Nigeria public debt and economic growth: a critical appraiser

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Public debt, economic growth, Nigerian economy, GDP, debt stock

Abstract
The paper sets out to examine the impact of debt burden on the Nigerian economy. It specifically seeks to ascertain the effect of debt burden to the growth of the Nigerian economy. Nigeria's data set from the CBN Statistical Bulletin (2010) during the period 1971-2010 was used. The study employed Co-integration techniques and structural analysis to test the relationship between debt and the Nigerian economy. . The finding shows that there is a negative relationship between debt stock (internal and external debt) and gross domestic product, meaning that an increase in debt stock will lead to reduction on the growth rate of Nigerian economy. Based on the above finding, it was recommended that the nation should avoid both external and internal borrowing and also encourage exportation than importation

Introduction

In early seventies underdeveloped countries were encouraged by developed countries to borrow from abroad to finance their current account deficit to boost up their economic growth. From 1980s the international financial institutions have been providing help to debtor countries in an attempt to reduce their external debt burdens, foster growth, reduce poverty and attain viability. These measures have resulted in considerable success in alleviating the external debt burdens of many middle-income countries.

However, many poor countries continue to suffer from poverty, civil conflicts, high external debt burdens and low economic growth. (Clements, Benedict, 2002) In the second half of the 1990s, policy makers and public opinion around the world have been increasingly concerned that high external indebtedness of developing countries is limiting growth and development. (Clements, Benedict, 2002).These debates made this issue very important and a lot of studies were conducted to understand the impact of external debts on growth and economic performance of developing countries. Like many other countries of the world, Pakistan has accumulated large external debt. Pakistan began to receive foreign economic assistance from July 1951 but substantial increase took place in outstanding debt during the second half of 1960s when debts were taken for building dams and industrialization. At that time the rate of accumulation averaged about 24 per cent per annum. At the end of December 1969, the external debt of Pakistan amounted to $2.7 billion while by December 1971, the figure rose to $ 3.6 billion and in June 1977 it was $ 7 billion which gives an average annual growth rate of about 11 per cent per annum. Later Pakistan continued to rely heavily on external resources to fill the increasingly high fiscal and external sector deficit and a sustainable pattern of external account was not maintained. One obvious consequence of continuous borrowing was the continuous debt-servicing burden. Thus a high level of debt stock and debt servicing emerged in the decade of 1980s and continued to be so in the decade of 1990s and afterwards in the second half of 2000s. Although the debt reduction strategy pursued in the beginning of the decade of 2000s brought some temporary relief in the form of restructuring and rescheduling of debt, yet in the financial year of 2007 alone, total debt and liabilities stock rose by 10 percent, the share of short-term debt increased and the share of foreign debt at floating interest rates also increased. This attempt has been made to study and analyze the causes of indebt-ness of Pakistan and to understand the relation of its external debt and debt service with economic growth in the presence of some other relevant variables. How and how far external borrowing has affected Pakistan's growth performance is the fundamental question for this study.

The act of borrowing creates debt, debt, therefore, refers to the resources of money in use in an organization which is not contributed by its owners and does not in any other way belong to them. It is a liability represented by a financial instrument of other formal equivalent. When a government borrows, the debts is a public debts, Debts are incurred by government through borrowing in the domestic and international markets in order to finance domestic investment. Therefore, the national debt is seen as all claims against the government held by the private sector of the economy, or by foreigners, whether interest-bearing or not (and including bank held debt and government currency, if any); less any claims held by the government against the private sector and foreigners. In the same vein, public debt burden refers to the economic hardship which the public debt imposes. The hardship may take the form of waste of productive efficiency (misdirection of production) for the economy as a whole or undesirable economic burdens imposed upon particular classes. One concept of burden pertains to the current amount of goods and services which the private sector forgoes in order to enable the burden relate to the amount of goods and services forgone by the people during the of their lifetimes (Anyanwu, 1993). The debt burden in Nigeria has resulted in various distortions in the macro-economy. Essentially, these distortions are structural in nature, and affect the level of per capita incomes and are instrumental to the rising poverty in the country. The latter has become the attention of various authors and Nigerian economic planners. The various points of view are all agreed that the Africa condition in general and Nigeria in particular has now deteriorated to an economic and political catastrophe (Nzotta, 2004).

