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## The Size and Sustainability of Nigerian Current Account Deficits

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**Abstract**

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This paper uses an intertemporal model of the current account and macroeconomic indicators to examine the size and sustainability of Nigerian current account deficits over the 1960–97 period. The results indicate that the Nigerian economy appeared to satisfy its intertemporal budget constraint during this period. However there were years marked by excessive current account deficits. The results also support the view that current account deficits accompanied by macroeconomic instability and structural weaknesses can degenerate in to an external crisis.

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## I. INTRODUCTION

One notable feature of the Nigerian economy since independence in 1960 is the recurrence of current account deficits and an increase in external debt, which grew from about US\$960 million in 1970 to an average of about \$32 billion in the 1990s. As a ratio to GDP, external debt was 10 percent in 1970, reached 110 percent in 1986 and stood at approximately 71 percent in 1997. Recurring current account deficits, coupled with the evolution of external debt, have generated interest in examining the excessiveness and sustainability of Nigerian external imbalances.

The concepts of excessiveness and sustainability examined in this paper are as defined in Milesi-Ferretti and Razin (1996). The concept of an excessive current account deficit measures the deviation of the actual current account balance from an optimal or benchmark current account. The difference between the actual and optimal balance (as given by an intertemporal model of the current account) can be used to examine how close a given path of current account imbalances may be to unsustainability. The notion of sustainability poses the question: can current-account imbalances be sustained under current policy (with government intertemporal budget constraints satisfied) without requiring a substantial change, or will they lead to a "crisis"? If the answer is in the affirmative, the imbalance is sustainable.

This paper achieves three major tasks. First, it uses an intertemporal model of the current account to gauge the extent of external imbalances before and after 1986<sup>2</sup>. Second, the paper suggests that capital flight is an important variable for assessing the external position of Nigeria. Third, to complement the results observed from the intertemporal model, macroeconomic indicators are used as an alternative to assess the sustainability of the Nigerian current account deficits.

This paper appears to be the first in-depth country analysis for any sub-Saharan African country using the concepts of excessiveness and sustainability. Previous studies focused on industrial and emerging economies. Moreover, the standard intertemporal model of the current account is adjusted for possible asymmetries in access to the international financial markets. The features of the Nigerian economy are used to characterize the source of such asymmetries. A clear and simple way to test the validity of possible asymmetries in access to the international financial markets is suggested.

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<sup>2</sup> 1986 is chosen as the crisis year, when the Nigerian naira depreciated from N1: US\$1 in 1985 to N4: US\$1 in 1986. This approach to determining crisis year is along the lines of studies by: Edwards (1989), Edwards and Montiel (1989), Edwards and Santaella (1993), Frankel and Rose (1996), Milesi-Ferretti and Razin (1996).

The paper is organized as follows: Section II provides the stylized facts of the Nigerian economy prior to the introduction of the Structural Adjustment Program in 1986 and thereafter. Section III focuses on the theoretical framework for determining the excessiveness of the current account. An empirical implementation of this theoretical framework is carried out in Section IV. Section V uses established macroeconomic variables to examine current account deficits sustainability in Nigeria. Section VI summarizes and concludes the paper.

## **II. BACKGROUND**

In this section, background information on the Nigerian economy before 1986 is presented for an understanding of the interplay of external shocks and domestic policy responses, which led to an external crisis in 1986. The macroeconomic variables chosen to assess the sustainability of the current account balance before and after 1986 are rooted in the characteristics of the Nigerian economy during the period 1960–97.

### **A. External Shocks and Policy Responses (1973–81)**

The development of the petroleum industry in the early 1970s transformed Nigeria from an agrarian economy to an oil-based economy. Oil's share of total output was 12 percent in 1970, increased to 33 percent by 1974 and further increased to 39 percent by 1997. The share of oil in total federally collected revenues increased from 26 percent in 1970 to 60 percent by 1973, reached a peak of 82 percent by 1974 and stood at 72 percent by 1997. In terms of foreign exchange earnings, the oil share of total exports was 58 percent in 1970, 83 percent by 1973, 93 percent by 1974 and further increased to 98 percent by 1997.

The dominance of the oil sector in the 1970s and 1980s reflected significant increases in oil prices during the 1973–74 and 1979–80 periods. The Nigerian government took these price increases to be permanent. Therefore, commensurate with increases in the oil prices, both government and private consumption expenditures increased tremendously. Expanded government resources were transferred to the private sector through wage increases in the public sector<sup>3</sup>. The increased salaries of public sector workers resulted in private sector workers' agitation for salary increases. The demand-pull inflation coming from the increase in the public sector salaries combined with cost-push effects associated with increases in the private sector salaries led to an increase in the general price level. With a fixed exchange rate regime and in the face of increases in domestic prices, the real exchange rate appreciated. This, in turn, further increased aggregate demand in the economy and had a consequent negative impact on the current account balance.

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<sup>3</sup> The "Udojie" award of 1975 increased salaries by over 100 percent in the government sector.

## **B. The Adverse Oil Shocks and the Policy Response (1982–86)<sup>4</sup>**

Given the Nigerian economy's excessive dependence on petroleum export earnings, the fall in world oil prices in 1982 had a negative impact. The Nigerian economy is heavily dependent on imports of manufactured and intermediate goods, and import demand could not adjust quickly enough to declining foreign exchange receipts. To facilitate importation of these goods, the government set real exchange rates at unsustainable levels and engaged in short and medium-term borrowing, creating a problematic bunching of debt service obligations.

This policy response failed to address the fundamental problems facing the economy and was not sustainable. One would have expected an efficient adjustment in terms of a reduction in government consumption expenditures, nominal devaluation of the currency, and a reduction in real wages to increase competitiveness in the tradable sector. The actual adjustment resulted in current account and balance of payments deficits, reduced foreign exchange reserves and an increase in external debt obligation. In response, the government put trade and exchange controls in place.

This policy of exchange controls and restrictions aimed at reducing the outflow of foreign exchange was inadequate in dealing with the current account deficit problems emanating from excessive domestic absorption. The nature of exchange control administration created uncertainties among private investors that reduced incentives for private investment and encouraged corruption, rent-seeking activities, and smuggling. In addition to the heightened impediments to trade, the pervasive nature of the exchange control mechanism introduced serious distortions into the economy that greatly affected its overall performance. In order to correct the level of absorption in the economy, the government introduced a number of austerity measures.

## **C. Austerity Measures and the Structural Adjustment Program**

To deal with the economic problems the country was encountering, the government introduced the Economic Stabilization Act in 1982. The National Economic Emergency Act followed in 1985. Both Acts laid emphasis on reducing the levels of aggregate absorption in the economy. These Acts failed to address structural problems facing the economy: the appreciated exchange rate, the unsustainable size of the government, the over-dependence on the oil sector, and a host of other structural problems.

The government, therefore, introduced the Structural Adjustment Program (hereafter, SAP) in 1986. The SAP emphasized six major policy measures: restructuring and diversifying of the productive base of the economy to reduce dependence on the oil sector

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<sup>4</sup> See, for example, Moser et al (1997) for an assessment of the impact of the Structural Adjustment Program on the Nigerian economy.

and on imports; deregulation of the exchange rate; trade liberalization; deregulation of the financial sector; rationalization and privatization of public sector enterprises; and adoption of appropriate pricing policies (by eliminating subsidies), especially for petroleum products and in public enterprises.

#### **D. Current Account Balance**

Nigeria's current account balance has shown a remarkable variation over time (Fig. 1). The current account balance showed a deficit pattern over the period, 1960–73, ranging from US\$9 million in 1973 to US\$406 million in 1971. The annual average of the current account balance as a ratio of GDP was 2 percent over the same period. It ranged from 0.1 percent in 1973 to –4.4 percent in 1971. Over the period, 1960–73, the cumulative current account deficit as a ratio of the GDP was approximately 33 percent.

