THE EFFECT OF DEBTS ON ECONOMIC GROWTH IN WEST AFRICA

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Abstract

This study investigates the effect of debt on economic growth in West Africa. The main objectives being to examine the effect of debt as a means of driving growth and also, some macroeconomic factors such as gross capital formation and labour quality on the resultant effect of the use of debt to drive economic growth in West Africa. Four models are specified and estimated using panel data from 1970 to 2011. The first, using the fixed and random effect regression based on the Ordinary Least Square, the second, using the 2SLSand the third and fourth using the GMM estimation techniques. The results show that debts do not have significant effect on growth in the selected West African countries with coefficients of (0.00267) and (0.00153) respectively; but upon addition of the year variable to control for time fixed effects, debt was found to have Strong effect at 1% level of significance on growth with coefficients of -0.010 and -0.0154 respectively. The negative sign indicating an inverse relationship; that is, the higher the debt stock, the lower the growth rate. This conforms to a'priori expectation. The study recommends that government should concentrate less on debts as means of driving economic growth.

Keywords: Debt, Growth, Macroeconomic, Deficit, Trade, Panel Data

INTRODUCTION

There is no doubt that provocative debate on the effect of debts on economic growth particularly for the West African sub region and the nature of the relationship has remained quite inconclusive. There are also evidences of the endogeneity of foreign aid of which a sizeable part often consist of concessionary loans which are concessional debts (Burnside and Dollar, 2002).

Concessional debts are known to crowd out domestic private flows in many developing economies as aid which concessional debts often accompany constitute a sizeable part of their Gross Domestic Product (GDP). Some underlying questions surrounding the debt question still remain lingering. There are inclusive opinions on whether debts are good for financing budget deficit and for driving growth in developing countries with poor fiscal and monetary policies (Acemoglu & Robinson, 2001), Okoye and Akenbo (2010) and Ojo (2014).

Debt is money owed by one party usually the debtor to another party the creditor. It is often a contractual agreement entered into by both parties over an amount of money usually referred to as the principal, which is repayable over a period of time under some terms and conditions which is usually guided by some form of interests payable to the creditor. One of the major aims of incurring debt by government is to finance deficit or shortfall in income.

Deficit financing involves the use of external and internal debt by a national government to finance its expenditure spending. Some proponents of deficit financing argue that it has strong capability to drive growth on the long run (Okoye and Akenbo, 2010). Other scholars also posit that deficit financing has negative implicative effects for economic growth particularly for studies on Nigeria (Ojo, 2014), making the question of the implicative effects of deficit financing on growth to be inconclusive.

This study investigates the effect of increases in debt stocks of some countries in West Africa as a result of deficit financing on economic growth using panel data for 11 West African countries namely; Republic of Benin, Burkina Faso, Cote D'ivoire, The Gambia, Ghana, Guinea, Liberia, Nigeria, Senegal, Sierra Leone and Togo for a period of 42 years (1970 to 2011). The time frame captures the period from rising debts to fund capital projects for development to the near collapse of the capital markets during the housing bubble burst and the aftermath. The measure of debt stock utilized in the study is concessionary debts (in form of concessionary loans) that are external in nature. The reason for this is that external inflows often crowd out internal flows in many developing countries making it reasonable to rely on external concessionary debt as a measure of debt in this case.

The preferred method of estimation used is the Generalized Method of Moment (GMM) estimation technique. The obvious advantages of the GMM estimation technique is that it allows for the overcoming of some underlying Ordinary Least Square (OLS) assumptions and limitations. They include choice of functional form such as the assumption of distributional normality which does not matter since GMM utilizes the moment conditions and assumes that the sample moment conditions will converge to that of the distribution. Also, its estimates are robust even in the presence of heteroscedasticity. It equally controls for endogeneity using internal instruments thereby saving us from the difficulty associated with the search for a

suitable instrument. Since it is known as dynamic panel estimation, it utilizes panel data which has the advantages of increasing the number of observations in the regression and allows for the control of unobservable effects such as time fixed effects and omitted variable bias which could affect the regression results (see Roodman, 2009) for further discussion.

Problem Statement

Most countries in West Africa are overburdened with the problems of debt. No doubt, this has left them in a state of long-run economic stagnation. The desire to borrow both externally and internally by governments of developing countries is to bridge the gap between domestic resources in order to accelerate economic development. To this effect, there is no quarrel with any developing country resorting to borrowing, but the caveat is that the proceeds be channeled towards productive investments that will facilitate the liquidation and servicing of such debt.

The standard "grow with debt" assumption asserts that a country borrows as long as the capital acquired produces a rate of return that is higher than the cost of borrowing. For most developing countries in West Africa, given the low level of infrastructural development, it is doubtful if borrowing has produced a positive rate of return because funds borrowed have not been channeled towards projects with high social rates of return, export-increasing projects and infrastructural projects. For example, Nigeria is a heavily indebted rich/poor country. Rich in the sense that the economy is the largest in Africa with a GDP of over $500 billion and an average growth rate of 5%, but poor in relation to the low infrastructural facilities, high unemployment rate and with over 60% of the citizens living below the World's poverty rate of $1.25 per day (World Bank Statistics 2012).

