Online Publication Date: 15th June 2012
Publisher: Asian Economic and Social Society

Debt and Debt Volatility: Effect on Economic Growth in Nigeria

James Sunday Kehinde (Faculty of Management Sciences, Lagos State University, Ojo, Nigeria)

Citation: James Sunday Kehinde (2012) "Debt and Debt Volatility: Effect on Economic Growth in Nigeria", Asian Economic and Financial Review, Vol. 2, No. 2, pp. 325-329.

Asian Economic and Financial Review, 2(2), pp. 325-329.

Author (s)

James Sunday Kehinde,
Faculty of Management Sciences, Lagos State University, Ojo, Nigeria.
E-mail: pastorkehindebox@yahoo.com

Debt and Debt Volatility: Effect on Economic Growth in Nigeria

Abstract

Today the major economic problem of the developing nation is the effect and volatility of debt on the real development of the economy. Debt volume continues to increase while the GDP either remain constant or increase at a reduced marginal rate. The ordinary least square regression analysis and the general autoregressional conditional heteroscedasticity (GARCH) were used. The study attempts to estimate the effect and volatility of debt on the GDP. Secondary data was used and the E-view package adopted in the study. The study revealed that only lag in GDP affect the GDP volume, while debt and volatility in debt does not affect the GDP. There is no ARCH effect of debt on GDP. It was recommended that debt management regime should be refocused to ensure that debt repayment is exogenously determined. Moreover, future debt should be attached to a specific capital development program to ensure the growth in the economy.

Keywords: Debt; Debt Volatility; Economic Growth; GARCH

Introduction

Several studies have examined factors that accounts for growth in the gross domestic product of a nation (Misztal,2010). Most developed economy are investment driven and the investment are finance by debt either domestic or foreign debt, .Audu,(2004) study the effect of investment on GDP ,concluding that the GDP is mostly influence by the volume of investment which are mostly finance by debt either locally or foreign. However, only little study has examined the effect of debt (Loan stock) on economic growth as measured by the GDP. There is the need to examine the direct effect of debt on economic growth in developing nation like Nigeria this is what this study attempt to do.

Also there is the need to examine the volatility of debt on the economic growth. Loan stock plays a major role in the budget and economic policy of developing nation. The extent of influence and volatility of debt remain largely undetermined over time. The basic objectives of this study are to examine the effect of debt volatility and debt volume on the GDP of Nigeria and to determine the effect of the shock on GDP.

Literature Review

One factor in determining the economic position of a country is through a comparison of public debt to the gross domestic product (GDP) of the country. This comparison is often listed as a percentage of how much of the GDP it would take to pay off the public debt. A low public debt and GDP percentage is usually an indication of economic health, while a high public debt and GDP percentage can indicate financial trouble for a country (Ellis, 2011).

Misztal(2010) summarized the relationships between public debt and gross domestic product stating that there are estimated elasticity coefficients of public debt to GDP and elasticity coefficients of GDP to public debt on the base of impulse response function. He further stated that there is made variance decomposition of the public debt and GDP in order to assess the impact of this factors on the variability of GDP and public debt respectively.

Reinhart and Rogoff (2010) summarize the relationship between debt and GDP based on compiled data on forty-four countries spanning about two hundred years which amounts to 3,700 annual observations and covers a wide range of political systems, institutions, exchange rate arrangements, and historic circumstances. The summary of the study is that Firstly, the relationship between government debt and real GDP growth is weak for debt/GDP ratios below 90% of GDP. Above the threshold of 90%, median growth rates fall by 1%, and average growth falls considerably more. The threshold for public debt is similar to advanced and emerging economies and applies for both the post World War II period and as far back as the data permit (often well into the 1800s).Secondly, emerging markets face lower thresholds for total external debt (public and private) – which is usually denominated in a foreign currency. When total external debt reaches 60% of GDP, annual growth declines by about 2%; for higher levels, growth rates are roughly cut in half. Thirdly, there is no apparent contemporaneous link between inflation and public debt levels for the advanced countries as a group (some countries, such as the US, have experienced higher inflation when debt/GDP is high). The story is entirely different for emerging markets, where inflation rises sharply as debt increases.

Ellis (2011) disagrees to some extend with the assumption made by most economists that a low National Debt as a percentage of GDP is a sign of economic health. While it can be a sign of economic health, it is increasingly a sign of economic disparity amongst the citizens. Some of the countries with the lowest debt to GDP ratios have the highest income inequality (GINI Coefficient) and a large percentage of their population living in below the poverty line. The perfect example she gave would be South Africa. The country has one of the highest GINI coefficients in the world, half of its population, however, lives under the poverty line, yet it has a national debt to GDP ratio that is only half that of the United States. This is nowhere near being economically healthy. This only means that a select few, likely large companies and multinationals, are economically healthy within the country.

