DO LARGE FISCAL DEFICITS PRODUCE HIGH INTEREST RATES?: THE CASE OF NIGERIA, GHANA AND THE GAMBIA, 1987:3- 1995:4

By

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It is a widely held view that fiscal deficits influence short-term nominal deposit interest rates. In this paper, the model for the determination of interest rates, which is applicable to small semi-open economies, is presented. The model is tested by using the pooled cross-section and time series quarterly data of 1987:3-1995:4 for three Anglophone West African countries—Nigeria, Ghana, and The Gambia.

In this paper, regression analysis applied to the pooled cross-section and time series data for these countries has not revealed a significant positive association between overall fiscal deficits (and its foreign financing) and domestic nominal deposit interest rates. However, there appears to be evidence for a significant positive association between domestic financing of the fiscal deficits and domestic nominal deposit rates during the period, 1987.3 to 1995.4. We conclude from the analysis that the concerns of many economists in the sub-region should shift from the level of the deficit itself to the mode of financing the deficit.

1. INTRODUCTION (STATEMENT OF THE PROBLEM)

One of the most important aspects of fiscal policy is the management of the public sector's fiscal deficit. Such fiscal deficit simply refers to the excess of the public sector's spending over its revenue (The World Bank, 1988). Such fiscal deficits have been at the forefront of macroeconomic adjustment- purposeful and coherent set of measures used to respond to (often severe) imbalances in the economy - in the 1980s, both in developing; and developed nations. This is because it is widely

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recognized that fiscal deficits - a key fiscal indicator - and macroeconomic indicators (like growth, inflation, the current account, etc.) influence each other in both directions. Consequently, fiscal deficits were blamed, in good part, for the assortment of ills that beset developing nations' economies in the 1980s: high inflation, poor investment and growth performance, and over-indebtedness,leading to the debt-crisis beginning in 1982. Today they occupy the centre stage in the massive reform programmes initiated in Eastern Europe and the former Soviet Union and by many developing nations spread throughout all continents (Easterly and Schmidt-Hebbel, 1992). The size of the public sector fiscal deficit - averaged over a period of, say, three years - is perhaps the most reliable indicator of overall macroeconomic stability or macroeconomic balance and growth. High deficits show up in at least one type of macroeconomic imbalance - a foreign debt crisis, inflation, a shortage of foreign exchange, or a crowding out of the private sector.

There has been much concern recently that large fiscal deficits have, or will soon, produce high interest rates, thus hindering capital formation and economic growth in West Africa. This view seems to be held not only by the popular press, but also by many respected economists. Though a number of studies on the impact of fiscal deficits have been carried out in West Africa (Sowa, 1994; Islam and Wetzel, 1991; Basu and Gemmell, 1993; Ariyo and Raheem, 1991, 1992; Egwaikhide, Chete, and Falokun, 1992; Ekpo and Ndebbio, 1992; Ndebbio, 1994) there is none to our notice that has investigated the impact on interest rates, much less so the stationarity issue. As Rose (1988) had stated, a number of authors have investigated the question of whether financial markets fluctuate excessively. Insofar as the stationarity of returns is crucial in addressing this issue (Shiller, 1979), an assessment of the stationarity of both nominal and real interest rates is potentially valuable. In addition, the fact that the real interest rate is a crucial determinant of investment, savings, and indeed virtually all intertemporal decisions renders its characteristics of intrinsic interest. If, for example, inflation is stationary but nominal interest rates are not, then the Gibson Paradox can easily be seen as a "spurious regression" between two nonstationary

series (see Granger and Newbold, 1974; Shiner and Siegel, 1977). This study attempts to provide robust evidence relevant to these issues with respect to the four Anglophone West African countries - Nigeria, Ghana, Sierra Leone, and The Gambia. On the other hand, various studies of this nature proposed here abound for the developed world (see, for example, Hoelscher, 1983, 1986; Cebula, 1988, 1993; Cebula and Saltz, 1993; Cebula and Scott, 1991; Cebula, Schwartzburt and Scott, 1991; Zahid, 1988; Tanzi, 1985: Zelhorst and de Haan, 1991; Allen and Woher, 1996; Ibrahim and Kumah, 1996, etc). The rarity of such studies for developing nations has been corroborated recently by Khan (1985), Edwards and Khan (1985) and Gupta and Gupta (1994). However, with the liberalization of the goods and assets markets and rapidly growing integration with world markets evident in many developing countries in the past decade or so, attention has recently turned to interest rate determination in these countries (McNelis and Schmidt-Hebbel, 1991). In most of these developing nations trade barriers have been significantly reduced and outward-oriented growth policies pursued in an increasingly large number of countries. Simultaneously, foreign investment barriers have been reduced, attracting sizeable inflows of foreign investment. Another key development has been the increasing deregulation of domestic financial sectors in many developing countries—with greater reliance on market-based interest rates, and a progressive dismantling of barriers to capital account transactions. For example, in August 1987, controls on interest rates were removed in Nigeria and the Central Bank adopted the policy of fixing only its minimum discount rate to indicate the desired direction of interest rate changes. In Ghana, interest rates were liberalized in September 1987 following the abolition of the maximum lending and minimum deposit rates. Banks then became free to set their own rates (Bank of Ghana, 1995). In Sierra Leone, financial liberalization commenced in 1989, while interest rate liberalization became effective from 1992 as a key element of the financial sector reform (Leigh, 1997; Davies, 1997). For The Gambia, one of the key measures adopted as part of the Economic Recovery Programme (ERP) in mid-1985 was the Central Bank of The Gambia's decontrol of interest rates in July 1985 (see also Basu and Gemmell, 1993; Central Bank of The Gambia 1987). Coinciding with these,

there has been an enormous increase in the volume of financial flows across countries, especially in the form of long-term investment prompted and accelerated by the privatization exercise and debt-equity swaps - as in the West African case.

