FOREIGN AID-DOMESTIC SAVINGS NEXUS: EVIDENCE FROM NIGERIA

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Sunday Osahon Igbinedion²

Abstract
The paper seeks to examine the nexus between foreign aid and domestic savings, focusing on Nigeria. Johansen Co-integration and error correction were applied to time series data for the period 1980-2015. The finding reveals that foreign aid complements (that is, crowd-in) domestic savings in Nigeria; suggesting that the problem of low savings in the economy may most probably be associated with other factors, not foreign aid. Also, results show that strong growth in gross domestic product positively and significantly influence domestic savings, while growth in per capita income fail to significantly promote aggregate national savings due, perhaps, to its subsistence level. Arising from the findings, the study recommends, amongst others, that government policies (such as privatization and other macroeconomic reforms) that could directly or indirectly boost the inflow of foreign aid to Nigeria should be accorded priority in development policy measures. On the domestic front, government could enhance per capita income growth through improvement in education and training as better educated persons earn more income on average compared to persons with little or no education.

Keywords: Foreign aid, Domestic savings, Cointegration, Error correction, Economic growth.

Introduction
Over the past half century, debates over the impact of foreign aid – defined as the transfer of resources from developed nations to less developed nations, either through bilateral donors or multilateral donors – have been frequent and heated. The central issue has been whether or not foreign aid complements or substitutes to domestic savings. Those in support of the positive impact of foreign aid on domestic savings (such as Rosenstein–Rodan (1961); Chenery and Strout (1966); and Over (1975) believe that foreign aid helps a country to make up for her insufficient funds and supplements domestic savings, thereby allowing such a country to experience a higher rate of investment.

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which, in turn, promotes faster growth. However, others such as Griffin (1970), Rahman (1968) and Weisskopf (1972) have argued that foreign aid tend to displace (that is, substitute domestic savings) and encourage capital flight by reducing the real rate of interest and, in the short-run, cause the exchange rate to appreciate. The debate tends nowhere near a conclusion. Although a vast empirical literature has shed light on the nexus between domestic savings and foreign aid in developing countries, most of such empirical investigations have been conducted using cross-national data of many less developed countries without paying much attention to their differing levels of development and socio-economic and cultural structures. Applying the results from such cross-national studies to policy formulation for individual countries may be quite misleading and erroneous.

This paper therefore fills this gap by supplementing the relatively scarce country-specific studies on the nexus between domestic savings foreign aid, utilizing error-correction methodology on time-series data for Nigeria. The rest of the paper is structured into four sections. Section two provides a brief review of the literature on foreign aid - domestic savings nexus. Section three outlines the methodology employed. Analysis of the regression results are contained in the fourth section, while section five concludes the paper with some relevant policy recommendations.

**Overview of Foreign Aid-Domestic Savings Dynamics in Nigeria**

Nigeria, like most developing economies, continues to witness huge gap between investment and domestic savings, and hence remain active in clamoring for external finances, especially during periods of massive macroeconomic instability. Foreign aid has been perceived as one of the major sources of external financing for developing nations, including Nigeria.

