

# JOURNAL OF INTERNATIONAL BUSINESS AND ENTREPRENEURSHIP

*Special Issue on*

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# **JOURNAL OF INTERNATIONAL BUSINESS AND ENTREPRENEURSHIP**

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Negara Brunei Darussalam, Brunei  
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## PREFACE

Dr. George O. Tasié  
Guest Editor

*Special Issue on "Contemporary Issues in International Business  
and Entrepreneurship"*

Previously technology, globalisation, and trade liberalisation did not play a dominant role in business environments, but today the approach is totally different. The millennium is characterised by globalised trading system and the predominance of the revolutionary information technologies. This scenario is where the real challenge is for the entrepreneuristic persons and organisations, raising the issue of how entrepreneurs and business organisations respond to the demands of the globalised markets and the fierce competition of business organisation in the so-called "borderless world".

The papers in this special volume of Journal of Business and Entrepreneurship (JIBE) explain some of these challenges by providing in-depth and analytical information on various topics of international business interests. For instance, the article on service quality demonstrates the extent in which customer satisfaction and expectations have become a popular area of academic attention and economic development of society. Other articles also draw on the importance of internationalisation of businesses, such as global marketing, organisational reputation, Swedish entrepreneurship, the impact of currency in business and scores of other thought-provoking research papers.

The articles chosen for this special issue represent and reflect the crucial challenges facing international business and management during the past and present economic crises. Although the current worldwide economic crisis has eased and most of the countries affected are on the way to recovery, we have to recognise the factors contributing to the crisis.

It is hoped that this volume will contribute towards creating an awareness of the need for better business practices and excellent management ideas across the world. I am optimistic that wider readers will benefit largely through reading this particular issue.

Above all, I must record my thanks and profound appreciation to the contributors of articles to this issue, and especially Professor Zafar U. Ahmed for affording me an opportunity to guest edit this special issue. Finally, I wish to thank the JIBE's Editorial Board and the reviewers for the job well done. Without their invaluable contribution, the publication of this special issue would not have been possible.

## **PROFILE OF GUEST EDITOR**

Dr. George O. Tasie

George O. Tasie, Ph.D (Manchester), M.Sc (Leicester), M.P.A; B.Sc (Hon) (Liverpool), M.M.S (London), is Head, Department of Management Studies at the University of Brunei Darassulam [UBD], Brunei. His teaching interests are in general management, human resource management, human resource development, organisational behaviour, and international management. His professional work and experience in academia has taken him to the U.S.A, the United Kingdom, Malaysia, Australia, Singapore, the Philippines, Indonesia, Brunei, Vietnam and Nigeria. The publication of one of his books on "Public Sector Administration and Management" was sponsored by the University of Malaysia Sarawak, where he was an associate professor before joining UBD. He has contributed articles to other internationally accredited journals. Dr. Tasie has also written and published books on rural financial planning and management. He has been involved in short courses and consultancy works for a variety of organisations in the U.S.A, U.K, Singapore, Nigeria, Malaysia, Brunei and JASPOC (Joint ASEAN Senior Officers' Course). His current research interests center on business-government relations, training and development and stress management in Southeast Asia.



## **CURRENCY DEVALUATION AND INTERNATIONAL COMPETITIVENESS: THE CASE OF THE CFA ZONE OF WEST AND CENTRAL AFRICA**

Dosse Toulaboe

### **Abstract**

The lack of external competitiveness in the CFA zone resulting from an appreciation of the CFA franc and deterioration of the terms of trade, is believed to be one of the major causes of the poor performance of the zone in the 1980s and early 1990s. The objective of this study is to investigate the effects of a nominal CFA devaluation on the external competitiveness of the CFA zone. Based on pooled cross-section time-series data regressions, the real effective exchange rate (a measure of external competitiveness) is found to be strongly related to productivity, terms of trade, trade policies and, most importantly, nominal CFA devaluation. The results indicate that a nominal devaluation of the CFA franc can help the zone regain (or maintain) its international competitiveness.

Dr. Dosse Toulaboe is an Assistant Professor of Economics, Department of Economics and Finance, Fort Hays State University, Hays, Kansas, U.S.A.