Public debt is an amount of money owned by the government to institutions, government agencies and other bodies' resident in or outside Nigeria. The debt crisis has also generated controversy as to the exact meaning of debt and external debt (Nzotta, 2004). The IMF (1988) defined debt as a liability represented by a financial instrument or other formal equivalent owed to other parties. The World Bank (1988) defined gross external debt as the amount, at any time of disbursed and outstanding contractual liabilities of residents of a country to non-residents to repay principal with or without interest, or to pay interest, with or without principal. Thus, the major objective of this study is to assess the impact of debt on economic growth of Nigerian economy from 1971- 2010.

Theoretical Framework

Debtcum – Growth Model:

The first stand of thought in the debtcum – growth theory is the substituting school of thought. It considers external debt as a substitute for domestic savings and investment and therefore domestic savings and investment are crowded out as a result (Krugman, 1988; Alesina & Tabellini, 1990; Tornell & Velusco 1992). The thinking is that the returns from investing in a country are seen as being subjected to a high marginal tax by creditors and this may discourage domestic and foreign investors. This is the familiar debt overhang theory. It is also argued that foreign savings may be used for consumption rather than for investment. However, studies by Cohen and Sachs (1986) and Cohen (1992) present endogenous growth models where capital accumulation is the driving force for growth (Nyong, 2005).

Threshold School of Thought (Debt - Latter Curvethesis)

The burden of external debt is the concern of threshold school of thought which emphasizes the non-linear relationship between debt and growth (Calvo, 1998). It links debt and growth to problem of capital flight where at high debt levels growth falls. According to the threshold theory, the fall in growth is due to the higher distortionary tax burden on capital required to service the debt. It leads to lower rate of return on capital, lower investment and hence lower growth. It maintains that low debt regimes have higher growth rate and lower strand of thought in the debt – growth nexus sees external debt as capital inflow with positive effect on domestic savings and investment and thus on growth which leads to poverty reduction via appropriate targeting of domestic savings and investment (Calvo, 1998). Such foreign capital inflows help to finance a chronic shortfall of domestic savings over investment, the gap in the current account. There should be no problem with the theory as the funds are channeled into production investment which allows the country to grow and generate future export earnings to repay the loan. (Nyong, 2005)

Profligacy Theory

The profligacy thesis attempts to correct the weakness of growth – cum debt theory by focusing on the institutional arrangement under which loan was contracted. The profligacy thesis, a component of the system stability theory, recognizes that the debt crisis arose from weak institutions and policies that have wasted resources through unbridled official corruption and damaged living standards and development. These policies led to distortions in relative prices and encouraged capital flights – as seen in substantial external liquid funds of private citizens of debtor countries in foreign banks. (Nyong, 2005)

In summary, many factors are identified as responsible for the dissonance between debt and growth in low income countries. These include (1) adverse terms of trade (ii) waste of resources due to policy deficiencies, poor governance, and weak institutions in public sector dominated economies (iii) inadequate debt management reflected in unrestrained borrowing at unfavorable terms. (iv) non-concessional lending and in financing policies motivated in part by the desire of lenders to promote their own exports (Stephens, 1999) (v) political factors such as social strive or tension with devastating economic consequences Nyong, 2005).

Conceptual Issues on Public Debt

When the government spends more than it receives which results in the use of some sort of security to cover the deficiency which normally lead external debt as source of fund. The aggregate of securities over timeless redemption is called the national debt (Ajayi, 1991). The above statement points to the fact that government accumulates debt simply by running deficits through borrowing on the distribution of such securities. Also, national debt consists of all securities issued by the federal government and held by the cbn, individual and foreigners, government agencies and trust funds, private sector as well as those by commercial banks.