In spite of the recognized importance of aid, developing nations are receiving less foreign aid today than in the 1990s. In Nigeria, after growing for a number of years in nominal terms, for example from US$8.36 million in 1980 to US$57.8 million in 1989, foreign aid peaked at US$13.2billion in 2006 and, thereafter declined to about US$1.9billion in 2012 (see Table 1). In real terms, foreign aid as a percentage of gross national income (GNI) witnessed significant fluctuation between 1980 and 2015. For instance, from a modest value of 0.1percent in 1980, foreign aid as a percentage of GNI rose steadily to about 0.9 percent in 1990 before declining to about 0.4 percent in 2000. However, from its value of 6.5 percent in 2005, the quantum of foreign aid rose to about 8.1 percent in 2006, before declining precipitously to about 0.4 percent in 2012, representing a reduction of about 95 percent. These wide fluctuations may be attributed partly to the lack of commitment by foreign aid donors, and partly due to diversion of developmental aid funds to disaster relief and peace-keeping operations since the 1990s, with less support for long-term development (Obadan, 2004). However, between 2013 and 2015, foreign aid as a percentage stabilized, with a value of 0.5 percent in each of those three years.
On the other hand, domestic savings in Nigeria has been relatively low and insufficient to meet the level of investment required to enable the country realize its economic growth targets and potentials. In real terms, the gross domestic savings as a percentage of GDP, which stood at 30.1 percent in 1981, declined steadily to about 20.2 percent in 1988, due perhaps to the serious economic recession of the time. The same experience was recorded between 1989 and 1998, partly as a result of the interest rate policy revisions in 1991, 1994 and 1995, as well as the concomitant macroeconomic instabilities that characterized that decade. From the year 2000, however, gross domestic savings as a percentage of GDP which stood at 39.11% declined abruptly to 15.4 percent in 2015 (see Figure and Table 1 below). What the foregoing trend reveals is that, gross savings, like foreign aid, has fluctuated markedly for the past three and half decades, perhaps in response to both external and internal exigencies.

Table 1: Time-Series Data on Domestic Savings and Official Development Assistance, 1980–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Net ODA (% of GNI)</th>
<th>Gross domestic savings (% of GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>0.1</td>
<td>NA</td>
</tr>
<tr>
<td>1985</td>
<td>0.1</td>
<td>20.2</td>
</tr>
<tr>
<td>1990</td>
<td>0.9</td>
<td>32.1</td>
</tr>
<tr>
<td>1995</td>
<td>0.8</td>
<td>18.8</td>
</tr>
<tr>
<td>2000</td>
<td>0.4</td>
<td>39.1</td>
</tr>
<tr>
<td>2005</td>
<td>6.5</td>
<td>18.0</td>
</tr>
<tr>
<td>2006</td>
<td>8.1</td>
<td>29.9</td>
</tr>
<tr>
<td>2007</td>
<td>1.3</td>
<td>12.3</td>
</tr>
<tr>
<td>2008</td>
<td>0.7</td>
<td>23.1</td>
</tr>
<tr>
<td>2009</td>
<td>1.1</td>
<td>11.8</td>
</tr>
<tr>
<td>2010</td>
<td>0.6</td>
<td>21.9</td>
</tr>
<tr>
<td>2011</td>
<td>0.5</td>
<td>23.8</td>
</tr>
<tr>
<td>2012</td>
<td>0.4</td>
<td>31.5</td>
</tr>
<tr>
<td>2013</td>
<td>0.5</td>
<td>29.6</td>
</tr>
<tr>
<td>2014</td>
<td>0.5</td>
<td>21.8</td>
</tr>
<tr>
<td>2015</td>
<td>0.5</td>
<td>15.4</td>
</tr>
</tbody>
</table>

Source: World Bank
Figure 1: Time-Series Data on Domestic Savings and ODA, 1980 – 2015
Source: World Bank

Literature Review

On the issue of foreign aid-domestic savings nexus, the contention centres on whether foreign aid complements or substitutes domestic savings. In support of complement or early views such as Rosenstein-Rodan (1961) and Chenery and Strout (1966) aver that since developing nations do not have the required savings to finance their investment requirements, foreign aid tend to help bridge the saving-investment gap. In this case, foreign aid helps to complement domestic savings.

On empirical front, Over (1975) using data for 36 developing countries for the two-year period of 1962-1964, observed that a positive and significant relationship exists between foreign aid and domestic savings. Waheed (2003) utilized time series data of the Pakistani economy to examine the nexus between foreign aid and gross national savings. The finding from the study suggests the existence of a positive and significant long-run relationship between foreign aid and domestic savings in the economy. On the other hand, Griffin (1970) and Griffin and Enos (1970) have argued that foreign aid tends to crowd out domestic savings, and thus act as replacements, instead of complements. Griffin (1970), using cross-section data for 32 developing nations and 13 Middle East and Asian nations, and annual data for Columbia, the results reveal an inverse relationship between foreign aid and domestic savings. In another study, Weisskopf (1972) investigated the nexus between domestic savings and foreign aid for a sample of 44 developing nations after the world war II. The results revealed that foreign aid negatively affects domestic savings, with every unit rise in foreign aid, domestic savings declined by about 0.23 units.