**INTRODUCTION**

The economic performance in Sub-Saharan Africa over the years has been unsatisfactory, and this poor performance is not a recent phenomenon. The problem worsened in the mid-1980s, and most Sub-Saharan African countries experienced economic crises. These countries resorted to different reform programs in their attempts to counter the economic turmoil. The reform programs took a different form in the CFA countries, which reflected the rules and objectives of the zone. The latter, comprising fourteen African countries (Table 1), is served by two central banks (each with a separate currency but equivalent in value)<sup>1</sup>: Central Bank of West African States (BCEAO) and Bank of Central African States (BEAC).

**Table1: CFA Zone Countries**

<b>West African countries (Under BCEAO)</b>	<b>Central African countries (Under BEAC)</b>
Benin Burkina Faso Cote d' Ivoire Gunie-Bissau Mali Niger Senegal Togo	Cameroon Central African Republic Chad Republic of Congo Gabon Equatorial Guinea

The CFA zone is intended to coordinate monetary and fiscal policies of the member countries and, thereby, foster and maintain their economic and financial stability.

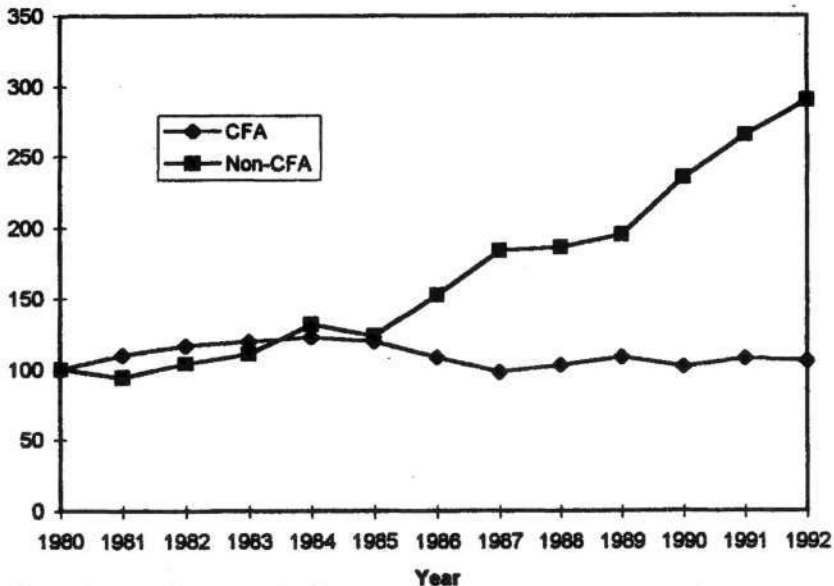
Although the zone members did enjoy a relatively sustained economic growth, with a low inflation rate comparable to that of the industrialized countries prior to the mid-1980s, a serious turnaround occurred after that period, undermining the region's efforts to grow.

The problem stemmed from an unfavorable external environment and inappropriate domestic economic policies. The downturn in the economic activities in industrial

countries starting in the early 1980s resulted in a decline of the export prices of the Sub-Saharan African countries, which led to a major deterioration in their terms of trade. Equally important is their lack of international competitiveness, due to the appreciation of their domestic currencies. The latter problem is even more acute in the case of the CFA countries, which because of the institutional arrangements of the zone, left the exchange rate parity unchanged despite the appreciation of the French franc vis-à-vis the U.S. dollar starting in the mid-1980s. Consequently, the nominal and real effective exchange rates of the zone countries appreciated. According to the World Bank, most currencies of Anglophone Africa depreciated in real terms by at least 77 percent between 1980-90 while the CFA franc appreciated by some 30 percent (Sonko, 1994), as presented in Figure 1.

A real depreciation can come about either through a nominal devaluation or appropriate change in relative prices through a demand management policy. Before the 1994 CFA franc devaluation, the second alternative was the option chosen by the CFA zone authorities to address their lack of external competitiveness. It consists of financial policies aimed at reducing the domestic demand for goods and services to accommodate the country's income, coupled with policies that switch expenditures toward nontradeables.