All these reforms have been accompanied by high and rising interest rates in the West African situation that both successive governments, Central Banks (see, for example, Bank of Sierra Leone, 1997) and the Manufacturers' Associations have continuously expressed concern about its adverse effects on investment and capacity utilization and consequently on economic growth and development.

Thus, in this study we empirically examine the role of federal fiscal deficits in explaining changes in the selected Anglophone West African countries' nominal interest rates. Indeed, interest rate is an important price in any economy. It has been rightly held that it is the pivot of the entire economic system and it seems to reign over the theories of money, growth, employment, general price level and balance of payments (Shackle, 1965; Bhole, 1988; Anyanwu, 1993a). Therefore, questions regarding the effect of fiscal deficits on interest rates in selected Anglophone West Africa are certain to play a dominant role in discussions concerning the future course of money, income, employment, inflation, savings, investment, the exchange rate, the balance of payments and external debt (see also Bowsher, 1980; Santoni and Stone, 1982). Also, as in the case of the single European currency (European Monetary Union), low fiscal deficit-GDP ratio is also a criterion for qualification to a planned single West African Monetary Union (WAMU). Indeed, the 1987 approval by the Council of Ministers of ECOWAS includes measures such as exchange rate adjustment; ceiling on government borrowing from the banking system; appropriate distribution of bank credit between government and private sectors; and fiscal harmonization (Anyanwu, 1993b). Similar requirements are stipulated for the proposed African Monetary Union (see also, Anyanwu, 1992b).

II. REVIEW OF PREVIOUS EMPIRICAL RESULTS ON THE EFFECTS OF FISCAL DEFICITS ON INTEREST RATES

A large body of literature published mostly outside Africa during the past decade or so has examined the effect of fiscal deficits on nominal and real interest rates. Studies which have found empirical evidence indicating that budget deficits have no significant effect on interest rates include, Hoelscher (1983), Dewald (1983), Makin (1983), Motley (1983), Mascaro and Meltzer (1983), McMillin (1986), Giannaros and Kolluri (1989), Darrat (1989, 1990), Findlay (1990), and Mehra (1995). Plosser (1982, 1987) also tested for the effect of monetized debt privately held federal debt and government purchases and found no relationship between the excess return on government bills and bonds and actual values of these three values in his 1982 article and unanticipated values of these three variables in his 1987 article.

On the other hand, positive evidence between fiscal deficits and real interest rates are reported by Hutchison and Pyle (1984) for pooled data for seven major countries from 1973 to 1982 and for the United States by Zahid (1988) and Cebula (1990a, b; 1993a, b). Indeed, for evidence of a positive linkage between nominal rates and (a) deficits, see Barth et al (1984, 1985) and Cebula (199Oa, 1991b); (b) structural deficits, see Cebula (1988b); (c) cyclically adjusted federal deficits, see Laumas (1989); (d) deficits (long-term rates or the spread between short and long rates), see Barth et al (1984, 1985) and Hoelscher (1986), Cebula (1988b, 1990b, 1990c, 1991a), Cebula et al (1988, 1992); (e) unanticipated deficits and the spread between short and long rates see Kim and Lombra (1989) and Goff (1990); (f) unanticipated deficits and three-month Treasury bill rates, see Makin and Tanzi (1984); (g) anticipated deficits and interest rates, see Thomas and Abderrezak (1988a, b): (h) excess government deficits and long rates, see Tran and Sawhney (1988); (i) deficit announcements and interest rates, see Wachtel and Young (1987). Recently, Mehra (1994) (using quarterly data) also found a positive significant effect of the first lag of deficit GDP ratio on nominal long-term U.S. Treasury bond rate. Also, Allen and Wohar (1996) using quarterly data (1961:1 - 1992:2) showed that the ratio of both

the National Income and Product Accounts (NIPA) deficit and the cyclical adjusted deficit to potential GDP have a significant effect on ex ante and ex post real tax-adjusted interest rates for the post-1981 period, but have no significant effect before 1981. It is important, indeed, to observe that in most of the cases where significant positive effects are found, lag values or changes in the deficit measures were used (see, for example, Mehra, 1994; Cebula, 1993a). Also De Leeuw and Holloway (1985) using annual data found evidence from a reduced form equation that suggests that the ratio of cyclically adjusted debt to Gross National Product (GNP) rather than changes in this ratio are positively related to nominal interest rates. Allen (1990, 1991, 1992) using quarterly data reported a positive association between real ex post rates and various measures of the federal debt as a ratio to potential GDP. These results also accord with those of Tanzi (1985) and Spiro (1990).

