Growth and Adjustment in an African Monetary Union: The CFA Franc Zone

S. Devarajan (Consultant)

Cord Jakobeit (Consultant)

Jaime de Melo

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Shantayanan Devarajan
World Bank and Harvard University

Cord Jakobeit
Harvard University

Jaime de Melo
World Bank

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ABSTRACT

Thirteen African countries are engaged in a monetary union with France known as the "CFA Zone." Participation in the Zone sets its members apart from most other developing countries in three ways: (a) monetary integration through the pooling of reserves; (b) currency convertibility because the CFA franc is guaranteed by the French franc; (c) a fixed exchange rate with the French franc which has not been altered since 1948. Though it is generally agreed that membership in the Zone has been beneficial, concern has recently been raised that adjustments to macroeconomic imbalances have not been as prompt and complete as desirable. This paper addresses those concerns.

The paper starts with a brief review of the attributes that make belonging to a monetary union desirable. These include a high degree of openness to foreign trade, and capital and labor mobility among potential members of the union. These attributes are only partially fulfilled by CFA Zone members so that on these grounds the benefits from forming a monetary union rather than following direct currency pegging, say, are likely to be small. However, other considerations suggest that CFA Zone members are likely to benefit from participating in a monetary union both because of the microeconomic benefits of sharing a common money and because of currency convertibility which is likely to attract foreign direct investment and relax restrictions on portfolio decisions by private agents.

The paper proceeds to a statistical comparison of GNP growth rates of CFA countries with a group of "comparable" developing countries over the period 1960-82. To isolate the monetary union effect, pairwise growth comparisons are submitted to statistical tests for eleven country classifications in an "error component" framework, i.e., one which accounts for missing variables. The results indicate that CFA Zone countries grew significantly faster than comparator Sub-Saharan African countries, but usually slower, and often significantly so, when comparisons are extended over the whole sample of developing countries. Dividing the period into two sub-periods (before and after 1973), we find that the relative performance of CFA countries improved in the second, suggesting that the rules of Zone membership may have helped, rather than hindered, these countries' adjustment to the turbulent 1970s.

The third part of the paper presents a stylized two-sector model inspired by the adjustment experience of the three largest countries in the Zone. The model includes the external balance implications of government spending to show that a reduction in an external deficit can be achieved by a combination of real exchange rate depreciation, increases in taxes on exports and increases in import restrictions (tariffs or quotas). The model serves as a backdrop to the case studies which examine how adjustment occurs in practice. We look at the role of the private and public sectors in adjusting to external

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shocks (commodity booms and oil price increases) for Cameroon, Ivory Coast, and Senegal. We show how differences in the burden of adjustment between private and public sectors and in the amount of foreign borrowing led to different real exchange rate behavior in each country. Also, we attempt to establish the relative importance of distortionary forms of adjustment (i.e. changes in the level of export taxes and import restrictions). We show that the commodity booms led to real exchange rate appreciation, a loss in manufacturing sector competitiveness, and increased taxation of agricultural crop exports. However, we also show that the public sector behaved quite differently in these three countries, and that this alone could account for the wide gap in the outcomes.

Thirteen African countries are engaged in a monetary Zone with France through their participation in two unions: (1) the West Africa Monetary Union (WAMU) (better known by its French acronym, UMOA, for Union Monetaire Ouest-Africaine) which has as its common central bank the Banque Centrale des Etats de l'Afrique de l'Ouest (BCEAO) and includes Benin, Burkina Faso, Ivory Coast, Mali, Niger, Senegal and Togo; and (2) the Central African Monetary Area whose members -- Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea and Gabon -- have the Banque des Etats de l'Afrique Central (BEAC) as their common central bank. Each union issues its own currency. Since both currencies are called the CFA Franc, the Zone is frequently referred to as the "CFA Zone."

Participation in the CFA Zone sets its members apart from most other developing countries in at least three ways.

*Monetary Integration: Member countries pool 65 percent of their foreign exchange reserves in their respective central banks. Each central bank sets monetary policy based on its overall asset position, and all bank members face the same interest rate. The central bank influences an individual country's monetary position by imposing country-specific credit constraints and limiting each government's borrowing to 20 percent of its previous year's fiscal receipts. The pooling of reserves implies that the countries avoid some of the seignorage costs usually associated with holding reserves.

*Currency convertibility: The CFA Franc is convertible since it is guaranteed by the French Franc (FF), itself a convertible currency. Each country has an operations account with the French central bank which it can overdraw at a graduated interest rate that rises to the Bank of France's rediscount rate. There are no foreign exchange implications for transactions among Zone members. Convertibility has implications for asset choice by residents and, in the longer-run, for foreign direct investment.

*Fixed exchange rate: The CFA Franc is pegged to the French Franc at an exchange rate (50 CFAF = 1 FF) that has remained unchanged since 1948. Parity adjustment requires unanimous agreement among Zone members. Effectively, CFA countries cannot use nominal devaluation of the exchange rate as an instrument of macroeconomic adjustment.

Although a type of CFA Franc had been in use during the colonial era, the two Central Banks were created when the majority of the members received their independence from France. In its early stages, the CFA Zone was designed as a means of providing balance of payments credit to these emerging nations. In addition, it was felt that a common and stable exchange rate would attract foreign investment into these countries. In the long-run, membership in the Zone appears to have induced a sense of monetary and fiscal discipline, and a cursory comparison of the overall performance of Zone members with neighboring countries suggests that over the period 1960-83, growth has been superior among Zone members. However, in spite of the general consensus that the monetary union has been working fairly well and that its

members have probably fared better than they would have in its absence, concern has recently been raised that adjustments to macroeconomic imbalances have not been as prompt and complete as desirable.

Indeed, as a result of the turbulent 1970's, many CFA countries were experiencing macroeconomic "crises" in the early 1980's. Senegal and Ivory Coast -- the two largest UMOA members -- had huge current account and public sector deficits that could in turn lead to debilitating debt-service payments in the future. Cameroon had become an oil exporter and was running sizeable current account surpluses. Some observers began questioning whether the particular nature of the CFA Zone prevented its members from adjusting their economies to these dramatic changes.

This paper examines how membership in the CFA Zone affects a country's growth and adjustment to external imbalances. The paper relies on a mix of theoretical and empirical analysis. The institutional aspects of the CFA Zone are referred to only insofar as they are relevant to the assessment of the net benefits of participation. 1/

The paper is organized as follows. Section 1 reviews briefly the benefits and costs for a country to participate in a monetary union. Because most of the literature is for developed countries and is concerned with the short-run, we only refer to that literature briefly. Rather we emphasize the long-run implications of joining a monetary union versus unilaterally pegging the exchange rate. Section 2 compares growth rates of CFA Zone members during 1960-82 with growth

rates of suitably chosen comparator developing countries. The issue of whether the relative performance of CFA Zone members changed after 1973 when constraints on monetary policy in the Zone were relaxed and when generalized floating and external shocks increased, is examined. Section 3 presents a stylized two-sector model of adjustment for a typical CFA Zone country. The model highlights the combination of fiscal policy, external borrowing and changes in trade taxes that may be used to restore internal and external balance in the medium-run under a fixed exchange rate regime. The model serves as an analytical framework within which to review the adjustment experience of Zone members. Section 4 looks at the adjustment experience of the three largest Zone members, Cameroon, Ivory Coast and Senegal, all of which experienced similar external shocks. Section 5 presents our conclusions.