**Figure 1: Real Effective Exchange Rates in Sub-Saharan Africa**



*Note: An increase in real effective exchange rate indicates a depreciation*

To Devarajan and de Melo (1987), this demand management strategy is effective if properly implemented. They claim that participating in the CFA zone does not prevent member countries from adjusting to macroeconomic imbalances.

To effect a real depreciation, a demand management policy requires sufficient reduction in government expenditures and credits to the private sector if it is to put enough downward pressure on the demand for imports and nontradeable prices. Given the sizes of the external and internal imbalances (of the CFA countries) due to both terms of trade deterioration and CFA appreciation, internal adjustments alone would be incapable of restoring equilibrium, and would instead be associated with negative growth and high unemployment, as the monetary and fiscal policies become too restrictive and deflationary. As Hussain (1994) puts it, "If the main cause of the decline is external shocks, then adjustment policies cannot be an effective answer to the problem. But if domestic policy weaknesses are the main culprit, then altering these policies should make a difference." Internal adjustments alone can, therefore, be very costly in terms of output and employment.

To effectively restore international competitiveness and macroeconomic equilibrium, a nominal devaluation is required. Like the demand management policy, nominal devaluation works, other than reducing domestic demand, to switch demand toward domestic goods (nontradeables) through its upward effects on the relative price of tradeables. The real exchange rate will thereby depreciate, improving the country's international competitiveness.

The main objective of this study is to investigate the effects of a nominal devaluation on the external competitiveness of the CFA zone economies. A nominal devaluation by making tradeable goods more expensive at home, leads to a real depreciation, at least in the short run. Tradeables become relatively more expensive domestically, while the nontradeable prices are unaffected by the exchange rate change (as they are determined by domestic supply and demand conditions).

A question is whether the incipient real depreciation will be preserved. This may not be the case as the nominal devaluation, by discouraging the production of nontradeables while encouraging their consumption, sets in an upward pressure on their prices, which may reverse the initial real depreciation unless contained by appropriate macroeconomic policies.

## INTERNATIONAL COMPETITIVENESS

### Real Effective Exchange Rate

Inappropriate exchange rates and macroeconomic policies in Sub-Saharan African countries leading to substantial exchange rate misalignment are at the core of the poor economic performance in the region. The negative relationship between economic performance and inappropriate real exchange rate policies is an indication that the real exchange rate is a key relative price in an economy, and that policies to keep the exchange rate close to its equilibrium value are indispensable for economic recovery. It is for this reason that developing countries in general, and Sub-Saharan African countries in particular, resorted to large and discrete nominal devaluations of their currencies in order to correct overvaluation, thereby improving their international competitiveness through real depreciation. The CFA countries in contrast maintained the parity of the CFA franc against the French franc, a policy that reflected the rules of the zone. Devarajan and Rodrik (1991) highlighted the costs of maintaining a fixed exchange rate regime on the face of highly variable external terms of trade. Their analysis of the costs and benefits of the CFA membership resulted in the conclusion that “fixed exchange rates have been, on the whole, a bad bargain for the CFA member countries. For most of the CFA members, the inflation benefits do not appear to have been large enough to offset the costs on the output side. Under ‘reasonable’ output-inflation tradeoffs, these countries would have been better off having the flexibility to adjust to external shocks”.

Devarajan and de Melo (1990) asserted that, as a consequence of a failure to fully adjust their economy (including nominal devaluation) in light of changes in the world environment and persistent current account deficits, the CFA zone members’ GDP growth rates fell behind those of their counterparts.

Movements in the real exchange rate are documented by various scholars to determine the responses of the actual and equilibrium real exchange rates to monetary and real disturbances. Studies that address the issue include Cottani et al. (1990), Dornbusch (1985), Edwards (1989a, 1989b, 1994), Elbadawi (1994), Ghura and Grennes (1993), Khan (1986), Khan and Montiel (1987), Khan and Ostry (1991), Rouis et al. (1994) and Snape (1988). According to these studies, and contrary to the purchasing power

parity theory, the equilibrium real exchange rate is not an “*immutable number*”, but responds to changes in different variables known as its “*fundamentals*”. The equilibrium (long-run) real exchange rate is thus sensitive to a wide range of variables. These include the international terms of trade, capital flows, trade policies, exchange and capital controls, world market real interest rates, and the level and composition of government consumption. These real variables affect the long-run (equilibrium) real exchange rate, while in the short run, both real and nominal variables (monetary and fiscal policies, and nominal devaluation) determine the actual real exchange rate.