Evans (1987a) (as is also in Thornton, 1990) indicated that for the period, 1908 to 1984, using monthly data, there was some indication of a negative relation between fiscal deficits and nominal or real interest rates. In the same vein, Kolluri and Giannaros (1987) have reported a negative and significant relationship in an IS-LM framework between a real ex ante rate and NIPA budget deficit for the 1966-1983 period.

III. METHODOLOGY

III.1 The Basic Framework And Model

The model adopted in this study to identify the effects of fiscal deficits on the nominal interest rates is a modified version (given a semi-open economy) of the loanable funds framework adopted by Sargent (1969), Hoelscher (1986), Mehra (1994, 1995) as well as Edwards and Khan (1985), Gupta and Gupta (1994), and Khan (1985a, b). In the loanable funds model, the nominal interest rate is taken to be composed of a real component, a component reflecting inflationary expectations, and a component reflecting the influence of monetary policy actions on the real interest rate. This is shown in the identity below:

$$Rn_{(t)} = Re_{(t)} + \pi^{e}_{(t)} + [Rm_{(t)} - Re_{(t)}] \quad \text{.....(3.1)}$$

where Rn is the nominal interest rate, Re is the equilibrium real rate, π^e is the expected inflation, and Rm is the market real rate.

However, in an open economy characterized by absence of impediments to capital flow, no transaction costs and risk-neutral agents, then domestic and foreign interest rates will be closely linked (Khan, 1985a, b; Edwards and Khan, 1985; Gupta and Gupta, 1994).

$$Rn_{(t)} = \alpha(R^{*}n_{(t)} + e^{*}_{(t)}) \quad \text{.....(3.2)}$$

where $R^{*}n_{(t)}$ is the world (foreign) interest rate for a financial asset of the same characteristics (maturity and so on) as the domestic instrument, and $e^{*}_{(t)}$ is the exchange rate (defined as the domestic price of foreign currency). However, in a semi-open Nigerian economy characterized by some controls on capital movements (as in most developing countries), the nominal interest rate can be specified as a linear combination of equations (3.1) and (3.2). if the parameter β represents an index measuring the degree of financial openness of the country (if $\beta = 1$, then economy is fully open), then the linear combination of equations (3.1) and (3.2) becomes

$$Rn_{(t)} = \beta(R^{*}n_{(t)} + e^{*}_{(t)}) + [(1 - \beta)(Re_{(t)} + \pi^{e}_{(t)})] + (Rm_{(t)} - Re_{(t)}) \quad \text{.....(3.3)}$$

Also, following the loanable funds theory, the first term on the right-hand side of equation (3.1), Re, is the real interest rate which equates **ex ante** savings with investment and the government fiscal deficit. Let us take savings (S) and investment (I) as depending on the variables stated in equations (3.4) and (3.5):

$$S_t = s_o + s_1 y_t + s_2 Re_{(t)} \quad \text{.....(3.4)}$$

$$I_t = i_o + i_1 \Delta y_t - i_2 Re_{(t)} \quad \text{.....(3.5)}$$

where y is real income. Equation (3.4) is a standard Keynesian savings function, while equation (3.5) is an accelerator-investment equation with interest rate effects. In equilibrium, the government fiscal deficit must be covered by an excess of savings over investment hence the equilibrium real rate is the rate that solves equation (3.6):

$$rdef_t = S_t - I_t \quad \text{.....(3.6)}$$

where rdef is the real government fiscal deficit. Substituting equations (3.4) and (3.5) into equation (3.6) we have equilibrium real interest rate expression:

$$Re_{(t)} = \frac{1}{s_2 + i_2}[(i_o - s_o) + i_1\Delta y_t - s_1 y_t + rdef_t] \quad \text{.....(3.7)}$$

The theory predicts that the fiscal deficit and the rise in the rate of growth of real income increase the demand for funds and thus drive up the equilibrium real interest rate. On the other hand, higher level of output leads to a larger volume of savings and hence reduces the equilibrium real rate. We note that if the fiscal deficit affects the interest rates, then there is a violation of the Ricardian Equivalence/Hypothesis (Evans, 1985; Seater, 1993; Barro, 1989; Bernheim, 1989).

The second term on the right-hand side of equation (3.1) is the expected inflation, which is the gap between the nominal interest rate (Rn) and the real market interest rate (Rm). This can be expressed as:

$$Rn_{(t)} - Rm_{(t)} = a\pi^e \quad \text{.....(3.8)}$$

The third term on the right-hand side of equation (1), $[Rm_{(t)} - Re_{(t)}]$ is the interest rate gap which arises in part from monetary policy actions—the deviation of the market real interest rate from the equilibrium real rate. The Central Bank can affect the real interest rate by changing the supply of the monetary base. In the loans market, such changes in the money supply have effects on the demand and supply curves for funds and hence the market real interest rate as in equation (3.9):

$$Rm_{(t)} - Re_{(t)} = -b_i[\Delta ms_t] \quad \ldots\ldots (3.9)$$

where ms is the real money supply. A variant of the literature predicts that a rise in real money supply results in the fall of the market interest rate with respect to the equilibrium real interest rate. Substituting equations (3.7), (3.8), and (3.9) into equation (3.3) yields equation (3.10), which includes the main potential domestic and foreign economic determinants of the nominal interest rate:

$$Rn_{(t)} = \delta_o + \delta_i\pi^e + \delta_2 rdef_t - \delta_3 y_t - \delta_4 \Delta ms_t + \delta_5 \Delta y_t + \delta_6 (R^* n_{(t)} + e^*_{(t)}) + \Psi_{(t)} \quad \ldots\ldots (3.10)$$

where the reduced-form parameters $\delta_i = (1 - \beta)$ and $\delta_6 = \beta\alpha$.