On the concept of debt burden, Cohen (1992) posited that external debt does not constitute a burden when contracted loans are optimally deployed and the returns on investment is enough to meet maturing obligations, while the surviving of the domestic economy is not undermined. He added that where the reverse is the case, then a debt service burden will emerge.

To properly gauge the gravity of debt burden on our economy, Anyanwu (1997) argues that neither the overall level of indebtedness nor the aggregate level of debt service payment is an adequate measure of a region or country's problem. He suggested that they should be used in combination with other debt indicators to get a more accurate picture of the situation. According to Nzotta (2004), these other indicators include: the external debt of GDP ratio of debt service to federally collected revenue, the ratio of interest payments to debt stock, and the ratio of outstanding debt stock to GDP. These indicators according to him show the degree of the severity or intensity of external debt burden. He further added that debt service burden as the weight of debt service payment relative to the proportion of national income devoted to servicing of economy. They concluded that debt service problem would arise when maturing obligations cannot be redeemed owing to either bad leadership or insolvency problem.

Empirical Literature Review

In economic literature of recent times, there are different studies about the relation between External Debt and Economic growth. A few of these studies discussed that reasonable debt levels have a positive effect on growth; other models suggested that high accumulated debt stocks are likely to be associated with lower growth or negative growth. There have been several attempts to empirically assess the external debt-economic growth link i.e. debt overhang and crowding out effect theories. We discussed all these studies respectively:

Amoateng and Amoako-Adu (1996) have investigated the relationship between external debt servicing, economic growth and exports for the total sample of 35 African countries during 1983-1990. The empirical results declared that there is a unidirectional and positive causal relationship between foreign debt service and GDP growth. Chowdhury (1994) investigated the direct, indirect and full effects of

external debt on GNP and vice versa, by using a system of simultaneous equations. The results of the model show that the effect of public and private external debts on the GNP level is small. The author found that the external debt of developing countries is not a primary cause of economic slowdown (Chowdhury, Khorshed, 1994). Fosu (1999) has employed an augmented production function to investigate the impact of external debt on economic growth in sub-Saharan Africa for the 1980 -1990 period. The author has used tests to measure the direct effect of debt overhang hypothesis namely that external debt negatively affect economic growth even if it has little or no effect on the level of investment. The findings show that as debt variable is included in the equation, debt exhibits a negative coefficient. And this might be due to a poor performer receiving large external debt (Fosu, Agustin K, 1999). Krugman, Paul, stated that if there is some likelihood that in the future debt will be large than the country's repayment ability, expected debt-service costs will discourage further domestic and foreign investment (Krugman, Paul, 1988). Cunningham (1993) examined the association between debt burden and economic growth for 16 heavily indebted nations.

This study concludes that the growth of a nation's debt burden had negative effect on economic growth during the period of 1971-1979 (Cunningham, Rosemary, T., 1993). In economics, crowding out theoretically occurs when the government expands its borrowing to finance increased expenditure or tax reduction, crowding out private sector investment by way of higher interest rates. If increased borrowing leads to higher interest rates by creating a greater demand for funds and hence a higher "price", the private sector, which is sensitive to interest rates will likely reduce investment due to a lower rate of return. This is the investment that is crowded out and a fall in can hurt long -term economic growth (Gul, Adnan, 2008). Kruger(1987) states that after the rise in oil prices, the oil importing developing countries faced large current account deficits. On the other hand, oil exporters had large current account surpluses, which they lent to the commercial banks, which in turn financed the deficits of oil importing countries, thus the surpluses of the oil exporting countries were used by oil importing developing countries (Krueger, Anne O., 1987)

