explicitly, we can specify that:



$$DSX_t = \sum_{i=0}^n \alpha_i RER_{t-i} + \sum_{j=1}^n \beta_j DSX_{t-j} + U_{it}; \alpha_i, \beta_j > 0. \quad (1)$$

Equation (1) can be rewritten in log-linear form as follows:

$$\text{Ln}DSX_t = \sum_{i=0}^n \lambda_i \text{Ln}RER_{t-i} + \sum_{j=1}^n \psi_j \text{Ln}DSX_{t-j} + U_{2t}; \lambda_i, \psi_j > 0 \quad (2)$$

Expressions 1 and 2 above imply that  $RER_t$  Granger-causes  $DSX_t$  if the values of  $DSX_t$  are regressed against its lagged values, the current values of  $RER_t$  and the lagged values of  $RER_t$ . Where the current values of  $RER_t$  are found to be significant given these conditions,  $RER_t$  would be said to Granger-cause  $DSX_t$ . The same conditions would apply to a situation where  $DSX_t$  is said to Granger-cause  $RER_t$ . Thus, we can derive similar expressions for  $RER_t$  as follows:

$$RER_t = \sum_{i=0}^n \varphi_i DSX_t + \sum_{j=1}^n \tilde{\lambda}_j RER_t + U_{3t}; \varphi_i, \tilde{\lambda}_j > 0 \quad (3)$$

Equation (3) can be rewritten in log-linear form as follows:

$$\text{Ln}RER_t = \sum_{i=0}^n \varpi_i DSX_t + \sum_{j=1}^n m_j RER_t + U_{4t}; \varpi_i, m_j > 0 \quad (4)$$

The second concern of this paper relates to the relationship between  $DSX_t$ ,  $RER_t$  and economic growth rate (EGR). Following the dictates of the earlier theoretical foundation, the hypothesis can be posited to state that: Economic growth rate ( $EGR_t$ ) is a negative function of  $DSX_t$  and  $RER_t$ , ceteris paribus. Explicitly,

$$EGR_t = K_0 + K_1 DSX_t + K_2 RER_t + E_{it}; K_1, K_2 < 0 \quad (5)$$

and

$$\text{Ln}EGR_t = \ell_0 + \ell_1 \text{Ln}DSX_t + \ell_2 \text{Ln}RER_t + E_{2t}; \ell_1, \ell_2 < 0 \quad (6)$$

With equation 5 and 6, we can test the nature of relationship existing between economic growth and external debt burden and foreign investment

burden. For the purposes of this paper the EGR variable is measured as the rate of growth in real aggregate output (GDP) of Nigeria.