In a related cross-country investigation, Mosley (1980) studied the relationship between foreign aid and domestic savings for 83 emerging countries. The results also confirmed the inverse relationship between domestic
savings and foreign aid in those countries, with the reported coefficient of aid being -0.11. White (1992) confirmed the savings displacement hypothesis in a cross-section study of 66 less developed countries. His results indicate that for every 1 percent rise in foreign aid, domestic savings declined by about 0.09 percent. Time series studies on foreign aid-domestic savings nexus appear not to have produced significantly different results. For instance, Bowles (1987), Morriset (1989) and Reichel (1995), all tend to lend credence to the view that aid displaces domestic savings in their respective investigations. Study by Razzaghe and Ahmed (2000) on the relationship between domestic savings and foreign aid for the Bangladesh economy for the period (1973-1988) using co-integration technique also confirmed the presence of a long-run negative relationship between foreign aid and domestic savings for that economy. The main arguments of most theorists with the view that foreign aid actually discourage domestic savings is that aid-recipient countries often engage in aid-switching; involving increases in government consumption expenditures and reduction in tax-collection drive. Recently, a study by Angmortey and Tandoh-Offin (2014), using three components of foreign capital inflow, namely foreign aids, foreign direct investment and grants, and foreign commercial borrowing, observed that none of the three forms of foreign capital crowd out domestic savings in both the short and long-runs in Ghana.

The literature reviewed so far either confirms the savings displacement or the savings complement hypothesis in the respective economies of interest. However, the studies available as at when this research was conducted didn’t include the Nigerian economy; a leading emerging economy in the Sub Sahara African zone. This nonetheless doesn’t suffice to say that studies may not have been done on the Nigerian economy in this regard. It therefore became imperative to ascertain if foreign aid actually complements or replaces domestic savings in the Nigerian economy and hence fill or add to existing literature as the case may be.

Methodology

Theoretical Underpinnings

This study on the impact of foreign aid on domestic savings in Nigeria will be premised on two principal theoretical models, namely, the Harrod-Domar (H-D) growth model and the Chenery-Strout two-gap model. The basic H-D growth model assumes a closed economy with no government, no depreciation of existing capital such that all investment is considered as net investment, and all investment (I) derives from savings (S).

Therefore, 
\[ S = \text{const}(Y) \]  
\[ I = \Delta K \]  
\[ K = kY \]  
\[ \Delta K = k(\Delta Y) \]  
Since total national savings, S, must equal total investment, I,
Then $S=I$ .............................................................. (4)
Therefore $s(Y) = k(\Delta Y)$ ........................................ (5)

Multiplying both sides of equation (5) first by $(1/Y)$ and then by $1/K$ gives:

$$\frac{S}{K} = \frac{\Delta Y}{Y}$$ ......................................................... (6)

Recall that $\Delta Y/Y$ is same as the rate of growth of GDP. Thus, the rate of growth of GDP $(\Delta Y/Y)$ is determined by the level of savings-capital ratio. Accordingly, the savings gap can be bridged either by foreign aid or private foreign direct investment. The Chenery-Strout model (1966) focuses generally on the role of external finance in the development process. The two-gap model is predicated on the premise that most developing nations are hindered either by inadequate domestic savings needed to help meet the required level of domestic investment or insufficiency of foreign exchange to meet the importation of intermediate and capital goods (Todaro & Smith, 2003). At any given point in time, one of the two gaps will be dominant in most developing economies. Whichever of the two gaps is dominant will invariably constrain the size and volume of investment that can be undertaken in the economy with such deficit. Algebraically, the two-gap model can be presented as follows: Consider the basic macroeconomic identity where: Aggregate Output = Aggregate Expenditure

Assuming an open-economy and one where there is no dominant government sector, hence equation (7) can be specified thus:

$$Y = C + I + (X-M)$$ ......................................................... (7)

**Where:** $Y$ is gross national product; $C$ is consumption; $I$ is investment (or domestic capital formation); $X$ is exports; and $M$ is imports.