Methodology

Based on the objective of the study and on the basis of what has been discussed in the theoretical framework, the following model will be specified.. The knowledge of economic theory suggests that a critical factor in assessment of economic growth is the Real Gross Domestic Product (RGDP). However, our model shall contain Gross Domestic Product as the dependent variable, While Foreign reserve, foreign investment, debt service payment, import and export are the explanatory variables, while import, inflation and foreign investment are the instruments used in the model

Therefore,
RGDP = F(FR, DSK, FRINV,DSP, IM,EXP,) ---- (1)
The economic model becomes
LRGDP = α + α1LFR + α2LINV + α3LIM + α4LEXPO + α5LDD + α6LED μ…
When RGDP =Real Gross Domestic Product
FR = foreign reserve
FRINV = Foreign investment
DSP = Debt service payment
IM = import
EXPO = Export
DD= Domestic Debt
ED= External Debt
μ = Scholastic Error sign.
Estimation Technique - Co integration and Error Correction Model (Ecm)

We first investigated the time series characteristics of the data to test whether these variables are integrated. The augmented Dickey-Fuller (ADF) test (as specified in Dickey and Fuller, 1979), and Phillips-Perron test (Phillips and Peron, 1988) were employed. For the ADF, the null hypothesis is that the

variable being considered has a unit root against an alternative that it does not. The model for the ADF is as specified below:

$$\Delta y_1 = \alpha + \beta T y_{1-1} + \sum_{1=1}^{p} d_1 \Delta y_{1=1} + \varepsilon_1 \quad \ldots\ldots\ldots\ldots\ldots (2)$$

Where y, is the variable considered, T is the time trend (which is only allowed if significant), and ε_1 is a random error term. The Akaike Information Criterion is used in selecting p (the lag-length) after testing for first and higher order serial correlation in the residuals. The lagged variables serve as a correction mechanism for possible serial correlation. The Philiips-Peron (PP) test uses models similar to the Dickey-Fuller tests but with Newey and West (1994) non-parametric correction for correcting possible serial correlation rather than the lagged variables method employed in ADF. Also Bartlett Kernel (Andrews, 1991) is used as an automated bandwidth estimator for lag truncation of the Newey and West non-parametric correction. The t.est statistics of the PP has the same distribution as that of Dickey-Fuller and critical levels provided by MacKinnon (1996) is used.

If the variables in the structural equations have unit roots, then we can capitalize on the likelihood of co-movements in their behaviour hence the possibilities that they trend together towards a stable long-run equilibrium. The multivariate maximum likelihood approach to co-integration developed by Johansen (1988, 1991) makes it possible to test for the co-integration rank that is the number of co-integrating vectors, to estimate these vectors and to test linear restrictions on the vectors using standard asymptotic inference. In addition, the small sample biases and normalization problems inherent in the OLS approach do not arise in the Johansen method. If we assume that the vector X_t contain *k* time series variables with T observations each, the Johansen method is based on the following p-lag Vector-AutoRegressive (VAR) model for X_t with Gaussian errors:

$$X_1 = X_I = \pi X_{1-1} + \ldots + \pi_p X_{1-p} + \varepsilon_1 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots..(3)$$

The π matrices are of order (k x k) and contain the VAR parameters. In addition each and every variable is explained by p-lagged values of itself and all the other variables. By implication, all the variables are regarded as endogenous. We can then reparameterize equation (25) into the error correction model (ECM) formulation to yield:

$$\Delta X1 = \sum_{t-1}^{p-1} \pi_1 \Delta X_{t-1} = \pi X_{t-1} + \varepsilon_1 \quad \ldots\ldots..(4)$$

Where $\pi_1 = -(\pi_{t+1} \ldots + \pi_p)$(i=1,….p-1) and $\pi = -1 + \pi, + \ldots + \pi p$. As long as πX_{t-1} is stationary, the ECM is well defined, since ΔX_t is stationary. Stationarity of $\pi X_{t=1}$ is equivalent to linear combinations of the X_t variables being stationary, that is, co-integration. Thus, the nature of the error-correction term, πX_{t-1} is what determines the nature of the co-integration relationships among the variables (Engsted and Bentzen, 1997).