Research Questions

Some of the specific questions this study sets out to answer are:
  a.) To what extent can debts as means of deficit financing drive growth in West Africa?
  b.) To what extent do macroeconomic factors such as gross capital formation and labour quality help the search for elusive growth?
  c.) To what extent does trade affect debts as a means of economic growth promotion in West Africa?

Objectives of the Study

The objective of this study is to examine the dynamics between deficit financing using concessionary debts stock as a measure of external debt and economic growth in West Africa.

The specific objectives of the study include:

    i)   To examine the effect of debt as a means of driving growth in West Africa

    ii)   To investigate the effect of some macroeconomic factors such as gross capital formation and labour quality in driving economic growth in West Africa.

    iii)   To investigate the effect of trade as a means for economic growth promotion in West Africa.

    iv)   To make policy recommendation/s from findings.

Research Hypotheses

The research null hypotheses include:

HO_1: Debts have no positive significant effect on economic growth in West Africa

HO_2: Specific macroeconomic factors such as gross capital formation and labour quality have no positive significant effect in helping debts promote growth in West Africa.

HO_3: External shocks due to external economic factors have no positive significant effect on the resultant effect of debt as a means of deficit financing and growth promotion in West Africa.

Significance of the Study

One of the basic significance of this study is that it employs an econometric debt model with strong theoretical underpinning that relates debts to growth of some countries in West Africa. Whereas other studies have utilized the Ordinary Least Square (OLS) and time series data in arriving at conclusions on the impact of debt on economic growth, this study utilizes panel data and the Generalized Method of Moment (GMM) estimation technique. The obvious advantages of the GMM estimation technique is that it allows for the overcoming of some underlying Ordinary Least Square (OLS) assumptions and limitations.

REVIEW OF RELATED LITERATURE

The goal of every economy is to grow and develop and to achieve this goal, there is a need to finance and improve every sector of the economy. Where finance is not available or insufficient, the option is to borrow. Borrowing is common to economies of the world and it is not a new practice. There are volumes of publication on the effect of debt on economic growth. Studies have been carried out on both internal (domestic) and external debt in relation to economic growth and development in various African countries. Some of the available studies conclude a positive relationship while others a negative relationship. The difference in their findings, recommendation for policy, reforms and economic transitions over the years suggests the need to review the effect of debt burden on economic growth. Studies in West Africa will be reviewed

with greater interest on the real scenario in Nigeria. Emphasis will be on the review of debt as a means of deficit financing driving growth in West Africa. The utilization of debt for elusive growth and specific shocks of countries to external economic factors will also be reviewed. In general, growth promotion in West Africa will be reviewed in line with debt incurred and debt serviced.

The Concept of Debt

The act of borrowing creates debts and this debt may be domestic or external. External debt refers to that part of a nation's debt that is owed to creditors outside the nation, while domestic debt refers to debt owed to creditors within the nation. In a situation that a country borrows from abroad or source for finance across its national borders, the debt is considered external. More specifically, external debt exists when the debt is contracted in a currency other than the home currency. On the other hand, debt owed to national banks within the countries boundaries in the local currency is referred to as internal/domestic debt. The two major concepts might be misunderstood due to globalization and the present technological improvement in banking and fund transfer across national borders. It is however good to note that the major distinction is the vulnerability to foreign interest rates.

Globalization has led to an integrated world economy where the distinctions between "internal" and "external" have become unclear. The integration of debt follow a pattern in which, there is a close interrelation between the two types of debt that can often make the distinction between them obsolete. It is argued that high domestic rate is influenced by external debt. High domestic rates encourage foreign borrowing and therefore, external debt increases. Lower domestic rates encourage local borrowing and hence, local investment. The payoff here is that low domestic debt leads to export strategy, while high external debt leads to import strategy. Therefore, internal debt leads to balance of payment issues and vice versa.

Theoretical and Empirical Reviews of Relevant Literature

There are numerous theories in literature on debt and economic growth. Some of the common theories in literatures measuring the impact of debt on economic growth are the dual gap analysis, the dependency theory, the Debt overhang theory, Solow growth model among others. These theories range from the Classical and Keynesian economic thoughts to the Neo classical economists. The Keynesian theory is noted to advocate for the use of fiscal policy to offset imbalances in the economy while the Debt overhang theory is based on the premise that if debt will exceed the country's repayment ability with some probability in the future, expected debt service is likely to be an increasing function of the country's output level.

The understanding derived from these theories will help to analyze the influence of debt on growing economies. The quest for growth in an economy is explained in the four main approaches to development. They are the financing gap, investment in physical and human capital, structural adjustments and new economic theory. From literature, effort was made to group economic development thought pattern by dates into the following strands.

- Linear-stages-of-growth model: 1950s and 1960s (Rostow)
- Theories and patterns of structural change: 1970s (Lewis/Chenery)
- International-dependence revolution: 1970s to late 1970s (Richardo)
- Neo-classical, free-market counterrevolution: 1980s and 1990s (J.Schumpeter)

Though there are many contributors to the divisions above, the Linear stages of growth model views the process of development as a series of successive stages of economic growth. The growth model suggests a combination of saving, investment, and foreign aid as a necessary tool for economic development. It also emphasizes the role of accelerated capital accumulation in economic development and the bottleneck to growth which is lack of adequate investment.