1. Zone Membership: Benefits and Costs

Much of the discussion about the relative merits of participation in a monetary union has been concerned with short-term adjustments to internal and external disturbances and has dealt with developed countries (see Tower and Willett, 1976). For developing countries there are also long-run implications of monetary union participation not applicable to developed countries because of different institutional characteristics. Moreover, the alternatives open to developing countries are different. Hence, it is useful to review the main arguments whereby monetary union membership confers benefits and costs.

Before examining the arguments, it is useful to recall two facts. First, there is wide agreement that developing countries do not face the same choices as developed countries with respect to monetary union membership: whereas developed countries face a range of alternatives from independent floating to a fixed exchange rate, a developing country's choice is simply "what to peg to?" The alternative of independent floating is not open to developing countries because of thin foreign exchange markets, restrictions on capital flows and limited capital markets (McKinnon 1979). Second since the advent of generalized floating among the major currencies starting in 1973, the issue of which currency to peg to -- a basket or a major trading partner -- has been the subject of debate for exchange rate policy in developing countries. However, this is somewhat apart from the costs and benefits of monetary union membership so we will review the arguments separately.

1.1 Benefits of Monetary Union Membership

The major argument for participating in a monetary union can be found in the literature on optimum currency areas. In a seminal paper, in which he was concerned about the short-run objectives of price stability and full employment, Mundell (1961) observed that boundaries of currency areas should be determined by factor mobility: within currency areas, factors should be mobile and, among currency areas, factors should be immobile. Though subsequently criticized, [2/] this argument remains the major reason for countries joining in a monetary union. Although direct evidence on factor mobility is hard to come by for the CFA Zone, the common language and institutions inherited from

the French and the lack of natural barriers between countries in the Zone would enhance factor mobility between countries.

The other short-run argument for membership in a monetary union has to do with the observation that short-run adjustment to a disturbance is less costly, the smaller are the multiplier effects of that disturbance on output and the price level. Whether the disturbance is internal or external, the more open the economy -- in the sense of a large fraction of exports in GNP -- when the exchange rate is fixed the larger are export and import elasticities so the smaller are the induced changes in domestic spending because spending leaks to the external sector. But the superiority of fixed rates over the feasible alternative of a crawling peg is not per se an argument for a monetary union since adjustment to the disturbance could be achieved with unilateral pegging. Thus, the superiority of a monetary union in adjusting to a disturbance in the short run must be attributed to the lower probability of using the exchange rate than in fixed or crawling peg regimes where exchange rate changes only involve a unilateral decision.

While CFA Zone countries are relatively open economies -- their import share in GDP is between 35 percent and 41 percent [3/] -- the share of intraregional trade is only 7-8 percent of regional GNP. [4/] Therefore, the above short-run benefits of monetary integration, i.e. minimizing the short-run impact on prices and employment of a disturbance, are fairly small.

However there are long-run benefits conferred from Zone membership for CFA countries which are not discussed in the literature on optimum currency areas. 5/ These benefits derive from full currency convertibility. As currency convertibility is rare among developing countries, this feature of the Zone sets its members apart from their Third World peers. 6/ Speculative capital flows and capital flight have been much less among CFA Zone members. Such portfolio diversification across currencies as exists among Zone residents has been related to political rather than to exchange rate risk. Though capital flight cannot be said to reduce welfare it is likely to reduce growth insofar as the capital may not be repatriated. Also, often the income from the capital that has left the country is not spent in the country of origin. Moreover, more foreign direct investment is also likely to result from currency convertibility as potential investors perceive smaller risks of confiscation. Finally, by effectively relaxing restrictions on the portfolio decisions of private agents, currency convertibility is superior to the alternative of non-convertibility for the private sector.

1.2. Costs of Monetary Union Membership

The need to achieve a higher degree of policy coordination in a monetary union is a drawback for the freedom to pursue independent stabilization policies. Effectively coordinated fiscal policy is essential to ease regional adjustment because there is always some factor immobility. Centralized fiscal policy is certainly not achieved by CFA Zone members as budget deficits are financed through borrowing in

the community or internationally. Insofar as economic integration is the goal of the monetary union, centralization is unavoidable. In practice, however, the degree of centralization will continue to be determined by the willingness of the member states to continue their association with the monetary union without a sense of grievance. 7/

Another factor to be considered is the tendency to postpone adjustment in all countries: the centralization of monetary policy and the (albeit loose) limits to borrowing from the operations account place bounds on the extent and duration of macroeconomic disequilibrium among CFA Zone members. As a result, their inflation rates are low compared with other developing countries. In turn, these lower inflation rates are attributable to the constraints imposed by membership in the monetary union. Mundell (1972) argues that the French tradition by stressing the passive nature of monetary policy and the rigidity of the exchange rate has bought stability at the expense of institutional development and monetary experience. The former British Colonies in Africa, by contrast, who opted for monetary independence, have sacrificed stability but gained experience and better developed monetary institutions. 8/ 9/

Beyond the possible lack of institutional development caused by potentially excessive dependence on foreign influence, rigid pegging to the franc during the period of generalized floating after 1973 may have weakened the insulation from external shocks. In his survey of the choice of peg for developing countries Williamson (1984), shows that under fairly general specifications of the structure of developing

countries (namely the dependent economy model), pegging to a trade weighted basket so as to minimize variation in the effective exchange rate (EER) is the best among the alternatives proposed. Thus even if CFA Zone members had not adopted a basket peg, the possibility of devaluing periodically might have been a superior alternative to pegging to the FFranc.

Another potentially important cost of rigid pegging to the franc has to do with relative price rigidities. Insofar as there are such relative price rigidities among Zone members if an effective real devaluation could be achieved by devaluation -- perhaps because of some nominal wage rigidity — then not having the option to devalue when they are in a position of external deficit may lead members to achieve redressement of their external deficit by means of distortionary taxes. The issue of distortionary adjustment to macroeconomic imbalance under a fixed exchange rate is further discussed in sections 3 and 4.

Finally, insofar as France is only concerned with the net position of the Zone in its operations account, adjustment may be postponed among several countries in deficit because one Zone member is experiencing a boom. This was the case in BEAC when Cameroon became a net exporter of oil starting in 1979.