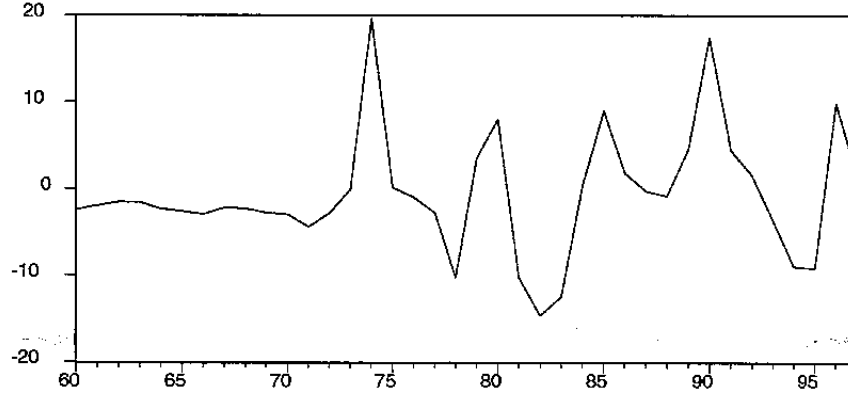
The period 1974–80 marked a new turn in the evolution of the current account balance. There were current account surpluses in 1974, 1975, 1979 and 1980. These reflected substantial increases in the crude oil prices and stringent exchange controls over the period 1977–80. Outside these years, Nigeria had current account deficits. The current account balance ranged from an approximately US\$4 billion deficit in 1978 to about US\$5.1 billion surplus in 1980. The current account balance showed an average surplus of almost 3 percent of the GDP. For this period, the current account balance ranged from 10 percent in 1978 to 20 percent in 1974. The cumulative current surplus as a ratio of the GDP was approximately 17 percent of the GDP.

During 1981–83, the current account balance was consistently negative, standing at an annual average of 12 percent and ranging from approximately \$4 billion to \$7 billion. The following three years marked current account surpluses to the magnitude of 4 percent partly reflecting the tightening of the trade controls during 1983–86 periods. The government introduced the Economic Stabilization Act in 1982 and the National Economic Emergency Act of 1985. These austerity measures emphasized reductions in aggregate absorption, without much focus on structural issues. The annual average of the current account deficit over the period 1981–85 was approximately 4.4 percent of the GDP. The cumulative current account deficit for this period was 26 percent of the GDP.

During the period 1986–88, the current account maintained a negative trend, with the exception of 1986. However, the following four years, 1989–92, marked current account surpluses, followed by current account deficits up to 1995. From 1996 to 1997, current account balances were positive. The behavior of the Nigerian current account appears to have been sensitive to developments in the world oil market, even after the introduction of the economic reforms in 1986. Among other factors, this sensitivity reflects the non-diversification of the economic base. While the current account does not appear to be a source of policy concern, especially over the last two years covered by this study, a sudden negative terms of trade shocks could easily produce an external crisis as the financing of future current account deficits become constrained by the existing stock of external debt obligations.



Figure 1. Nigeria: Current Account Balance, 1960–97  
(In percent of GDP)



### III. AN INTERTEMPORAL MODEL OF THE CURRENT ACCOUNT

#### A. Theoretical Framework

The intertemporal model of the current account has been used by various studies to determine the optimal current account balance (see Cashin and McDermott (1996), Makrydakis (1999)). The structure of the intertemporal model of the current account that gives the optimal current account balance, which can be compared with the actual current account to determine the excessiveness of the actual balance, is presented in this section.

Consider a small open economy that can lend and borrow at a constant real world interest rate,  $r^*$ , and produces a single tradable good,  $Y_t$ . The representative agent is assumed to have rational expectations. The infinitely lived household has the expected intertemporal utility function given by:

$$U = E_t \left\{ \sum_{t=\tau}^{\infty} \beta^{t-\tau} [U(C_t)] \right\}, \quad U'(C_t) > 0; \quad U''(C_t) < 0; \quad 0 < \beta < 1 \quad (1)$$

where  $\beta$  is the subjective discount factor;  $E$  is the expectation operator;  $U(.)$  represents the period or temporal utility function; and  $C_t$  represents the consumption of the single good in period  $t$ .

The relationship between the net foreign asset and the current account balance is provided in (2):

$$B_{t+1} - B_t = r^* B_t + Y_t - C_t - G_t - I_t = CA_t \quad (2)$$

where:  $B_t$  is the net foreign assets;  $Y_t$  is the gross domestic product;  $C_t$  and  $G_t$  capture private and government expenditures, respectively;  $I_t$  is private and government investment; and  $CA_t$  is the current account balance in period  $t$ .

By taking the expectation of (2) and by imposing a 'solvency condition' (*transversality condition* or *no Ponzi game condition*) to rule out the possibility of bubbles, iterating the dynamic budget constraint in (2) gives the intertemporal budget constraint facing the representative agent as:

$$E_t \left\{ \sum_{\tau=t}^{\infty} \left( \frac{1}{1+r^*} \right)^{t-\tau} Y_t + (1+r^*) B_t \right\} = E_t \left\{ \sum_{\tau=t}^{\infty} \left( \frac{1}{1+r^*} \right)^{t-\tau} (C_t + I_t + G_t) \right\} \quad (3)$$

The social planner maximizes (1) subject to the constraint indicated in (3). Maximizing (1) subject to (3) gives the optimal path of consumption.

$$C^*_t = \left[ r^* B_t + \frac{r}{1+r^*} \sum_{\tau=t}^{\infty} \left( \frac{1}{1+r^*} \right)^{t-\tau} E_t (Y_t - G_t - I_t) \right] \quad (4)$$

The open economy rational expectations consumption function is given by (4). As in Hall (1988), planned consumption is constant but actual consumption will change as the stochastic processes in the economy evolve<sup>5</sup>.

Substituting (4) into (2) produces the optimal current account balance:

$$CA^*_t = Y_t + r^* B_t - \left\{ \frac{r^*}{1+r^*} \left[ (1+r^*) B_t + \sum_{\tau=t}^{\infty} \left( \frac{1}{1+r^*} \right)^{t-\tau} E_t (Y_t - I_t - G_t) \right] \right\} - I_t - G_t \quad (5)$$

Alternatively, we could have written (4) as:

$$C^*_t = \frac{1}{\theta} \left\{ \left[ r^* B_t + \frac{r^*}{1+r^*} \sum_{\tau=t}^{\infty} \left( \frac{1}{1+r^*} \right)^{t-\tau} E_t (Y_t - G_t - I_t) \right] \right\} + \varsigma_t$$

where  $\theta$  is the long-run co integrating parameter between net output and consumption.

<sup>5</sup> In the case where  $\beta$  is different from  $r$ , given the quadratic utility function,  $\theta$  is given by:

$$\theta = \frac{\beta(1+r^*)r^*}{(\beta(1+r^*)^2 - 1)}$$

In this case, there are two factors driving movements in the current account balance: consumption smoothing and tilting.

Equation (5) can be rewritten as<sup>6</sup>:

$$CA_t^* = Y_t - \frac{r^*}{1+r^*} \sum_{i=\tau}^{\infty} \left( \frac{1}{1+r^*} \right)^{i-\tau} E_t Y_i + \frac{r^*}{1+r^*} \sum_{i=\tau}^{\infty} \left( \frac{1}{1+r^*} \right)^{i-\tau} E_t G_i + \frac{r^*}{1+r^*} \sum_{i=\tau}^{\infty} \left( \frac{1}{1+r^*} \right)^{i-\tau} E_t I_i - G_t - I_t \quad (6)$$

Equation (6) becomes:

$$CA_t^* = (Y_t - E_t \hat{Y}_t) - (I_t - E_t \hat{I}_t) - (G_t - E_t \hat{G}_t) \quad (7)$$

The basis of the intertemporal model of the current account is provided in (7): the current account serves as a buffer through which private agents can smooth consumption over time in response to temporary disturbances to output, investment, and government expenditure. A rise (fall) in the current output above (below) its expected permanent value leads to a current account surplus (deficit), reflecting consumption smoothing. A temporary increase (decrease) in the current output above (below) its long run discounted average will induce individuals to accumulate (deplete) interest yielding foreign assets as a way of smoothing consumption over future periods. Similarly, foreign borrowing will be used to finance profitable opportunities by borrowing abroad instead of reducing current consumption to finance such investment and, consequently, the current account balance position will deteriorate. Finally, a temporary increase in government expenditure has the same effect as a temporary productivity shock: A higher current account deficit enables people to minimize the impact of such a shock in any given period by spreading that impact over the entire future.

It is possible to write (7) in a more compact form, which will make it similar to the approach developed by Campbell (1987) for testing the permanent income hypothesis of consumption. This approach makes full use of the structure of the model to derive testable

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<sup>6</sup> Defining the relationship between the permanent value of a variable and its current value

as: 
$$\sum_{i=\tau}^{\infty} \left( \frac{1}{1+r^*} \right)^{i-\tau} \hat{Z}_\tau = \sum_{i=\tau}^{\infty} \left( \frac{1}{1+r^*} \right)^{i-\tau} Z_i$$

Therefore, the permanent value of Z is given by:

$$\hat{Z}_\tau = \frac{r^*}{1+r^*} \sum_{i=\tau}^{\infty} \left( \frac{1}{1+r^*} \right)^{i-\tau} Z_i$$

(See Obstfeld and Rogoff, 1996 pp. 74 for this definition of a permanent variable).

implications. This compact form is used to show that an expected positive change in net output in the future increases the current account deficit in the current period.