Equation (3.10) says that the nominal interest rate depends on anticipated inflation, the fiscal deficit, changes in real money supply and income, the level of income, and the net return on assets (combination of foreign interest rates and expected change in exchange rate).

That is, equation (3.10), describes the long-run responses of the nominal interest rates to expected inflation (π^e), real fiscal deficit, real income, changes in money supply, changes in real income, foreign interest rates, and expected changes in foreign exchange rate. The coefficients δ_i, i = 1, 2, 3, 6 measure the long-run responses in the sense that they are the sums of coefficients that appear on current and past values of the relevant economic determinants. The term δ_i,π^e in equation (3.10) captures the inflation premium in the nominal interest rates, whereas the remaining terms capture the impact of other variables on nominal interest rates. Because of the problems inherent in static models, it may be necessary in certain circumstances to develop an Error Correction Model (ECM) to capture short-run dynamics that may help to explain certain developments.

Thus, equation 3.10 could be modified to incorporate an error correction term as follows:

$$\blacktriangle Rn_{(t)} = \theta_0 + \theta_1 \blacktriangle \pi_t^e + \theta_2 \blacktriangle \ln rdef_t + \theta_3 \blacktriangle \ln y_t + \theta_4 \blacktriangle^2 \ln ms_t + \theta_5 \blacktriangle^2 \ln y_t + \theta_6 [\blacktriangle \ln R^* n_t + \blacktriangle \ln e^*_t] + \Sigma \theta_7 \blacktriangle Rn_{(t-i)}) + \theta_8 ECM_{t-1} + e_{tl} \quad \text{.....(3.11)}$$

where ECM_{t-1} is the one-period lag of the error-correction terms or the lagged residual from the long-run nominal interest rate equation (3.10), $\blacktriangle^2$ is the second-difference operator. Equation (3.11) is the short-run nominal interest rate equation, and the coefficients θ_i i = 1... 6, capture the short-run responses of the interest rates to economic determinants suggested here. The coefficients that appear on lagged first difference of the interest rate capture short-run dynamics. The coefficient that appears on the lagged error-correction residual in equation (3.11) captures the short-run influences of long-run dynamics on the interest rates. It is usually necessary to determine the time series property of data before they are applied in estimating a model. This procedure is important in determining whether the cointegration technique could be applied in estimating the model. Where stationarity has not been confirmed, especially where it is important to include all the variables in the model, traditional econometric tools are resorted to.

III.2. **Data and Definition of Variables**

The major problem in estimating equations (3.10) and (3.11) is that long-run expected inflation is an unobservable variable. The empirical work here first uses actual inflation as a proxy for long-run expected inflation. In this case, the coefficient δ_1 that appears on actual inflation in the long-run nominal interest rate equation (3.10) measures the nominal interest rates' response to expected inflation, where the latter is modelled as a distributed lag on current and past inflation rates or using the vector autoregression (VAR) procedure.

The empirical work uses quarterly data from 1987:3 to 1995:4, in a pooled cross-section of time series for Nigeria, Ghana and The Gambia. This is necessary since interest rates were largely administered by the monetary authorities prior to SAP in the sub-region. The relevant nominal interest rates are the deposit rates, treasury bill rates, and the lending rates. The real fiscal deficit variable (and its domestic and foreign financing) is included in ratio form as federal government fiscal deficit scaled by nominal GDP so as to reflect the position that in a growing economy higher fiscal deficits result in higher interest rates only if the deficits rise relative to GDP. Real income is real GDP. Money supply refers to the narrow component (M1), while the foreign interest rate is the relevant U.S. Dollar LIBOR rate. The data series are from the IMF's International Financial Statistics, the Central Bank of each country's publications, and the Statistical Offices' macroeconomic aggregate series. The GDP and fiscal deficit (and its foreign financing) were quarterlized using the Diz method. The domestic financing proxy was extracted from the IMF's IFS.

IV. EMPIRICAL RESULTS

IV.1. Trends and Some Stylized Facts About Anglophone West African Countries' Fiscal Deficits and Interest Rates

Table I summarizes the descriptive statistics for quarterly nominal deposit rates, the overall fiscal deficits, and their financing modes for the pooled cross-section of time series data for the period 1987.4 to 1995.4. It shows, in particular, that the deposit rate averaged 16.63%, while the real overall fiscal deficits averaged US $-214.57 million. In the same vein, the average real domestic financing of the deficit (rdf) was US $2,232.2 million, while its foreign financing (rff) averaged only US $59.58 million in real terms. Figures 1, 2, 3 and 4 illustrate the trend of these series—the log of nominal deposit rates, real overall fiscal deficits, real domestic credit to government, and real foreign financing of the fiscal deficit, respectively. In our analysis, we chose nominal interest rate because, as McNelis and Schmidt-Hebbel (1993) noted, nominal interest rate is the variable which clears the money market.

