DOMESTIC DEBT AND POVERTY IN NIGERIA: AN EMPIRICAL TIME SERIES INVESTIGATION

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ABSTRACT: *This work is an empirical investigation of the relationship between domestic debt and the poverty of Nigeria (1986-2012), using the Ordinary Least Square Technique, Vector Auto regression (VAR), Cointegration and Granger Causality Approaches. Using Johansen Cointegration technique, estimated results revealed that there is a long-run relationship between poverty {measured by real gross domestic product (RGDP), per capita gross domestic product (GDPPC), and basic secondary school enrolment} and domestic debt in Nigeria. The study equally reveals that the domestic debt coefficient has positive impact on bank credit and this impact is highly significant. Such credit provides place for rural development project so as to reverse the chaotic trend of urbanization, industrialization, and create lucrative market advancement in the country's manufacturing sector, thereby, improving the welfare of the citizens. Hence, the study recommends that Government should make efforts to settle the outstanding domestic debt. This will give room for proper conduct of monetary policy in the economy. This is necessary because excessive domestic debt sometimes have negative effect on growth, if it persists. The study equally recommends that Government should make available cheaper funds to the investing public so as to help them boost their various investment activities.*

KEY WORDS: Real Gross Domestic Product, Per capita Gross Domestic Product, Poverty, Basic Secondary School Enrolment

BACKGROUND OF STUDY

Applying the principles of scarcity, countries borrow internally and externally in order to grow their economies, sustain development and ultimately improve the living standard of their citizenry. Nigeria is no exception to this modality. Particularly, Nigeria's domestic borrowing (debt) is aimed at escaping the dangers associated with external borrowings occasioned by rising government expenditures vis-à-vis falling government revenues, supplement the internal savings for productive activities through infrastructural development as well as management of other macroeconomic conditions of the country (Gbosi,1998,;Ajayi ,1989; Adofu and Abula, 2010). For instance, in 2013, the Federal Government proposed to spend N543 billion on domestic debt servicing out of N592 billion total debt service cost, yet domestic debt stock is to increase to approximately N7 trillion ($45 billion) at the end of 2013.

However, events in the recent past have led to increasing concerns about the possible adverse consequences of the size of internal debt as well as the possible consequential effects of its reduction on private sector investment, the pricing of petroleum products (which is the mainstay

of the Nigerian economy), unemployment, corruption, inflation and indeed the living standard of the citizenry; irrespective of its continued use by government to finance projects. For example, N1.11trillion out of the N4.8 trillion 2012 national budget was financed by domestic debt (Appropriation Act, 2012). The concern is borne out of the experiences of countries like Mexico, Argentina, Portugal, and Greece between 1980s and 2012. The fears range from threats to financial stability to political pressures and inability of financial institutions to withstand recessions and other types of adversities.

Although there are many studies on domestic debt and its impact on economic growth and development, most of those studies concentrated on the servicing of the debt and the significance of accumulated interest payment effects on economic growth (Ayadi, 2008; Hunt, 2007; Clements, Bhattarchanya & Nguyen, 2003). Some studies have also been carried out to investigate the application and management of the debt (Omotoye *et al*, 2006; Arikawe, 2001); but they failed to bring out clearly the implication of domestic debt on the rate of poverty in Nigeria.

This study, therefore, assesses the degree to which domestic debt significantly impacts on the rate of poverty in Nigeria over the period of twenty-six years. This study is also significant to researchers, policy makers and economy managers because it will contribute to the growing debate the claims by managers on whether the growth in the deficit funding of the Nigerian economy especially through domestic debts is cosmetic or not and without actual expected negative impacts on the poverty level (measured by gross domestic product per capita) of Nigerians.

The study is therefore premised on the following hypothesis:

H_{01}: There is no significant relationship between domestic debt and Gross Domestic Product (GDP) of Nigeria.

H_{02}: There is no significant relationship between domestic debt and gross domestic product (GDP) per capita of Nigeria.

THEORETICAL FRAMWORK

Several authorities have conducted studies in the causes, size, and impacts of domestic debt on governance, economic growth and development, and by extension the poverty level, on country and cross-country basis. For instance, Gbosi (1998) studying the causes, asserted that the growing need to finance government expenditure is the main reason for increase in domestic debt. Christensen (2004) employed a cross-country survey of 27 sub-sahara African countries for a 20 year period (1980 – 2000) and found that domestic debt markets in these countries are generally small, highly short term, with narrow investors' base, that domestic interest rate payment present a significant burdens to government budgets, and that the use of domestic debt has a significant crowding out effect on private investment. Asogwa (2005), employing a more comprehensive technique in investigating the effect of domestic debt on economic growth concluded that domestic government debt in Nigeria has continued to suffer from confidence crisis as market participants

have consistently shown greater unwillingness to hold longer maturities. The government has only been able to issue more of short-term debt instrument. In the views of Gurley and Shaw (1956), mounting volume of public debt is a necessary feature of a strong and healthy financial structure of an economy. Therefore some secular increase in public debt should be planned by every government of a market–oriented economy.