Define net output as gross domestic output, less gross investment and government expenditures. That is,

$$Q_t \equiv Y_t - I_t - G_t \quad (8)$$

Based on this definition, equation (8) takes the simple form:

$$CA^*_t = Q_t - E_t \hat{Q}_t \quad (9)$$

The permanent value of the net output,  $\hat{Q}$ , can be written as:

$$\hat{Q} = \frac{r^*}{1+r^*} \sum_{t=\tau}^{\infty} \left( \frac{1}{1+r^*} \right)^{t-\tau} E_{\tau} Q_t \quad (10)$$

Substituting (10) into (9) yields:

$$CA^*_{\tau} = Q_{\tau} - E_{\tau} \frac{r^*}{1+r^*} \sum_{t=\tau}^{\infty} \left( \frac{1}{1+r^*} \right)^{t-\tau} E_{\tau} Q_t \quad (11)$$

Setting  $\frac{1}{1+r} = \psi$ , we can rewrite (11) as:

$$\begin{aligned} CA^*_{\tau} &= Q_{\tau} - (1-\psi) \sum_{t=\tau}^{\infty} \psi^{t-\tau} E_{\tau} Q_t \\ &= Q_{\tau} - E_{\tau} \left[ \sum_{t=\tau}^{\infty} \psi^{t-\tau} Q_t - \sum_{t=\tau}^{\infty} \psi^{t-\tau+1} Q_t \right] \\ &= Q_{\tau} - Q_{\tau} - E_{\tau} \left[ \sum_{t=\tau+1}^{\infty} \psi^{t-\tau} Q_t - \sum_{t=\tau}^{\infty} \psi^{t-\tau+1} Q_t \right] \end{aligned} \quad (12)$$

Note that:

$$\sum_{t=\tau}^{\infty} \psi^{t-\tau+1} Q_t = \sum_{t=\tau+1}^{\infty} \psi^{t-\tau} Q_{t-1}$$

Therefore, equation (12) can be reexpressed as:

$$\begin{aligned} CA^*_{\tau} &= -E_{\tau} \left[ \sum_{t=\tau+1}^{\infty} \psi^{t-\tau} Q_t - \sum_{t=\tau+1}^{\infty} \psi^{t-\tau} Q_{t-1} \right] \\ &= -E_{\tau} \left[ \sum_{t=\tau+1}^{\infty} \psi^{t-\tau} (Q_t - Q_{t-1}) \right] \end{aligned} \quad (13)$$

The current account in the current period based on (13) is:

$$CA^*_{\tau} = - \sum_{t=\tau+1}^{\infty} \left( \frac{1}{1+r^*} \right)^{t-\tau} E_{\tau} (\Delta Q_t) \quad (14)$$

From (14), temporary shocks lead to changes in the current account, and the extent of the movement in the current account is a decreasing function of the persistence of the shock. A country will run a current account surplus only if it expects its net output to be falling temporarily in the future. The analogy to household saving is illuminating: as Campbell has shown, an implication of the rational expectations permanent income model is that households save when they expect their future labor income to decline. In this model, net output plays the role of labor income and the current account the role of savings.

This approach to looking at the current account balance has a number of policy implications. In the first place, the fact that the economy is experiencing current account deficits may not necessarily be indicative of structural problems. A temporary increase in government expenditure, in investment, or a decline in productivity is expected to generate current account deficits. This shows that there is no need on the part of the government to initiate policy measures, such as exchange rate devaluation, to correct such current account deficits. Secondly, if the observed current account deficit reflects consumption smoothing of private economic agents, then the observed current account deficits may not necessarily result in the accumulation of foreign liabilities that are not sustainable, as private agents borrow to smooth consumption. Thirdly, observed current account deficits may indicate the need for the economy to accelerate growth in the future in order to be able to repay the borrowed foreign savings.

## B. The Testable Implications of the Intertemporal Model of the Current Account

In order to determine the consistency of the Nigerian current account with the joint hypotheses of consumption smoothing behavior and intertemporal budget constraint, the optimal (or benchmark) current account,  $CA_t^*$ , must be compared with the actual current account,  $CA_t$ . The actual current account is given by:

$$CA_t^* = (Q_t + rB_t) - \theta C_t \quad (15)^7$$

To effect such comparison, the optimal measure of the current account has to be constructed as given by (14) and the testable implications of the present value relationship in (14) need to be clearly outlined.

The first implication of (14) is the stationarity of the optimal current account,  $CA_t^*$ . From (14), if  $\Delta Q_t$  is a stationary variable (*i.e.*,  $I(0)$ ), then the optimal current account  $CA_t^*$  must also be stationary in levels, since it is just a linear combination of stationary variables. The stationarity of  $CA_t^*$ , conditional on the stationarity of  $\Delta Q_t$ , constitutes a relatively weak implication of the present-value model (Otto (1992)).

The second implication from (14), of the present value model of the current account is the existence of a long-run relationship between net output and consumption. Consider the vector of time series  $z_t = [r*B_t, Q_t, C_t]$  to be individually  $I(1)$  processes, ( $C_t$  and  $r*B_t$  by theory and  $Q_t$  by assumption)<sup>8</sup>. From (14),  $CA_t$  is a stationary variable (a linear combination of  $I(1)$  time series); this is the residual in the long run specification of the net output inclusive of interest rate and consumption. The stationarity of this variable implies a long-run relationship between the net output and consumption.

The third implication is that of equality between the actual and optimal current accounts. From (14), creating the optimal current account series requires estimating the present value of expected changes in net output, where the expectation is conditional on the information set used by economic agents. This is an uphill task: the information set on the basis of which agents forecast future values of the variables contained in the net output is generally unknown to the researcher. However, precise knowledge of the content of information utilized by the agent is not needed. This is because, as Campbell and Shiller (1987) have shown, in a different context, the current account itself reflects all the

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<sup>7</sup> In the absence of consumption tilting  $\theta=1$ .

<sup>8</sup> Instead of having three variables in the vector of time series, we can submerge the net factor payment into the net output and therefore examine the co integration between it and the consumption. The co integration vector gives an estimate of the consumption tilting parameter when  $\beta$  is not equal to  $1/(1+r^*)$ .

information available to agents for forecasting these variables. Indeed, under the null hypothesis of equation (14), the current account should itself incorporate all of the consumers' information on future net output changes. Consequently, consumers' forecast of changes in net output ( $\Delta Z_t$ ) for  $t > \tau$  is based on the  $p$ -order vector auto regression (VAR) model in (16). For ease of exposition we set  $p=1$ <sup>9</sup>.

$$\begin{bmatrix} \Delta Q_t \\ CA_t \end{bmatrix} = \begin{bmatrix} \psi_{11} & \psi_{12} \\ \psi_{21} & \psi_{22} \end{bmatrix} \begin{bmatrix} \Delta Q_{t-1} \\ CA_{t-1} \end{bmatrix} + \begin{bmatrix} V_{1t} \\ V_{2t} \end{bmatrix} \quad (16)$$

where  $V_{1t}$  and  $V_{2t}$  are errors with a conditional mean of zero. Equation (16) is used to forecast the expected value of  $\Delta Q_t$  in (14). Taking the expectation of (14) yields:

$$E_\tau \begin{bmatrix} \Delta Q_t \\ CA_t \end{bmatrix} = \begin{bmatrix} \psi_{11} & \psi_{12} \\ \psi_{21} & \psi_{22} \end{bmatrix}^{t-\tau} \begin{bmatrix} \Delta Q_\tau \\ CA_\tau \end{bmatrix} \quad (17)$$

In (17), we use the condition that  $E_t[X_{t+j}] = \Psi^j X$ ;  $E(V_{1t}) = E(V_{2t}) = 0$ ; and  $\Psi = \text{matrix} [\psi_{ij}]$ .