Expenditure targets: $Y + M = C + I$ ........................................ (8)

Hence, equation (8) can be rewritten to become equation (9)

$$Y - C + M = I + X$$ ......................................................... (9)

Since $Y - C = S$

Where $S$ = domestic (public) savings, measured as the difference between public income and expenditure.

Therefore, simplifying equation (9) further yields one of the definite identities in modern macroeconomics represented in equation (10)

$$S + M = I + X$$ ......................................................... (10)

(Leakages) (Injections)

The foregoing relationship can be restated thus:

$$M - X = I - S$$ ......................................................... (11)

(Foreign Exchange Gap) (Savings Gap)

**Note:** The analysis in this study rests on the premise that shortfalls or gaps in savings and foreign exchange in equation (11) can be financed by inflow of foreign aids.
Model Specification

Based on the reviewed literature in the previous section, and the theoretical underpinnings, the foreign aid-domestic savings hypothesis is tested in an error-correction modeling (ECM) framework. Within an ECM technique, the ECM coefficient reveals the speed of adjustment that guarantees the convergence of short-term dynamics with its long-term equilibrium path. From the generalized form in equation (12), the ECM is derived thus:

\[ Z_t = \beta_0 + \beta_1 Z_{t-1} + \pi_1 K_t + \pi_2 K_{t-1} + \mu \]  

(12)

From equation (12), subtract \( z_{t-1} \) from both sides; and then adjusting the other autoregressive component \( x \), yields:

\[ \Delta Z_t = \beta_0 + (\beta_1 - 1)Z_{t-1} + \pi_1 k_t + \pi_2 k_{t-1} + \mu \]

\[ \Delta Z_t = \beta_0 + (\beta_1 - 1)Z_{t-1} + \pi_1 K_t + (\pi_1 + \pi_2) K_{t-1} + \mu \]

\[ \Delta Z_t = \pi_1 \Delta K_t - (1 - \beta_1) [Z_{t-1} + \left(\frac{\beta_0}{1-\beta_1}\right) + \left(\frac{\pi_1 + \pi_2}{1-\beta_1}\right) K_{t-1}] + \mu \]

Hence, we have equation (13)

\[ \Delta Z_t = \pi_1 \Delta K_t + \pi_2 [ECM] + \mu \]  

(13)

Where: \( \Delta Z_t \) and \( \Delta K_t \) stand for the dependent and explanatory variables, respectively, in their first differences.

The study augments equation (13) by including relevant determinants of domestic savings based on extant literature. Let \( X \) represents all such variables, that is:

\[ X_t = (ODA_t, GDP_t, RPCI_t, GFCF_t) \]  

(14)

Therefore, the estimated parsimonious ECM model for this study is specified in equation (15).

\[ \Delta SAV_t = \phi_0 + \phi_1 \Delta ODA_{t-3} + \phi_2 \Delta RPCI_{t-2} + \phi_3 \Delta GDP_t + \phi_4 \Delta GFCF_t + \phi_5 ECM_{t-4} \ldots \]  

(15)

Where: \( SAV \) is Domestic savings; \( ODA \) is official development assistance (i.e. foreign aid); \( GDP \) is Gross domestic product; \( RPCI \) is real per capita income; and \( GFCF \) is Gross fixed capital formation.

The ECM parameter (\( \phi \)) is the error-correction term which is expected to be negative. It indicates the speed of convergence to equilibrium once the equation is disturbed. The “\( \Delta \)” stands for first difference. The model is estimated by the OLS method which is expected to yield consistent estimates provided the variables are stationary (Enders, 1995). The study also tested the model for stability.