### The Real Exchange Rate Equation

Following Edwards (1989a, 1994), the dynamic equation of the real effective exchange rate takes the following form:

$$\Delta \log(\text{REER})_t = \theta_0 [\log(\text{REER}^*)_t - \log(\text{REER})_{t-1}] + \theta_1 (\text{MP} - \text{MP}^*)_t + \theta_2 [\log(\text{NEER})_t - \log(\text{NEER})_{t-1}] \quad (1)$$

where, REER = Actual real effective exchange rate

REER\* = equilibrium real effective exchange rate

MP = variables representing macroeconomic (monetary and fiscal) policies

MP\* = macroeconomic policy variables consistent with domestic GNP and money demand

NEER = nominal effective exchange rate

Equation 1 indicates that changes in the actual real effective exchange rate, REER, are explained by three forces. The first force, represented by the expression  $[\log(\text{REER}^*)_t - \log(\text{REER})_{t-1}]$ , through a self-correcting mechanism, prevents the actual and equilibrium real effective exchange rates from drifting apart. A misalignment is progressively corrected and the speed of this partial adjustment is measured by  $\theta_0$ , whose values are constrained to be between 0 and 1.

The second driving force of the movements of the REER is represented by  $(MP - MP^*)$ . It captures the stance of the macroeconomic policies. The adoption of a fixed exchange rate regime imposes some restrictions on macroeconomic policies if misalignment is to be avoided. Macroeconomic policies that are inconsistent with the domestic GNP and money demand will be reflected in the REER via their effect on relative prices. Policies that are more expansionary than required by the appropriate economic variables ( $MP > MP^*$ ), will induce an appreciation of the REER. In the following, the term  $(MP - MP^*)$  will be represented by monetary and fiscal variables. The monetary variable is money supply (MONS), and the fiscal variable is proxied by government consumption (GCONS).

The third explanatory term in Equation 1,  $[\log(\text{NEER})_t - \log(\text{NEER})_{t-1}]$ , is changes in the (logarithm of) nominal effective exchange rate, and can be interpreted as a nominal devaluation variable, NOMDEV.

The final form of the actual REER equation to be estimated requires that the functional form of the equilibrium REER be first specified. It takes the form,

$$\log(\text{REER})_t = \tau_0 + \tau_1 \log(\text{TOT})_t + \tau_2 (\text{CAPF})_t + \tau_3 \log(\text{INV})_t + \tau_4 \log(\text{TRES})_t + \varepsilon_t \quad (2)$$

where, TOT = terms of trade

CAPF = capital flows

INV = investment (standing for technological improvement)

TRES = trade restrictions

Substituting Equation 2 into Equation 1, and taking into account one-period lag of the nominal devaluation variable, gives (after rearranging),

$$\begin{aligned} \log(\text{REER})_t = & \theta_0 \tau_0 + (1 - \theta_0) \log(\text{REER})_{t-1} + \theta_0 \tau_1 \log(\text{TOT})_t + \theta_0 \tau_2 (\text{CAPF})_t \\ & + \theta_0 \tau_3 \log(\text{INV})_t + \theta_0 \tau_4 \log(\text{TRES})_t + \theta_{11} \log(\text{MONS})_t + \\ & \theta_{12} \log(\text{GCONS})_t \\ & + \theta_{21} \text{NOMDEV}_t + \theta_{22} \text{NOMDEV}_{t-1} + \theta_0 \varepsilon_t \end{aligned}$$

The equation to estimate takes the form<sup>2</sup>,

$$\begin{aligned} \log(\text{REER})_t = & \sigma_0 + \sigma_1 \log(\text{REER})_{t-1} + \sigma_2 \log(\text{TOT})_t + \sigma_3 (\text{CAPF})_t \\ & + \sigma_4 \log(\text{INV})_t + \sigma_5 \log(\text{TRES})_t + \sigma_6 \log(\text{MONS})_t + \sigma_7 \log(\text{GCONS})_t \\ & + \sigma_8 \text{NOMDEV}_t + \sigma_9 \text{NOMDEV}_{t-1} + e_t \end{aligned} \quad (3)$$

The hypothesized signs of the explanatory variables are summarized in Table 2.