Also, the nominal interest rate is consistent with the real interest rate driving intertemporal consumption and investment decisions. We estimated the determinants of nominal deposit (3-months) rates for the countries under study. We also chose to use Nigeria, Ghana, and The Gambia owing to data problems associated with the inclusion of Sierra Leone, especially the outliers observed in some of the data series, given the effects of the prolonged civil war in the country during the period chosen for the study.

Table 1: Descriptive Statistics of Quarterly Pooled Time-Series, Nominal Deposit Rates and Fiscal Deficits: Nigeria, Ghana, and The Gambia, 1987:3-1995:4 (N=102)

Statistics	Nominal Deposit Rate (%)	Fiscal Deficit (US $ m)	Real Domestic Borrowing/ Financing (US $ m)	Real Foreign Financing (US $ m)
Mean	16.6275	-214.5716	2232.2	59.5829
Standard Deviation	4.4252	252.1045	4300.3	199.1551
Skewness	1.2070	-1.2462	4.9442	4.1230
Kurtosis-3	.86330	.091097	33.8762	20.9410
Coefficient of Variation	.26614	1.6410	1.9265	3.3425

Source: Author's Computations.

FIGURE 1: POOLED TIME-SERIES, CROSS-SECTIONAL NOMINAL DEPOSIT RATES (%)

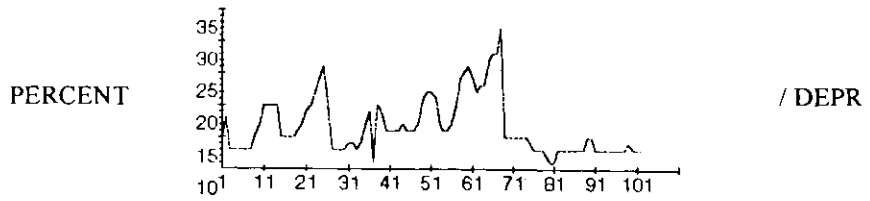


FIGURE 2: POOLED TIME-SERIES, CROSS-SECTIONAL REAL FISCAL DEFICITS (US$M)

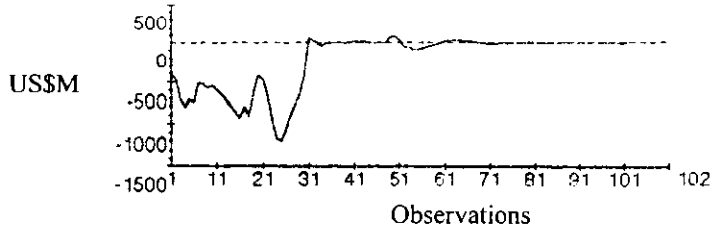


FIGURE 3: POOLED TIME-SERIES CROSS-SECTIONAL DOMESTIC FINANCING OF THE DEFICIT

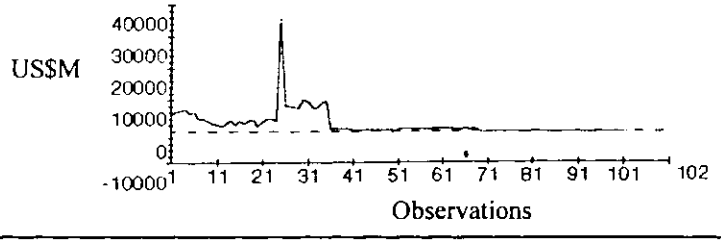
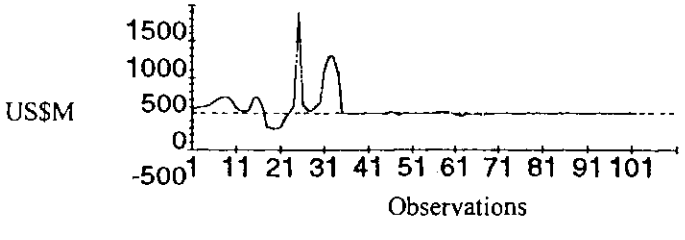


FIGURE 4: POOLED TIME SERIES CROSS-SECTIONAL FOREIGN FINANCING OF THE DEFICIT



IV.2. **Model Estimation and Results**

As a preliminary step to testing for cointegration in equation (3.10), we execute Augmented Dickey-Fuller (ADF) unit root test statistics on the series used. Six lags were used in the test. The results are summarized in table 2. The results show that all of the series except real income (y) which is 1(1) are stationary or 1(0). Thus the null hypothesis of nonstationarity is only accepted in real income. Given these results especially with our dependent variable (Rn) being 1(0), we did not pursue cointegration analysis further.

OLS estimation technique was applied to equation (3.10) as in Edwards and Khan (1985) and Ahn (1994) in a partial stock adjustment framework including the first period lag of the dependent variable (Rn_{t-1}). The fixing of interest rates ceilings for a few quarters was represented by a dummy called "control". Thus, is expected to have negative effect on interest rates.