2. Growth in the CFA Zone: A Comparison with Other Developing Countries

The discussion in the previous section pointed out that members of the CFA Zone have certain advantages over other countries. But these are in general hard to quantify, and they must be weighted against the potential costs, especially during the period of generalized floating

after 1973. Indeed, to identify each effect separately, one would need a detailed structural macro model that could not be implemented with existing knowledge and data. A less ambitious approach which we adopt here, is to compare, after trying to control for omitted factors, the growth rates of CFA Zone members with those of other "comparable" countries. The analysis is for the period 1960-82 with a further breakdown for the subperiods 1960-73 and 1974-82. Results are reported for GNP growth only, because test using GNP per capita yielded very similar results.

2.1 The Statistical Model and Country Classification

After classifying countries into groupings, we will compare the growth rates of the 12 CFA Zone members (Equatorial Guinea is not in the sample) with those of 63 other developing countries for the period 1960-82. In this cross-section time-series framework, we are interested in analyzing the GNP growth rate of country i in the t-th year, say Y_{it}, which belongs to group classification S. (Group classification is described below.) One common method for pooling cross-section and time series data is to use the least-squares-with-dummy-variables (LSDV) method. In this method the slope coefficient is the same for all cross-section units and only the intercepts are different. Since we are interested in testing whether the slope coefficients which are trend estimates of GNP growth are the same across different groups of cross-section units, we would have to modify the LSDV technique. The extended model would then be

$$(2.1) \qquad Y_{it} = \sum_{j=1}^{N} \alpha_{oj} D_{it}^j + \beta_o T + \beta_1 D_{it}^* T + v_{it}$$

where, as before, i refers to a country, t to time, D_{it}^j is a dummy variable which takes a value of zero unless the observation belongs to the i-th country, D_{it}^* is a dummy variable taking the value one if the country belongs to the CFA Zone, zero otherwise, and T is a time index. Note that the use of the D_{it}^j dummies severely reduces the degrees of freedom for hypothesis testing. This would present a problem in some of the group classifications adopted below. In this regression, tests of a different growth rate in CFA Zone countries, is a test on the significance of β_1.

An alternative, that results in a gain in degrees of freedom, is to use the error-components framework which handles the problem of cross-period correlation by treating the intercept terms α_i as random variables rather than fixed. Since α_i are random, the residuals are now $u_{it} = \alpha_i + v_{it}$ and the presence of α_i produces a correlation among residuals of the same cross-section unit, even if, as below, we assume that the residuals from different cross-section units are independent. Correlated residuals requires use of a generalized least squares (GLS) estimator to get efficient estimates. $\underline{10/}$ The model to be estimated is:

$$(2.2) \qquad Y_{it} = \sum_{s=1}^{2} \alpha_i^s D_{it}^s + \sum_{s=1}^{2} \beta_s D_{it}^{*s} T + u_{it}$$

where D_{it}^s takes a value of one if the i-th country belongs to the CFA Zone, a value of two otherwise, and D_{it}^{*s} takes a value of one if the i-th

country belongs to the CFA Zone, two otherwise. We assume that the residuals have zero mean and common variance σ^2_u and that they are both serially independent and independent across units. The assumptions are:

$$E(\alpha^S_i) = 0; \; E(u_{it}) = 0$$

$$cov(\alpha^S_i, \alpha^S_j) = \sigma^2_\alpha \text{ for } i = j$$

$$= 0 \text{ otherwise}$$

$$cov(u_{it}, u_{js}) = \sigma^2_u \text{ if } i = j; \; t = s$$

$$= 0 \text{ otherwise}$$

$$cov(\alpha^S_i, u_{jt}) = 0 \text{ for all } i, j, t$$

Besides resulting in more degrees of freedom than with the LSDV method, the variance components (VC) model does not eliminate the covariance between groups. More importantly for our purposes, treating the intercept terms as a random variable is a way to account for other missing variables not included in the model. The costs of this approach are the conditions imposed on the error structure. Whereas the country-specific effects are captured by the dummy variables in the LSDV approach, in the VC model they are captured in the intercept term which must be uncorrelated with the explanatory variables in the model, including the CFA Zone dummy. 11/

It should be clear that with our crude way of dealing with omitted factors, the classification of countries is of great importance since it is also a way accounting for some of the omitted variables.

Table 1 below gives the sample of 74 countries for which we have constant series GNP for the period 1960-82. The selection is the result of choosing all countries with income per capita below US$ 3,000 in 1980 and a population over 1 million in 1965. [12/] Note also that for one of the regressions, we consider the CFA Zone as a single country to reflect the fact that the countries are engaged in a monetary union. Hence the inclusion of the CFA Zone as a country in table 2. [13/]

The countries in table 1 are classified along nine dimensions which will be the focus of pairwise growth comparisons between CFA Zone members and non-Zone members. The nine dimensions inspired from Chenzy and Syrquin (1975) are: large, small, oil exporter, oil importer, low income, high income, semi-industrial, sub-Saharan mineral rich and other sub-Saharan Africa. How the countries in the sample fit in this classification criteria are given in table 1. In the results reported below a typical comparison would be the GNP growth rate of small CFA Zone countries with the GNP growth of non-CFA Zone small countries.

2.2 Statistical Results

(2.2.1) Entire Period: 1960-82

Results from estimation of equation 2 are given in table 2. Three sets of estimates are provid..: for the entire period (1960-82); and for each one of two subperiods (1960-73) and (1973-82). For each set of estimates we report annual percentage growth for non-CFA (g_0), CFA ($g_0 + g_1$) and a test on the significance of the difference in GNP growth between CFA and non-CFA countries (t-statistics are in parenthesis below the coefficient of the dummy variable, g_1).

Starting with the entire sample for the entire period (model I), we cannot reject (at the 1 percent significance level) the hypothesis that CFA-Zone countries' GNP growth over the 1960-82 period was less than that of the other developing countries in the sample. Over the period, their growth rate was on average 0.8 a percentage point lower. Treating all CFA countries as a single country (model II) and comparing its mean growth rate to that of other large countries, the difference loses statistical significance. The CFA Zone does better vis-a-vis its comparator when it is treated as a single country than when countries are considered individually. In part this is due to the fact that countries, when treated individually, are given equal weight in the regression. But when the CFA Zone is viewed as an aggregate, the weight of fast-growing Ivory Coast is greater which improves the performance of the CFA Zone but this does not alter the results because non-CFA large countries also grew faster than the entire sample. However, it is legitimate to treat the CFA Zone as a single economic Zone since this is the purpose of creating the monetary union in the first place. In that case, the growth of the CFA Zone, though 0.6 percentage points lower than that of other large countries, is not statistically significant and one can conclude that growth in the CFA Zone has been average in a comparative sense.

Moving down the table, we see that among small countries (model III), CFA Zone members' growth is less by a smaller amount than in model II and the difference is barely significant. When the comparison is made among oil exporting countries (model IV), CFA Zone members grow

Table 1: CFA Zone vs. Comparator and Sub-Saharan Countries (1960-1982).
Country Classifications.