**Table 2: Hypothesized Signs**

<b>Determinants</b>	<b>Short-run REER</b>	<b>Equilibrium REER</b>
Deterioration of the terms of trade (TOT)	Appreciation (-)/ Depreciation (+)	Appreciation (-)/ Depreciation (+)
Technological improvement (INV)	Appreciation (-)/ Depreciation (+)	Appreciation (-)/ Depreciation (+)
Capital inflow (CAPE)	Appreciation (-)	Appreciation (-)
Trade restrictions (TRES)	Appreciation (-)	Appreciation (-)
Monetary expansion (money supply, MONS)	Appreciation (-)	
Fiscal expansion (Government consumption, GCONS)	Appreciation (-)	
Nominal devaluation (NOMDEV)	Depreciation (+)	



## EMPIRICAL RESULTS

### Methodology

The REER equation is estimated for the CFA zone (10 zone member countries) for the period 1972 to 1992, a total of 210 annual observations<sup>3</sup>. Given its definition, the trade restrictions variable (TRES), is an endogenous variable<sup>4</sup>. As pointed out by Ghura and Grennes (1993), “The CLOSE variable [TRES in our case] is affected not only by trade policies but also by a number of other factors including the terms of trade and the RER itself”. The REER equation is, therefore, estimated using two stage least squares (2SLS) and fixed effects procedure (country specific dummy variables). Four versions of Equation 3 are considered.

### Empirical Findings

The determinants of real exchange rates are of two types, real variables (or fundamentals) and monetary variables. Knowledge of these determinants and the estimates of their quantitative effects on the real exchange rate can help avoid exchange rate misalignment. Most important is the effects of a nominal devaluation on the real exchange rate. The empirical results are summarized in Table 3.

The coefficients of the nominal devaluation variable ( $NOMDEV_t$ ) and its lag ( $NOMDEV_{t-1}$ ), or their sum, must be positive and statistically significant if a nominal devaluation is to have short- or long-run real depreciating effects on the CFA franc. The results show without ambiguity that a nominal devaluation will cause the CFA franc to depreciate in the short run. The parameter estimates (of  $NOMDEV_t$ ) range from 0.850 to 0.929 and are all statistically significant. These results are very similar to those found in Rouis et al. (1994). Their estimate of the contemporaneous effect is 0.88.

The coefficient estimate of the lagged nominal devaluation variable ( $NOMDEV_{t-1}$ ) has mixed signs. It is positive and significant in one of the four versions (2) and negative in three (1, 3, and 4) and significant in only one (4). A test of the hypothesis that the sum of the contemporaneous and lagged coefficients is zero, however, leads to the conclusion that a nominal devaluation will have a real depreciating effect on the CFA

franc. Thus, the evidence support the view that a nominal devaluation of the CFA franc will help the zone countries regain (or maintain) their international competitiveness.