Thus, equation (3.10) can be re-written (including country dummies)(x_js) as:

$$Rn_{(t)} = \delta o + \delta\pi^e + \delta_2 rdef_t - \delta_3 y_t - \delta_4 \Delta ms_t + \delta_5 \Delta y_t + \delta_6 (R^* n_{(t)} + e^*_{(t)}) + \delta_7 discr_t + \delta_8 X_j - \delta_9 control + \delta_{10} Rn_{t-1} \quad \text{.....(3.11)}$$

Table 2: Testing the Order of Integration or Unit Root Tests

Level			S/NS
Series	ADF t-statistic with constants [a]	ADF t-statistic with constant and trend term [a]	
Rn	-3 .1071*	-3.4421	S
π^e	-3.2987*	-3.8105*	S
rdef	-2.7572	-3 5706*	S
rdf	-4.4094*	-7.9283*	S
off	-5.9836*	-6.0349*	S
y	-1 .5665	-2. 8952	NS
ms	-1.5400	-7.5157*	S
$Rn^* + e^*$	-4.1815*	-4.1492*	S
Discr	-2.3225	-2.4240	NS
Critical values (5 %)	-2.8918	-3.4571	
First Differences			
y	-7.2865*	-7.2903*	S
Critical Values (%)	-2.9822	-3.4576	

a. Augmented Dickey-Fuller test Statistics. * Statistically significant at 0.05 level.
S = Stationary, NS = Non-stationary

In our estimation, we alternatively used real overall fiscal deficit-GDP ratio (rdef), real domestic borrowing by government-GDP ratio (rdf), and real foreign financing of the deficit-GDP (rff) as our fiscal variables.

Tables 3a, 3b and 3c report our empirical results. The variables are in logarithms. As table 3a shows, the real overall fiscal deficit has positive but insignificant effect on domestic nominal deposit rate in Anglophone West African countries in the basic model. It has negative but insignificant effect in the remaining equations where country dummies were used. However, the domestic financing of the deficit has positive and significant effect on domestic nominal deposit rate both in the basic model and in the equations where country dummies were used (see table 3b). The results show that a 1 percent increase in domestic borrowing results in an increase of between 35.6 and 49.3 basis points in the sub-region's nominal deposit rate. This appears to confirm the crowding out hypothesis. From table 3c, we observe that foreign financing of the fiscal deficit has negative but insignificant effect on domestic nominal deposit rate. However, in the equations with country dummies, it has positive but insignificant effect on domestic nominal deposit rate in the countries under study.

When fiscal deficit is used, expected inflation has positive but insignificant effects. There are mixed insignificant effects when both domestic and foreign financing are used as variables as shown in tables 3b and 3c.

Growth in money supply is positively but insignificantly related to nominal deposit rate. This is true irrespective of which fiscal variable is used.

Apart from when Gambia enters the equation, real income positively and significantly influences nominal deposit rate in the Anglophone West African sub-region. Also, the growth of real income positively and significantly affects nominal deposit rate in the sub-region.

Our empirical results in table 3a (when overall fiscal deficit is used) show that for the Anglophone West African sub-region, the foreign arbitrage interest rates ($Rn^* + e^*$) have significant negative effects on domestic nominal deposit rates: higher levels of foreign interest rates lead to a fall (or less change) in domestic nominal deposit rates, implying a ceiling or bound on the domestic deposit rates, characteristic of the pre-liberalization period. Indeed, the values of coefficients of ($Rn^* + e^*$) mean that the 1 percent increase (decrease) of LIBOR on US deposits or the 1 percent

depreciation (appreciation) of the Anglophone West African currencies lead to between 5.8 and 6.6 percent fall (rise) of domestic nominal deposit intest rates. These results are in line with those of McNelis and-Schmidt-Hebbel (1993) for New Zealand, using quarterly data for the period 1976:3-1991:1. We also note, as table 3b shows, that when domestic financing is used, foreign financing maintains its negative effect. But it is only significant when Ghana enters the equations. However, when foreign financing is used (table 3c), the foreign interest variable has negative and significant effect when the country dummies enter equations.

In all the estimation results, the country dummies indicate that for Nigeria and The Gambia the nominal deposit rates are falling significantly, while they are rising significantly in Ghana. Also, the control dummy shows that the few quarters during which ceilings were imposed, domestic nominal deposit rates were depressed/ repressed. Furthermore, as in Edwards and Khan (1985) for Colombia, Ahn (1994) for Korea, and Soderlind (1997) for the post-war United States both using quarterly data, the one-period lag of the nominal deposit rate is very significant, confirming the use of a partial adjustment model.

V. SUMMARY, RECOMMENDATIONS AND CONCLUSION

V.I. SUMMARY

It is a widely held view that fiscal deficits influence short-term nominal deposit interest rates. In this paper, the model for the determination of interest rates, which is applicable to small semi-open economies, is presented. The model is tested by using the pooled cross-section and time series quarterly data of 1987:3-1995:4 for three Anglophone West African countries—Nigeria, Ghana, and The Gambia.

Our unit root tests indicate that the nominal deposit rate expected inflation rate, real fiscal deficit-GDP ratio, domestic and foreign financing of the fiscal deficit, money supply, and the foreign interest rate (adjusted for expected exchange rate) are stationary, while real income was non-stationary, being I(1). On the basis of these results, we proceeded to implement OLS estimates of our model.

