Does fiscal deficit determine the size of external debt in Nigeria?

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This paper investigates the direction of causality as well as the impact of fiscal deficit on external debt in Nigeria. It goes further to determine whether structural shift actually exists in the pattern and direction of fiscal deficit and debt in the period under review. Econometric analysis such as unit root test, Granger causality test, ordinary least square (OLS) and the Chow break point test were performed on time series data from 1970 to 2007. The results reveal that a structural shift actually exists in the pattern of deficit and debt in Nigeria, but no strict causality or causal relationship actually exists between the variables.

Key words: Fiscal deficit, external debt, growth.

INTRODUCTION

The way fiscal deficit is financed determines the economic growth process of countries. Deficits could be financed through debt financing, taxes and printing money. Except taxes which is a leakage, both printing of money and debt financing are injections into the economy and could be inflationary if not properly and effectively managed. Increased taxes to finance fiscal deficits reduce the amount available for investments through reduction in savings and this slow down the rate of capital formation and economic growth. More often than not, countries seek for debt financing option to finance excess of expenditure over revenue (deficit), because of its ability to act as a catalyst in promoting economic growth and its indirect effect on inflationary process. Rising fiscal deficit and bourgeoning debt has become a permanent feature of most developing countries, particularly from sub-Saharan Africa. Developing countries in Africa and particularly Nigeria is characterized by inadequate capital formation arising from the vicious circle of low productivity, low income and low savings. This calls for technical, managerial and financial support from abroad to bridge the gap. The access to external finance strongly influences the economic development of nations and it is an important resource needed to support sustainable economic development of nations.

In Nigeria, fiscal deficit has been rising relatively and absolutely over the years, it recorded surpluses only in 1971, 1973, 1974, 1979, 1995 and 1996. In 1995 and 1996 during the regime of tight banking policies, fiscal deficit as a percentage of gross domestic product (GDP) were less than a unit with 0.0 and 0.8%, respectively. Thereafter, the deficits increased and were not near unity, for example, fiscal deficit/GDP percent was 5.9 in 1999, 3.1 in 2001 and 3.8 in 2002. According to Adedotun (1997), even the budget surpluses claimed by the federal government for 1995, 1996 and recently in 2007 could turn out to be deficits when exposed to rigorous accounting procedures. The external debt profile in Nigeria has also worsened from 1982. It rose steadily from 1981 indicating the extent of gross financial indiscipline by the civilian administration of Alhaji Shehu Shagari that was barely two years in power. External debt/GDP percent was 2.3 in 1981 and it rose phenomenally to 8.0 in 1982, 11.8 in 1984 and mid stream into the Structural Adjustment Programme (SAP) period, in 1987 it got to 49.6. The debt situation improved manageably in 2006 through 2007 with 2.4 and 0.5% of external debt/GDP, respectively. This is however not unconnected with the debt cancellation granted the country recently by the lending countries. One major concern the debt burden poses is the threat towards the realization of the Millennium Development Goals (MDGs) of reducing poverty to 50% by 2020.

The ushering of the civilian administration since 1999
after the prolonged period of the military interregnum is expected to reduce fiscal deficit, curtail the debt burden, reduce inflation to a permissible level and improve performance of other macroeconomic variables in order to achieve the desired growth and development. Contrary to expectation, fiscal deficit and debt has worsened and coupled with the present global economic meltdown other macroeconomic variables like inflation, exchange rate, net export, savings and investment have all failed to improve. Excessiveness of fiscal deficit and debt become worrisome when fiscal deficit exceed the international benchmark of 3.0% of GDP and debt become unsustainable in the long run. Unfortunately however, Nigeria's fiscal profile was only able to satisfy this criterion in only 13 out of 38 years from 1970 to 2007 (pre and post SAP periods) inclusive. The debt situation has equally worsened over years both before and post SAP periods reaching its peak in 1987 and 2002 with approximately 50% of external debt to GDP.
The question is what percentage of deficit and debt is permissible and sustainable in the long run for a developing economy like Nigeria? This paper attempts to provide answer to this question by:

1. Examining the direction of causality between fiscal deficit and debt in Nigeria.
2. Determining whether there exist a structural break in the pattern of fiscal deficit and debt before and after the reform period (SAP) in Nigeria.

The scope of the study is between 1970 and 2007 to cover the pre SAP and post SAP periods in Nigeria.