**Table 3: Real Effective Exchange Rate Equation Results, log(REER), 1972-1992**

Variable	1	2	3	4
log (DCRE <sub>t</sub> )		-0.045** (-3.10)		
log (DCRE <sub>t-1</sub> )				0.005 (0.62)
CAPF <sub>t</sub>	-0.006* (-1.53)			-0.003 (-1.08)
CAPF <sub>t-1</sub>		-0.004 (0.62)		
log (TRES <sub>t</sub> )	-0.036* (-1.57)	-0.073** (-2.64)	-0.022 (-1.27)	-0.010 (-0.48)
log (MONS <sub>t</sub> )	-0.011 (-0.85)		-0.007 (0.65)	
log (REER <sub>t-1</sub> )	0.908** (28.97)	0.723** (17.56)	0.925** (33.13)	0.961** (32.91)
log (TOT <sub>t</sub> )	0.062** (-3.15)	-0.161** (-4.63)	-0.051** (-2.85)	-0.040*** (-2.05)
log (INV <sub>t</sub> )	-0.029** (-2.64)	-0.081** (-5.70)	-0.037** (-3.69)	-0.036** (-4.01)
log (GCONS <sub>t</sub> )	-0.008 (-1.10)	-0.029** (-2.68)	-0.009 (-1.19)	
NOMDEV <sub>t</sub>	0.897** (21.45)	0.850** (14.60)	0.908** (22.41)	0.929** (23.50)
NOMDEV <sub>t-1</sub>	-0.015 (-0.39)	0.178** (3.06)	-0.020 (-0.55)	-0.053*** (-1.47)
N	210	210	210	210
R <sup>2</sup>	0.9831	0.9654	0.9838	0.9846

All versions included country-specific dummy variables.

R<sup>2</sup> is the adjusted coefficient of determination.

N is the number of observations

The numbers in parentheses are t-values:

\* Significant at 10 % level

\*\*\* Significant at 5 % level

\*\* Significant at 1 % level

The international terms of trade [ $\log(\text{TOT}_t)$ ], a real variable, is expected to have either sign depending on whether the shock is due to export price or import price change, and on the substitution and income effects. The estimated terms of trade coefficient is negative and statistically significant in all four versions.

The technological improvement variable, proxied by investment [ $\log(\text{INV}_t)$ ] is also expected to either appreciate or depreciate the real exchange rate depending on the sector in which the technological progress occurred. The results point at a technological improvement occurring in the tradeable sector in the CFA countries. The estimated coefficient is statistically significant and negative in all four versions of Equation 3.

Trade policy is another important variable that explains real exchange rates. In the theoretical model, it was postulated that trade restrictions will limit the openness of an economy to international trade, and will result in an appreciation of its real exchange rate. This is confirmed by the coefficient estimate of the trade restrictions variable [ $\log(\text{TRES}_t)$ ]. In all four versions the coefficient is negative, and statistically significant in three (1, 2, and 3). This is an indication that in a fixed exchange rate regime in general, and in CFA countries in particular, reducing trade restrictions not only will expose those countries to the benefits of the global trade environment, but also will help them avoid misalignment of their currencies.

The capital flow variable [ $\log(\text{CAPF}_t)$  or  $\log(\text{CAPF}_{t-1})$ ] has a negative coefficient estimate (as expected), but is statistically significant in only one version (1). Government consumption [ $\log(\text{GCONS}_t)$ ] is also postulated to appreciate the real exchange rate. This variable can be interpreted as a proxy for fiscal policy, or government consumption on nontradeables. Its coefficient is negative in all the three versions (1, 2, and 3) in which it is included. Its statistical significance is, however, confirmed in only one of the three versions (2). Version 4 is estimated without the government consumption variable. Its exclusion did not have any significant effect on the estimates of the other coefficients.

The one-period lag of REER [ $\log(\text{REER}_{t-1})$ ] has coefficient estimates ranging from 0.723 to 0.961. These results are similar to those in Edwards (1989a) which are also quite high. Edwards (1989a) claims that:

“In a way this is not too surprising in light of the analysis of the time series properties of RERs... From an economic prospective these high values for the coefficients imply that in the absence of other intervention, actual real exchange rates converge very slowly toward their long-run equilibrium level.” (pp.141).

The money supply [ $\log(\text{MONS}_t)$ ] coefficient is negative as postulated, although not statistically significant in the two versions in which it is included. In version 2, the money supply variable is replaced by domestic credit [ $\log(\text{DCRE}_t)$ ]. Its coefficient is negative and statistically significant. In all, there is an indication that expansionary monetary policy causes a real appreciation of the CFA franc. This result is in line with the position taken by the CFA zone monetary authorities (from the mid-1980s) to address the real appreciation of the CFA franc by opting for a contractionary monetary policy.