#	Country	Code	CFA (12)	Size Lge (19) II	Size Sml (56) III	Oil Exp. (13) IV	Oil Imp. (61) V	Income Low (55) VI	Income High (20) VII	Semi-Indust. (28) VIII	Sub-Saharan All (31) IX	Sub-Saharan Rich (7) X	Population 1965 (Mill.)	Percapita GNP 1980 (US $)
1	AFGHANISTAN	1			X		X	X					11.12	223.8
2	ALGERIA	3			X	X			X	X			11.92	2,111.6
3	ANGOLA	6			X	X		X	X	X	X		5.35	831.9
4	ARGENTINA	8		X			X	X					22.28	1,982.7
5	BURKINA FASO	194	X		X		X	X			X		4.60	218.2
6	BANGLADESH	13		X			X	X					60.48	130.2
7	BENIN	17	X		X		X	X			X		2.33	335.1
8	BOLIVIA	20			X		X	X					3.84	758.7
9	BRAZIL	24		X			X		X	X			84.29	2,001.0
10	BURMA	27		X			X	X					24.25	172.8
11	BURUNDI	28			X		X	X			X		3.13	239.6
12	CENTRAL AFR.REP	32	X		X		X	X			X		1.74	349.7
13	CFA	1000	X	X			X	X			X		32.84	627.4
14	CHAD	33	X		X		X	X			X		3.31	112.7
15	CHILE	34			X		X		X	X			8.51	2,399.2
16	CHINA	35		X			X	X		X			746.80	289.6
17	COLOMBIA	38		X			X	X		X			18.49	1,282.0
18	CONGO	40	X		X	X		X			X	X	1.07	987.3
19	COSTA RICA	42			X		X		X	X			1.49	2,048.8
20	DOMINICAN REP.	49			X		X		X	X			3.72	1,158.5
21	ECUADOR	51			X	X		X		X			5.13	1,476.2
22	EGYPT	52		X		X		X		X			29.39	581.6
23	EL SALVADOR	53			X		X	X					3.01	735.1
24	ETHIOPIA	55		X			X	X					22.55	132.4
25	GABON	64	X		X	X			X		X	X	0.69	5,032.2
26	GHANA	68			X		X	X			X		7.77	374.0
27	GUATEMALA	75			X		X	X		X			4.62	1,077.3
28	GUINEA	76			X		X	X			X	X	4.14	299.1
29	HAITI	79			X		X	X					3.95	274.2
30	HONDURAS	80			X		X	X					2.30	636.8
31	HUNGARY	82			X		X		X				10.15	2,033.0
32	INDIA	84		X			X	X		X			487.32	235.6
33	INDONESIA	85		X		X		X					104.76	473.4
34	IVORY COAST	91	X		X		X	X		X	X		4.16	1,212.6
35	JAMAICA	92			X		X	X					1.75	1,097.3
36	KENYA	96			X		X	X		X	X		9.52	412.8
37	KOREA, REPUBLIC	99		X			X		X	X			28.71	1,606.6
38	LIBERIA	103			X		X	X			X		1.14	521.7
39	MADAGASCAR	106			X		X	X			X		6.08	366.5
40	MALAWI	107			X		X	X			X		3.92	197.6

Table 1 (continued)

#	Country	Code	CFA (12)	Size Lge (19) II	Sml (55) III	Oil Exp. (13) IV	Imp. (61) V	Income Low (55) VI	High (19) VII	Semi-Indust. (27) VIII	Sub-Saharan All (31) IX	Rich (7) X	Population 1965 (Mill.)	Percapita GNP 1980 (US $)
41	MALAYSIA	108			X	X			X	X			9.53	1,653.3
42	MALI	110	ʌ		X		X	X			X		4.56	199.4
43	MAURITANIA	113			X		X	X			X		1.09	433.1
44	MEXICO	115		X		X			X	X			43.50	2,615.4
45	MOROCCO	119			X		X	X		X			13.32	948.2
46	MOZAMBIQUE	120			X		X	X			X		7.26	322.7
47	NEPAL	122			X		X	X					10.34	133.8
48	NICARAGUA	127			X		X	X					1.61	784.5
49	NIGER	128	X		X		X	X			X		3.51	326.6
50	PAKISTAN	136		X			X	X					52.41	311.8
51	PANAMA	137			X		X		X				1.27	1,861.7
52	PAPUA NEW GUINEA	149			X		X	X					2.14	815.1
53	PARAGUAY	140			X		X		X				2.02	1,359.2
54	PERU	142			X	X		X		X			11.23	1,117.7
55	PHILIPPINES	143		X			X	X		X			31.77	730.6
56	PORTUGAL	146			X		X		X	X			9.20	2,462.9
57	RWANDA	150			X		X	X			X		3.25	222.9
58	SENEGAL	157	X		X		X	X			X		3.92	501.6
59	SOMALIA	163			X		X	X			X		2.82	274.8
60	SOUTH AFRICA	152		X			X		X	X			19.47	2,666.4
61	SRI LANKA	167			X		X	X					11.13	271.2
62	SUDAN	173			X		X	X			X		12.36	367.3
63	SYRIAN ARAB REP	177			X	X			X	X			5.33	1,512.3
64	TAIWAN, PROVINC	179			X		X		X	X			12.44	2,268.8
65	THAILAND	180		X			X	X		X			31.24	706.9
66	TOGO	181	X		X		X	X			X		1.70	430.4
67	TURKEY	186		X			X		X	X			31.15	1,312.6
68	UGANDA	190			X		X	X			X		8.43	235.3
69	UN.REP.CAMEROON	189	X		X	X		X			X	X	5.83	737.4
70	UN.REP.TANZANIA	193			X		X	X			X		11.60	264.2
71	URUGUAY	195			X		X		X	X			2.69	3,450.2
72	VENEZUELA	200			X	X			X	X			9.17	1,805.9
73	ZAIRE	210		X			X	X			X	X	19.52	203.1
74	ZAMBIA	211			X		X	X			X	X	3.64	619.4
75	ZIMBABWE	164			X		X	X			X	X	4.27	762.3

Sources: (1) Chenery, H. and M. Syrquin, "Patterns of Development: 1950-1970"
(London: Oxford University Press, 1975)
(2) Berg, Eliot "Accelerated Development in Sub-Saharan Africa" (Washington, D.C., World Bank, 1981)

Notes: II=   Defined as POP(1965) > 15 Million.
III=   Defined as POP(1965) < 15 Million.
VII=   Low Income defined as GNP/capita(1980) < $1,300.00
VI=   High Income defined as GNP/capita(1980) > $1,300.00

faster than their oil-exporter comparators, but the difference is not statistically significant. When the comparison is made among oil-importers (model V) or among low-income countries (model VI), the growth rate of low-income CFA Zone members is less and is again statistically significant. Thus, we conclude that when given equal weight and when they are compared with oil importing or low income countries, CFA Zone countries have had relatively slower growth than their comparators.