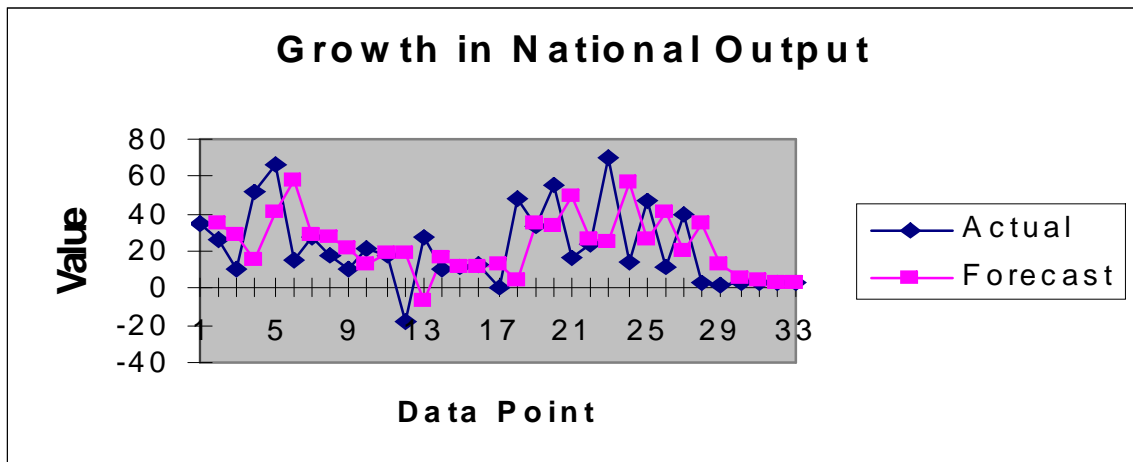
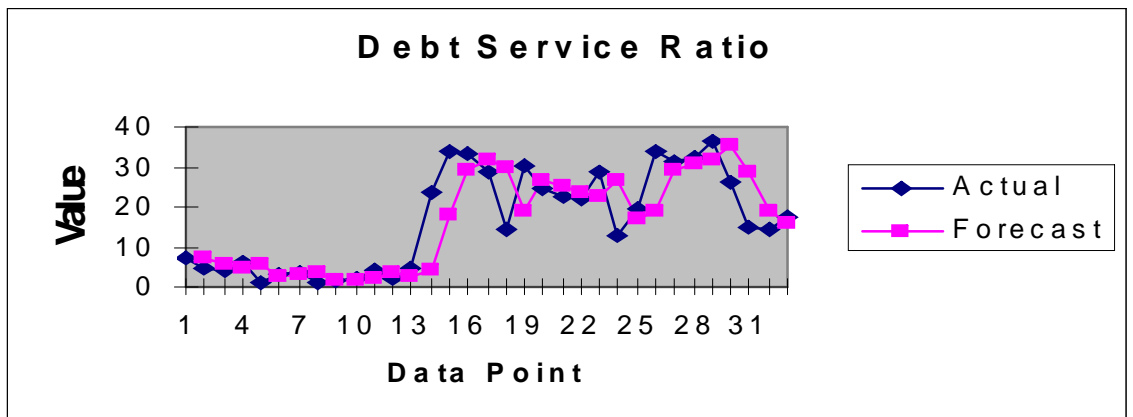
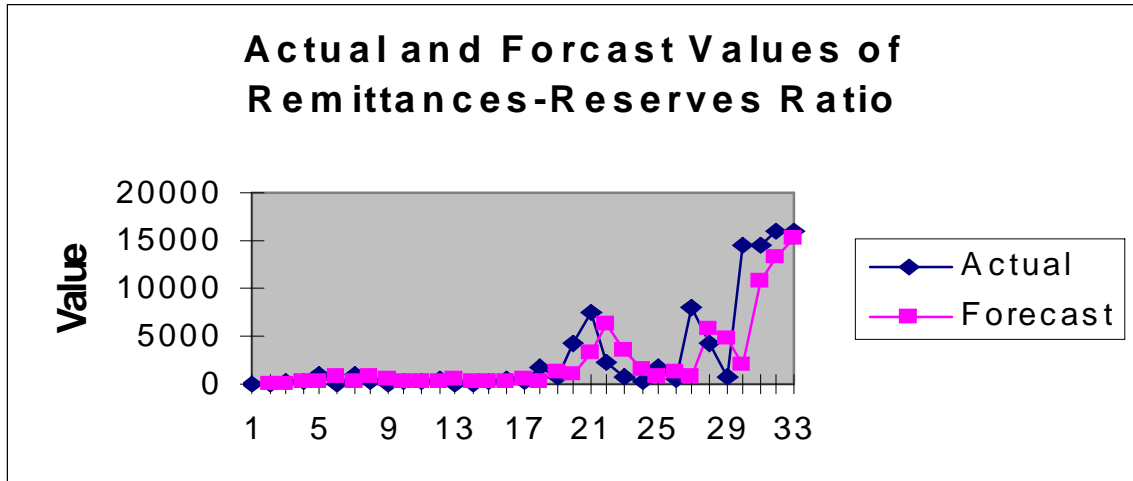
**Table 1: Descriptive Statistics of EGR, RER, & DSX (1970- 2002)**