## CONCLUSIONS AND IMPLICATIONS

The analysis of the real effective exchange rate points to different factors that influence the CFA zone's external competitiveness. Of particular importance is the effect of a nominal devaluation on the real effective exchange rate. It was found that a nominal devaluation will have a real depreciation effect. This result implies that the CFA zone authorities should use the exchange rate as a policy instrument when needed. This does not mean that each country should (or can) resort to the exchange rate as a policy variable, as this is impossible given the arrangements of the zone. However, a misalignment of the exchange rate that threatens the entire zone needs to be given immediate attention by adjusting the parity to reflect the currency's real value. This assumes, of course, that the other effects of a nominal devaluation are also taken into account. The sizable overvaluation of the CFA franc from the mid-1980s to the early 1990s and its effects on the zone's economy, could have been avoided if corrective actions had been taken to devalue the currency.

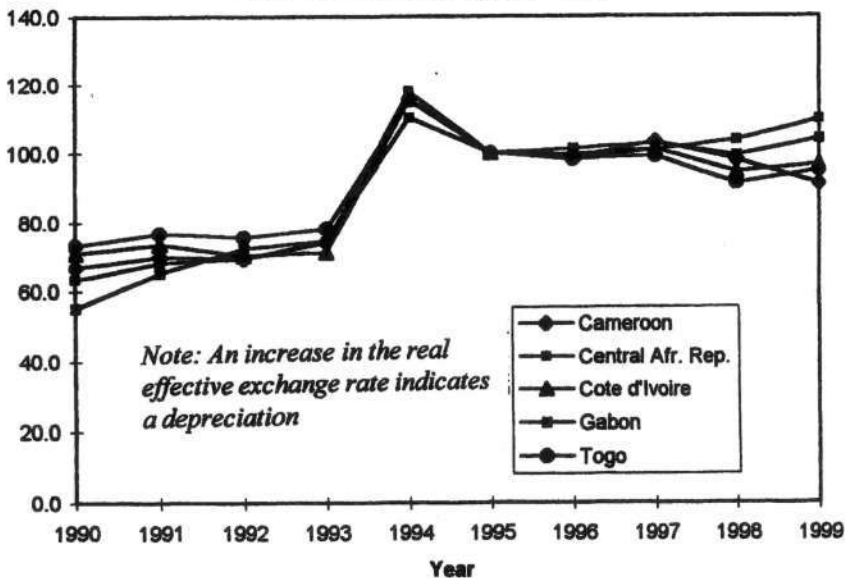
In practice, a successful devaluation must entail more than a simple change in the parity of the currency. This is because the incipient gain in the external competitiveness following a nominal devaluation can be threatened by higher inflation brought about by the same nominal devaluation. As a consequence, to effectively guarantee (and protect)

the competitiveness gain, the zone authorities need to accompany a nominal devaluation with restrictive monetary and fiscal policies to contain inflation. As such, devaluation will not be painless to society, and this explains its unpopularity to correct the zone's problems. A comprehensive analysis of a devaluation should be based on its long-run effects, and not (erroneously) on its short-run effects. "Implementation of rigorous fiscal, wage, and monetary policies..." (IMF Survey, February 1994, p. 35), as part of a policy package to secure external competitiveness, is the inevitable cost to incur in the short run in order to guarantee larger gains for the zone's economy in the long run.