On the other hand, the Rostow's stages of growth groups development stages into five. They are the traditional society, the pre-conditions for take-off, the take-off, the drive to maturity and the age of high mass consumption. From the stages listed, it is clear that all advanced economies have passed the stage of take-off into self sustaining growth. While developing countries are still in the traditional society or the pre-conditions stage. The difference in this disparity is due to no other factor than the volume of investment, capital accumulation and availability of finance to drive the economy. Since capital flow is required for developing nation to grow, debt is incurred by the receiving nation to finance economic activities focused on growth and development.

The International Dependence Revolution (IDR)opines that "dependence is a conditioning situation in which the economies of one group of countries are conditioned by the development and expansion of others." It is also based upon an international division of labour which allows industrial development to take place in some countries, while restricting it in others whose growth is conditioned by and subjected to the power centers of the world.

There are volumes of empirical works on the effects of external debt on economic growth in West Africa. Some of the results of the studies suggest that for a developing country to experience rapid growth, such country needs credit from other countries to strive. The problem common to these nations are challenges of borrowing to service debt rather than investments. Though indebted countries have to service their debt, the increase in interest rate and its effect on exchange rate makes debt repayment tedious and almost impossible. The debt overhang theory suggests that the government of highly indebted countries cannot engage in

any meaningful policy development because return on policies are used to service outstanding debt. Ejigayehu (2013) studied the effect of external debt on the growth of eight selected African economies heavily indebted. These countries are Benin, Ethiopia, Mali, Madagascar, Mozambique, Senegal, Tanzania and Uganda. A panel data sparring 1991 to 2010 was used and it was shown that external debt affects economic growth through debt crowding out rather than debt overhang.

Faraji and Makame (2013) highlighted in their study on Tanzania's economy, the impact of external debt on economic growth and inferred that there is a significant impact of external debt and debt service on GDP growth. Their study revealed that total external debt stock had a positive effect while debt service payment had a negative effect. This shows that there is no long-run relationship between external debt and GDP. Rabia and Kamran (2012) conducted a similar research on the impact of debt on the economic growth of Pakistan and found that an inverse relationship exists between debt and economic growth and that the relationship slows down economic growth. Butt (2009) also examined the causal relationship between economic growth and short term external debt for 27 Latin American and Caribbean countries from 1970-2003. Out of a total of 13 countries found to exhibit Granger causality, several were also found to have bidirectional causal relationships.

Iyoha (1999) carried out an econometric analysis on the effect of external debt on economic growth in Sub-Saharan African countries, the result of his findings suggests that Sub-Saharan Africa's external debt stock and debt services payments act to depress investment and lower the economic growth rate. The mid-19th century experience of developing countries shows high rate of growth which was typically internally generated. During these periods, developing economies strove to increase their growth by engaging in domestic and external debt. The increase in their investment reliance on external resources however, outweighed the domestic as financial transactions internally generated were not sufficient for the huge growth envisaged. The capital market operations in most developing countries make funds available for project execution. In situations where funds are in short supply, the alternative is to seek for assistance externally. External debt therefore, includes all financial assistance received by a country outside its own national boundary and this has increased steadily over the years in developing countries.

The belief of this study is that borrowing is not the problem if money borrowed is used for purposeful productive and developmental projects, while on the other hand it might be a problem when used for non-productive engagements like war, recurrent expenditure among other liabilities. Osuji and Ozurumba (2013) studied on the impact of external debt financing on economic development in Nigeria and concluded that debt financing is inversely related to

economic growth. Abubakar (2011), shows that external debt in Nigeria has made both positive and negative contribution to the economic development of the country during the period covered by this study. Sulaiman and Azeez (2012) examine the effect of external debt on economic growth of Nigeria. Ordinary Least Squares (OLS), Augmented Dickey-Fuller (ADF) Unit Root test, Johansen Co-integration test and Error Correction Method (ECM) were employed in the empirical analyses. The findings from the error correction model show that external debt has contributed positively to the Nigerian economy. The study recommends that government should ensure economic and political stability and external debt should only be acquired for economic rather than social or political reasons.

Furthermore, (Obadan and Uga, 2004) in a study on the Public Policies for Economic Development in a deregulated economy stressed the fact that domestic *debt* and government consumption expenditure are negative and to gain macroeconomic policy targets it requires the use of fiscal and monetary policies in maintaining balance.

Debt Profile for West African Countries (2013)

Table 1. Total External Debt Stocks, (US$)

| COUNTRY	EXTERNAL DEBT
BENIN	2,366,618,000.0
BURKINA FASO	2,564,129,000.0
CAPE VERDE	1,483,651,000.0
COTE D'IVOIRE	11,287,827,000.0
GAMBIA	522,655,000.0
GHANA	15,831,510,000.0
GUINEA	1,197,825,000.0
GUINEA BISSAU	277,396,000.0
LIBERIA	541,530,000.0
MALI	3,422,795,000.0
MAURITANIA	3,570,463,000.0
NIGER	2,655,662,000.0
NIGERIA	13,791,937,000.0
SAO TOME AND PRINCIPE	214,377,000.0
SENEGAL	5,222,793,000.0
SIERRA LEONE	1,395,022,000.0
TOGO	903,358,000.0

Source: World Development Indicators 2013

The table above shows the external debt profile for West African countries. A closer look at the data shows that for the year 2013, Ghana had the highest debt of $15.8 billion, followed by Nigeria with $13.7 billion and Cote d'Ivoire with $11.2 billion. Guinea Bissau is the least indebted with about $277 million. The comparison between the above shows that Ghana with a population less than Nigeria incurred more debt. This translates to the development experience in Ghana. The per capita income in Ghana is high compared to Nigeria where majority of the citizens live in poverty. The increase in debt incurred by the above countries can be traced to the need to liberate most of these countries, which presently are recovering from different economic ills.