<i>STATISTICS</i>	<i>RER</i>	<i>DSX</i>	<i>EGR</i>
Mean	3079.775	16.85531	21.37031
Standard Error	893.832	2.180272	3.655811
Median	657.05	16.15	15.5
Kurtosis	2.060115	-1.56387	0.177906
Skewness	1.846476	0.074647	0.789956
Range	15844	35.56	88
Sum	98552.8	539.37	683.85
Count	32	32	32

### **The Data**

The paper estimated the above-specified models against time series annual data of Nigeria from 1970 through 2002. The original data related to the GDP, total debt service, total FDI income remittances, total export earnings, and total external reserves of the country sourced from the publications (Statistical Bulletin and Annual Reports) of the Central Bank of Nigeria. From these raw data, the DSX, RER, and EGR were calculated. Table 1 depicts the associated descriptive statistics of the variables. For the RER, the mean value is 3079.775% with a standard error of 893.832 indicating that the country experienced very high spate of and variations in investment income remittances relative to its external reserves. Invariably, on the average, over 3000 percent of its external reserves were remitted out of the country by foreign investors. These are indicative of the huge burden being faced by the country in respect of foreign direct investment remittances.

**Figure A: Actual and Fitted Values of RER, DSX, & EGR**



The DSX variable did not post values of comparative magnitude owing to the fact that the denominator is total export earnings instead of external reserves. Its mean was 16.855% while the standard error was 2.18. That over 16% of its export proceeds, on the average, are used to service debt is quite burdensome for a country struggling with poverty. The mean growth of the EGR was 21.37% with a standard error of 3.66%. All the data generated and computed into DSX, RER, and EGR went through exponential smoothing with the resultant actual and fitted values depicted in figure A, (see Appendix). As shown by the charts, both the actual and forecast values moved in the same direction, having the same swing over the years from 1970 through 2002. The paper considered them suitable for estimation purposes given their observed values at 95% confidence levels (see Table 1).

**Table 2:** Ordinary Least Squares Estimates of Granger-Causality Flowing from External Debt Crisis to Investment Crisis.

<b>Panel A: Relative Estimates of Regressors: Dependent = LnDSX<sub>t</sub></b>					
<b>Regressors</b>		<b>Coefficient</b>	<b>Std Error</b>	<b>T-Ratio [Prob.]</b>	
LnRER <sub>t</sub>		.32564	.14693	2.2163[.036]	
LnDSX <sub>t-1</sub>		.84250	.11446	7.3605[.000]	
LnRER <sub>t-1</sub>		-.25736	.15480	-1.663[.208]	
Constant		.11296	.49939	.22619[.823]	
<b>Panel B: Global Statistics Results</b>					
R-Squared		.79142	R-Bar-Sq.	.76736	
S.E. of Regression		.55893	F-stat	32.885[.000]	
Equation LL		-22.9695	AIC	-26.9695	
SBC		-29.7719	D.W. stat.	1.9398	
Durbin's h-Stat.		.21174[.832]			
<b>Panel C: Diagnostic Tests</b>					
Test Statistics		Lm Version		F-Version	
Serial Correlation		.018407[.892]		.015348[.902]	
Functional Form		.14242[.706]		.111925[.733]	
Normality		5.9955[.050]		Not Applicable	
Heteroscedasticity		1.4666[.226]		1.4391[.240]	
<b>Panel D: Unit Root Tests for Residuals*</b>					
Test	Statistic	LL	AIC	SBC	HQC
DF	-5.5823	-20.7989	-21.799	-22.4650	-22.00
ADF(1)	-44.7567	-20.1869	-22.19	-23.5192	-22.60

95% critical value for the Dickey-Fuller Statistics = -4.5113, LL = Maximized Log-likelihood, AIC = Akaike Information Criterion, SBC = Schwarz Bayesian Criterion, HQC = Hannan-Quinn Criterion.