REVIEW OF THEORETICAL AND EMPIRICAL LITERATURE

Keynes proposition on the appropriate mix of financing fiscal deficit is the adoption of compensatory fiscal policy to manage the economy during the periods of low economic activity (Keynes, 1936). Keynes opined increased public expenditure and for it to have the desired effect (Keynesian effect), it should not be borne out of taxes. If borne out of taxes, it would not have the desired effect of increasing national income and employment. Thus, Keynes advocated for a loan financed public expenditure or deficit financing. In line with Keynes (1936), Barro (1995) posit that the influence of the budget deficit on investment depends on the validity of the Ricardian equivalence theory. The theory explains that a reduction in taxes which is accompanied by an increase in budget deficit does not trigger growth of consumption and hence, does not have any expansionary effect. Romer (2000) concludes that although the concept of equivalence is an attractive theoretical idea, empirical studies confirm the presence of influence of fiscal policy on consumption and aggregate demand.

The monetarist led by Friedman (1959) emphasized the long run effect of fiscal deficit (whether debt or money creation financed) by taking into account the wealth effect. They posited further that when government increases its expenditure by selling bonds in the market, their buyers feel themselves wealthier than before. The reason for this is that they expect to have more resources in the future. This tends to increase demand for money. If public expenditure is increased with bond financed deficit, expenditure on buying bonds also increases. This raises the level of national income which in turn raises the demand for money and the purchase of government bonds by the public further increases the demand for money due to wealth effect.

The monetarists argued that increase in government expenditure may not have much effect on aggregate demand (AD), if they are offset by a decline in private investment due to increase in interest rate. Interest rate increases if government spending is financed through borrowing. Since government is ready to borrow at any level of interest because its budget deficits are always financed, the pool of savings (loanable funds) available for private investors is hereby reduced, thus crowding out private investment.

Empirical works on financing of fiscal deficit include the work of Rao (1973) who finds out in his study that monetary financing of fiscal deficit has inflationary potentials and Lad (1984) who opines that a major cause for a build up of debt by many third world countries was the need of financing rising public expenditures and the associated fiscal deficit. According to Kiguel (1986) the positive links between deficits and inflation variables under perfect foresight are that large money financed budget deficits could lead to hyperinflation. Kruger (1987) submits 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. Easterly and Schmidt-Hebbel (1993) in their study on the investigation of money and debt financing of fiscal deficit find a strong evidence that, over the medium term, money financing of fiscal deficits lead to higher inflation. Okunronmu (1992) attributed the growth in the stock of domestic debt profile and the rise in monetary expansion to the need to provide financial support for the budgetary gaps of the federal government. Ikhide (1995) however noted that, it does not make so much difference whether the deficit is financed by borrowing from the central or commercial banks, or from abroad or public, the result in most cases is an increase in the inflation rate. Ariyo and Raheem (1993) highlighted the process in which the financing of huge deficit through ways and means advanced by the Central Bank of Nigeria negatively affected the private sector. Ojo and Okunronmu (1992) also found that increasing levels of fiscal deficit as well as the mode of financing the deficit
had resulted in macroeconomic instability and frequent rise in debt had adverse effect on monetary base and money supply. Fischer (1993) posited that, high deficit may be consistent with low inflation for a while, but that a more detailed assessment of debt dynamics may be needed to see if the deficit is sustainable and therefore, consistent with macroeconomic stability. Louis and Terrones (2003) examined the causal relationship between fiscal deficit and inflation, spanning 107 countries over 1960 to 2001. The study modeled inflation as nonlinearly related to fiscal deficit through inflation tax base, and estimated this relationship using panel techniques that explicitly distinguished between short and long run effects of fiscal deficits. The study finds a strong positive association between fiscal deficit and inflation among high inflation and developing country groups, but not among low-inflation advanced economies.

Ogunmuyiwa and Salisu (2005) in a study conducted to find the determinants of fiscal deficit behaviour in Nigeria found that only inflation (proxied by consumer price index) accounted for between 23 and 35% of the variation in fiscal deficit for the period under focus. Ogunmuyiwa (2008) while conducting a similar study on Fiscal Deficit-Inflation Nexus in Nigeria between 1970 and 2004 affirms that causality is uni-directional and it runs from inflation to fiscal deficit in a high inflation country like Nigeria (Wikipedia, 2006). In his investigation of the impact of sources of financing a deficit, noted that most countries finance its deficit through debt because monetizing deficit can trigger off inflation.

The aforementioned theoretical and empirical postulates point to the fact that fiscal deficit is normally and often times accompanied by increased debt through loan or bond financing. Thus, the availability of debt financing of fiscal deficit may be a pointer to conspicuous and wasteful expenditures by most country’s leaders and decision makers. Hence, availability of loan or debt financing can be instrumental to increased budget deficit in the future.