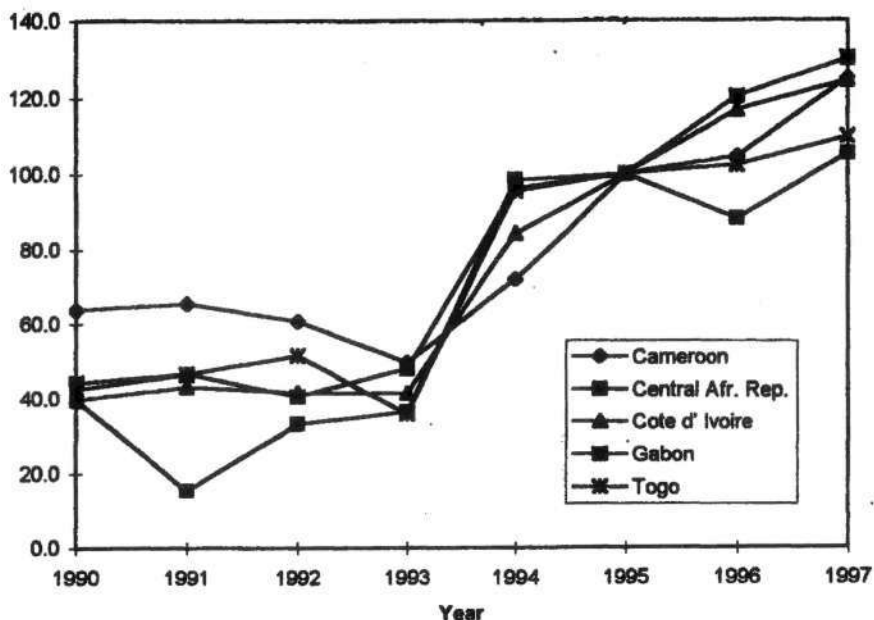
Arguments against nominal devaluation based on the short-run costs to society, are thus less important. As far as external competitiveness is concerned, and based on our results, a CFA franc devaluation will help the zone regain (or maintain) its external competitiveness, as supported by the encouraging results of the 1994 devaluation<sup>5</sup>

(Figures 2 and 3). Without this, and in the face of a CFA overvaluation, the zone (and Sub-Saharan Africa in general) will be marginalised in today's challenging world environment and, therefore, continue to retain its "unfortunate" title of the world's "poorest region". Adoption of the proposed policy would increase the gains derived from the CFA membership, apart from the fiscal and monetary discipline conferred by the zone. The result would be greater benefits for the zone and member nations.

**Figure 2: Real Effective Exchange Rates Before and After the 1994 CFA Devaluation (1995=100)**



**Figure 3: Exports Before and After the 1994 CFA Devaluation  
(1995=100)**



**FOOTNOTES**

1. The two currencies of the zone, both known as CFA (African Finance Community), are pegged to the French franc since 1948 (at CFA50 to FF1) and were devalued for the first time in January 1994 (CFA100 to FF1).
2. See Appendix for data sources.
3. CFA countries included in the sample: Benin, Burkina Faso, Cameroon, Central African Republic, Republic of Congo, Gabon, Cote d' Ivoire, Niger, Senegal, and Togo.
4. See Appendix for definition of TRES
5. The 1994 CFA franc devaluation sharply improved the external competitiveness of the zone. Exports and economic growth responded favorably.

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## APPENDIX

1. All data (except for those computed by the author) are derived from *World Data* and *International Financial Statistics*.
2. Some variables are computed from raw data and, therefore need more explanation.

- a. Nominal Devaluation

The nominal devaluation is proxied by the first difference of the nominal effective exchange rate. The latter is computed as,

$$NEER_j = \sum_i W_i E_i$$

where,

$NEER_j$  = Nominal effective exchange rate of country j

$W_i$  = Weight corresponding to trading partner i

$E_i$  = Nominal bilateral exchange rate between country i and country j.

Thus, the nominal devaluation variable (NOMDEV) of country j is,

$$NOMDEV_{jt} = NEER_{jt} - NEER_{jt-1}$$

- b. Real Effective Exchange Rates (REER)

This variable is obtained by adjusting the nominal effective exchange rate for price differences as represented by the following equation:

$$REER_j = \sum_i W_i E_{it} P_{it}^* / P_{jt}$$

where,  $REER_j$  = real effective exchange rate of country j (CFA country in our case)

$E_i$  = nominal bilateral exchange rate between country i and country j (or CFA Franc price of currency i)

$W_i$  = weight corresponding to trading partner i

$P_i^*$  = price level of trading partner i

$P_j$  = price level of the home (CFA) country

t = time

- c. Trade Restrictions (TRES)

This is the ratio of gross domestic product (GDP) over the sum of exports and imports.

$$TRES = GDP / (Exports + Imports)$$