\* Test based on OLS regression of LnDSX<sub>t</sub> on the predictors from 1971 to 2000.

## **Analysis of Estimation Results**

### **External Debt Burden, Investment Burden and Causality**

The first level of analysis, done in this paper deals with the relationships between the two external economic crises conditions: external debt burden and investment burden. The relationships are expressed in equations 1 through 4, while relevant results are summarised on Table 2 through 4 (See appendix). Table 2, for instance, depicts the least squares estimates of the causal relationship between foreign investment burdens to external debt burden (see equation 2). It is noteworthy that only the log-linear model estimation results are reported instead of the linear model (expression 1) results because the former behaved better than the latter in all econometric ramifications. Thus there relationship is more log-linear than linear. From the result in Table 2, the global statistics indicate that expression 2 fitted the generated data very well. The model explained over 76% of the variation in external debt burden and this is significant at 1% level (Adjusted R-Bar-squared = .767;  $F = 32.89$ ,  $P = .000$ ). The observed values for the Equation Log-likelihood (ELL), Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC) all showed that the model reserves high forecasting power. The results from both the D.W. statistic and Durbin's h-statistic provide evidence against auto-correction problems in the data (see Panel B of Table 2). The Diagnostics test results as shown on Panel C, indicates the absence of serial correlation of residuals, correctness of chosen functional form of the model, and absence of heteroscedasticity problem for both langrangian multiplier and F-versions. Normality status of the model was however marginally suspected at 5% level of significance. Both the Dicker-Fuller and Augmented Dicker-Fuller statistics showed satisfactory unit root test result for residuals (see Panel D, Table 2). These global test results attest to the high utility of the relevant specified models (equation 2). Relatively, the results of the independent variables showed that the foreign investment crisis variable ( $\text{LnRER}_t$ ) is significant at 5% level

(Beta = .33, t = 2.22, P = 0.036). Following the Granger rule, the hypothesis of no causality flowing from foreign investment crisis to external debt crisis cannot be accepted. The suggested implication is that foreign investment burden causes or aggravates external debt burden.

**Table 3:** Ordinary Least Squares Estimates of Granger-Causality Flowing from Investment Crisis to External Debt Crisis.

<b>Panel A: Relative Estimates of Regressors: Dependent = LnRER<sub>t</sub></b>				
<b>Regressors</b>	<b>Coefficient</b>	<b>Std Error</b>	<b>T-Ratio [Prob.]</b>	
LnDSX <sub>t</sub>	.48798	.22018	2.2163[.036]	
LnDSX <sub>t-1</sub>	-.26771	.24039	-1.1136[.276]	
LnRER <sub>t-1</sub>	.62953	.15647	4.0233[.000]	
Constant	1.0405	.57691	1.8035[.083]	
<b>Panel B: Global Statistics Results</b>				
R-Squared	.60174	R-Bar-Sq.	.55579	
S.E. of Regression	.68421	F-stat	13.0949[.000]	
Equation LL	-290369	AIC	-33.0369	
SBC	-25.8393	D.W. stat.	1.6089	
Durbin's h-Stat.	2.0786[.038]			
<b>Panel C: Diagnostic Tests</b>				
Test Statistics	Lm Version		F-Version	
Serial Correlation	1.923[275]		1.0347[.319]	
Functional Form	.019750[.888]		.0116469[.899]	
Normality	1.4529[.484]		Not Applicable	
Heteroscedasticity	.10919[.741]		.100228[.751]	
<b>Panel D: Unit Root Tests for Residuals*</b>				
Test	Statistic	LL	AIC	HQC
DF	-5.1790	-24.9432	-25.9432	-26.1468
ADF(1)	-4.76679	-24.2123	-26.2123	-26.6196

95% critical value for the Dickey-Fuller Statistics = -4.5113, LL = Maximized Lag-likelihood.  
 AIC = Akaike Information Criterion, SBC = Schwarz Bayesian Criterion, HQC = Hannan-Quinn Criterion.