There is also the contentious view that a country that borrows is automatically immersed in the debt burden. Queientin (1984); Sanusi, (1988) and Ngerebo-a & Agundu (2010) clarified that indebtedness amounts to a problem, if a country could not afford to repay its debt. This can result from the cost of debt servicing which includes the repayment of principal and interest due on the loan, faulty domestic policies which ranges from project financing mismatch, inappropriate monetary and fiscal policies, and misapplication of the borrowed funds to generate funds that can easily repay the indebtedness as and when due.

Consequently, James (2006), Oshadami (2006) and Ngerebo-a & Agundu (2010) opined that public debt has had either no significant or negative effects on the growth of the Nigeria economy because the borrowed funds were either channeled into non-productive ventures or diverted outrightly into private purses; suggesting that for the gains of the debt forgiveness to be realized the War Against Corruption should be fought vigorously and won, and the principles of time value of money must be effectively applied to raising, application and repayment of amounts borrowed.

The Trends in Nigeria's Public Domestic Debt:

Domestic government debt plays an important role in any economy. It provides economic agents with alternative options to banking for allocating their savings accordingly. It is a key part of the collateral used in financial markets and as such plays an important role in monetary policy implementation. The situation of Nigeria domestic debt shows that treasury bills constitute the main component of government domestic debt, the others are treasury certificates, treasury bonds, and development stock (Okunrounnmu, 2012). Comprehensively, Nigeria's domestic debt had grown enormously over the decades with the effect that her domestic debt consumes a larger chunk of her Gross Domestic Product (GDP) thereby tending to decline in total output of goods and services. It rose from N28,440.2 million in 1986 to N1,370,325.2 million in 2004. In relative terms, domestic debt grew astronomically averaging 114.98 percent of bank deposits within the period under review, though it dropped to as low as 7.62 percent of bank deposits in 2008.

According to Alison et al (2003), theoretically, there are three reason often advanced for government domestic debt. The first is budget deficit financing, the second is implementing monetary policy and the third is developing the financial sector (supplying tradable financial instrument so as to deepen the financial markets). In Nigeria, several factors have been advanced to explain the changing domestic debt profile between the 1960s and now (Odozi 1996, Mihaljek et al 2002, Rapu, 2003). The major factor include: high budget deficits, low output growth, large

expenditure growth, high inflation rate and narrow revenue base witnessed since the 1980s, resulting in borrowing from the central bank through the instrument of ways and means advances (Adofu and Abula, 2010).

The Negative Effects of Domestic Debt
These include the following:
1.   Large internal domestic debt tends to crowd out private investment.
2.   High rate of poverty (Olukole,1991; NBOS, 2009).

RESEARCH METHODOLOGY

The study employed an econometric investigative survey method in examining the relationship between domestic debt and poverty. Data relating to the study were obtained from CBN statistical bulletin, Debt Management Office (DMO) reports and other sources for a period of 26 years (i.e. 1986 – 2012).
Simple linear regression analysis technique (using E-views 7 statistical package for social sciences), as recommended by Onuchuku et al (1999) and Chiang (1984) was applied in this study.

Model Specification

MODEL ONE:

$RGDP_1 = f(DOMDT)$
$RGDP_1 = \alpha_1 + \beta_1 DOMDT + \mu_1$ ....equation (1)
Apriori economic expectation: $\alpha_1 > 0$

In this model, it is expected that as domestic debt increases the domestic productivity of the citizens

will rise, making poverty level to decline almost at the same rate.

MODEL TWO:

$GDPPC_2 = f(DOMDT)$
$GDPPC_2 = \alpha_2 + \beta_2 DOMDT + \mu_2$…...equation (2)
Apriori economic expectation: $\alpha_2 > 0$

This model means that our apriori expectation is that domestic debt should be positively influence

gross domestic product per capita, hence negatively related to the poverty level.