Stylized facts on Debts and Economic Growth in West Africa

World Bank Statistics 2012 (see Fig.1), West Africa's debt profile appeared to have peaked in the mid-1990s and has not returned to the lower levels experienced in the early 1970s. The recent reductions have been due to debt rescheduling, debt buy back and debt forgiveness by the IMF and Paris Club. Nigeria with once huge debt profile of 41 billion dollars as at 2001 had a debt of about 11 billion dollars as at 2011(CBN Statistical Bulletin, 2011).

Figure 1. Average Trends in Concessional Debts in West Africa
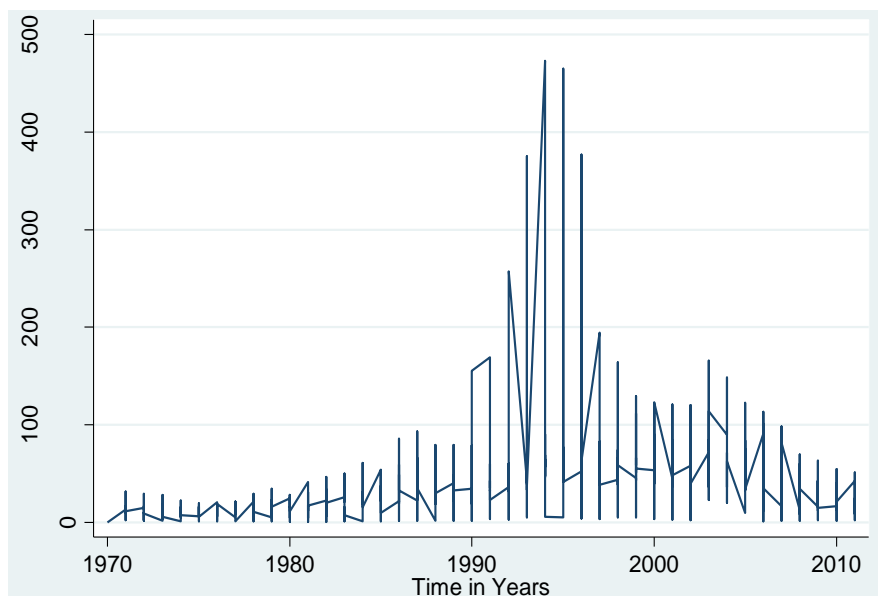
Note: The above graph shows debts trends in West Africa in billions of dollars.

The averseness to debt in many of these developing countries is associated with the conditionality that often accompany the concessionary loans such as economic restructuring and fiscal policy shift as directed by the loan giving agencies.

Figure 2. Trends in Concessional Debts for Countries in West Africa
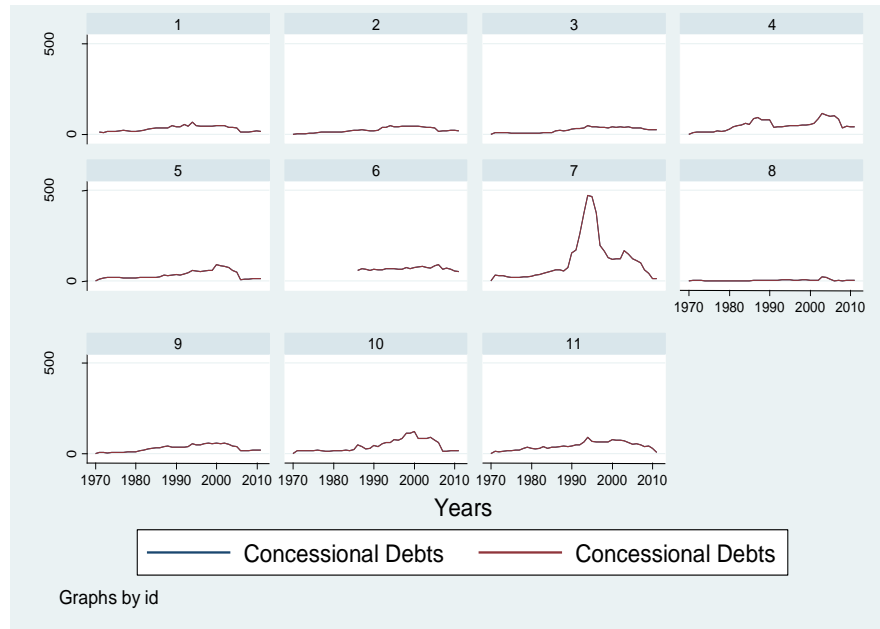
Note: Concessional loan for the 11 African Countries in our sample they include in order of graph id 1.Republic of Benin, 2.Burkina Faso, 3.Cote d'ivoire, 4.The Gambia, 5.Ghana, 6.Guinea, 7.Liberia, 8.Nigeria, 9.Senegal, 10.Sierra Leone and 11.Togo

Further arguments for the decline is that despite the oversight by the World Bank and IMF, loans and grants have not succeeded in helping many African countries in their quest for growth. Other factors that could be responsible for this, is the poor level of gross capital formation in the entire sub region.