Specifically, the number of independent stationary linear combinations is determined by the rank, *r,* of the (*k x k*) matrix π:

(1) If r = 0, π is just the null matrix, which implies that the model reduces to a Vector Auto Regression (VAR) in first differences. Hence, all the variables in X_t are 1(1) but there is no cointegration, that is, no long-run relationships between the variables.

(2) lf 0<r< k, such that π has reduced rank greater than zero, then X_t is 1(1) and there are r cointegrating vectors.

(3) If r = k, such that π has full rank, X_t can be said to be trivially co-integrated because all the variables in X_t are stationary, :1(0), and hence any linear combinations of the X_t variables is trivially stationary.

The number of non-zero eigen values from the co-integrating equations usually denotes the co-integration rank, that is, the number of co-integration relationships in the system. Two tests exist for the rank of π, r, based on eigen values test (L_{max}), and the trace test (L_{trace}). Having determined the co-integration rank, π

can then be partitioned as $= \alpha\beta$, where β is a (*k x r*) matrix whose columns are the co-integration vectors, and a is the corresponding (*k x r*) matrix of so-called factor loadings. The interpretation of the factor loadings α is that they measure the speed with which the variables change in response to short-run deviations from the long-run equilibrium given by the co-integration vectors in β.
The general form of the error correction model for the structural equations can therefore be

where Y_t is the dependent variable; X_1, X_2; and X_3 are the independent variables in the structural equations; p is the optimal lag length of the VAR, $\alpha_{1\,k}$ = the adjustment coefficients,
$V_{k,t-p}$ = is the co-integrating vector and μ_1 = intercepts.

Structural Analysis: Impulse Response Analysis and Forecast Error Variance Decomposition. A shock to any variable in the VEC model not only directly affects the variable but is also transmitted to all of the other endogenous variables through the dynamic (lag) structure of the VEC. An impulse response function traces the effect of a one-time shock to one of the innovations on current and future values of the endogenous variables. While impulse response functions trace the effects of a shock to one endogenous variable on to the other variables in the VEC, variance decomposition separates the variation in an endogenous variable into the component shocks to the VEC. Thus, the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VEC.

Table 4.1: Descriptive Statistics of the Variables

	RGDP	DD	ED	EXPO	FR	IM	INV
Mean	274187.0	493711.4	810191.3	1655942.	1021605.	671939.5	213272.5
Median	266464.5	65572.10	269504.1	83928.60	13724.80	38289.05	23525.15
Maximum	755140.2	2320310.	4890270.	12306134	9310240.	3472332.	1178983.
Minimum	4715.500	1000.700	175.0000	885.4000	104.6000	756.4000	341.6000
Std. Dev.	210900.1	682950.6	1347419.	3167692.	2276263.	1065483.	340121.5
Skewness	0.630093	1.230977	1.857820	2.172169	2.493967	1.470705	1.628231
Kurtosis	2.656318	3.252770	5.123811	6.598793	8.134198	3.706160	4.327272
Jarque-Bera	2.843645	10.20852	30.52759	53.04096	85.39911	15.25093	20.61032
Probability	0.241274	0.006071	0.000000	0.000000	0.000000	0.000488	0.000033
Sum	10967481	19748455	32407651	66237668	40864197	26877580	8530898.
Sum Sq. Dev.	1.73E+12	1.82E+13	7.08E+13	3.91E+14	2.02E+14	4.43E+13	4.51E+12
Observations	40	40	40	40	40	40	40

Source: Authors' computation (2012)