The empirical results for the selected Anglophone West African Countries are summarized as follows:

i. Domestic nominal deposit rates adjust with very significant lag.

ii. Expected inflation rate positively, but insignificantly influences domestic nominal deposit rates when fiscal deficit is used. There are mixed but insignificant effects when domestic and foreign financing are used as explanatory variables.

iii. While the real fiscal deficit-GDP ratio (and its foreign financing) insignificantly affects domestic nominal deposit rates, its domestic financing positively and significantly affects domestic nominal deposit rates in these countries.

iv. The money stock changes do not have significant effect on domestic nominal deposit rate.

v. Both the levels and changes in real income exhibit positive significant effects on the sub-region's domestic nominal deposit rates.

vi. Generally, foreign interest rates have significant negative effects on the sub-region's domestic nominal deposit rates.

vii. Domestic nominal deposit rates appear to be falling in Nigeria and The Gambia, while rising in Ghana.

The paper established that domestic financing of fiscal deficits, the level of real income, growth in real income and foreign interest rates play important roles in the determination of deposit interest rates in Nigeria, Ghana and The Gambia, and cannot be excluded in the determination of deposit rate.

V.2 POLICY IMPLICATIONS

Some important policy implications may be gleaned from our empirical results:

i. The finding that domestic credit financing of the fiscal deficit significantly acts to raise the domestic nominal deposit rates may be especially important in view of the potential implications for the "crowding out" of private investment by government deficits. When such business investment falls, it can induce short term unemployment increases and long term inflation increases in the Anglophone West African sub-region. The finding can also lead to distortions of exchange rates. Therefore, if governments of Nigeria, Ghana and The Gambia must run fiscal deficits at all, they must seek to finance it by others such as increased tax revenues (not necessarily increased taxes but efficient collection of existing taxes) rather than by borrowing from domestic financial institutions.

ii. The results thus suggest that financial market factors as well as fiscal policy become important determinants of interest rates as financial liberalization progresses. Since these variables have important effects on employment and growth during the adjustment process, our analysis of Nigeria, Ghana and The Gambia shows that misguided financial or fiscal policy can exact high costs when an economy becomes more financially open.

iii. For the countries under study, which are in the early stage of capital liberalization, the estimated results show that changes in money supply do not affect the domestic nominal interest rates. These results imply that the interest rate channel, for now, has not been important for monetary policy. Thus, the interest rate channel is unimportant for the transmission of monetary policy.

iv. Theory predicts that higher level of output leads to a larger volume of savings and hence reduces domestic interest rates. From our results, the reverse is true in Anglophone West African sub-region, implying that as the size of the

economies (GDP) increases, savings fail to increase hence leading to a rise in domestic interest rates. This implies that appropriate measures must be taken both to encourage domestic savings and to increase savings mobilization in these economies, such as refraining from domestic borrowing to finance fiscal deficits as well as avoiding domestic deposit rate ceilings or bounds.

v. As McNelis and Schmidt-Hebbel (1993) have shown, an increase in the arbitrage interest level reduces desired (i.e. long-run money demand, thereby increasing domestic interest rates, but at the same time it reduces (shifts) the short-run or current money demand, reducing domestic interest rate. The lower is the speed of adjustment coefficient and the higher the magnitude of the cross derivative of the money demand, the higher is the probability that the second effect dominates, as we found in our empirical results. Thus, higher levels of foreign interest rates lead to fall in domestic deposit rates, implying a ceiling or bound on the domestic interest rates, characteristic of the pre-liberalization period. Our results, therefore, are not compatible with the model for perfect capital mobility, but are consistent with the model for imperfect capital mobility. This implies that even though the legal limitations on capital movements are completely lifted, capital, in reality, may not be perfectly mobile due to the constraints such as transaction costs and uncertain real returns, also implying lack of financial market integration with the rest of the world.

V.3 CONCLUSION

There has been much concern recently that large fiscal deficits in Anglophone West African Countries of Nigeria, Ghana and The Gambia may produce high interest rates, thus hindering capital formation and economic growth.

The Study showed that the real overall fiscal deficit has positive but insignificant effect on domestic nominal deposit rates in the selected countries. However, the domestic financing of the deficit has positive and significant effect on domestic nominal deposit rate. Thus, we therefore conclude that emphasis should shift from the level of the deficit itself to the mode of financing the deficit.

Table 3a: OLS Estimation Results for Quarterly Pooled Cross-Section and Time Series Nominal Equations: Nigeria, Ghana and The Gambia, 1987:3-1995:4 (N = 102)