METHODOLOGY

A model is a representation of an economic system or a function usually expressed through mathematical function. Given the objectives of this study, the model utilized is the endogenous growth theory which is extended with the inclusion of other factors that are viewed will affect growth in West Africa.

Growth can now be a function of the following:

Growth= *f (TECH, CAPITAL, LABOUR, CONCESSIONAL DEBTS, INFLATION and TRADE)*

Technology is assumed to be fixed and thus not included as a variable in the study. While capital is captured using capital formation in countries, labour is measured using labour quality which in this case is secondary school enrollment. Other variables include concessional debts, inflation and total trade as percentage of GDP.

Therefore, the apriori expectations will be that Capital K (captured by gross capital formation) will be an increasing function $K \geq 0$, Labour L will be a decreasing function $L \leq 0$, Trade T will be a decreasing function $T \leq 0$, Inflation I, will be a decreasing function $I \leq 0$, and Debts will be a decreasing function $D \leq 0$ of growth.

The model is not mis-specified since the principal variables in the traditional endogenous growth model are adequately represented in the study. This is then extended to include debts, inflation and trade. While concessional debts are the loan component of loans it assumed that it is likely to suffer from measurement problems since not all concessional loan components of grants can be captured in this study.

It is assumed that concessional loans are likely to be endogenous. This thereby justifies the use of simultaneous equation model for the study in order to overcome issues of the presence of endogenous variables in the regression.

Models Specification

In this study, four models are specified and estimated. The first, using the fixed and random effect regression is based on the Ordinary Least Square (OLS), the second using the 2SLS (Two Stage Least Square) and the third and fourth using the GMM (Generalized Methods of Moment) estimation techniques.

The use of the second, third and fourth equations allow for accounting for the endogeneity of the concessional debt variable which in the first stage of equation 2 is instrumented using the variable 'debt' as a percentage of Gross National Income (GNI). The justification for this is that external debts in many developing countries often crowd out domestic debts making the use of debt as percentage of GNI reasonable.

The third and fourth models are estimated using the generalized methods of moment estimation respectively but the fourth utilizes interactive variables (these include debts*labour quality, debts*gross capital formation and debts*trade/GDP) respectively. The reason for this is to find out if debts specifically used to improve labour quality capabilities, financial services and access and trade facilitation will promote growth. The obvious advantage of this technique is that it allows for resolving issues of functional form. Secondly, since it is a dynamic model and the first two being static models, allows for the examination of long run effect of debts on economic growth for the countries in the sample. Finally, the GMM variance covariance estimation allows us to overcome the problem of heteroscedasticity, since this provides heteroscedastic robust standard errors, thereby making this the preferred model. However, results of the first two are presented to allow readers appreciate the relevant fact in controlling for endogeneity (Roodman 2009).

The models are expessed below as:

Model Specification 1

$$lnGrowth_{it} = \propto_0 + \ \beta_1 Capital_{it} + \beta_2 Labour_{it} + \beta_3 Con. Debts_{it} + \beta_4 Inflation_{it} + \beta_5 Trade_{it}$$
$+\epsilon_{it}$ ….eqn 1.

Model Specification 2

$$Con. Debts_{it} = \propto_0 + \ \beta_1 Debts. Gni_{it} + \epsilon_{it} \qquad …………………………………..eqn2a$$
$$lnGrowth_{it} = \propto_0 + \ \beta_1 Capital_{it} + \beta_2 Labour_{it} + \beta_3 Con. Debts_{it} + \beta_4 Inflation_{it} + \beta_5 Trade_{it} + \epsilon_{it}$$
….eqn2b

Model Specification 3

$$lnGrowth_{it} = \propto_0 + \ \beta_1 Growth_{it-1} + \beta_2 Capital_{it} + \beta_3 Labour_{it} + \beta_4 Con. Debts_{it} + \beta_5 Inflation_{it} +$$
$$\beta_6 Trade_{it} + \epsilon_{it} \qquad …………………………………………………eqn 3$$

Model Specification 4

$$lnGrowth_{it} = \propto_0 + \ \beta_1 Growth_{it-1} + \beta_2 Capital_{it} + \beta_3 Labour_{it} + \beta_4 Con. Debts * X_{it} +$$
$$\beta_5 Inflation_{it} + \beta_6 Trade_{it} + \epsilon_{it} \qquad ………………………………………………… ….eqn 4$$

For the GMM model in specifications 3 and 4, the test for serial correlated errors and instrumental validity and relevance are conducted using the Arrelano Bond test for serially correlated errors and the Sargan/Hansen over-identification test respectively (see Roodman, 2006) for further discussion. As stated earlier, panel data for eleven of the fifteen countries in West Africa is utilized for this study. Some of the advantages for utilizing panel data include that it allows for elongation of the number of observations and for the control of unobservable effects that are likely to bias our regression estimates. These include fixed effects (or within group effects) which are unobservable characteristics inherent in countries and are likely to affect the regression results and the random effects. The Hausman test is conducted to determine between fixed and random effect models, which would be more suitable for the study.