\* Test based on OLS regression of LnRER<sub>t</sub> on the predictors from 1971 to 2000.

Table 3 summarises the Log-linear least squares estimates of Granger-causality flowing from external debt crisis to investment burden. The global statistics as in Panel B indicates that the relevant model (Equation 4) explains over 55% of the variation in the investment burden of the country and this is significant at 1% level ( $F = 13.09$ ,  $P = .000$ ). The values of ELL, AIC, and SBC testify to the high forecasting power of the model. The D.W. statistic and Durbin's h-statistics show that autocorrelation is not significantly present. All the diagnostic tests (serial correlation of residuals, functional form of the model, normality, and heteroscedasticity and unit roots) revealed satisfactory results even better than the cases of Table 2 on the average. Thus, the model possesses high utility for both explanatory and forecasting purposes. At the level of the relative effect of the explanatory variable, the  $\text{LnDSX}_t$  is significant at 5% level ( $\beta = .488$ ,  $t = 2.22$ ,  $p = 0.36$ ). This suggests that a hypothesis of no significant causality flowing from external debt burden to investment burden would not be accepted (see Panel A of Table 3). The picture is made clearer by the results of the Fully Modified Phillip-Hansen Estimates summarized on Table 5. The beta coefficient of the  $\text{LnDSX}_t$  variable is .55 while the t-value is 2.97 and this is significant at 1% level. Evidently, we can be 99% confident in affirming that the debt burden variable is causal prior to the investment burden variable. Invariably, external debt burden can be said to Granger-cause investment burden in Nigeria. This agrees with the results of an earlier study by the authors that found a significant and positive relationship between the two economic crisis conditions (see Ezirim and Muoghalu, 2005). It however, contradicts the findings of Warner (1992) whose work casts sufficient doubts as to the efficacy of explaining investment declines (crisis) by debt-related explanations.

Table 4 summarises the results of the Fully Modified Phillip-Hansen Estimates of the causal relationship between  $\text{LnDSX}_t$  and  $\text{LnRER}_t$ . The results amplify the inference of causality flowing from investment burden to external

debt burden. The  $\text{LnRER}_t$  is significant at 1% level ( $\beta = 0.42$ ,  $t = 3.07$ ,  $P = .005$ ) indicating that, in the Granger sense, investment burden is causal prior to external debt burden. Thus, the former can also be said to Granger-cause the latter. This is understandable in the sense that when the economy suffers drastic capital flight in the form of FDI remittances, the capacity to finance productive activities is hampered and thus the ability to meet debt obligations may be threatened adversely, *ceteris paribus*.

**Table 4:** Fully Modified Philip-Hansen Estimates: Bartlett Weights, Truncation lag= 0, Trended Case.

<b>Panel A: Relative Estimates of Regressors: Dependent = <math>\text{LnDSX}_t</math></b>			
<b>Regressors</b>	<b>Coefficient</b>	<b>Std Error</b>	<b>T-Ratio [Prob.]</b>
$\text{LnRER}_t$	.4189	.13656	3.0682[.005]
$\text{LnDSX}_{t-1}$	.78784	.10399	7.5759[.000]
$\text{LnRER}_{t-1}$	-.24539	.13806	-1.7774[.088]
Constant	-.17993	.45029	-.39958[.693]

**Table 5:** Fully Modified Philip-Hansen Estimates: Bartlett Weights, Truncation lag= 0, Trended Case.

<b>Panel A: Relative Estimates of Regressors: Dependent = <math>\text{LnRER}_t</math></b>			
<b>Regressors</b>	<b>Coefficient</b>	<b>Std Error</b>	<b>T-Ratio [Prob.]</b>
$\text{LnDSX}_t$	.55205	.18610	2.9665[.007]
$\text{LnDSX}_{t-1}$	-.22109	.20097	-1.1001[.282]
$\text{LnRER}_{t-1}$	.48353	.13161	3.6738[.001]
Constant	1.3645	.48167	2.8328[.009]