Where: RGDP   =   Real Gross Domestic Product
                GDPPC   =   Gross Domestic Product Per Capita
                DOMDT   =   Domestic Debt

                       α_2 =   The autonomous domestic debt (ie the size of GDPPC that

is not influenced by changes in domestic debt)

β   =   Beta coefficient of the independent variable (ie the level
of inducement of GDPPC by DOMDT)

μ   =   Standard Error of the Estimate

Note that α plus β_2DOMDT =   RGDP or GDPPC $\pm \mu$

PRESENTATION OF DATA AND ANALYSIS OF RESULTS

Our adopted Ordinary Least Square (OLS) regression approach used unit root and cointegration tests in order to avoid presenting spurious or nonsense estimates for policy formulation (Guajarati, 2007). We also used the log-log model to show the responsiveness of the Nigeria's poverty level to domestic debt. The study also reported the correlation matrix for variables, granger causality test and the vector autoregresion (VAR) model.

Long-Run Static Regression: OLS Estimations
Tables 4.1 and 4.2 show the results of the *OLS* estimation of models 1 to 2. Both the intercept term and the β-coefficient of domestic debt have direct impact on real gross domestic product (RGDP), given their positive values. Also, the coefficient of domestic debt is highly significant at 1 percent level. The result shows that a 1% increase in domestic debt will result in about 15% increase in RGDP or about 15% reduction in the poverty level in Nigeria. In addition, with F-statistic of 379.84 (see table 4.2), the overall model is highly significant at 1 percent, and shows that 94 percent of systematic variation in changes in RGDP in Nigeria is accounted for by changes in the domestic debt. This further reveals the fact that a higher domestic debt, if properly utilised will to reduce poverty. However, there is the presence of residual systematic randomness

Model	Variables	Table 4.1: Results of Static OLS Regression of Model 1 – 2			
		Coefficient	Standard Error	T-Statistic	Probability
1	**RGDP**				
	Intercept (α_1)	238474.8	14246.37	16.73933	0.0000
	DOMDT	0.153511	0.007877	19.48967	0.0000
	R-bar squared $[\overline{R}]^2$ = 0.935778				
2	**GDPPC**				
	Intercept (α_2)	2465.689	76.83477	32.09079	0.0000
	DOMDT	0.000692	0.000043	16.28758	0.0000
	R-bar squared $[\overline{R}]^2$ = 0.910433				

* Dependent Variables are in **Bold Letters**.   **Source:** Author's Computation (2013) –Eviews 7.1 Output.

Table 4.2: Autocorrelation and Overall Significance of Regression Model Check

Autocorrelation Test	Model	Durbin-Watson Statistics	Autocorrelation	Type
	1	0.957196	Presence	Positive
	2	0.695050	Presence	Positive
Model Overall Significant Test	Model	F Statistics	Probability Value	Remarks
	1	379.8473	0.0000	Highly Significant
	2	265.2854	0.0000	Highly Significant

Source: Author's Computation (2013) –Eviews 7.1 Output

Next, we present the result of the model of domestic debt on per capita income. As seen from the table above, the coefficient of domestic debt conformed to theoretical expectation – being positive and highly significant. This implies that increase in domestic debt has contributed to increase in per capital income to the citizenry and as such improves poverty level of Nigerians. This finding concurs with the assertion of Abbas and Christensen (2007) that countries engaged in borrowing, prominently for macro-economic reasons such as poverty alleviation and macroeconomic stability. The overall model (as seen from table 4.1) is statistically very significant and robust. About 91 percent of systematic variation in per capital income is accounted for by fluctuation in the debt variable. However, there is the presence of positive autocorrelation.

Unit root test

Table 4.3 presents the unit root tests results and confirms that most economic variables exhibit trends of non-stationarity in their level forms. However, the first or second differenced terms of most variables will usually be stationary (Granger, 1969; Ramanathan, 1992). By the second difference forms of the variables we reject the null hypothesis of non-stationarity since the absolute ADF values are greater than the absolute critical value. In other words, the unit root test for the entire variable is significant at 1, 5 and 10 percent levels at their second differenced.