Data Set and Description

This research work utilizes time series data spanning 1980-2015, collected mainly from the Central Bank of Nigeria (CBN) Statistical Bulletin (2015), Annual Report and Statement of Accounts (various issues) and the

The descriptive summary statistics of the variables for the study is presented in Table 2. The mean value of domestic savings (SAV), official development assistance (ODA), gross domestic product (GDP), real per capita income (RCPI) and gross fixed capital formation (GFCF) are 1011982, 969.5891, 57263.56, 7123536, and 634727.6 respectively. Evidently, this reveals that the variables under consideration tend to exhibit variations in terms of magnitude, implying that estimating such equations in their levels may produce inconsistent results.

**Table 2: Descriptive Statistics**

<table>
<thead>
<tr>
<th>Metrics</th>
<th>SAV</th>
<th>ODA</th>
<th>RCPI</th>
<th>GDP</th>
<th>GFCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1011982</td>
<td>969.5891</td>
<td>57263.56</td>
<td>7123536</td>
<td>634727.6</td>
</tr>
<tr>
<td>Median</td>
<td>121496.8</td>
<td>205.6400</td>
<td>54320.06</td>
<td>2317966</td>
<td>4207423</td>
</tr>
<tr>
<td>Maximum</td>
<td>6531913</td>
<td>11427.94</td>
<td>81290.63</td>
<td>37543655</td>
<td>10710403</td>
</tr>
<tr>
<td>Minimum</td>
<td>5769.900</td>
<td>31.71000</td>
<td>43470.63</td>
<td>47619.70</td>
<td>8799.480</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>1879853</td>
<td>2260.570</td>
<td>10047.52</td>
<td>10710403</td>
<td>1016879</td>
</tr>
<tr>
<td>Observations</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
</tbody>
</table>

Source: Author’s Computation

**Data Analysis**

**Stationarity Test**

It has been observed in the literature that macroeconomic time series are usually non-stationary (Granger and Newbold 1977), and utilizing such non-stationary variables in estimations might lead to spurious outcomes. Policy prescriptions based on such outcomes might be misleading. To avoid this pitfall, we employ the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. The results are presented in table 3.

**Table 3: Results of Unit Root Tests: Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) Tests**

<table>
<thead>
<tr>
<th>variables</th>
<th>Augmented Dickey-Fuller (ADF) Test</th>
<th>Phillip-Perron (PP) Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>1\textsuperscript{st} Difference</td>
</tr>
<tr>
<td>SAV</td>
<td>-1.324</td>
<td>-6.2720**</td>
</tr>
<tr>
<td>ODA</td>
<td>-3.0118</td>
<td>-3.0118*</td>
</tr>
<tr>
<td>RCPI</td>
<td>-1.6481</td>
<td>-5.2533*</td>
</tr>
<tr>
<td>GDP</td>
<td>-2.0017</td>
<td>-7.8321**</td>
</tr>
<tr>
<td>GFCF</td>
<td>-1.2556</td>
<td>-6.2257**</td>
</tr>
</tbody>
</table>

Note: *(**) denote significance at 5% and 1% respectively.

Source: Author’s computation.
The result in table 3 shows that, with the exception of ODA variable that was stationary at level (using both test statistics), all other variables became stationary after first differencing. Besides, while SAV, GDP and GFCF are significant at 1 percent level of significance, ODA and RCPI were significant at 5 percent level of significance.

**Co-integration Test**

Co-integration tests are tests designed to find out the existence or otherwise of a long-term equilibrium relationship between the variables under consideration (Johansen, 1988; Johansen & Juselius, 1990). The presence of a long-term relationship not only satisfied the convergence property, but is also vital in policy making. Besides, this approached is preferred in this study because of its useful properties particularly that it does not depend upon the method of normalization chosen. The number of lags used is based on the evidence provided by the Akaike Information Criteria (AIC).