### **Observable Distributed Lag and Autoregressive Effects**

Some notable distributed lag and autoregressive effects of the variables are underscored by the estimation results of models 2 and 4 as buttressed on Tables 4 and 5 respectively. From Table 4, it can be seen that previous spates of external debt burden exacerbates current levels of debt burden or crisis. This is seen in the positive and significant beta values ( $\beta = .79$ ,  $t = 7.58$ ;  $P = .000$ ) of the lagged-



values of debt service – export ratio ( $\text{LnDSE}_{t-1}$ ). A similar trend is equally the case with the investment burden model (equation 4) as reported on Table 5. As shown, previous spates of investment burden increases the magnitude of current investment burden. The beta coefficient and t-values of the  $\text{LnRER}_{t-1}$  variable are 0.48 and 3.67 respectively and these are significant at 1% level ( $P = .001$ ). These are indicative of fact that a hypothesis of no distributed-lag effect would not be accepted. Thus, we can underline the partial adjustment principle at play in both the debt and investment burden equations.

On the other hand, in both debt and investment models, the lagged values of the explanatory variables did not post positive and significant results. For the debt model, the lagged investment burden variable had beta and t-values of -.245 and -1.78 respectively, which are not significant at 5% level (see Table 4). For the investment model, the lagged external debt variable had beta and t-values of -.22 and -1.1, which are not significant at 5% level. Given these we cannot safely verify a hypothesis of significant positive auto-regressive effects of the relevant models. As such the paper cannot confirm the existence of adaptive expectations behaviour of the concerned models as it does the partial adjustment behaviour. From the results and following the manipulations in Ezirim, Emenyonu and Muoghalu (2002), the stock adjustment indices for the external debt burden and foreign investment burden models (expressions 2 and 4) are 21% and 52%. These imply that in any given year under consideration only 21% of the total debt burden experience by the country would have been considered ideal. The remainder constitutes excess external debt burden. Similarly, in any given year under consideration, only 52% of the total investment burden can be considered normal to be experienced by the country. The remaining 48% would be seen as excessive investment burden. It is no gainsaying therefore that the country is experiencing both debt and investment crisis.

**Table 6:** Regression Statistics Showing Relationship between EGR, RER, & DSX

<i>Statistics</i>	<i>Values</i>
Multiple R	0.255092
R Square	0.065072
Adjusted R Square	0.002743
Standard Error	20.46438
Observations	33
F Statistics	1.044
P-Value	0.364

<i>Variables</i>	<i>Coefficients</i>	<i>Std Error</i>	<i>T Stat</i>	<i>P-value</i>
Intercept	25.36357	6.177288	4.10594	0.000285
RER	-0.00103	0.000736	-1.39561	0.173077
DSX	-0.03065	0.300674	-0.10194	0.919481

### The Economic Crises and Economic Growth

The second level of analysis addresses the link between economic growth and the two external economic crisis conditions. The null hypothesis postulated in Expression 5 and 6 reads: there is no significant and positive relationship between economic growth variable and the two identified crises conditions (external debt and investment burdens). Table 6 summarises the regression statistics buttressing the relationship between  $EGR_t$ ,  $RER_t$ , and  $DSX_t$  variables. As can be seen, the global results point to the absence of significant joint relationship between the three variables ( $R = 0.26$ ,  $R^2 = .07$ ,  $F = 1.04$ ,  $P = .364$ ). Relatively, the Table reveals that there is a negative and insignificant relationship between economic growth variable and the investment burden variable. The relationship between economic growth and external debt burden was also both negative and insignificant.