Table 4.3: Unit Root Test

Variables	ADF Critical Values			ADF Statistics	Lag Length	Remarks
Level Form	1% level	5% level	10% level			
RGDP	-3.72407	-2.986225	-2.632604	2.146476		Not Stationary
DOMDT	-3.78803	-3.012363	-2.646119	3.029303**		Stationary
GDPPC	-3.72407	-2.986225	-2.632604	1.062432		Not Stationary
First Differenced						
DRGDP	-3.72407	-2.986225	-2.632604	-1.406448		Not Stationary
DDOMDT	-3.752946	-2.998064	-2.638752	0.537192		Not Stationary
DGDPPC	-3.72407	-2.986225	-2.632604	-2.675802		Not Stationary
Second Differenced						
D(DRGDP)	-3.737853	-2.991878	-2.635542	-6.609149*		Stationary
D(DDOMDT)	-3.752946	-2.998064	-2.638752	-9.944964*		Stationary
D(DGDPPC)	-3.737853	-2.991878	-2.635542	-6.964527*		Stationary

Note: * Stationary at 1% and ** Stationary at 5%.   **Source:** Author's Computation (2013) –Eviews 7.1 Output

Co-integration test

The unrestricted Johansen co-integration test results are presented in table 4.4 (Ojameruaye and Oaikhenan, 2004). The result shows the existence of stable and long-run relationships between the log of real gross domestic product and log of domestic debt as well as basic secondary school enrolment.

Table 4.4: Unrestricted Co-integration Rank Test (Trace)						Decision
Hypothesized No. of co-integrating equation (r)	Eigen Value	Trace Statistics	Critical Value (0.05)	Prob.**	Remarks	
r≤ 0*	0.935189	179.1603	95.75366	0.0000	Significant	Reject H_0
r≤ 1*	0.896431	116.2258	69.81889	0.0000	Significant	Reject H_0
r≤ 2*	0.736031	64.07299	47.85613	0.0008	Significant	Reject H_0
r≤ 3*	0.633337	33.43878	29.79707	0.0182*	Significant	Reject H_0
r ≤ 4	0.339782	10.36258	15.49471	0.2539	Insignificant	Accept H_0
r ≤ 5	0.034744	0.813323	3.841466	0.3671	Insignificant	Accept H_0
Note: *significant at 5%.			Source: Author's Computation (2013) –Eviews 7.1 Output			

Samples Descriptive Statistics

In order to check for the descriptive properties of our series and skewness of the distributive function of our data series, we present the summary statistics in table 4.5. Essentially, the result shows a relatively moderate mean of the variables of interest over the period.

	LOG(RGDP)	LOG(BSSE)	LOG(DOMDT)
Mean	12.82903	3.35103	13.15257
Median	12.64927	3.266206	13.41151
Maximum	13.72895	3.785325	15.33104
Minimum	12.22982	3.172399	10.25551
Std. Dev.	0.445819	0.195527	1.509838
Skewness	0.507307	0.883063	-0.50578
Kurtosis	1.963126	2.466995	2.167711
Jarque-Bera*	2.279928	3.686904	1.858971
Probability	0.319831	0.15827	0.394757
Sum	333.5548	87.12677	341.9669
Sum Sq. Dev.	4.968861	0.955771	56.99024
Observations	26	26	26

The table shows that all the variables are normally distributed since all the probabilities are less than the Jacque Bera (chi-square) distribution at the 5% level of significance. Hence the null hypothesis of the regression is not rejected. Utilizing the mean based coefficient of skewness and

kurtosis to check the normality of all the variables used, we found that all the variables have non-normal curves with values ranging between −3 and +3.

Correlation Analysis
Table 6

Variables	LOG(RGDP)	LOG(BSSE)	LOG(DOMDT)
LOG(RGDP)	1	0.905131	0.909505
LOG(BSSE)	0.905131	1	0.712193
LOG(DOMDT)	0.909505	0.712193	1

The correlation result as presented in Table 6 above reveals that LOG (DOMDT) has a positive correlation with LOG (RGDP). This is an indication that domestic debt in our log-log model is critical in explaining the changes in the poverty level.

Granger Causality Test
The pair-wise Granger-causality test result is presented in table 7 to determine the direction of causation (if any) between LOGRGDP and LOG (DOMDT).

Table 7: Pairwise Granger Causality Tests					
Null Hypothesis:	Obs	F-Stat.	Prob.	Decision	Direction
LOG(DOMDT) does not Granger Cause LOG(RGDP)		1.39465	0.2710	Accept	No causation
LOG(RGDP) does not Granger Cause LOG(DOMDT)	5	0.80478	0.4611	Accept	
Note: *significant at 10 others at 5%.		**Source:** Author's Computation (2013) –Eviews 7.1 Output			

The test result shows that there is no directional relationship between real gross domestic product and domestic debt. In other words, the domestic debt is not much a major predictor of Nigeria's poverty level.

The Log-Log Model of RGDP (Elasticity coefficients of Nigerian Economy)
Having established correlation, cointegration, and causality, we present the result of our static model. The coefficient of domestic debt is simply the elasticity of the real gross domestic product with respect to domestic debt. This result is presented in table 8 below.