Not surprisingly, when Ivory Coast is compared with other semi-industrial countries (model VIII), its growth (5.8 percent) is almost a full percentage point higher than that of other semi-industrial countries. Finally, when we compare Ivory Coast and Gabon with other high income countries (model VII) we find they have a higher growth than their comparators.

When we turn in the last three rows to a comparison with other sub-Saharan countries, the picture changes dramatically. No longer are the CFA Zone members worse performers. Within the group of all sub-saharan countries their growth rate is slightly higher than the average (model IX), but is statistically significant. And among the sub-Saharan rich countries their higher growth is also statistically significant (model X). Finally, among sub-Saharan poor countries, CFA Zone growth is slightly less than that of other sub-Saharan poor countries, but the difference is not statistically significant.

In sum, if we take the comparison among sub-Saharan countries as the most appropriate one because we can better control for other factors (such as natural and physical endowments), we find that CFA Zone

Table   A Comparison of GNP Growth for CFA and Non-CFA Countries.

Model: $\ln(GNP) = bo + b1*D + go*TIME + g1*D*TIME$

Classification	Entire Period: 1960-82			First Sub-Period: 1960-73			Second Sub-Period: 1973-82		
	Non-CFA	CFA	Differ.	Non-CFA g0	CFA g0+g1*D	Differ. g1	Non-CFA g0	CFA g0+g1*D	Differ. g1
I. Entire Sample									
Coefficient	4.51 °	3.69	-0.83 °	4.88 *	3.61	-1.27 *	3.61 °	3.00	-0.61
t-ratio	(59.1)		(-5.2)	(64.9)		(-6.5)	(17.9)		(-1.5)
II. Large Countries									
Coefficient	5.25 °	4.66	-0.59	5.44 *	4.28	-1.16 **	4.74 °	4.14	-0.60
t-ratio	(55.7)		(-1.4)	(41.7)		(-2.0)	(23.6)		(-0.7)
III. Small Countries									
Coefficient	4.22 °	3.69	-0.53 **	4.66 *	3.61	-1.04 *	3.15 *	3.00	-0.16
t-ratio	(48.2)		(-3.2)	(52.3)		(-5.2)	(14.0)		(-0.4)
IV. Oil Exporting									
Coefficient	5.43 °	5.73	0.31	5.47 *	4.52	-0.95 *	4.84 °	4.22	-0.62
t-ratio	(30.4)		(0.8)	(5.5)		(-3.2)	(9.3)		(-0.6)
V. Oil Importing									
Coefficient	4.34 °	2.92	-1.42 °	4.77 *	3.28	-1.50 °	3.37 °	2.54	-0.84**
t-ratio	(51.5)		(-8.4)	(56.4)		(-6.4)	(15.2)		(-2.0)
VI. Low Income									
Coefficient	3.95 °	3.35	-0.60 °	4.43 *	3.47	-0.96 °	3.05 °	3.35	0.30
t-ratio	(52.7)		(-3.8)	(51.8)		(-4.8)	(16.3)		(0.7)
VII. High Income									
Coefficient	5.82 °	6.98	1.16 °	5.93 *	4.94	-0.99	4.90 °	-0.01	-4.89 °
t-ratio	(49.5)		(2.7)	(43.4)		(-1.5)	(12.8)		(-5.1)
VIII. Semi-Industrial									
Coefficient	5.69 °	6.58	0.89 **	5.83 *	7.31	1.48 °	4.80 °	5.38	0.58
t-ratio	(68.4)		(2.2)	(55.6)		(2.7)	(17.3)		(0.7)
IX. Sub-Saharan									
Coefficient	3.29 °	3.69	0.40 **	4.20 *	3.61	-0.58 °	2.00 °	3.00	1.00
t-ratio	(27.9)		(2.0)	(30.9)		(-2.6)	(6.0)		(1.8)
X. Sub-Saharan Rich									
Coefficient	3.31 °	5.73	2.43 °	4.39 *	4.52	0.13	1.38	4.22	2.84**
t-ratio	(15.5)		(7.4)	(20.8)		(0.4)	(1.8)		(2.4)
XI. Sub-Saharan Poor									
Coefficient	3.29 °	2.92	-0.37	4.15 *	3.28	-0.87 °	2.16 °	2.54	0.37
t-ratio	(25.1)		(-1.7)	(25.6)		(-3.2)	(5.9)		(0.6)

Notes: – Dummy (D) is 0 for Non-CFA and 1 for CFA membership.
            – Levels of Significance: ° = 1% and ** = 5% .
            – Growth estimates in percentage.

Estimator: – W.A. Fuller and G.E. Battese. "Estimation of Linear Models with Cross-error Structure".
            Journal of Econometrics, V.2, No.1, May 1974, p.67-78.

members have grown somewhat more rapidly than their comparators. While
not conclusive, the evidence tends to support the view that CFA Zone
members have, on the whole, performed well in terms of GNP growth when
compared with other sub-Saharan. countries. Finally, when considered as
a single economic Zone, in a statistical sense, the CFA Zone has not
grown differently than the average for large countries.

(2.2.2) Comparison by Sub-Periods: 1960-73 vs. 1974-82

A further comparison by sub-periods is useful because of the
combination of the advent of generalized floating among major currencies
starting in 1973, the supply-side shocks from two oil-price hikes
starting in 1973, and the reforms within the CFA Zone itself. Starting
in 1973, BEAC and BCEAO acquired greater autonomy from France for BEAC
and BCEAO in setting money supply targets. (Money supply growth which
had been around 10 percent annually for BEAC and BCEAO until 1973, rose
to 45 percent in 1974.) At the same time arrangements regarding
monetary cooperation with France were updated, reducing the predominant
representation of France on the Boards' and allowing a greater degree of
diversification of the Central Bank's foreign reserves. Under the new
statutes and rules of intervention. in case of imbalances the Central
Banks have a strengthened and better defined role in monetary policy and
an enhanced range of monetary instruments for meeting their objectives.

Controlling as best possible for other factors such as the oil
shocks one may suspect that the comparative performance of CFA and non-
CFA countries might have been affected by this conjunction of events.

Table 3:   Growth Comparisons by Subperiod

Classification [a]		GNP Growth Rates [b]	
		1960-73	1974-82
I	Entire Sample	L	NS -
II	Large Countries	L	NS -
III	Small Countries	L	NS -
IV	Oil Exporter	L	NS -
V	Oil Importer	L	L
VI	Low Income	L	NS +
VII	High Income	NS -	L
VIII	Semi-Industrial	H	NS +
IX	All Sub-Saharan	L	NS +
X	Sub-Saharan Rich	NS +	H
XI	Sub-Saharan Poor	L	NS +

Notes: [a]   Classification from Table 1; estimates from Table 2.

[b]   NS = Difference in growth rates between CFA and non-CFA not statistically significant; H (L) = Higher (Lower) growth of CFA Zone countries (significance level: 5 percent or more).

Signs next to NS are: + if CFA Zone growth is higher; - if CFA-Zone growth is lower.