	Real Overall Fiscal Deficit-GDP Ratio Used			
Explanatory Variables	Equations[a]			
	(1a)	(1b)	(1c)	(1d)
Constant	-8 .973	3.355	8.029	3.877
	(-1 .117)	(.338)	(.865)	(.476)
π^e	.001	.007	.007	. 845E-3
	(.032)	(.208)	(. 197)	(.026)
rdef	4.040	- 1.177	-3.084	- 1.040
	(1.192)	(-.274)	(-.771)	(-.298)
Δms	. 269E-3	.363E-3	.338E-3	.230E-3
	(.629)	(.856)	(.826)	(.573)
y	.031**	.050***	.020*	- .031
	(2.588)	(3.258)	(1 .685)	(-1 .497)
Δy	.05*	.004*	.004*	.005**
	(1. 886)	(1 .677)	(1.878)	(2.278)
(Rn* +e*)	-.061 *	-.066*	-.066*	-.063*
	(-1 .668)	(-1.809)	(-1.874)	(-1.819)
NIGERIA		-.129*		
		(-1.934)		
GHANA			.119***	
			(3.032)	
GAMBIA				-.264***
				(-3.584)
Control	-.168***	-.158	-.1 60***	-.1 72***
	(-3.039)	(-2.887)	(-3.032)	(-3.312)
Rn_{t-1}	.763***	.695***	.636***	.621***
	(12.278)	(9. 866)	(8.767)	(8.800)
R^2	.74	.75	.77	.78
$\bar{R}^2$	.72	.73	.74	.75
F	32.24***	29.96***	32.35***	33.90***
SER	.13	.13	.12	.12
DW	2.06	1.97	1.90	1.88
DH	-.38	.18	.72	.81

*** Significant of 1% level; ** Significant at 5% level; * Significant at 10% level. [a] The values in parentheses below the coefficients are the t-values.

Table 3b: OLS Estimation Results for Quarterly Pooled Cross-Section and Time Series Nominal Equations: Nigeria, Ghana and The Gambia, 1987:3-1995:4 (N=102)

Real Net Credit to Government-GDP Ratio ("Domestic Borrowing") Used				
Explanatory Variables	Equations[a]			
	(2a)	(2b)	(2c)	(2d)
Constant	-.499	-.272	.042	.595
	(-.990)	(-.531)	(.081)	(I.039)
π^e	.002	.559E-3	-.002	-.004
	(.054)	(.017)	(-.054)	(-.139)
rdf	.493***	.411*	.365*	.356*
	(2.322)	(1.924)	(1.841)	(1.740)
Δms	.461E-3	.454E-3	.403E-3	.327E-3
	(1.100)	(1.098)	(.995)	(.821)
Y	.017	.038**	.019*	-.029*
	(I.514)	(2.413)	(I .776)	(-I.693)
Δy	.006**	.005**	.005**	.006**
	(2.584)	(2.200)	(2.280)	(2.671)
(Rn* +e*)	-.044	-.056	-.060*	-.056
	(-1.241)	(-1.565)	(-1.709)	(-I.655)
NIGERIA		-.097*		
		(-1.871)		
GHANA			.089***	
			(2.782)	
GAMBIA				-.232***
				(-3.439)
Control	-.181***	-.158***	-.154***	-.167***
	(-3.475)	(-2.978)	(-3.008)	(-3.378)
Rn_{t-1}	.765***	.707***	.665***	.634***
	(12.422)	(10.837)	(9.896)	(9.412)
R^2	.75	.76	.77	.78
$\bar{R}^2$	.73	.74	.75	.76
F	34.15***	31.59***	33.51***	35.36***
SER	.13	.13	.12	.12
DW	1.95	1.92	1.88	1.85
DH	.30	.51	.79	1.01

*** Significant of 1% level; ** Significant at 5% level; * Significant at 10% level. The values in parentheses below the coefficients are the t-values.

Table 3c: OLS Estimation Results for Quarterly Pooled Cross-Section and Time Series Nominal Equations: Nigeria, Ghana and The Gambia, 1987:3-1995:4 (N = 102)

Real Foreign Financing of Deficit GDP Ratio Used				
Explanatory Variables	Equations[a]			
	(3a)	(3b)	(3c)	(3d)
Constant	7.484	-2.920	-6.844	-4.703
	(.576)	(-.2 15)	(-.520)	(-.375)
π^e	.011	.044	-.002	-.004
	(.322)	(.106)	(- 050)	(-. 115)
rff	-2 .988	1.540	3.348	2.675
	(-.531)	(.262)	(.587)	(.491)
Δms	.330E-3	.343E-3	.293E-3	.211E-3
	(.772)	(.820)	(.720)	(.529)
y	.024**	.051 ***	.026**	-.029
	(2.153)	(3.116)	(2.487)	(-1.653)
Δy	.005**	.004	.004**	.005**
	(2.008)	(1.646)	(1.791)	(2.246)
(Rn* +e*)	-.058	-.065*	-.066*	-.062*
	(-1.557)	(-l.789)	(-l .864)	(-l.780)
NIGERIA		-.122**		
		(-2.214)		
GHANA			.108***	
			(3.198)	
GAMBIA				-.264***
				(-3.782)
Control	-.185***	-.154***	-.151***	-.168***
	(-3.439)	(-2.845)	(-2.892)	(-3.333)
Rn_{t-1}	.753*** (11.782)	.703	.657***	.628***
		(10.532)	(9.662)	(9.182)
R^2	.74	.75	.77	.78
$\bar{R}^2$	.72	.73	.74	.75
F	31.70***	29.95***	32.23***	33.97***
SER	.13	.13	.12	.12
DW	2.05	1.98	1.91	1.88
DH	-.34	.15	.58	1.80

*** Significant of 1% level; ** Significant at 5% level; * Significant at 10% level. ' The values in parentheses below the coefficients are the t-values.

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