By premultiplying (17) by the  $1 \times 2$  vector  $[1 \ 0]$  we have:

$$E_\tau \Delta Q_t = [1 \ 0] \begin{bmatrix} \psi_{11} & \psi_{12} \\ \psi_{21} & \psi_{22} \end{bmatrix}^{t-\tau} \begin{bmatrix} \Delta Q_\tau \\ CA_\tau \end{bmatrix} \quad (18)$$

Substituting (18) into (14) yields the optimal current account balance  $CA^*_t$ . Let  $I$  be a  $2 \times 2$  identity matrix. Then:

$$\begin{aligned} CA^*_t &= -[1 \ 0] \left( (1+r^*)^{-1} \Psi \right)^{t-\tau} \begin{bmatrix} \Delta Q_\tau \\ CA_\tau \end{bmatrix} \\ &= [\Phi_{\Delta Q} \ \Phi_{CA}] \begin{bmatrix} \Delta Q_t \\ CA_t \end{bmatrix} \end{aligned} \quad (19)^{10}$$

<sup>9</sup>It is straightforward to generalize this expression for higher order VARs by writing a  $p$ th order VAR in first order form (see Otto (1992)).

<sup>10</sup> The expression in (19) is valid as long as the infinite sum in (14) converges, which it will if the variables in the VAR are stationary.

Equation (19) is the predicted or optimal current account that will be compared with the actual current account data.

Generally, to evaluate the model, projecting equation (14) onto the information set produces the following restrictions:

$$[CA_t | H_t] = - \sum_{i=t+1}^{\infty} \left( \frac{1}{1+r^*} \right)^{t-i} E_t(\Delta Q_i | H_t) \quad (20)$$

Given the condition that  $CA_t$  is contained in  $H_t$ , we use (20) to obtain the following set of restrictions on the VAR companion matrix  $\Psi$ :

$$g' = - \sum_{i=t+1}^{\infty} \left( \frac{1}{1+r^*} \right)^{t-i} E_t h' \Psi^{t-i} \quad (21)$$

In (21), given the choice of one lag in the AR process,  $g$  and  $h$  are column vectors with 2 elements. The second element of  $g$  and the first element of  $h$  are unity. Since  $CA_t$  and  $\Delta Q_t$  are stationary variables, the right hand side of the equation above converges to:

$$-h'(1+r^*)^{-1} \Psi [I - (1+r^*)^{-1} \Psi] \quad (22)$$

By post-multiplying both sides of (22) by  $[I - (1+r^*)^{-1} \Psi]$ , we have the following set of restrictions:

$$g' [I - (1+r^*)^{-1} \Psi] = -h' (1+r^*)^{-1} \Psi \quad (23)$$

Campbell (1987) wrote out the restrictions on the individual coefficients of  $\Psi$  and demonstrated that the restrictions implied by (23) can be formally tested by running a linear regression of the following form:

$$CA_t - \Delta Q_t - (1+r^*)CA_{t-1} = aW_t + r^* \xi \quad (24)$$

where  $W_t$  contains values of  $CA_t$  and  $\Delta Q_t$  dated  $(t-1)$  and earlier. The error term represents the innovation in the  $\Delta Q_t$  process. The restrictions in (24) imply that conditional upon a choice of  $r^*$  the left hand side should be orthogonal to lagged values of  $CA_t$  and  $\Delta Q_t$ , if the data are to be consistent with the present value-model in (14).

Once the optimal current account series has been calculated, a number of other tests may be performed. In this respect, the fourth implication of the intertemporal model is that the current account should Granger-cause subsequent movements in the net output.



The fifth implication, under the null, is the equality of the variances of the actual current account and the optimal current account. If this is found to be valid, then the Nigerian economy can be considered as receiving sufficient capital flows to ensure consumption smoothing. The last implication is the stationarity of both the actual and optimal current account balances. Given the null of equality between the actual and optimal current accounts, the optimal current account is an I (0) process; hence the actual current account must be an I (0) process too.

### C. Asymmetry in Access to the International Financial Markets and the Present Value Model of the Current Account

One of the weaknesses of the standard consumption-smoothing model of the current account is its assumption of unrestricted access to the international financial market. We follow Callen and Cashin (1999) in allowing for asymmetric behavior on the part of economic agents in responding to temporary shocks to net output. However, while Callen and Cashin interpreted this as capital controls imposed by the government, we perceive it in the current context as emanating from macroeconomic and political instabilities in an economy like Nigeria. Macroeconomic instability, for example, reduces the growth potential of an economy and thereby reduces the ability of private agents to repay back funds secured on the international financial markets. International financial markets anticipating this may not be willing to lend to private agents in Nigeria to smooth consumption.

To implement the constrained consumption-smoothing model, the actual current account  $CA_t$  is decomposed into two main components as follows:

$$CA_t^h = D_t^h CA_t \text{ where } D_t^h = \begin{cases} 1 & \text{if } CA_t > 0 \\ 0 & \text{if } CA_t \leq 0 \end{cases} \quad (25)$$

$$CA_t^l = D_t^l CA_t \text{ where } D_t^l = \begin{cases} 1 & \text{if } CA_t < 0 \\ 0 & \text{if } CA_t \geq 0 \end{cases} \quad (26)$$

where  $CA_t^h$  ( $CA_t^l$ ) equals  $CA_t$  when  $CA_t$  is positive (negative) and  $CA_t^h$  ( $CA_t^l$ ) is zero otherwise. The variables  $\Delta Q_t^h$  and  $\Delta Q_t^l$  are defined similarly as:

$$\Delta Q_t^h = D_t^h \Delta Q_t \text{ where } D_t^h = \begin{cases} 1 & \text{if } \Delta Q_t > 0 \\ 0 & \text{if } \Delta Q_t \leq 0 \end{cases} \quad (27)$$

$$\Delta Q_t^l = D_t^l \Delta Q_t \text{ where } D_t^l = \begin{cases} 1 & \text{if } \Delta Q_t < 0 \\ 0 & \text{if } \Delta Q_t \geq 0 \end{cases} \quad (28)$$

In the intertemporal model of the current account, an expected rise in output is expected to generate an increase in the current consumption and, with a constant current income, a decrease in saving. With unchanged investment, the current account balance deteriorates. However, without access to the international financial market, the deficit current account position will not be affected by expectations of an increase in output, because the agent does not have access to external borrowing to finance the deficit. On the other hand, the domestic economic agents can lend abroad. When agents expect a decline in their future output, they can reduce current consumption, thereby increasing saving, with a consequent improvement in the current account position.

Therefore, in the presence of credit constraints the relationship between the net cash flow and current account takes two forms. If the postulate of asymmetry in access to international financial market is binding, then  $CA_t^h$  will Granger-cause future changes in net output, as defined by  $\Delta Q_t^l$ . However, no Granger causality should be found between  $CA_t^l$  and  $\Delta Q_t^h$ .

To derive the estimate of optimal current account, we estimate a four-variable VAR of current and lagged changes in net output ( $\Delta Q_t^h$  and  $\Delta Q_t^l$ ), current and lagged values of the actual current account ( $\hat{CA}_t^h$  and  $\hat{CA}_t^l$ ) of the form:

$$\begin{bmatrix} \Delta Q_t^h \\ \Delta Q_t^l \\ CA_t^h \\ CA_t^l \end{bmatrix} = \begin{bmatrix} \psi_{11} & \psi_{12} & \psi_{13} & \psi_{14} \\ \psi_{21} & \psi_{22} & \psi_{23} & \psi_{24} \\ \psi_{31} & \psi_{32} & \psi_{33} & \psi_{34} \\ \psi_{41} & \psi_{42} & \psi_{43} & \psi_{44} \end{bmatrix} \begin{bmatrix} \Delta Q_{t-1}^h \\ \Delta Q_{t-1}^l \\ CA_{t-1}^h \\ CA_{t-1}^l \end{bmatrix} + \begin{bmatrix} V_{1t} \\ V_{2t} \\ V_{3t} \\ V_{4t} \end{bmatrix} \quad (29)$$

From (29), the optimal current account (with asymmetry in access to the international financial market) is given by:

$$CA_t^{**} = kz_t \quad (30)$$

where,

$$k = -(g_1')((I + r^*)^{-1}\Psi)(I - (I + r^*)^{-1}\Psi)^{-1} \text{ and } g_1 = [1 \ 1 \ 0 \ 0],$$

$$z_t = (\Delta Q_t^h \ \Delta Q_t^l \ ca_t^h \ ca_t^l)'$$

The  $CA_t^{**}$ , is the optimal current account, given the presence of asymmetry in access to the international financial markets.