The period due to data stringency spans from 1970 to 2011 although some years of data are missing. Panel data is used for the study due to some obvious advantages and attractiveness of Panel data over cross sectional and time series data. Also, other issues of bias of regression estimates, emanating from omitted variables bias in the model is often accounted for in panel regression with the control of unobservable effects.

The variables used in this study include: The dependent variable GDP per capita, which is the total goods and services produced in countries as percentage of the population in countries. This was obtained from the World Bank data via the data market of Iceland for the periods stated although with some years of data missing. Other explanatory variables include Concessional debts; this includes all external debts component of grants given to countries in

West Africa. The reason for the use of concessional debt is that a sizeable percentage of external debts to developing countries are often embedded in grants in the form of development aids to these countries. Trade is the aggregate trade in goods and services as a percentage of GDP in the eleven countries in the sample. The volume of trade is often affected by global demand pull, for commodities and reflects the share of demand for goods and services a country produce in the global trade environment. Gross capital formation depicts the money supply available to private sector firms for investment particularly in the real sector of the economies of the specific countries under study. Inflation is the average increase in the price of goods and services overtime in countries. It captures the macroeconomic stability of the economies and their riskiness for business and trade. It is measured in percentages. Labour is captured using labour quality in countries stemming from secondary school enrollment rates in the West African countries under study.

ANALYSIS AND RESULTS

The results of the regression results are presented in a systematic manner in this section. The first set of equations is estimated using OLS (Specifically the GLS estimation technique). The Haussmann test is conducted to determine between random and fixed effects which is most suitable for the model estimated. The fixed effect model is accepted as the most suitable model at p-value of 0.0001. Therefore, the assumption that time varying variables are uncorrelated with the errors in the regression results is required in the validity of the regression estimates.

The utilization of panel data as stated earlier stems from its obvious advantages over both the cross-sectional and times series data some of which include elongation of number of observations with back to back cross-sections connected over time. It allows for control of unobservable heterogeneity among groups (groups in this case are the countries) and omitted variable bias since it is not likely that the utilized model specification is likely to capture all significant growth promoting or reducing variables.

The limitation of this OLS technique (using the fixed effect GLS) is that it does not resolve the problem of endogeneity of the concessional loan variable (Burnside and Dollar, 2002). The results are however presented for useful comparison for interested readers. Also presented are the random effect results for inquisitive pundits. The results show that concessional debts do not have significant effect on growth in the selected West African countries (see Table 2, Columns 1 and 3) with coefficients of (0.00267) and (0.00153) respectively. Upon addition of the year variable to control for time fixed effects, concessional debts were found to have Strong significant effect (***) on growth in the selected West African Countries in the study sample, with coefficients of -0.0100*** and -0.0154*** respectively see

Table 2, Columns 2 and 4 respectively with the fixed effects coefficients in column 4 exerting the lower percentage negative significant effect.

Table 2. OLS and Fixed Effects Regression of Concessional Debts
and Economic Growth for West Africa

VARIABLES	(1) Growth FE GLS	(2) Growth FE GLS	(3) Growth RE GLS	(4) Growth RE GLS
Concessional Debts	0.00267	-0.0100***	0.00153	-0.0154***
	(0.00261)	(0.00236)	(0.00249)	(0.00221)
Gross Capital	0.0146***	0.0268***	0.0147***	0.0149***
	(0.00512)	(0.00407)	(0.00504)	(0.00504)
Labour Quality	0.0283***	-0.0111**	0.0287***	0.00221
	(0.00481)	(0.00544)	(0.00467)	(0.00558)
Inflation	-0.00510	0.00189	-0.00520	0.00283
	(0.00376)	(0.00293)	(0.00368)	(0.00366)
Trade/GDP	-0.00283	-0.00346*	-0.00275	0.00485**
	(0.00231)	(0.00175)	(0.00224)	(0.00195)
Debts/GNI	-0.000193	0.000795	7.30e-05	0.00411
	(0.00112)	(0.000856)	(0.00110)	(0.00110)
Time Fixed Effects		Yes		Yes
Constant	5.236***	-97.06***	5.309***	-63.25***
	(0.175)	(10.49)	(0.246)	(11.50)
Observations	140	140	140	140
R-squared	0.325	0.617		
Number of id	8	8	8	8

Note: Standard errors in parentheses.　*** $p<0.01$, ** $p<0.05$, * $p<0.1$

The time fixed effect are significant depicting that concessional debts were responsible for poor growth trends and not some other factors in the sampled countries. This depicts the usefulness in controlling for time fixed effects by including the variable year (although the year dummy may have been more appropriate the author utilized this due to time exigency).