Table 8 Long Run Static Regression: OLS Estimations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.184392*	0.49355	(16.58271)	0.0000
LOG(DOMDT)	0.108122**	0.039048	(2.768927)	0.0118
Adjusted $[\overline{R}]^2$		0.981681	* implies significant at 1%;	
S.E. of regression		0.060341	**implies significant at 5%	
F-statistic		268.9386		
Prob.(F-statistic)		0.0000		
Durbin-Watson stat		1.96866		
Source: Author's Computation (2013) –Eviews 7.1 Output				

An overview of the Ordinary Least Squares (OLS) result shown in the Table 8 above indicates that about 98.2 percent of the systematic LOGRGDP was explained by LOGDOMDT. This shows that the model has a very good fit of the regression line and a very high forecasting power.Using F-statistics, it was observed that the model was statistically significant since the calculated F-value of 268.9 is greater and highly significant (at 1 percent) than the critical value. This is means that there is significant linear relationship between LOGRGDP and LOGDOMDT. And therefore that the estimated econometric model appropriately explains the fluctuation in the real gross domestic product or poverty. Similarly, the T-test result shows that LOGDOMDT was significant at 5 percent confirming that domestic debt has impact on the poverty in Nigerian.

The empirical result shows that debt has positive effect on poverty. This conforms to the earlier stated apriori expectation. Essentially, the coefficient of LOGDOMDT indicates that the elasticity of LOGRGDP with respect to LOGDOMDT is 0.1081. Since this is significant, we reject Hypothesis 1, which states that the domestic debt has no effect on poverty in Nigeria. This low value shows that LOGRGDP is inelastic with respect to LOGDOMDT, implying that an increase in domestic debt will result in more than proportionate increase in poverty. Lastly, the DW-Statistic of 1.968 shows the absence of first order auto-correlation in the model hence can be useful and should be accepted by policy makers for decision purpose and policy formulation.

SUMMARY, RECOMMENDATIONS AND CONCLUSION

Summary of Findings
The study found that:
1.   There is a long run significant (at 5 percent) relationship between poverty and domestic debt in Nigeria.
2.   Government deficit financing, funded by domestic debt and aimed at boosting consumption and governance, has translated into poverty.
3.   The correlation test shows a high positive correlation between debt and poverty while the granger test shows no causality.

Recommendations

1.   Government should reduce the level of domestic debt it raises over time because of its effect in aggravating the level of poverty in Nigeria.

2.   Government should divest itself from all projects which the private sector can handle including refining crude oil (petroleum product) and transportation but should provide enabling environment for private sector investors such as tax holidays, subsidies, guarantees and most importantly improved infrastructure.

3.   Government should make efforts to settle the outstanding domestic debt. This will give room for proper conduct of monetary policy in the economy.

4.   Government should strive to finance her budget deficit by improving on the present revenue base rather than resorting to domestic borrowing. This can be achieved by improving its revenue sources and ensure efficient pursuit of tax reforms.

Conclusion

Public debt remains one of the major economic policy issues confronting the governments of poor countries globally. However, due to the effect of external debt crisis on the economy, most of these countries have shifted to the use of domestic debt instruments. The shift in the composition of overall public debt in favour of domestic debt in sub-Saharan Africa Countries has brought to the fore the need for governments to formulate and implement prudent domestic debt management strategies to mitigate the effects of rising debt on the economy. As such, this study sets out to investigate the impact of domestic debt on the economy. The main objective of this paper is to examine the evolution of domestic debt in Nigeria and its impact on the economy in the period 1986 to 2012 in order to make recommendations on how to mitigate the risks of domestic debt in Nigeria.

The study found no evidence that domestic borrowing does not crowd-out private sector lending in Nigeria during the period. This could be attributed to the considerable level of financial development in Kenya {evidence that this thesis not conduct by drive}. However, with log magnitude of our coefficient, it obviously implies that the funds generated through domestic borrowing have been used partially to finance those expenditures of government, which contribute to growth rate of GDP. The principle is that domestic debt as well as external debt should be spent on long-term developmental projects. In effect, amongst others we recommend that in order for domestic debt to further propagate growth, Government should maintain a proper balance between short term and long term debt instruments in such a way that long term instruments dominate the debt market. Even if the ratio of the long term debt is a multiple of deposit, the economy can still accommodate it so long as the proceeds is been channeled towards improving Nigerian investment environment.

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