#### IV. THE EMPIRICAL ANALYSIS

##### A. Data Set

The important issue of the excessiveness of the Nigerian current account deficits is investigated via an empirical implementation of the present value model of the current account determination using annual data over the 1960–97 period.

Annual data on private consumption, government consumption, investment, GDP, and GNP in billions of Naira is collected. All variables are cast in *real per capita terms* by dividing the nominal variables by the GDP deflator (1995=100) and the level of total population. The actual current account is arrived at by subtracting private and consumption expenditures and investment from the GNP (adjusted for consumption tilting), and it is represented by,  $casm_t$ . The optimal current account without adjusting for asymmetry in access to the international financial market is  $casm_t^*$ , and  $casm_t^{**}$ , when such asymmetry is taken into consideration. The real per capita private consumption expenditure is represented by  $c_t$ . We compute the net output as the GDP less the addition of investment and government consumption expenditures  $q_t$  and when adjusted for net factor payment, it is captured by  $qr_t$ .

The data set used for the analysis originate from the World Bank, Social Indicators of Development database. This is in conformity with previous empirical investigation of the intertemporal model of the current account for a number of developing countries by Ghosh and Ostry (1995).

##### B. Unit Root Tests

From the methodological procedures of Campbell and Shiller (1987) outlined in the previous section, the variables entering the VAR  $casm_t$  and  $\Delta q_t$  must be stationary variables. Also, the postulation that there exists a long run relationship between  $qr_t$  and  $c_t$  implies that both variables are integrated of order 1. In order to test for the presence of unit roots, and hence the degrees of integration of these variables, two unit root tests were used: the Augmented Dickey-Fuller (ADF) unit-root test (see Said and Dickey (1984)) and the Phillips- Perron unit-root test (see Phillips and Perron (1988)). These approaches have low power against plausible trend-stationary alternatives. This weakness should be kept in mind when interpreting the results obtained from their application. The results reported from applying the ADF and PP tests include a constant and a time trend and are presented in Table 1.

The smoothed component of the current account,  $casm_t$ , and change in net output,  $\Delta q_t$  are found to be stationary variables at a significance level of 5 percent. On the other hand,  $c_t$ ,  $q_t$  and  $qr_t$  are non-stationary variables at 5 percent significance levels; however, their first differences are stationary.

Table 1. Nigeria: Unit Root Tests\*

Variable	ADF	PP
$casm_t^*$	-4.00	-4.23
$casm_t$	-3.93	-4.40
$c_t$	-2.97	-2.76
$q_t$	-3.20	-3.06
$qr_t$	-2.74	-3.04
$\Delta c_t$	-4.57	-5.11
$\Delta q_t$	-5.31	-6.17
$\Delta qr_t$	-5.58	-6.61

\* ADF indicates the augmented Dickey-Fuller test; PP represents the Phillip-Perron test.

### C. Co integration Test

The Phillips and Hansen (1990) “fully modified” (FM) co integration approach is used. The advantage of their procedure is that it eliminates the inefficiency of the standard ordinary least square (OLS) estimates, and tests based on it are asymptotically normal.

Over the entire sample size, the estimate of the long-run relationship between real net output adjusted for interest payments and real private consumption ( $\theta$ ) is 0.85. During the period 1960–1992,  $\theta$  assumes a value of 0.96. By sequentially applying the FM method,  $\theta$  ranges from 0.87 in 1997 to 0.95 in 1995. Overall, there exists a long-run relationship between consumption and the net output inclusive of interest payments rate over the entire sample size.<sup>11</sup> The fact that  $\theta < 1$  implies consumption tilting towards the current period. This indicates that Nigeria is consuming more than its permanent net output and as a result, the observed current account deficits in most of the years covered by the paper.

### D. Formal and Informal Tests of the Model

The present value model of the current account implies that the optimal current account,  $casm_t^*$  is a stationary variable. Based on hypothesized equality of the actual current account,  $casm_t$  and optimal current account, by the present-value model of the current account,  $casm_t$  is expected to be a stationary variable. Both  $casm_t$  and  $casm_t^*$  are found to be stationary variables. This constitutes evidence in favor of the present value model of the current account.

<sup>11</sup> The use of Johansen co integration tests points to the existence of long-run relationship between net output and consumption. Also, the stationarity properties of  $casm_t$  is examined via the use of the Engle and Granger (1987) no co integration standard ADF test. The test result was  $-3.287$  and a critical value of  $-2.9446$ .

Moreover, the present-value relationship (14) implies that the current account should in general Granger causes change in net output. Also, the model has the implication that the sum of the coefficients on the lags of  $casm_t$  in the VAR equation for  $\Delta q_t$  should be a negative number. This results from the fact that current account surpluses are signals of expected future decreases in  $\Delta q_t$ . A one-lag VAR for  $\Delta q_t$  and  $casm_t$  was chosen by Akaike Information Criterion (AIC) and Schwarz Criterion (SC). The standard LM test for no serial correlation under the null and the LM test for the maintained hypothesis of no first order conditional heteroscedasticity are used. A summary of the VAR results is presented in Table 2. The coefficients on each variable in the VAR and their respective standard errors are reported in columns 1 and 2. The hypothesis that  $casm_t$  does not granger cause  $\Delta q_t$  is rejected at 3 percent level of significance. This result is in consonance with present-value model. This has the interpretation that a sequence of current account surpluses (deficits) indicates expected higher (lower) income growth.

Table 2. Nigeria: Tests of the Present-Value Model

1-lag VAR	(1)	(2)	(3)
	$\Delta q_t$	$casm_t$	D
$\Delta q_{t-1}$	0.137 (0.181)	0.042 (0.162)	-0.139 (0.188)
$casm_{t-1}$	-0.501 (0.217)	0.302 (0.194)	0.495 (0.225)
AR(2)	1.36	0.38	
ARCH(1)	0.25	0.08	
		F	P
$\Delta q_t$ does not granger cause $casm_t$		0.08	0.78
$casm_t$ does not granger cause $\Delta q_t$		5.42	0.03
Correlation between $casm_t^*$ and $casm_t$		0.97	
Variance Ratio ( $casm_t / casm_t^*$ )		3.83	

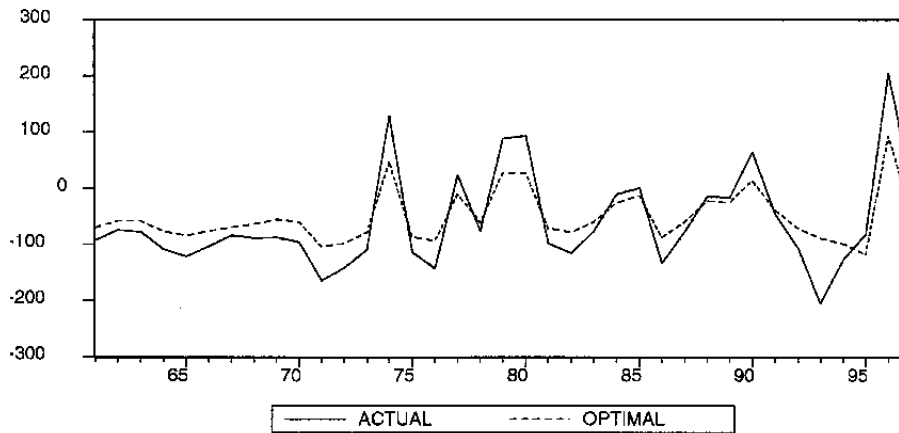
Formal tests of the restriction implied by the present-value relationship, are based upon the estimates reported in column 3. If the model is valid, then

$$D \equiv [casm_t - \Delta q_t - (1 + r^*)casm_{t-1}] \quad (31)$$

should be orthogonal to the first lag of  $casm_t$  and  $\Delta q_t$ . The significance of the lagged coefficient of the current account in column (3) implies that the Nigerian data are not consistent with the strongest restrictions implied by the present-value model of the current account.

In Figure (2), it is obvious from the graph that the forecast of the current account implied by the present-value model is able to track the behavior of the actual current account closely. The estimated correlation between the two variables is 0.97. However, the variance of the actual current account is approximately 4 times the size of the actual current account.