On the one hand, if properly used, greater autonomy in the conduct of monetary policy would be expected to raise growth if indeed earlier credit availability, was insufficient. 14/ On the other hand, pegging to the Franc rather than to a basket currency, or even allowing for periodic exchange rate realignments, might have been more costly during the post-1973 turbulent years when floating led to great exchange rate volatility.

The results from comparing CFA and non-CFA growth by sub-periods are in Table 2 and further summarized in Table 3. The purpose of Table 3 is to bring out clearly whether or not for our classification, the relative performance of CFA Zone members changed between sub-periods and CFA Zone performance remained below that of comparators in both sub-periods. For one classification, the relative performance did not change. But for the remaining ten that changed, eight classifications showed a relative improvement in the period 1973-82 vis-a-vis the period 1960-73. The only deteriorations are those classifications which include the Ivory Coast (reasons for that deterioration are given below in Section 4.) Thus, we find overwhelming support for an improved position relative of CFA Zone countries vis-a-vis comparators during the period of external shocks. Of course, our crude tests do not allow us to attribute this apparent improvement to reform in the monetary union or to the greater superiority of a fixed exchange rate when the intensity and frequency of external shocks increased. But it does appear that the fear that a fixed exchange rate was detrimental to adjustment is not supported empirically. Rather we

conclude that the fixed exchange rate regime of the CFA Zone was particularly appropriate to force adjustment during the turbulent period of the seventies.

3. Adjustment to Shocks in the CFA Zone

Despite their reasonably impressive growth performance over the last two decades, especially vis-a-vis their African neighbors, CFA Zone members were subjected to several external and internal shocks since 1973. Several observers have asked whether the particular nature of the Zone affects its members' ability to adjust to these shocks. In this section, we address that question. We first define a "shock" and describe the methods of adjustment available to CFA countries. Next, we present a simple stylized model of adjustment with a fixed exchange rate. The model serves as the analytical background for the three case studies -- Cameroon, Ivory Coast and Senegal -- that follow. We conclude that while they received similar shocks, these three countries responded in very different ways. This strengthens the notion that it is the actual policies followed by CFA governments, rather than the rules of the Zone itself that determine the members' adjustment experience.

By a "shock", we mean a sudden change in domestic spending (typically government expenditure) or external conditions (world prices, interest rates) that leads to a current account deficit. Besides drawing down its reserves, a country has three options in responding to a shock: (i) it can borrow abroad to finance the deficit: (ii) it can print money and finance the deficit through an "inflation tax"; or

(iii) it can reduce expenditure and switch its composition towards domestic goods. The latter, in turn, can be achieved either by reducing public spending or raising taxes, and lowering the real exchange rate.

The first option is typically recommended when the shock is considered to be temporary rather than permanent. Many CFA countries have exercised this option in responding to their ambitious public investment programs, the oil price increases in the 1970s or the interest rate spikes of the 1980s. In addition to borrowing from the compte d'operations, they have accumulated sizeable foreign debts from multilateral and commercial banks. The rules of the Zone limit the amount of public borrowing to 20 percent of the previous year's fiscal receipts, although in practice this constraint has been violated.

While borrowing is often a desirable option, it frequently postpones the need for adjustment. In particular, when the borrowed funds are used for consumption rather than investment, other adjustment measures are needed to service the debt. That a country responds to a shock by borrowing, therefore, does not eliminate the need to look at the other options.

As for the second option for adjusting to a shock — printing money — at least two features of the CFA Zone constrain its use. First, membership in a monetary union limits an individual country's ability to increase its money supply. Both BEAC and BCEAO set union-wide monetary targets and attempt to influence their individual members' money supply by affecting domestic credit policies. Thus, if a CFA country wishes to finance a deficit by an inflation tax, it will require

the consent of the membership of its monetary union. Secondly, a fixed and rigid exchange rate makes inflation-financing of the deficit a less attractive option. Non-CFA countries that have attempted to print money in response to a shock have also found it necessary to devalue their currency in order to prevent a complete deterioration in their international competitiveness. Since Zone members effectively cannot devalue, they tend to resist the temptation to finance a deficit through money creation.

The third option — expenditure reduction and switching — appears therefore to be the major one open to CFA countries. However, this, too, is not without its difficulties. Reduction in public expenditure is problematic (because of recurrent costs or fiscal inertia), if it were an increase in public spending that created the shock in the first place. As for tax increases, since CFA countries cannot levy non-distorting taxes, these have welfare consequences that can be significant. Typically, trade taxes are increased to adjust to a deficit, and these can harm the country's international competitiveness as well as reduce consumer welfare.

We now present a skeletal model that captures these essential features of adjustment in a CFA economy. Despite (or perhaps because of) its stark simplicity, the model illustrates in sharp relief the impact of various policies (export taxes, import tariffs and government expenditure) on the current account deficit, as well as the role of the real exchange rate in linking instruments and targets. The model is

then used to derive orders of magnitude for the response of various adjustment policies on the economy.

A Stylized Model of Adjustment with a Fixed Exchange Rate

A typical CFA Zone member's economy is characterized by a primary sector producing a cash crop (coffee, cocoa or groundnuts) whose output is almost entirely sold in world markets at an exogenously given dollar price 15/, a small industrial sector and a sizeable nontradable sector. The industrial sector produces goods and services that are imperfect substitutes for goods sold in international markets; by contrast the cash crop is a homogenous undifferentiated product. Hence the distinction between the two sectors. Without much loss of generality, we can aggregate the industrial and nontradable sectors into a "semi-tradable" sector. Since it includes manufacturing, the semi-tradable sector competes with foreign goods, albeit partially. For simplicity, we assume further that output in each sector is produced by a Cobb-Douglas production function. To reflect the medium term focus of the analysis we assume sector-specific capital. This gives us the following production functions, with the terms for capital suppressed:

$$(3.1) \quad E = AL_1^{\alpha}$$

where

E = output (equal to exports) of the primary sector

L_1 = labor employed in the primary sector.

and

(3.2) $\quad Q = BL_2^\beta$

where

$\quad Q$ = output of semitradables

$\quad L_2$ = labor employed in the semitradables sector.

The output of the semitradables sector is an imperfect substitute for imports, M. Let consumers have CES utility functions over C, their consumption of semi-tradables, and M. The demand for the two is thus determined by:

(3.3) $\quad \dfrac{C}{M} = K \left(\dfrac{P^*(1+t)\sigma}{P} \right)$

where $\quad P^*$ = the exogenous world price of imports, which is set equal to one by choice of units.

$\quad P$ = domestic price of semitradables, equivalent to the real exchange rate

$\quad t$ = ad valorem tariff rate

$\quad \sigma$ = elasticity of substitution

$\quad K$ = a constant.