From the evidence, it does seem that although the two economic crisis conditions affect economic growth in Nigeria negatively, the degrees of effects are not statistically significant to alter the fortunes of the country. Thus, the sub-optimal economic growth of Nigeria cannot be attributed wholly or mainly to the prevalence of external debt and investment burden conditions in the country.

Other factors that are not included in the model directly or inversely affect economic growth of the country more significantly. This finding is consistent with Warner (1992) who found that sufficient doubts existed about explaining domestic investment declines (that directly leads to poor economic growth) by debt-related problems. Further, the results of this paper corroborates those by Ezirim, Muoghalu, and Elike (2004) in respect of the possible positive effects of faithful external debt servicing behavior in boosting domestic investments and income is not confirmed by the present analysis.

### **Conclusion and Recommendations**

This study has addressed two major sets of hypotheses. The first set relates to the existence, or otherwise, of causal relationship between external debt burden and foreign investment burden in a typical developing economy such as Nigeria. The second set relates to the existence, or otherwise, of significant relationships between economic growth and the above two external sector economic crises conditions. The result of the first set of hypotheses indicates that there exists a bi-directional causality between external debt burden and foreign investment burden in Nigeria. Whereas the models that yielded the dual-causation results possessed significant lag effects that are amenable to the partial adjustment principle, they do not guarantee significant auto-regressive effects that subscribe to adaptive expectations behaviour. The results indicate that the country was carrying average debt burden and investment burden of 79% and 48% respectively. The results of the second set of hypothesis indicate that economic growth of Nigeria is a negative function of external debt and foreign investment burdens. The relationships were not also significant either from the global or relative perspectives.

The results indicate that 79% of the debt burden and 48% of the investment burden being experienced by the country constitute excess burden. To achieve an

even keel, the economic managers should evolve policies and decisions that would reduce the current levels of debt service by 79% and current levels of FDI income remittances by 48%. This should be done with the use of policy tools that would not cause disaffection both to external creditors and foreign investors. This paper is not suggesting the unreserved liberalization or total deregulation of the external sector of the Nigerian economy. Some measure of regulation of entry and income remittances by foreign investors is indicated. Unbridle liberalization would not be the best policy at this stage of development.

Some further public policy implications can be drawn from the above results. First, it does appear that the economic managers of the country would be restrained, in view of the evidence of this study, from separating foreign investment management decisions from external debt management decisions. The separation theorem would not apply here as any act to the contrary would be solving only one side of a double-edged problem. Thus, the financial authorities must always evolve concomitant policy directions in both external debt and investment packages. On the other hand, the study reveals that policies to boost economic growth of the country can be made independent of debt-service- and foreign-investment-remittances-related decisions. The separation theorem properly applies here. Thus, monetary authorities can go ahead and invoke policies to promote growth in the country without worrying too much about debt service and investment remittances issues.

The above policy implications paint a picture that suggests a deviation of policy directions from orthodox prescriptions of economic and finance theory. For instance, the body of literature supports the significant reduction of debt stock and foreign investment income outflows from a developing country in order to experience real growth. This convention has very good merits but what happens where the developing country is caught in between two important webs. The first is the condition of choosing between injections of needed foreign investment

income (together with associated liberalization of income repatriation) and securing the economy from capital erosion, which unbridled remittances represent. The second is quite similar and relates to the condition of choosing between receiving foreign financial assistance (in the form of debt with its attendant overhang effects and burden) and that of running away from imminent bankruptcy situations or even that of protecting the economy from foreign economic colonization. These scenarios amplify the need for further enquiries, theorising, and well-suited studies in this area. Further empirical evidences generated from more sophisticated analytical tools may help in this regard. A possible way to start in this direction would be to redefine the variables used in this study and also to employ different econometric and statistical tools to estimate the models developed in the paper.