Figure 2. Nigeria: Actual and Optimal Current Balances, 1961–97  
(Mns. of 1995 Naira)



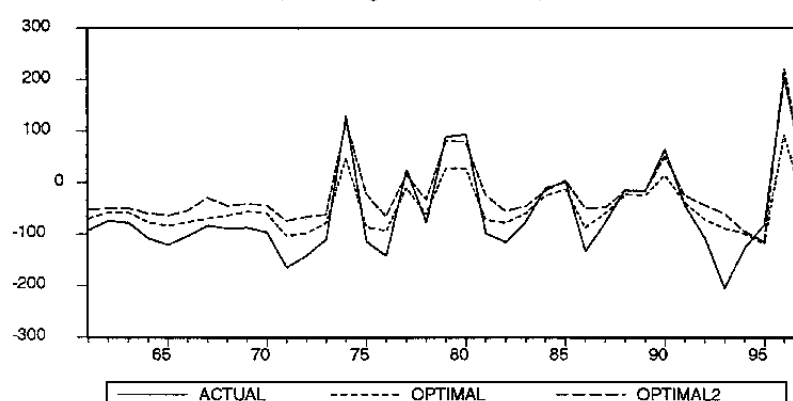
Allowing for asymmetry in access to the international financial market reveals key insights. First, the null of no Granger causality between  $casm_t^l$  (equals  $casm_t$  when  $casm_t$  is negative and zero otherwise) and  $\Delta q_t^h$  (equals  $\Delta q_t$  when  $\Delta q_t$  is positive and zero otherwise) is not rejected at the 5 percent level- it has an F-value of 0.0012 and P-value of 0.972. This has the interpretation that expectations of higher output do not necessarily results in current account deficit in the current period. However, the null that  $casm_t^h$  (equals  $casm_t$  when  $casm_t$  is positive and zero otherwise) does not Granger cause  $\Delta q_t^l$  (equals  $\Delta q_t$  when  $\Delta q_t$  is positive and zero otherwise) is rejected - the F-value is 7.87 and a P-value of 0.008. This has the implication that asymmetry in access to the international financial market is important in analyzing current account determination.

The actual current account, and estimates of the optimal current account without asymmetry in access (optimal) and current account in the face of asymmetry in access (optimal2) are shown in Figure 3. For most of the period, the three current account balances were in deficits. The first important observation, for most of the years, the actual current account balances could be considered excessive relative to either the constrained or unconstrained current account. In the period before 1986, especially, 1981–83, the current account balances were persistently excessive. The strict trade and exchange policy measures curbed this trend during 1984–85. However, the unsustainability of such policy measures was reflected in dramatic widening of the gap between optimal and actual current account balance in 1986. The important question is why would excessive current account balances result in external crisis in one period and not in another. The model itself may not be able to provide

answer to this issue and that is the reason why macroeconomic variables are used to assess the external position of the Nigerian economy before and after 1986.

Second, for most of the years, the optimal current account deficits in the absence of unrestricted access to the international financial market is greater than that of the optimal current account that allows for possible asymmetry. However, there appears a reduction in the difference between the two towards the latter period covered by this study. Also, it seems excessive current account balances were being put in check, as the actual deficits were lower than that predicted by either of the two optimal current account balances.

Figure 3. Nigeria: Actual and Optimal Current Account Balances, 1961–97  
(Mns. of 1995 Naira)



## V. MACROECONOMIC AND INSTITUTIONAL INDICATORS OF CURRENT ACCOUNT SUSTAINABILITY

The variables chosen to analyze the external position of the Nigerian economy before and after 1986 reflected the findings of previous studies on using macroeconomic indicators to examine the sustainability of current account deficits (see for example, Milesi-Ferretti and Razin (1996), McGettigan, (2000)). These variables are: the composition of the current account balance, capital flight, size of external debt, changes in the real exchange rate, economic growth, openness and trade composition, fiscal deficits, foreign exchange reserves, political instability and policy uncertainty.

The analysis is divided into four major periods. The first period 1960–73, covering the year of independence up to the first oil shock in 1973. The second period, 1974–80, covering the period after the first oil shock and before the emergence of serious economic recessions. The third period, 1981 to 1986, included various austerity measures implemented by the Nigerian government prior to the adoption of the Structural Adjustment Program. The period thereafter, 1987–97 marked the post-Structural Adjustment Program era and this period is used to assess the current external position of the Nigerian economy.

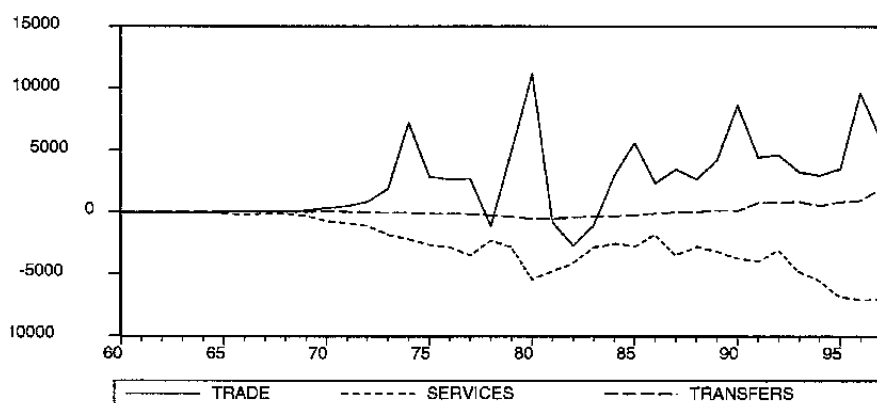
### A. The Composition of the Current Account Balance

A current account imbalance may be less sustainable if it is derived from a large trade deficit rather than from large negative net factor income from abroad. For a given current account deficit, large and persistent trade deficits may indicate structural competitiveness problems, while large and negative net foreign factor incomes may be the historical remnant of foreign debt incurred in the past. Therefore, it is essential to look at the evolution of the trade balance component of the current account balance.

The trade balance component of the current account showed dramatic variation over time. (See Figure 4). The trade balance component of the current account was consistently negative during 1981–83, an indication of sustained trade deficits preceding external crisis. The following years were marked by trade balance surpluses. There is a caveat to using this indicator for assessing the sustainability of current account deficits in Nigeria. The surpluses were not necessarily indicative of an increased ability to sustain current account deficits nor did they indicate the absence of structural weaknesses. More than 90 percent of export receipts came from the export of crude oil in the 1990s. This can be considered to be a structural weakness.

Figure 4. Nigeria: Trade Balance, Net Services and Transfers, 1960–97

*(In millions of US\$)*



### B. Capital Flight

Higher levels of capital flight during certain periods may partly reflect anticipation of devaluation, fiscal deficits, inflation, and financial repression culminating in negative real interest rate, and political instability. Thus, capital flight is a summary indicator that reflects the degree of economic distortion in a given country.



The World Bank (1985) definition of capital flight<sup>12</sup> is used in this paper. This is given by:

$$KF = CD + NFD + CAB + CIR \quad (32)$$

where  $KF$  is the capital flight;  $CD$  is the change in external debt;  $NFD$  is net foreign direct investment;  $CAB$  represents the current account balance and  $CIR$  is the change in official reserves.

The estimate of capital flight derived from (32) is used to gauge the extent of illegal capital outflows before 1986. Figure 5 shows the evolution of capital flight during the period 1972–97. It stood at an annual average of US\$496 million during 1972–79, increased to US\$1,478 million in the pre-crisis period (1980–86) and further increased to US\$3,071 million during 1987–94. This points to higher capital flight preceding external crisis. Macroeconomic instability might have produced the increase in capital flight during the period 1987–1994.<sup>13</sup> However, capital reversal took place during 1995–97<sup>14</sup>.

### C. The Stock of External Debt

The ability to sustain current account deficits will be affected by the country's stock of international liabilities. An existing large burden of international debt will make it more difficult to finance a current account imbalance. Moreover, a large debt-servicing burden can easily exhaust export revenues and prevent imports of investment goods that are needed for growth. In such a case, the debt burden can create a trap that inhibits any growth policies. Therefore, in assessing the sustainability of the current account deficits, one must take into consideration the evolution of the stock of external debt.

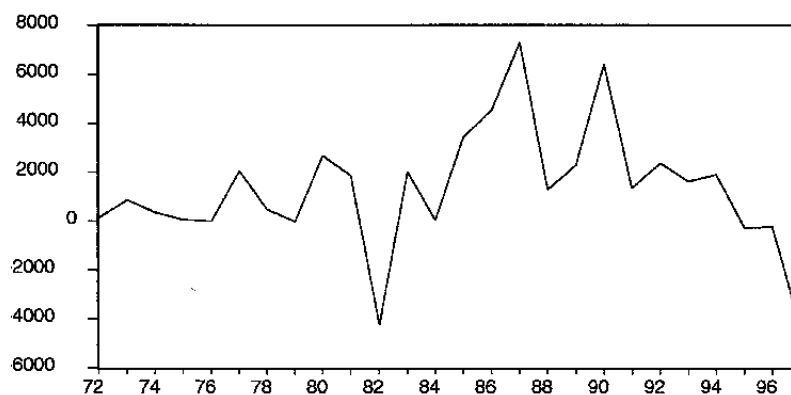
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<sup>12</sup> There exists a huge literature on various approaches to measuring capital flight. Here, the focus is on examining the evolution of capital flight and see whether it increased tremendously before the crisis year 1986 and what has been the current trend.