The result of the co-integration tests indicates that both the trace statistic and maximum eigenvalue statistic confirm the existence of co-integrating equations among the variables. The co-integrating tests were conducted after allowing for non-linear trends domestic savings (SAV), official development assistance (i.e. foreign aid - ODA), gross domestic product (GDP), real per capita income (RPCI), and gross fixed capital formation (GFCF). Table 4 presents the estimates of Johansen procedure and the associated standard statistics.

**Table 4: Johansen Co-integration Test Results (Co-integrating Vectors: SAV, ODA, GDP, RPCI, GFCF)**

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Trace-Statistic</th>
<th>Max. eigen-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>r = 0</td>
<td>171.9592*</td>
<td>116.6116*</td>
</tr>
<tr>
<td>r ≤ 1</td>
<td>55.34763*</td>
<td>26.82412*</td>
</tr>
<tr>
<td>r ≤ 2</td>
<td>28.52351*</td>
<td>17.64083</td>
</tr>
<tr>
<td>r ≤ 3</td>
<td>10.88268</td>
<td>10.55002</td>
</tr>
<tr>
<td>r ≤ 4</td>
<td>0.332653</td>
<td>0.332653</td>
</tr>
</tbody>
</table>

*Significant at 5% level. Both statistics suggest, at least 2 co-integrating equations at 5% level.

**Source: Author's Computation**

**Error-Correction Result**

Table 5 contains the results of the estimated dynamic error correction model. The t-values and their corresponding critical values, the standard errors of the estimated parameters are reported in the table.
Table 5: The Parsimonious Error Correction Model

Dependent variable: D(SAV)
Included observations: 32 after adjustments

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std- Error</th>
<th>t-statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DODA(-3)</td>
<td>237.16***</td>
<td>35.49</td>
<td>6.68</td>
<td>0.00</td>
</tr>
<tr>
<td>DRPCI(-2)</td>
<td>22.85</td>
<td>18.11</td>
<td>1.43</td>
<td>0.17</td>
</tr>
<tr>
<td>DGDP</td>
<td>0.19***</td>
<td>0.06</td>
<td>3.25</td>
<td>0.01</td>
</tr>
<tr>
<td>DGFCF</td>
<td>-0.15</td>
<td>0.21</td>
<td>-0.72</td>
<td>0.48</td>
</tr>
<tr>
<td>C</td>
<td>-32315.89</td>
<td>38002.90</td>
<td>-0.85</td>
<td>0.41</td>
</tr>
<tr>
<td>ECM(-1)</td>
<td>-0.404**</td>
<td>0.19</td>
<td>2.13</td>
<td>0.05</td>
</tr>
</tbody>
</table>

- R-Squared: 0.9280; Adjusted R-Squared: 0.8786
- F-statistic: 18.7753 (0.0000)
- Akaike info criterion: 26.9736
- Schwarz criterion: 27.5445
- Durbin-Watson Stat.: 2.0391

Where *, ** & *** represent 10%, 5% and 1% level of significance for both t and F statistics.

Source: Author’s Computation.

From Table 5, the coefficient of the error correction term is appropriately signed and is statistically significant at 5% with the speed of convergence to long-run equilibrium of 40.4%. In other words, approximately 40.4% of the deviations in the previous year is corrected for in the current year. Essentially, foreign aid has a significant positive relationship with domestic savings (that is, foreign aid complements, rather than substitute domestic savings in Nigeria). This finding is in consonance with Over (1975), Bowen (1998) and Waheed (2003). The coefficient of aggregate GDP is positive and highly significant at the 1% level, suggesting that growth in national output raises the propensity for domestic savings, through its positive effects on income. However, growth in per capita income, although positive as expected, it was nevertheless not significant at the conventional test levels, confirming that for a highly populous country like Nigeria where income levels remain the same amidst rising inflation and a weak economy, whatever income individuals get may be insufficient to meet the essentials of life and nothing or a very insignificant proportion of income is left for domestic savings. The impact of gross capital formation on national savings is negative and also not statistically significant in the model, reflecting the nature of investments in the country. This finding negates the capital fundamentalists’ view that growth in capital formation could be a major driver for rapid sustainable rise in output (Romer, 1986; Levine & King, 1994).
In addition, the diagnostic test shows that the adjusted coefficient of determination ($R^2$) is 0.8786 percent, implying that the model explains about 88 percent of what happens to the dependent variables (domestic savings). The remaining 12 percent can be ascribed to a litany of other factors not implicitly included in the model. Such factor could include institutional variables, weak fiscal-monetary policy co-ordination and mediocre reforms, amongst others.