### **References**

- Clements, B. J., Rina Bhattacharya, and T. Q. Nguyen (2003) "External Debt, Public Investment, and Growth in Low-Income Countries". IMF Working Papers, 03/249.
- Elbadawi, I., Benno Ndulu and N. Ndungu (1997) "Debt Overhang and Economic Growth in Africa". In External Finance and the African Countries, Haques and Kumbar. The World Bank, Washington, D.C.
- Ezirim, B. Chinedu and M.I. Muoghalu (2005) "Exchange Rate Determination, Foreign Investment Burden and External Debt Crisis in LDCs: Evidence from Nigeria". Paper presented at the International Academy of Business and Public Administration Disciplines (IABPAD) Conference in New Orleans, Louisiana, January 6-9.
- Ezirim, B. Chinedu, M. I. Muoghalu, and U. Elike (2004) "External Indebtedness and the Economic of Less Developed Countries: Econometric Extension

Drawing Empirical Evidence from Nigeria”. *Journal of Business and Behavioural Sciences*, 11 (2).

Ezirim, B. Chinedu, M. I. Muoghalu, and E. N. Emenyonu (2004) “Does External Debt Burden Always Act as Disincentive to Investment for LDCG? Further Empirical Extension Based on the Nigerian Evidence”. Paper Presented at the 2004 Annual Meeting of the American Academy of Accounting and Finance in New Orleans, Louisiana, December 9-11.

Ezirim, B. Chinedu, M.I. Muoghalu, and E. N. Emenyonu (2004 “Can the St. Louis Model Effectively Explain Output-Debt Relation in an Emerging African Country? Paper Presented at the Annual Conference of the American Academy of Accounting and Finance in New Orleans, Louisiana, December, 9-11.

Geiger, L.T. (1990) Debt and Economic Development in Latin America, *The Journal of Developing Areas*, 24, pp. 181-194.

Iscan, Talan B. (1998) “Financing Constraints and Investment Decline in Mexico”. Working Papers Archive, Department of Economics, Dalhousie University (RePEc: dal: wparch: fdis98).

Levy, A. and K. Chowdhury (1993) “An Integrative Analysis of External Debt, Capital Accumulation, and Production in Latin America, Asia-Pacific and Sub-Saharan Africa”. *Journal of Economics and Finance*, 17(3), 105-119.

Metwally, M.M and Tamaschke, R. (1994) The interaction among foreign debt, capital flows and growth; case studies, *Journal of Policy Modelling*, 16 (6), pp. 597-608.

Olgun, H. Disbudak, U. and Okem, G. (1998) Macroeconomic interactions among capital inflows, debt servicing and growth, paper presented in *Middle East Technical University (METU) II Economic Conference*, Ankara.

Phillips, P.C.B. and B.E. Hansen (1990), 'Statistical Inference in Instrumental Variables Regression with I(1) Processes', *Review of Economic Studies*, 57,

pp. 99-125.

Pettis, Michael (1998) “The New Dance of the Millions: The Asian Crisis”.  
Challenge, July – August.

Rockerbie, D.W. (1994) Did debt crisis cause the investment crisis? Further  
evidence, *Applied Economics*, 26, pp. 731-738.

Savvides, A. (1992) “Investment Slowdown in Developing Countries during the  
1980s: Debt Overhang or Foreign Capital Inflows, *Kyklos*, 45 (3), 363-378.

Sawada, Y. (1994) Are the heavily indebted countries solvent? Tests of inter  
temporal borrowing constraints, *Journal of Development Economics*, 45,  
pp. 325-337.

UNECA (1998) “The Dynamic Impact of External Debt Accumulation on Private  
Investment and Growth in Africa”, Working Paper Series, UNECA.

Warner, Andrew M. (1992) “Did the Debt Crisis Cause the Investment Crisis?”  
The Quarterly *Journal of Economics*, 107 (4) 1161-86.

Williamson, John (1999) “Implications of the East Asian Crisis for Debt  
Management”, Paper presented at a conference on External Debt  
Management, Organized by the Reserve Bank of India, Indian Ministry of  
Finance, and the World Bank at Kovalam, Kerala, January 7-9.