<sup>13</sup> This tends to point to the fact that an increase in capital flight may not be associated with external crisis. However, a rise in capital flight is an indication of the need to assess the macroeconomic policy stance of the government. Capital flight and other relevant macroeconomic variables must be used in assessing the sustainability of external imbalances.

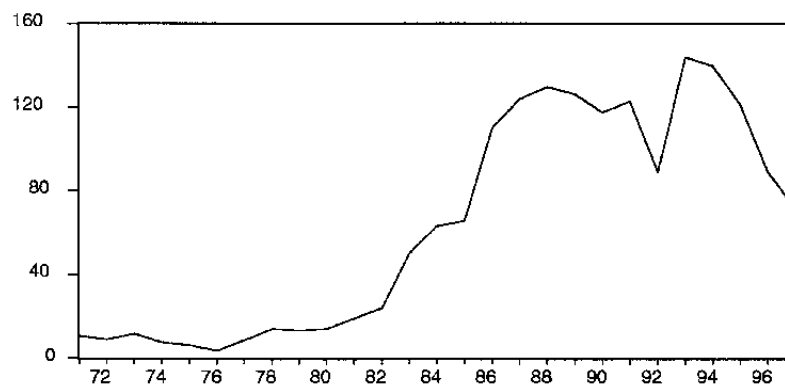
<sup>14</sup> Estimates of capital flight were negative in some years. This reflects capital flight net of unrecorded capital inflow and these years can be considered as years of capital repatriation (Cuddington, 1986).

Figure 5. Nigeria: Capital Flight, 1972–97  
(In millions of US\$)



The external debt-GDP ratio showed an increasing trend over most of the period covered. It increased from approximately 10 percent during 1970–73 and 1974–80 to 55 percent during 1981–86 and 116 percent over the period 1987–97. This steady increase could explain the emergence of an external crisis in 1986. Also, the average of 116 percent during 1987–95 is indicative of a reduction in the capacity of the Nigerian economy to harness external resources to finance current account deficits in the future.

Figure 6. Nigeria: Debt-GDP ratio, 1971–97



#### D. Real Exchange Rate

When a country's real exchange rate is overvalued beyond a certain threshold level, or above an historical average, and this is associated with current account deficits, there is a

presumption that such deficits are not sustainable<sup>15</sup>. Real appreciation of the currency can lead to a loss of competitiveness and an increase in the consumption of imported goods, which, in turn, results in a worsening of the current account balance.

There is evidence of exchange rate appreciation before the introduction of economic reforms in 1986. For the period 1981–85, the annual average appreciation of the real effective exchange rate was 14 percent. The current account deficits over the period 1981–85 were not sustainable as they were associated with exchange rate appreciation. In order to ensure a sustainable current account position, the government had to devalue the currency towards the end of 1986. The introduction of economic reforms in 1986 produced a significant depreciation of the real effective exchange rate. During 1986–97, the real effective exchange rate depreciated by 12 percent. At the same time, the current account surplus was 1 percent of GDP. The depreciation of the exchange rate resulted in lower imports of consumer goods, and therefore the observed current account surplus.

### **E. Economic Growth**

The higher a country's GDP growth rate, the greater the current account imbalance it can sustain without increasing its external debt to GDP ratio. Also, high (actual and expected) GDP growth may reflect sustained capital accumulation rates driven by expectations of high profitability. If the growth rate exceeds the real rate of interest on external debt, then the addition to total GDP is greater than that of external debt. Economic growth thus becomes an important variable in assessing the external position of a country.

The annual average growth rate of the GDP was 5 percent during the period 1960–73, pointing to the sustainability of current account deficits experienced over the same period. However, the growth rate declined to 4 percent during 1974–80 and the economy witnessed an annual average negative growth rate of 2 percent over the period 1981–85. Thus, prior to the structural adjustment reforms introduced in 1986, the economy experienced a substantial decline in the rate of growth. This declining trend in growth points to a reduction in the capacity of the country to sustain persistent current account deficits and consequently, the need to introduce economic reforms to remove external imbalances. The annual average growth rate of the GDP rate was 4 percent during the 1986–97 period. This indicates an

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<sup>15</sup> It is important to distinguish between “good” and “bad” real exchange rate appreciation for the current account balance. Real appreciation that emanates from a pegged exchange rate regime combined with inflation inertia is detrimental to removing an external imbalance. On the other hand, a stabilization policy that results in the inflow of foreign direct investment and other capital inflows can generate exchange rate appreciation. Such real appreciation may also be associated with larger current account deficits, but this may be a good development reflecting increased imports of capital or intermediate goods, rather than any fundamental problem. The former form of appreciation calls for a possible devaluation in the future, while the latter may reflect an appreciation of the equilibrium exchange rate.

increase in the external imbalance that Nigeria can sustain without experiencing external crisis.

### **F. Openness and Trade Composition**

A more open economy (with a higher exports-GDP ratio) is expected to generate higher foreign exchange earnings, and is in a better position to service its external debt. Nonetheless, a high degree of openness could increase the vulnerability of the country to external crisis, especially when the export base is thin.

The degree of external orientation as measured by the ratio of exports to GDP increased considerably over the period covered by this paper. It increased from an annual average of 10 percent in the 1960s to 18 percent in the 70s, 21 percent in the 80s and 43 percent in the 90s. The increased export-GDP ratio was combined with high dependence on oil receipts and this tended to increase the vulnerability of the Nigerian economy to developments in the world oil markets. The immense dependence on oil exports shows that a given current account position that may be ordinarily considered to be sustainable may easily deteriorate to an unsustainable path given an unexpected fall in the world oil prices.

### **G. Fiscal Policy Indicator**

A given current account deficit may emanate from either public savings-investment balance or private savings-investment balance or a combination of the two. If private sector external liabilities are not guaranteed by the government (if not, private debts become public debt) and the private economic agents base their savings decisions on accurate forecast of relevant economic variables such as expected permanent income (if not, an overly optimistic expected income can result in a current consumption level that is not sustainable), a current account deficit arising from a private saving-investment balance is considered to be more sustainable than the one arising from public savings-investment balance. This assumption reflects the fact that fiscal deficits may induce excessive monetary growth, generating the possibility of speculative attacks, especially in an environment of a fixed exchange rate regime. If foreign investors suspect that the government will be unwilling or unable to service its external obligation at some stage in the future, this could lead to the cessation of private capital inflows and the withdrawal of the pre-existing short-term foreign investments, culminating in external crisis.

Government fiscal balances were in deficit in most of the years considered by this study. Over the period 1965–69, the period of the Nigerian civil war, the government deficit was 4 percent of the GDP. However, there was a positive balance to the magnitude of 1 percent over the period 1970–73. Given the stage of development of the Nigerian economy at the time, the market's expectation that the civil war would be short-lived and that the economy had the potential for higher growth prevented the current account deficits associated with fiscal deficits from triggering an external crisis.

During the period 1974–81, the dramatic increase in the government revenues from oil exports was reflected in a fiscal surplus of 5 percent of GDP, any deficits during such a periods are more sustainable as they are coming from the saving-investment balance of the private sector. Thereafter, the fiscal deficit as a ratio of GDP was 8.3 percent during 1981–86 period and 6 percent over the period 1987–97. As indicated earlier, current account deficits arising from government savings-investment balances could generate anticipation of higher future tax liabilities. This expectation could lead to a reduction in capital inflows and hinder the ability of the government to sustain such deficits, possibly resulting in external crisis.