**Stability Analysis**

Following the procedure provided by Brown, Durbin and Evans (1975), this study investigated the short run stability of the parameters in the domestic savings model using the plots of cumulative sum of the residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMsq). The results of the two tests are provided in figures 2(A) and 2(B) respectively. Essentially, the existence of parameters instability is established if the CUSUM and CUSUMsq go outside the bands represented by the two critical (dotted) lines. From the graphs, only CUSUM stays within the 5 percent critical line, implying parameter stability throughout the sample period of the study. For CUSUMsq, parameter instability established between 1991 and 2009. Thus, the finding is relatively robust for policy analysis and formulation.

**Figure 2: Stability Test Using CUSUM and CUSUM Sq of Residuals**

**Conclusion and Recommendations**

The paper has investigated the nexus between domestic savings and foreign aid using Johansen Co-integration technique and error correction model, employing time series data for the variables; domestic savings, foreign aid, gross domestic product, real per capita income and gross fixed capital formation over the period 1980 to 2015. The most important findings resided in the existence of long-run (positive) and short-run relationships between foreign aid and domestic savings as implied by the statistical significance of the coefficients of foreign aid and the lagged error term (ECM) respectively. In other words,
within the Nigeria context, foreign aid tends to complement domestic savings, while the parameter stability test (CUSUM) reveals the stability of the parameters throughout the sample period of the study. From the available evidence, it cannot be reasonably argued that the inflow of foreign aid is the cause of low savings in Nigeria. In other words, the problem of low savings in Nigeria may probably be associated with factors other than the influx of foreign aid into the country.

Accordingly, the specific policy recommendations of the study are as follows: first, since there is a general failure on the part of the government to generate large savings, efforts should be made to widen the tax base, to include the non-oil sectors as these sectors have grown remarkably well in recent years. Domestic savings from such sectors should be channeled into productive investment with a view to raising the rate of economic growth. Second, the focus of development policy in Nigeria should be to genuinely diversify the productive base of the economy in order to encourage real income growth. In this regard, the on-going vision 20:2020 programme of the government, which is partly saddled with the responsibility of increasing diversification of the economy, should be conscientiously sustained.

Third, since public savings has been shown to complement rather than substitute private savings in Nigeria (Nwachukwu, 2010), the latter can be enhanced by strengthening the relevant domestic policy frameworks aimed at encouraging private savings in the economy. Such measures will, in turn, promote real income growth and reduce unemployment. This can be achieved by encouraging a return to agriculture and promoting small and medium scale enterprises, as well as education. Fourth, since foreign aid has the potential of boosting domestic savings, investment and economic growth in Nigeria, attracting large quantum of foreign aid should be accorded priority in development policy programmes. Such policy thrust should include accelerating reforms especially in the areas of privatization, real exchange rate devaluation and other relevant macroeconomic reforms, that may directly or indirectly boost the inflow of foreign aid to Nigeria.

Finally, it is pertinent to remark that though this study focused on Nigeria, its results can nevertheless be applied to many other African countries with similar socio-economic structures, but which have not been previously investigated. This is so because it contains some invaluable lessons which could inform policy measures in the current drive by African countries towards mobilizing additional external finance to meet the Sustainable Development Goals (SDG) targets.
References