Labor is the only mobile factor, available in fixed supply $\bar{L}$:

(3.4) $\quad L_1 + L_2 = \bar{L}$

Finally, profit maximization and perfect competition requires equality of the value of marginal product across the two domestic sectors:

$$(3.5) \quad \alpha\pi(1-s)AL_1^{\alpha-1} = \beta PL_2^{\beta-1}$$

where π is the world price of the export sector and s is the ad-valorem export tax rate.

We assume government purchases only semi-tradables, amounting to G. Material balance requires that:

$$(3.6) \quad O = C + G$$

The government's budget constraint is:

$$(3.7) \quad eF + tP*M + s\pi E = PG$$

where F is foreign borrowing (like borrowing from the operations account) by the government.

By Walras' Law (the equality between income and expenditure), the difference between the value of imports and exports equals the current account deficit, F:

$$(3.8) \quad (P^*/e) M = (\pi/e)E + F$$

Where e is the nominal exchange rate, set equal to unity (the numeraire). Note that we have assumed for simplicity that the fiscal deficit is the current account deficit. This abstracts from any real effects arising out of the government's borrowing from the central bank,

and from the fact that some foreign borrowing was done by the private sector. As we show in the case studies, private borrowing was transitory, whereas public borrowing was often sustained.

The solution to the model (3.1) - (3.8) is given in the Appendix 1. To reflect what happened (see the case studies), we divide the adjustment experience into two episodes: initially, there is a terms of trade shock (an increase in π, say) accompanied by some change in government spending, G and no change in trade tax rates. The impact on P -- the inverse of the real exchange rate $(RER \equiv 1/P)$ -- and the current account F are expressed by the following equations:

$$(3.9) \qquad \hat{P} = a_0 \hat{\pi} + a_1 \hat{G}$$

$$(3.10) \qquad \hat{F} = b_0 \hat{\pi} + b_1 \hat{G}$$

where a"^" denotes a percentage change.

For reasonable values of the model's parameters (see Appendix 2 for the actual values used), we obtain the following estimates of a_1, b_1:

$$a_0 = -1.03 \qquad a_1 = 0.84$$

$$b_0 = -5.66 \qquad b_1 = 8.67$$

It follows that, for a given terms of trade shock, both the real exchange rate appreciation and the current account deterioration are greater the higher is the attendant government spending. Also, a one percent improvement in the terms of trade leads to a 5.7 percent reduction in the current account deficit. However, every corresponding one percent increase in G causes the current account to deteriorate by almost nine percent.

We obtain similar results for the second episode of this process, namely, the attempt to reduce the deficit by increasing import tariffs and export taxes. Defining $\hat{t}$ and $\hat{s}$ to represent the percentage increases in the tariff and tax <u>rates</u>, respectively, we obtain:

$$(3.11) \qquad \hat{P} = C_0\hat{t} + C_1\hat{s} + C_2\hat{G}$$
$$\hat{F} = d_0\hat{t} + d_1\hat{s} + d_2\hat{G}$$

$$(3.12) \qquad C_0 = -0.18$$
$$C_1 = -.054$$

$$C_2 = 0.84$$

where
$$d_0 = -2.59$$
$$d_1 = -4.11$$
$$d_2 = 8.67$$

Note that an increase in export taxes is more effective than the equivalent increase in import tariffs in reducing the deficit. This is

because raising s lowers cash crop output, releasing resources to the semitradable sector. This, in turn, depreciates the real exchange rate, facilitating the current account improvement. By contrast, an import tariff increase raises demand for semitradables, causing the real exchange rate to depreciate by less, thus dampening the first-round effect on the deficit. Again, the deficit is considerably more responsive to government spending than to taxes. In fact, a one percent increase in both taxes accompanied by a one percent increase in G will lead to a deterioration of the deficit.

In sum, a favorable terms of trade shock can lead to a real exchange rate appreciation and deterioration of the current account if it is accompanied by an increase in government spending. Similarly, attempts to reduce a deficit by distortionary taxation can be thwarted by a simultaneous expansion of the public sector. Finally, export taxes are a more potent instrument at reducing the government deficit and depreciating the real exchange rate than tariffs.

We now apply the insights from this model in interpreting the adjustment experience of the three largest countries in the CFA Zone — Cameroon, Ivory Coast and Senegal.

4. Case Studies of Adjustment: Cameroon, Ivory Coast and Senegal

What makes a comparative study of the three largest countries interesting is that they received similar shocks while operating under the same institutional rules, yet they had very different adjustment experiences. All three countries experienced the temporary benefits from a commodity boom. Cameroon and especially the Ivory Coast

benefited from the coffee and cocoa boom of 1975-77; [16/] Senegal enjoyed a phosphate boom in 1973. [17/] In addition Cameroon became a net oil exporter in 1980.

We show that the adjustment experience of the three countries differs substantially. Net external borrowing patterns were quite different as were the shares of the private and public sector in accounting for the trade deficit (surplus). As suggested by the stylized model of section 3, the compositional differences in expenditures in turn affected differentially the external sector competitiveness in each country.

A matched set of adjustment indicators is used for the three countries. The indicators, which are consistent with and highlight the stylized model presented above, measure the magnitude of the external shocks and serve to show how adjustment took place.

A first set of indicators is constructed from price indices. The commodity terms-of-trade index is supplemented by an index measuring the ratio of the domestic producer price to the world price for the two most important export commodities (coffee and cocoa for Cameroon and Ivory Coast; phosphates and groundnuts for Senegal). The impact of the shock on the structure of production is measured by two real exchange rate indices. An index corresponding to the concept of the real exchange rate developed in the model of Section 3 is constructed from national accounts data (tradables include agriculture and industry and non tradables the rest). A rise in the index signals an increase in the relative price of tradables. Finally a purchasing power parity index

(PPPRER) is used to measure external competitiveness for
manufacturing. This index is the ratio of an import-trade-weighted
manufacturing (WPI) of trading partners to the domestic manufacturing
WPI so that a fall in the value of the index indicates a loss of
manufacturing competitiveness. This fall will be consistent with a
deteriorating trade balance unless, of course, restrictions on imports
are used to prevent trade balance deterioration.

The second set of adjustment indicators measures the sources of
current account deficits and the composition of government
expenditures. The decomposition of the current account deficit, CA
(expressed as a percentage of GDP) links the change in net foreign
financial assets, NFA, to a flow adjustment by the private and public
sectors, i.e.

$$(4.1) \quad \Delta NFA \equiv CA = S_p - I_p + S_g - I_g,$$

where S_p, S_g are private and public savings, and I_p, I_g are private and
public investment. The usefulness of this decomposition derives not
only from the fact that public sector deficits are, at least in
principle, an instrument of adjustment but also from the observation
that public sector spending is usually more intensive in non-tradables
than private sector spending, an observation that was built into the
stylized model of section 3. Finally public sector expenditure and
investment patterns are tracked to see whether foreign borrowing is

guided towards investment which, if it has a higher rate of return than the borrowing costs, would not need to be eliminated.