**METHODOLOGY AND EMPIRICAL FINDINGS**

This study makes use of time series data sourced from statistical bulletin, economic and financial review and annual reports and statement of accounts of the Central Bank of Nigeria (CBN) and the Federal Office of Statistics (FOS). The macroeconomic data covered fiscal deficits and external debt between 1970 and 2007.

The model

The model for this study uses Granger causality test to ascertain the direction of causality between fiscal deficit and external debt in Nigeria between 1970 and 2007. Other econometric tests such as unit root test and the Chow break point test were also performed to determine the stationarity of the data and to ascertain whether a structural shift actually existed. The test procedure as described by Granger and Newbold (1974) is illustrated as follows:

\[
FD_t = \sum_{j=1}^{K} A_j ED_{t-j} + \sum_{j=1}^{K} B_j FD_{t-j} + u_t
\]

Equation 1 postulates that current FD is related to past values of itself as well as that of ED and vice-versa for Equation 2. Unidirectional causality from ED to FD is indicated if the estimated coefficient on the lagged ED in Equation 1 are statistically different from zero as a group (that is, \( \sum A_i \neq 0 \)) and if the set of estimated coefficients on the lagged FD in Equation 2 is not statistically different from 0 (that is, \( \sum D_i = 0 \)). The converse is the case for unidirectional causality from FD to ED. Feedback or bilateral causality exists when the sets of ED and FD coefficient are statistically different from 0 in both regressions (Gujarati, 2004).

The more general model with instantaneous causality is expressed as:

\[
ED_t = \sum_{j=1}^{K} C_j ED_{t-j} + \sum_{j=1}^{K} D_j FD_{t-j} + u_t
\]

\[
ED_t = \sum_{j=1}^{K} C_j ED_{t-j} + \sum_{j=1}^{K} D_j FD_{t-j} + u_t
\]

\[
FD_t = f(ED_t)
\]

**Unit root test**

Since carrying out regressions, non stationary time series data would lead to spurious regression outcomes, we employ the widely used Augmented Dickey-Fuller (ADF) test (Dickey and Fuller, 1979) to ascertain the stationarity of the data. The econometric views (E-views package was employed) to carry out the regressions.

**Chow break point test: 1986**

In 1986, the Chow break point test yields:
Table 1. Results of unit root test.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Stage</th>
<th>ADF test</th>
<th>1%</th>
<th>5%</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>FD</td>
<td>Level</td>
<td>-5.388064*</td>
<td>** -3.6171</td>
<td>-2.9422</td>
<td>-2.6092</td>
</tr>
<tr>
<td>ED</td>
<td>Level</td>
<td>-1.380851</td>
<td>-3.6171</td>
<td>-2.9422</td>
<td>-2.6092</td>
</tr>
</tbody>
</table>

*Significance at 1%, **Significance at 5%.

Table 2. Granger causality test.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>F-Stat</th>
<th>Lags</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>FD does not Granger cause ED</td>
<td>1.41365 (0.25850)</td>
<td>2</td>
<td>Accept</td>
</tr>
<tr>
<td>ED does not Granger cause FD</td>
<td>1.43416 (.25369)</td>
<td>2</td>
<td>Accept</td>
</tr>
<tr>
<td>FD does not Granger cause ED</td>
<td>0.94844 (0.43060)</td>
<td>3</td>
<td>Accept</td>
</tr>
<tr>
<td>ED does not Granger cause FD</td>
<td>0.91720 (0.44527)</td>
<td>3</td>
<td>Accept</td>
</tr>
<tr>
<td>FD does not Granger cause ED</td>
<td>0.57577 (0.68279)</td>
<td>4</td>
<td>Accept</td>
</tr>
<tr>
<td>ED does not Granger cause FD</td>
<td>0.63707 (0.64087)</td>
<td>4</td>
<td>Accept</td>
</tr>
</tbody>
</table>

Critical values of F- distribution: 1% = 7.31; 5% = 4.08; 10% = 2.84.

DISCUSSION

As already stated, to determine the direction of causality if any, between fiscal deficit and external debt in Nigeria, we first subject the series to unit root test using the widely used ADF test. The results affirmed that fiscal deficit (FD) is of order I (0) and is stationary at level with ADF at -5.388064 at both 1 and 5%. However, external debt (ED) still contains a unit root and was found to be non stationary with ADF at -1.380851. Then, we obtained the 1st difference for ED and by differencing the variable and it was found to be of order I (1) at 1 and 5% with ADF of -4.541506 (Table 1).