Ellis (2011) stated that It is important to note that the relationship between public debt and GDP is abstract. Nations do not actually pay off public debt per year according to the ratio of debt and GDP. Since most public debt is paid off over many years and even altered or added to as time goes by, the relationship between public debt and GDP is merely used to illustrate and illuminate the financial state of a nation.
Despite the limited real meaning of public debt and GDP ratios, the comparison is taken very seriously, as it indicates how able a nation will be to pay off debts. When the Eurozone was created in 1999, member nations had to prove a debt to GDP ratio of under 60% to be allowed to join the currency. This was to ensure that the euro would remain relatively stable despite becoming the backbone of many widely different economies throughout Europe.

Over the past two decades, the world's most populous black nation has been sitting on the time bomb which evolves around a protracted external debt crisis, the intractable effect of which is unseen in relation to the country's economic growth development. The debt relief granted by the Paris Club in 2005, one of Nigeria's creditors, is no doubt a welcome development, but that does not put a permanent end to the debt debacle. For those who understand the intricacies surrounding the recent debt cancellation granted by the Paris Club, they would quite agree that it is not yet "uhuru" for Nigeria as regards her debt crisis.
Naturally and historically too, Nigeria can be aptly referred to as an agro economy just like most of its contemporaries in the sub-saharan part of Africa. The dominant economic activity was in terms of employment and linkages with the rest of the economy and it used to be the sector with the most earnings for the government especially during the pre-independence era. Around this period, Nigeria was heavily dependent on agriculture as the mainstay of the economy. For the avoidance of doubt, 64% of the GDP were originated from the agricultural sector.

However, all that soon changed with vigorous exploration of oil in the 1970s; the contribution of the agricultural sector systematically declined until it reached an all time low level of about 17% in 1982. From 1976, there was an

oil glut which resulted in the fall of oil prices at the international market. However, the government still embarked on large projects which were pegged on external financing. This could be said to be the genesis of Nigeria's external debt crisis.

Osagie (1985) defines external debt as "one incurred when government borrows from foreign international financial institutions". In other words, external debt comprises of any debt, incurred or contracted by the government of a particular country from sources outside the geographical boundaries of the indebted country. The debt ballooned of Nigeria was the fact that the more she pays part of her debt, the more the increase in the debt owed. Ordu (2005) summed up the frustration of a nation entangled in protracted debt crisis when he said "Our debts seem to be perpetually on the increase. It is a sore that has refused to heal. The more we pay, the more we seem to owe. And our debt has been paid many times over."

The Nigerian Debt Build-Up: A Foreign Author's Brief Account

Quite a number of views have been expressed in relation to the build-up to the nation's debt crisis. One of such views is that by Rieffel (2005) that stated among other things, that "Nigeria's debt servicing problem began around 1985. At this point, the Nigerian government's total external debts to all creditors amounted to $19 billion. However, today its outstanding external debt at the end of 2004 grew to almost $36 billion.". The ballooning of Nigeria's debt is related directly and exclusively to this policy choice by the creditors. Over the past twenty years, Nigeria has met its debt-service obligations to multi-lateral creditors without any restructuring, to commercial creditors after negotiating a debt exchange at 60% discount, Nigeria has been a performing debtor.

The above view becomes very necessary in that over the past few years, it is commonplace to find different authors adduced Nigeria's external debt crisis to a case of a non-performing debtor, thus making the country the only visible culprit for its worsening debt debacle. However, as it is combination of so many factors and not just a case of non-performing creditor or debtor.

Research Methods

The research made use of secondary data source from the central bank of Nigeria (CBN) statistical bulletin 2008. The ordinary least square regression model was used to test the significant of relationship that exist between the Gross Domestic Product (GDP), as explained, variables on the national debt, national debt volatility and the lag of gross domestic product. The national debt volatility was obtained as the squared residual of national debt using the Autoregressive Conditional Heteroskedasticity (ARCH) using the Breush Pagan – Godfrey test for random shock test.The various dependent variables were also tested for the present of unit root. The Augmented Dickey - Fuller (ADF) test was adopted for a robust analysis. National debt, one lag of gross domestic product (GDP (-1)) and national debt volatility were tested for present of a unit root. The decision criterion was based on the Markinnon (1996) one –sided p – values.

The linear regression model was estimated as below:

GDP = a0 + a1 NDebt + a2 NDebt vol + a3 GDP (-1)

GDP = Gross Domestic Product

NDebt = National debt

NDebt vol = National debt volatility

GDP (-1) = one lag of gross domestic product

a0, a1, a2, a3 = constants

U = the standard error of the equation.

Data Analysis

The study test his effect of the volatility of national debt and national debt volatility on the gross domestic product (GDP) between 1987-2008.To ensure this stability of his variable the unit out rest using the Augmented Dickey-Fuller (ADF) test was carried out on the variable. The result is shown as follow (Dickey and Fuller 1981)

Table-1: Augmented Dickey-Fuller Tests

	t-statistic	Dec. rule	Probability
GDP	-6.714198	I(0)	0.0000
NDebt	-6.777534	I(0)	0.0000
NDebtVol	-6.33991	I(0)	0.0000

Source: Result of analysis

NOTE: One asterisk denote regression of the null hypothesis at 1% based on the Mackinnon (1996) Critical Value.

Table1 shows the result of the Augmented Dickey –FULLER (ADF) unit root test for the variable-GDP, D(NDEBT) and NDEBTVOL and GDP, NDEBT, AND NDEBTVOL were stationary at levels. All the variables were stationary at 1% critical value.