Table 4.2: Correlation Matrix

	DD	ED	EXPO	FR	IM	INV	RGDP
DD	1.000000	0.596866	0.913391	0.871988	0.953433	0.969139	0.923332
ED	0.596866	1.000000	0.270199	0.172450	0.476541	0.458976	0.542027
EXPO	0.913391	0.270199	1.000000	0.989878	0.946694	0.972793	0.856041
FR	0.871988	0.172450	0.989878	1.000000	0.901228	0.941590	0.808103
IM	0.953433	0.476541	0.946694	0.901228	1.000000	0.977954	0.898273
INV	0.969139	0.458976	0.972793	0.941590	0.977954	1.000000	0.911849

Source: Authors' computation (2012)

Table 4.3: Level Series OLS Multiple Regression

Dependent Variable: RGDP				
Method: Least Squares				
Date: 08/01/12 Time: 22:50				
Sample: 1971 2010				
Included observations: 40				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	128242.4	17403.76	7.368662	0.0000
DD	0.230854	0.116963	1.973735	0.0568
ED	-0.027973	0.029117	-0.960726	0.3437
EXPO	0.063952	0.068266	0.936804	0.3557
FR	-0.117209	0.073880	-1.586479	0.1222
IM	-0.059407	0.075157	-0.790436	0.4349
INV	0.508226	0.405148	1.254421	0.2185
R-squared	0.871146	Mean dependent var		274187.0
Adjusted R-squared	0.847718	S.D. dependent var		210900.1
S.E. of regression	82300.23	Akaike info criterion		25.63176
Sum squared resid	2.24E+11	Schwarz criterion		25.92732
Log likelihood	-505.6353	F-statistic		37.18397
Durbin-Watson stat	1.2 1.217425	Prob(F-statistic)		0.000000

Source: Eviews print out (2012)

From table 4.3 above which the long run result revealed that the DW-statistics is found to be 1.21743 which is higher than the adjusted R^2

Value of o.84772 and lies between the DW critical value of 1 and 2, suggest the presence of some degree of positive autocorrelation in the series. This indicates that there may be some degree of time dependence in the series which could lead to spurious regression results, hence the need to conduct the analysis of the stationarity properties of the series

In view of the problems with the Engle-Granger framework for testing co-integration, this study employed the Johansen (1991, 1995) approach.

Table 4.4: Summary of Unit Root Test Results

VAR		**ADF TEST**	**CRITICAL VALUES**		**PP TEST**	**CRITICAL VALUES**		**ORDER OF INTEGRATION**
			1%	5%		1%	5%	
RGDP	LEVEL	0.719294	4.211868	3.529758	0.788302	4.211868	3.529758	1(1)
	1ST DIFF.	5.828865	4.219126	3.533083	5.819621	4.219126	3.533083	
DD	LEVEL	0.856832	4.211868	3.529758	2.238198	4.211868	3.529758	1(1)
	1ST DIFF.	5.43226	4.219126	3.533083	5.566589	4.219126	3.533083	
ED	LEVEL	2.984404	4.219126	3.533083	1.955284	4.211868	3.529758	1(1)
	1ST DIFF.	3.580874	4.219126	3.533083				
EXPO	LEVEL				2.579865	4.219126	3.533083	1(1)
	1ST DIFF.	6.704124	4.296729	3.568379	4.382941	4.211868	3.529758	

IM	LEVEL	0.936266	4.211868	3.529758	0.936266	4.211868	3.529758	1(1)
	1ST DIFF.	8.107772	4.219126	3.533083	10.03854	4.219126	3.533083	
INV	LEVEL	3.411844	4.211868	3.529758	2.926767	4.211868	3.529758	1(1)
	1ST DIFF.	4.076101	4.219126	3.533083	4.181	4.219126	3.533083	
FR	LEVEL	1.281671	4.211868	3.552973	1.271671	4.219126	3.533083	1(1)
	1ST DIFF.	7.626297	4.262735	3.552973	6.1383	4.211868	3.529758	

Source: Authors' computation (2012)