After affirming the stationarity of the series, we then proceed to conducting the Granger causality test as explained (Granger, 1969; Engel and Granger, 1987). The results from Table 2 show clearly that no strict causality could be established between the variables at the conventional 1 and 5% levels of significance in spite of the lag length (lags 2 to 4). Albeit, bidirectional causality occurred between FD and ED only at the 25% significance level with a critical value of 1.36. But, since causality could not be established at the conventional 1 and 5%, it would be misleading to purport that causality actually existed between FD and ED in Nigeria in the period under review. One can only conclude that the variables are exogenous of each other, albeit, the degree of exogeneity can not be really determined. Thus, it can be stated that fiscal deficit is not a specific factor determining the size of external debt in Nigeria.

The ordinary least square (OLS) results as shown in Table 3 reveal that for Equations 8 (a, b and c) which were estimated to determine the impact of FD on ED, it was found that the independent variable is not correctly signed and is not in conformity with a-priori expectation for all the three equations. However, the t-statistics and the F-test were found to be significant (Equation 8b) at the 5% level only between 1986 and 2007 which actually falls within the reform period when SAP was practiced. In conformity with the OLS results and as evident from Figures 1 and 2, the period between 1986 when the reform programme started and 1994 through 1995 exhibit high swings in external debt when the economy was deregulated and all kinds of loans and aids were contracted by the military administration of Babaginda and Abacha. The R² of 0.069, 0.033 and 0.17 for the three models show that changes in ED cannot be determined with the behaviour of FD. Once again, fiscal deficit does not determine size of external debt in Nigeria. The Durbin Watson statistics for the three equations reveal that serial auto-correlation actually exists.

Chow break point results at 1986 break point affirmed that a structural shift actually exists in the pattern of fiscal deficit and external debt at both 1 and 5% levels of significance.

CONCLUSION AND POLICY IMPLICATION

This paper investigates the direction of causality between fiscal deficit and external debt as well as the impact of fiscal deficit on debt in Nigeria from 1970 to 2007. It goes further to determine whether a structural shift actually exists in the pattern and direction of fiscal deficit in Nigeria.
Table 3. O.L.S results equation 8 (1, 2 and 3).

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>4.250546</td>
<td>31.14387</td>
<td>20.29965</td>
</tr>
<tr>
<td>SLOPE</td>
<td>-0.146037</td>
<td>-2.628734</td>
<td>-1.574952</td>
</tr>
<tr>
<td>T-Test</td>
<td>-0.701653</td>
<td>-2.063486**</td>
<td>-1.634773</td>
</tr>
<tr>
<td>F-Test</td>
<td>0.49</td>
<td>4.25**</td>
<td>2.67</td>
</tr>
<tr>
<td>R²</td>
<td>0.033</td>
<td>0.17</td>
<td>0.069</td>
</tr>
<tr>
<td>D-W</td>
<td>0.29</td>
<td>1.07</td>
<td>0.39</td>
</tr>
</tbody>
</table>

Critical t-values: 1% = 2.704*, 5% = 2.021**; Critical F-values: 1% = 7.31*, 5% = 4.08**.

Figure 1. Line graph (External Debt and Fiscal Deficit 1970 to 2007).

Figure 2. Bar graph (External Debt and Fiscal Deficit 1970 to 2007).
Nigeria. Empirical results proved that no causality exists between FD and ED in the period under review. Also, contrary to expectation causation between the variables could not be affirmed as causality could not be established. However, structural shift occurred in the pattern of fiscal deficit and external debt with 1986, the year the Structural Adjustment Period (SAP) was embarked upon as the break point year. Thus, it can be established that fiscal deficit does not determine the size of external debt in Nigeria.

Policy implication of the aforementioned is that during and after the reform period in 1986, most external finance soughted were not actually sought or directed at financing the country’s deficit. Rather, the military ‘junta’ under Babaginda and Abacha took most of the loans and spent them on extravagant expenditures and inflated contracts. This led to huge debt accumulation and increased debt service payments which were ultimately passed to a new civilian administration in 1999. The debt overhang (even with the recent cancellation of part of the debt) coupled with financial indiscipline on the part of the past and present civilian administrations have culminated into reduction of foreign investment from abroad, slow growth process and reduction in the socio-economic welfare of the ordinary Nigerian. It is thus, recommended that for an economy like Nigeria still yearning for development, the fiscal deficit as a percentage of GDP should not exceed 3.0% while 5 to 10% is recommended as debt/GDP percent.

REFERENCES