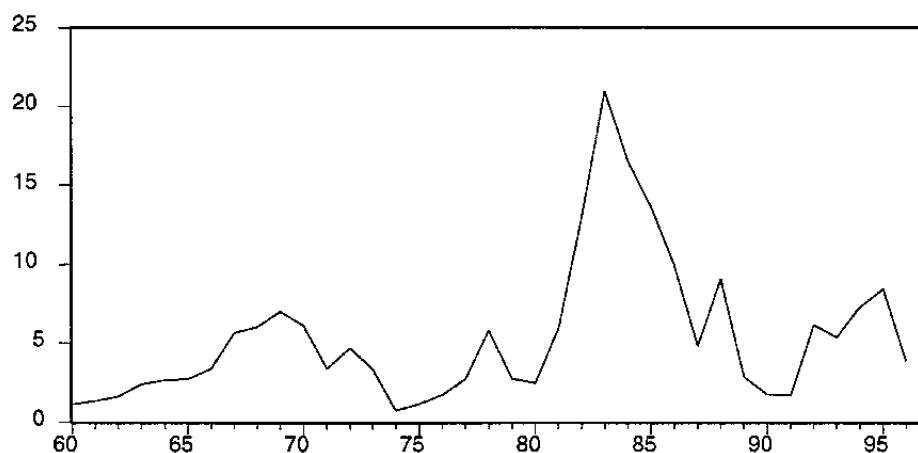
#### **H. Foreign Exchange Reserve Adequacy Indicators**

The conventional approach is to express international reserves in months of imports. However, when capital is highly mobile, this may not necessarily be the most suitable measure of reserve adequacy. An outflow of existing capital puts pressure on the exchange rate and further increases the needs to expand the foreign exchange reserves. Moreover, if reserves are low relative to short-term debt servicing, (irrespective of the fact that they may be sufficient to cover imports), the country may still experience an external crisis. Also, in periods of uncertainty, there are tendencies to convert liquid liabilities into foreign exchange. This puts pressure on foreign exchange reserves and increases the need to augment reserves. To capture this scenario, an alternative to the international reserves in months of imports is the ratio of M2 to international reserves. This is to capture the fact that M2, which contains currency and banks' demand/ savings deposit, is one proxy for the potential liabilities that domestic agents may wish to convert into foreign exchange in times of uncertainty.

The foreign exchange reserves in months of imports were 7 months over the period 1960–73; therefore, the financing of current account deficits was not a serious problem, as they were only about 2 percent of GDP during the same period. The foreign exchange reserves in months of imports increased to 9 months during the period 1974–80. However, they showed a downward turn, decreasing to 2 months of imports in the course of 1981–86 and remained constant at about an average of 2 months in the following period 1987–97.

This indicator points to unsustainability of current account deficits over the period 1981–86 and, therefore, explains the introduction of economic reforms in 1986 that were associated with a depreciation of the exchange rate. Using the ratio of M2 to international reserves as shown in Figure 6 does not change this conclusion.

Figure 7. Nigeria: M2-International Reserves, 1960-97



### **I. Political Instability and Policy Uncertainty**

In the context of current-account sustainability, political instability can be relevant for various reasons. It subjects domestic and foreign investors to the risk of a sudden policy reversal, reducing the credibility of the current policy stance. If a government favoring free capital mobility is replaced by one prone to the imposition of capital controls, the occurrence of capital outflows is more likely.

Based on this indicator, Nigeria has experienced considerable political instability. Its system of governance has oscillated between military regimes and civilian administration. Such political instability produced frequent changes in the macroeconomic policy stance of the government. Assessing external sustainability on the basis of this indicator shows that Nigeria does not fare well. Nigeria experienced civil war over the period 1967-70. The military took over from the civilians in 1983 and assumed control over the Nigerian economy up to the period covered by this study. There was a series of coups and counter coups. This political turmoil did not favor the inflow of foreign resources, but encouraged capital flight.

The use of various indicators to assess the sustainability of the Nigerian current account deficits reveals a key insight. An assessment of the sustainability of external imbalances must be based on a wide range of relevant macroeconomic indicators. Current account deficits associated with exchange rate appreciation and fiscal deficits appear not to be sustainable. When associated with low savings, a high concentration of exports in a particular commodity, lower economic growth, growing external debt, high debt servicing, inadequate foreign exchange reserves and political instability, current account deficits can degenerate to an external crisis.

## **VI. CONCLUSION**

This paper has investigated the excessiveness and sustainability of the Nigerian current account deficits during 1960–97. Excessiveness of the current account position was examined through a model that yields an optimal current account balance. There were excessive current account balances in the period preceding external crisis of 1986, and the use of macroeconomic indicators validated this results, pointing to the unsustainability of the Nigerian current account deficits position during that period.

## REFERENCES

- Callen, T., and P. Cashin, 1999, "Assessing External Sustainability in India," IMF Working Paper WP/99/181 (Washington: International Monetary Fund).
- Campbell, J.Y., 1987, "Does Saving Anticipate Declining Labor Income? An Alternative Test of the Permanent Income Hypothesis," *Econometrica*, Vol. 55, pp.1249–74.
- \_\_\_\_\_, and R. Shiller, 1987, "Co integration and Test of Present Value Models," *Journal of Political Economy*, Vol. 95, pp. 1062–88.
- Cashin, P., and C.J. McDermott, 1996, "Are Australia's Current Account Deficits Excessive?" IMF Working Paper WP/96/85 (Washington: International Monetary Fund).
- Cuddington, J.T., 1986, "Capital Flight: Estimates, Issues and Explanations," *Studies in International Finance*, Vol. 58 (New Jersey: Department of Economics, Princeton University).
- Dickey, D.A., and W.A. Fuller, 1981, "Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root," *Econometrica*, Vol. 49, pp. 1057–72.
- Edwards, S., 1989, "Real Exchange Rates, Devaluation, and Adjustment: Exchange Rate Policy in Developing Countries," (Cambridge, Massachusetts: MIT Press).
- \_\_\_\_\_, and P.J. Montiel, 1989, "Devaluation Crises and the Macroeconomic Consequences of Postponed Adjustment in Developing countries," *Staff Papers*, International Monetary Fund, Vol. 36 (December), pp. 875–903.
- \_\_\_\_\_, and J.A. Santaella, 1993, "Devaluation Controversies in Developing Countries: Lessons from the Bretton Woods Era," *In A Retrospective on the Bretton Woods System: Lessons for International Monetary Reform*, ed. by M.D. Bordo and B. Eichengreen, (Chicago: University of Chicago Press).
- Engle, R.F., and C.W.G. Granger, 1987, "Co integration and Error Correction Representation, Estimation and Testing," *Econometrica*, Vol. 55, pp.251–76.
- Frankel, J., and A.K. Rose, 1996, "Currency Crashes in Emerging Markets: An Empirical Treatment," *Journal of International Economics*, Vol. 41, pp.351–66.
- Ghosh, A.R., and J.D. Ostry, 1995, "The Current Account in Developing Countries: A Perspective From The Consumption-Smoothing Approach," *The World Bank Economic Review*, Vol. 9, pp. 305–33.



- International Monetary Fund, 1988, "*World Economic Outlook: Financial Crises: Causes and Indicators*," (Washington: International Monetary Fund).
- Makrydakis, S., 1999, "Consumption-Smoothing and the Excessiveness of Greece's Current Account Deficits," *Empirical Economics*, Vol. 24, pp. 183–209.
- McGettigan, D., 1999, *Current Account and External Sustainability in the Baltics, Russia, and Other Countries of the Former Soviet Union*, IMF Occasional Paper No.189 (Washington: International Monetary Fund).
- Moser, G., So Rogers, and R. van Till, 1997, "Nigeria's Experience with Structural Adjustment," IMF Occasional Paper No. 148 (Washington: International Monetary Fund).
- Milesi-Ferretti, G.M., and A. Razin, 1996, "Current-Account Sustainability," *Princeton Studies in International Finance*, Vol.81. (New Jersey: Princeton University).
- Obstfeld, M., and R. Kenneth, 1996, "Foundations of International Macroeconomics," (Cambridge, Massachusetts: MIT Press).
- Otto, G., 1992, "Testing a Present Value Model of the Current Account: Evidence from U.S. and Canadian Time Series," *Journal of International Money and Finance* No. 11, pp. 414–430.
- Phillips, P.C.B., and P. Perron, 1988, "Testing for a Unit Root in Time Series Regression," *Biometrika*, Vol. 75, pp.165–93.
- \_\_\_\_\_, and B. Hansen, 1990, "Statistical Inference in Instrumental Variable Regression with I(1) Processes," *Review of Economic Studies*, Vol. 57, pp. 99–125.
- Said, S.E., and D.A. Dickey, 1984, "Testing for Unit Roots in Autoregressive Moving Average Models of Unknown Order," *Biometrika*, Vol. 71, pp. 599–607.
- World Bank, 1985, *World Development Report* (Washington: World Bank).