The results of the second and third model specifications are presented in Table 3. The reason for this is hinged on the fact that they both address the issue of endogeneity of the concessional debt variable. The utilization of the two-stage least squares simultaneous equation

model and the dynamic panel model provide not only interesting findings but further provides in-depth understanding of the two model specifications. In the first two Columns in Table 4, the two-stage least squares results are presented. In this case, the Haussmann test for fixed or random effect is again significant (this time at 1%) and the fixed effect model is accepted as the most appropriate model for estimation.

An exclusion restriction is placed on the second model due to the endogeneity of the concessional aid variable. Exclusion restrictions are typically theoretical Wooldridge (2010) and can be explained from intuition as done in this study and then tested empirically. Exclusion restriction is in two folds, allowing for instrumental relevance and validity. First, the restriction is that the instrument is correlated with the endogenous variable concessional debts and uncorrelated with economic growth in the second stage (i.e. E/$Debts.Gni_{it}.\in_{it}$/ =0; implying that the instrument Debt as percentage of Gross National Income is uncorrelated with the error term $\in_{it}$). This is likely to be true since the instrument Debt as a percentage of Gross National Income is not likely to have significant effect on growth in many developing countries. Secondly, there should exist sufficient variation between the instrument and the endogenous variable (i.e cov ($Debts.Gni_{it}.\in_{it}$)≠0), therefore the coefficient of debt as percentage of GNI must be non-zero (see Kauffman and Kraay, 2008) for further discussion on exclusion restriction.

The two-stage results presented for the fixed and random effect regression depict that concessional debts have weak negative significant effect on growth in the eleven selected African countries in our sample with coefficients of -0.00611* and -0.00574* (* represents weak significance) respectively (see Table 3 Columns 1 and 2) for the fixed and random effect Two-Stage Least Squares (2SLS) regressions.

Table 3. Two-Stage Least Squares and GMM Regressions of Concessional Debts
and Economic Growth for West Africa

VARIABLES	(1) Growth 2SLS FE	(2) Growth 2SLS RE	(3) Growth Diff. GMM	(4) Growth System GMM
L.GDP/Capita			0.696***	0.819***
			(0.0473)	(0.0288)
Concessional Debts	-0.00611*	-0.00574*	-0.00473***	-0.00327***
	(0.00352)	(0.00345)	(0.00118)	(0.000686)
Gross Capital	0.0264***	0.0259***	0.00708***	0.00563***
	(0.00412)	(0.00405)	(0.00246)	(0.00204)
Labour Quality	-0.00909	-0.00817	-0.000856	-0.00342

Table 3...

	(0.00567)	(0.00554)	(0.00373)	(0.00269)
Inflation	0.000608	0.000348	-4.78e-05	-0.000619
	(0.00325)	(0.00320)	(0.00139)	(0.00118)
Trade/GDP	-0.00355**	-0.00331*	-0.00191*	-0.000994
	(0.00177)	(0.00174)	(0.00103)	(0.000845)
Time Fixed Effects	Yes	Yes	Yes	Yes
Constant	-87.48***	-84.75***	-42.42***	-20.25***
	(13.91)	(13.55)	(10.23)	(5.074)
Observations	140	140	147	179
Number of id	8	8	8	10

Note: Standard errors in parentheses   *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The utilization of the GMM technique allows for overcoming the search for relevant instrument problem since it utilizes internal instruments. As stated earlier, it also has a dynamic nature since the lag of the dependent variable is included as an explanatory variable in the regression equation. Therefore, growth will now depend on growth from past periods allowing for accounting for the long-run relationship between debts and growth. The choice of functional form or distributional normality does not affect the model since the GMM is based on the premise that the individual sample moment conditions will converge to that of the distribution. The variance covariance estimates provided in STATA 11 provides for heteroscedastic robust standard errors estimates thereby lending more credibility to the estimates (Roodman, 2009). The results of the dynamic panel model specification using GMM also depict that concessional debts have strong negative effects on economic growth in the selected West African countries used in the study with coefficients of -0.00473*** and -0.00327*** respectively. For the difference and system GMM see Table 3 Columns 3 and 4. The control for endogeneity shows that the percentage contribution of concessional debts to growth decreases in the Two-Stage least squares and GMM regressions are less than that in the fixed effect GLS regressions.

The fourth model where interactive variables are utilized is also estimated using the GMM and in this case specifically the system GMM (see table 4). Three interactive variables are introduced to the GMM model and estimated. They include cases where concessional debts are interacted with trade, labour quality and gross capital formation. The aim is to determine if concessional loans channeled to trade development, human capital development and improved financial capability will improve the impact of debts on promoting growth. Since the argument could either be that loans were not probably judiciously utilized by many of these developing countries or were diverted for consumption. The results depict that the three interactive

variables have negative effects on economic growth with coefficients of -3.24***, -0.123*** and -0.208*** (*** representing strong significance at 1%).