Table-2: Volatility Test Breusch-Pagan-Godfry: Arch Test

	Prob	t-statistic
N Debt	0.1957	1.327922
GDP (-1)	0.0263	2.355
GARCH(-1)	0.0000	-5.094902

Table2 Revealed the basic GARCH(1,1) result for NDEBT and GDP(-1).

The test for ARCH effect on NDEBT was not significant (at probability of 0.1957) at 5% significant level while the ARCH effect for GDP(-1) was significant (at probability of 0.0263) at 5% and 10% significant level. There is no ARCH effect on NDEBT while the ARCH effect exist in GDP (-1).The GARCH (-1) effect for the linear equation revealed a strong ARCH effect on GDP by NDEBT and GDP(-1) variables.

Table-3:

	Co-efficient	Probability
C	82758.42	0.4083
NDebt	-0.777459	0.7473
GDP (-1)	1.107004	0.0000
NDebtVol	-0.391930	0.9203
R – Squared		0.935328
Adjusted R^2		0.927244
P ratio (F-statistics)		0.0000

The result in table 3 show the least square regression model, expressing GDP as the function of National Debt, National debt volatility and GDP (-1). The result of the regression reveals an R2 of 0.935 or 94%. This means that the determinant variables have effect on GDP to a 94% extent. There exist a high positive relationship between the dependent variable and the explanatory variables. Also, the coefficient of determination stand at 0.927 or 93% which means that 93% changes in the dependent variables (GDP) is caused by the explanatory variables.

The effect of each variable on the explained variable (GDP) revealed that National Debt and National debt volatility are not significant at 0.05 and 0.01 level. However, GDP (-1) is significant at 0.05. Thus, a change in GDP is strongly influenced by the lag of the GDP. Hence, the previous GDP value influences the current GDP. However, the change in the National Debt does not bring about any effective change in GDP.

There is no any meaningful shock in National Debt neither do the square of the residual of National Debt constituting any significant effect on the GDP. Thus, other exogenous variables aside National debt provoke change in the GDP in Nigeria within the period covered. However, the probability of F- Statistics is significant at 5%, which suggest that the explanatory variables are significant measure of the dependent variable.

Findings, Conclusion and Recommendation

The study reveals that the independent variables combined significantly influence changes in the Gross Domestic Product as revealed by the f-statistic. The study also

reveals that there is no shock effect on National Debt and that National Debt volatility does not impact on GDP. This means that the huge stock of national debt do not bring about any serious changes in GDP. If any relationship exists, it is a negative one that national debt negatively affects the Gross Domestic Product (GDP). It suggests that the loan stock does not really translate to any growth in the GDP of Nigeria. However, the GDP is largely influence by the lag of GDP. Thus, the past value of GDP influences the current value.

The study unveils a high impact relationship between the gross domestic product and the combined factors of national debt, national debt volatility, and lag of gross domestic product. However, it would be concluded that national debt does not about any valuable change in the gross domestic product. Most changes in GDP, is brought about by the lag of GDP. The following are the recommendations stemming form the study:

1)The government should put in place a policy that will direct loan stock towards direct investment factor.

2)The government should ensure that the non – productive existing loan stock should be settled. Also, future loan stock should have public – private participation scheme such that commutated infrastructural facility is developed from the loan stock. Those infrastructure should be such that proved directly related to growth in the economy.

References

Audu I (2004) External Debt, Economic growth, Public investment, Nigeria African Institute for Economic Development and Planning (IDEP) Dakar Senegal

Dickey, D.A. and W.A. Fuller (1979) "Distributions of The Estimators For Autoregressive Time Series with a Unit Root", Journal of the American Statistical Association, Vol.74, pp. 427-431.

Dickey, D.A. and W.A. Fuller (1981) 'Likelihood Ratio Statistics For Autoregressive Time Series with a Unit Root, Econometrica, Vol.49, pp. 1057-1072.

Ellis Jessica (2011) public debt and the gross domestic product Conjecture Corporation USA

Misztal P. (2010) Public debt and economic growth in the European Union, Journal of Applied Economic Sciences, Vol5 No3 pp292-302. www.jaes.reprograph.ro/articles/fall2010/MisztalP.pdf

Reinhart, Carmen M and Kenneth S Rogoff (2010a) Growth in a Time of Debt American Economic Review, May. (Revised from NBER working paper 15639, January 2010.)

Reinhart, Carmen M and Kenneth S Rogoff (2010b) From Financial Crash to Debt Crisis NBER Working Paper 15795, March. Forthcoming in American Economic Review.

Osagie, E. (1985) "An operational econometric model of the Nigerian economy: Some preliminary estimates', Ife Social Science Review, Vol.l No.2, pp. 149-65.

Ordur. (2005) , Debt cancellation for Nigeria agreed in principle Centre for Economic Growth and Development, Nigeria www.newstartnigeria.com

Rieffel Lex (2005) Resolving Nigeria's Paris Club Debt Problem: A Case of Non-Performing Creditors The Brookings Institution