Table 4.5: Observed Result of the Unit Root Test of Residual of ECM Variable

VAR		ADF TEST	CRITICAL VALUES		PP TEST	CRITICAL VALUES		ORDER OF INTEGRATION
			1%	5%		1%	5%	
ECM	LEVEL	3.662632	3.610453	2.938989	3.531181	3.610453	2.938987	1(0)

Source: Authors' computation (2012)

Table 4.6: Johansen Co-integration Test

Sample (adjusted): 197- 2010				
Included observations: 40 after adjustments				
Trend assumption: Linear deterministic trend				
Series: LDD LED LEXPO LFR LIM LINV LRGDP				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.622873	124.8541	125.6154	0.0556
At most 1	0.55518	87.79759	95.75366	0.1555
At most 2	0.408827	57.01437	69.81889	0.3383
At most 3	0.316419	37.03977	47.85613	0.3457
At most 4	0.229642	22.5842	29.79707	0.2671
At most 5	0.197855	12.67001	15.49471	0.1275
At most 6 *	0.10681	4.292325	3.841466	0.0383
Trace test indicates no cointegration at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Authors' computation (2012)

The Johansen's framework provides the number of co-integrating equations and of all co-integrating vectors in the multivrariate case. The johansen co-integration test results are presented in table

4.4 above. The trace test and the max-eigen test were conducted to establish the number of co-integrating equation. However, the results showed that none of the tested equations are co-integrating at 5% level of significance. Furthermore, the unit root analysis was also conducted and the result confirm with the Johansen co-integration test.

From table 4.5 above shows the results of the Johansen co-integration test. In addition the normalized co-integrating coefficients show that the variables in the equation are relatively important. The consistency in the results confirms the existence of long run relationship among the exogenous and dependent variables in the model.

Table 4.7: Forecast Error Decomposition and Impulse Analysis

Variance Decomposition of LRGDP:								
Period	S.E.	LRGDP	LDD	LED	LEXPO	LFR	LIM	LINV
1	0.359017	100	0	0	0	0	0	0
2	0.461199	97.8999	1.038968	0.190441	0.125132	0.693485	0.037106	0.014969
3	0.506146	96.43184	1.326119	0.621607	0.263735	0.740594	0.538636	0.077468
4	0.530285	94.75954	1.217702	1.057199	1.042023	0.787291	0.739575	0.396672
5	0.547449	93.71543	1.506507	1.323765	1.41382	0.801043	0.788243	0.451189
6	0.56305	93.23371	1.759877	1.442749	1.452464	0.772683	0.906591	0.431923
7	0.576188	93.15849	1.757997	1.46038	1.388618	0.744865	1.056824	0.432827
8	0.586012	93.12464	1.700668	1.437046	1.374906	0.722615	1.173907	0.466216
9	0.592616	93.03422	1.666579	1.414082	1.407717	0.707624	1.251557	0.518223
10	0.596667	92.9492	1.644861	1.398356	1.443924	0.700762	1.292726	0.570169

Source: Authors' Computation 2012

In the economic growth equation, the explanatory variables were found to explain large proportion in the future changes in economic growth. The independent variables show that as the period increases the percentage changes also increase hence, we domestic debt 1.6%, external debt 1.3%, export 1.4%, foreign exchange 0.7% import 1.2% and investment 0.5% in the tenth period. Furthermore, the impulse Response Analysis graph showed a similar result as the variance decomposition

Conclusions and Policy Implications

The primary objective of the study was to analyze the effect of debt burden (both internal and external) on the growth of Nigerian economy. The study tries to explore the linkage between economic growth and debt burden by using the set of macroeconomic and debt indicators. Empirical results in indicate that the is a negative relationship between economic growth and the Nigeria public debt. The result is in agreement with the findings of Iyoha (1999), Essien and Onwuoduokit (1998), and Ezeabasili, (2011), which confirm that large stock of public debt tend to lower the rate of economic growth in Nigeria. Nigeria has relied much to finance its development projects in the past two decades ago with both internal and external debts which put her debt profile so high. From the analysis above it was review that GDP which was used to represent the Nigerian economy as well as the dependent variable. While on the other hand, the explanatory variables are used to represent debt burden. However the result shows that there is a significant relationship between the dependent and the explanatory variables, meaning that the growth