Table 4. Interactive Variables Regression on Growth Using GMM for West Africa

VARIABLES	(1) System GMM Growth	(2) System GMM Growth	(3) System GMM Growth
L.Growth	0.822***	0.809***	0.800***
	(0.0288)	(0.0297)	(0.0290)
Gross Capital Formation	0.00509**	0.00619***	0.0104***
	(0.00204)	(0.00206)	(0.00223)
Labour Quality	-0.000973	0.00186	-0.00277
	(0.00252)	(0.00238)	(0.00255)
Inflation	-0.000988	-0.00109	-0.000897
	(0.00117)	(0.00117)	(0.00114)
Trade/GDP	9.44e-05	-0.00154*	-0.000507
	(0.000966)	(0.000825)	(0.000852)
Concessional Debts *Trade /GDP	-3.24***		
	(7.78)		
Concessional debts* Labour Quality		-0.123***	
		(3.09)	
Concessional Debts*Gross Capital			-0.208***
			(3.91)
Time Fixed Effects	Yes	Yes	Yes
Constant	-15.05***	-15.06***	-21.83***
	(4.603)	(4.679)	(5.001)
Observations	179	179	179
Number of id	10	10	10

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

HYPOTHESES TESTING AND DISCUSSION

It was found that concessional debts, the measure of debts in the study had a negative significant effect on growth. It was also found out that some macroeconomic factors such as gross capital formation and labour quality negatively affected growth even if loans from debt incurred were channeled to improve human capability and labour quality. Finally, loans

channeled to aid trade capacity do not help promote growth or insulate developing countries from external trade shocks. Therefore, the three null hypotheses are accepted as listed below:

Ho_1: Debts have no positive significant effect on economic growth in West Africa

Ho_2: Specific macroeconomic factors such as gross capital formation and labour quality have no positive significant effect on helping debts promote growth in West Africa.

Ho_3: External shocks due to external economic factors have no positive significant effect on the resultant effect of debt as a means of deficit financing and growth promotion in West Africa.

All variables conformed to apriori expectations in the GMM Model (see Table 3). Capital K (Captured using gross capital formation) was an increasing function $K \geq 0$ of growth , while Labour L was a decreasing function $L \leq 0$ of growth, Trade T was a decreasing function $T \leq 0$ of growth, Inflation I was a decreasing function $I \leq 0$ of growth, and Debts was a decreasing function $D \leq 0$ of growth respectively.

SUMMARY AND CONCLUSION

Debts remain a convenient way of financing deficits in both developed and developing countries. External debts and concessional debts in particular remain quite questionable in the quest for growth. Policy makers and government are often compelled to utilize such funds in times of economic crisis and in cases where huge infrastructural projects need to be financed. However, in many developing countries the results of the effect of debt have not appeared to have yielded useful results for development and growth in general. Poor institutions remain a bane to development and growth, with high level of illiteracy and low life expectancy. Diseases such as cholera, malaria, polio etc. still lead to untimely deaths.

The study investigated the effects of debt on economic growth in eleven West African countries. Past studies have utilized time series data and as such have not been able to control for unobservable heterogeneity across countries (e.g. unobservable differences such as institutional quality differences and other country specific potentials such as natural resources and time fixed effects arising from years where countries performed well due to external factors such increases in global commodity prices that are likely to affect growth other than debt) that are likely to bias the regression estimates. It was found that debts do not affect growth in the eleven sampled countries used in the study. It was also found that concessional debts channeled to improving labour quality as well as financial services access through improving gross capital formation had negative effect on growth. Finally, it was also found out that concessional debts channeled towards trade improvement have no significant effect on growth.

Therefore, debts were also incapable of promoting trade and help insulate countries from global shocks arising from trade decreases.

On controlling for endogeneity and time fixed effects (in this case by including the year variable) of concessional debts on growth, it was found that debt moved from having weak negative significant effect to strong negative significant effect on growth in countries, making the control for fixed effects to be very important (see tables 2 and 3) respectively.

The results and findings of this study support past literature such as Bello M.S. (2004) and Agundu P. and Dagogo D. (2005) who state that deficit financing have no significant effect on infrastructural development and growth in Nigeria.

RECOMMENDATIONS

Many governments continue to rely on concessional loans for infrastructural provision in many parts of West Africa. The results of this study and other past works suggest that debts have not yielded the required results in promoting growth in general. It is likely that such flows are used to aid consumption or diverted to other non-productive sectors such as defense.

Credit crunch in many developing countries can be reduced further through fiscal responsibility by government and proper budget planning and implementation process with proper oversight in the disbursement and use of funds. This will lead to low deficit accumulation and less reliance on foreign capital in general leading to shrinkage over time in country specific debt profile.

Viable projects should be made priority in countries and huge non-sustainable projects should be done away with. While also in the provision of social services, government should provide employment opportunities for the mass unemployed so they can consume and contribute to the huge infrastructural projects such as electricity, water supply and others.

Less of debts and more of realistic planning should be embarked upon to promote infrastructural growth and development as interest on debts over time affect countries and prevent them from reaching their full growth potential in general.

LIMITATIONS AND FURTHER STUDIES

One limitation of this study is hinged on the fact that data from World Bank and other international institutions were not complete or up to date for some countries in West Africa. This would have made this work more robust.

Given that debt has had a huge negative impact on most West African countries, it is imperative that serious attention be paid to the management of debts. Further research is encouraged in the area of debt cancellation, debt management and the resultant effect on

developing economies in West Africa. It is important to measure the actual impact of debt cancellation for countries in West Africa, especially Nigeria. It is common knowledge that when debt is properly managed growth is inevitable.

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