rate of the Nigerian economy relies strongly on the contribution of the explanatory variables. Thus, therefore, before the debt write-off by the Paris-club and London club the result shows that the impact on Nigeria economy was much compare to present time. Though, the exit from the Paris club and London club actually reduce Nigeria external debt, whereas the domestic debt and the effect created by the huge debt before the debt write-off still have lag effect on the economy. Therefore, base on the above findings we therefore recommended that Nigeria should not borrow now either internally or externally. More so with the conformable position of our external reserve will believe that the Nigerian economy will definitely improve tremendously

References

Alesina, A.& Tabellini, G.(1990). *External debt, capital flight and political risk*
Journal of International Economics 27, pp.199-220

Ajayi, S. I. (1991), *Macroeconomic Approach to External Debt*: The case of Nigeria,AERC Research paper eight, Nairobi, December.

Ani A. (1997), *Details of budget 1997*: Text of the 1997 Federal Budget Breakdown Presented in Abuja,Monday, January 20, 1997 by minister of Finance, chief Anthony Ani, Daily Champion, January 21

Anyanwu J. C. (1997) *Monetary Economics*: Theory, Policy and Institutions. Hybrid Publishers LTD, Onitsha

Calvo, G. (1989).*Growth, debt and economic transformation*: The Capital Flight problem;in Coricelli, F. and Hahn, F. (eds) New Theories in growth and development, st. martins press, pp. 847-868

Central Bank of Nigeria, *Annual Report and Statement of Accounts* various issues

Cohen, D. (1992). Large external debt and (show) domestic growth: A Theoretical analysis; Journal of Economic Dynamics and control 19, pp.1144-1163

Cohen, D. & Sachs, J.(1986). *Growth and external debt under risk of debt repudiation*; European Economic Review 30, pp.529-550.

Krugman, P. (1988). Financing vs forgiving a debt overhang Journal of development Economics, Vol.22; pp 253-268

Nyong, M. O.(2005). *International Economics*: theory, policy and application , Calabar, Wusen publishers,

Nzotta, S. M. (2004). *Money, banking and finance. Owerri;Hudson-Jude Nigeria Publishers*

Stephens, M. (1999). *The Changing Role of Export Credit Agencies* (Wasshington DC, IMF)

Tornell, A. & Velasco, A. (1992). *The tragedy of the commons and economic growth;* Why does capital flow from poor to rich countries. Journal of Political Economy 100 , pp 1208-1231

Amoateng, Kofi. Ve Amoako, Adu.B.(1996): "Economic Growth, Export and External Debt causality: The case of African Countries." Applied Economics, Vol 28, pp 21-27

Chowdhury, Khorshed(1994): " A Structural Analysis of External Debt and Economic Growth: Some
Evidence From Selected Countries in Asia and Pacific", Applied Economics, Vol 26, pp1121-1131)

Clements, B., Bhattacharya, R., and Nguyen, Q., (2003), External Debt, Public Investment, and Growth in Low-Income Countries. IMF Working Paper 249.

Cunningham, Rosemary, T. (1993): " The Effects of Debt Burden on Economic Growth in Heavily Indebted Nations", Journal of Economic Development Economics, Vol 52, pp 169-187)

Fosu, Agustin K (1999) " The External Debt Burden and Economic Growth in the 1980s: Evidence From Sub-Sahara Africa", Canadian Journal of Development Studies, Vol 20, No 2, pp 307-318

Gul, Adnan (2008) Pakistan's Public Debt: The shocks and aftershocks, http://mpra.ub.unimuenchen.de/11427)

Krueger, Anne O. (1987): "Debt Capital Flows, and LDC Growth, American Economic Review, Vol 77, pp 159-164)