4.1. Cameroon

Until 1975, Cameroon had been enjoying modest but steady economic growth, averaging over 4 percent a year. Agriculture was the mainstay of the economy, accounting for a third of GDP and employing 70 percent of the labor force. Essentially free of state intervention, subsistence agriculture was responsible for about two-thirds of the growth in this sector. Cash crops — mainly coffee and cocoa — represented the lion's share of export earnings. These were bought from farmers at fixed producer prices (always lower than world prices) and sold to the world market by the Office National de Commercialisation des Produits de Base (ONCPB). Manufacturing growth was of the import-substituting variety. Finally, the country was blessed with a high degree of political stability.

This tranquil yet prosperous economy was subject to two major positive shocks in the late 1970s. First, the coffee and cocoa boom of 1975-76 led to windfall gains for the ONCPB as producer prices remained unchanged. Second, the discovery of offshore oil and its subsequent production beginning in 1978 created a one-time opportunity for the government to accelerate its development program.

How did Cameroonian policymakers respond to these favorable shocks? Figure 1 summarizes the story. At the time of the 1976-77 coffee boom, production was at an all-time low (see Table 3). The "spending effect" of the boom was therefore not substantial. The real

exchange rate did not appreciate (although its rate of depreciation slowed).   Nevertheless, manufacturing competitiveness continued its downward slide, reflecting the inward-looking industrial policy, rather than the effects of the shock.   After the shock, the government reacted by raising producer prices of both cash crops; while at the same time government spending was kept under control (between 1976 and 1980, both
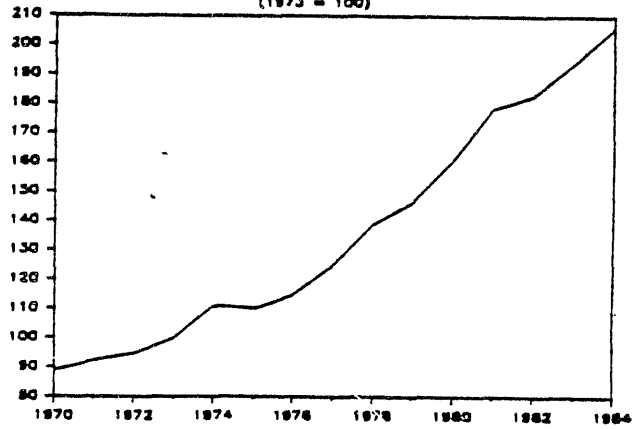
Table 4:   Cameroon: Production of Cash Crops
(thousands of metric tons)

	Cocoa	Coffee Arabica	Coffee Robusta
1965-70	97.8	18.5	48.3
1971-75	114.4	40.4	63.5
1976	96.0	22.8	57.2
1977	85.0	19.0	62.5
1978	106.0	20.3	73.9

Cameroon -- Adjustment Indicators
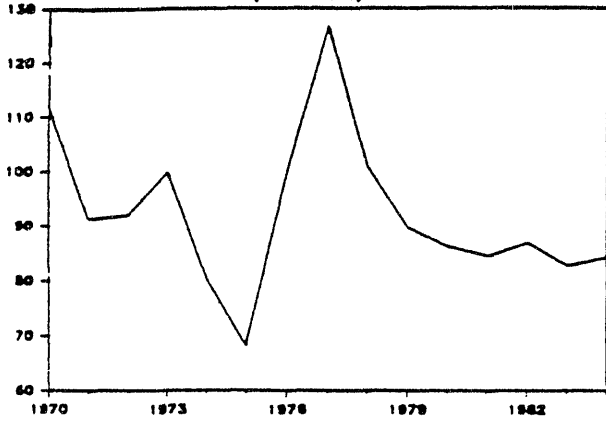
Terms of Trade
(1973 = 100)

Gross Domestic Product
(1973 = 100)

Ratio of Producer to World Price

Decomposition of Trade Balance
by Public and Private Sources

□ Pub.Surp ● Prv.Surp —— Trade.Bal

Real Exchange Rates
(1973 = 100)

—— Pt/Pmt · (Pt/Pmt)_ex.mining —— PPPCR
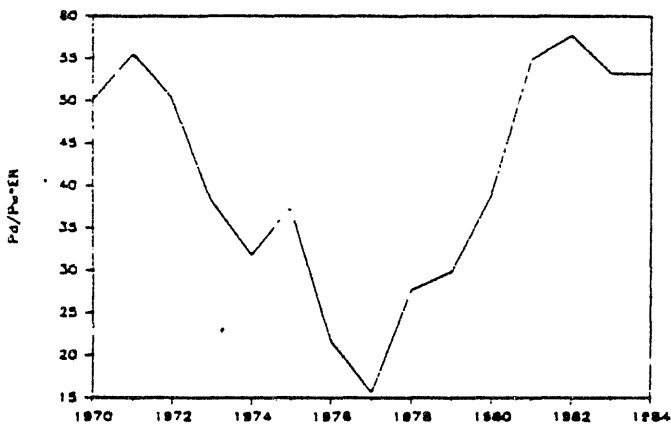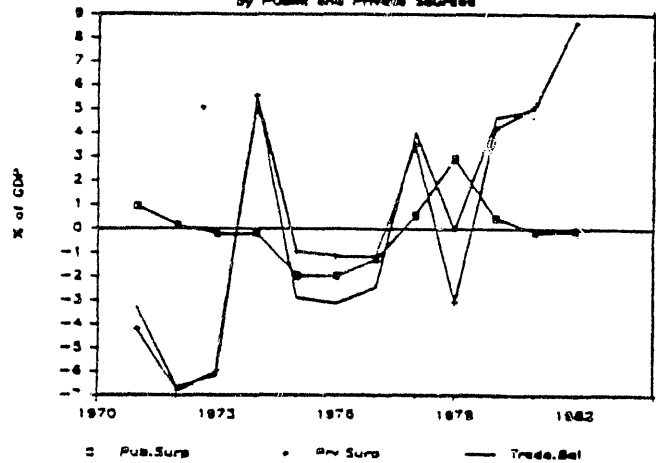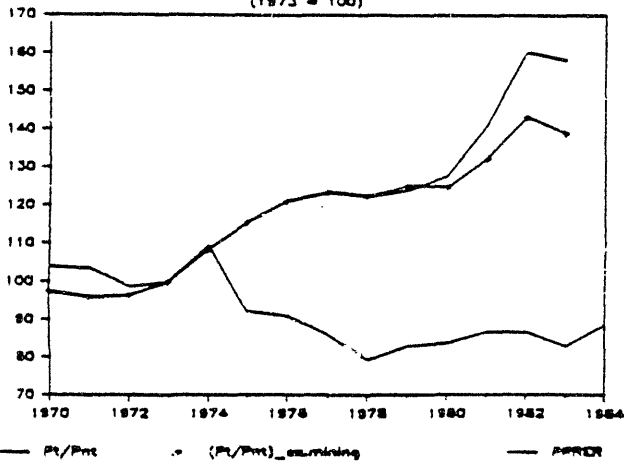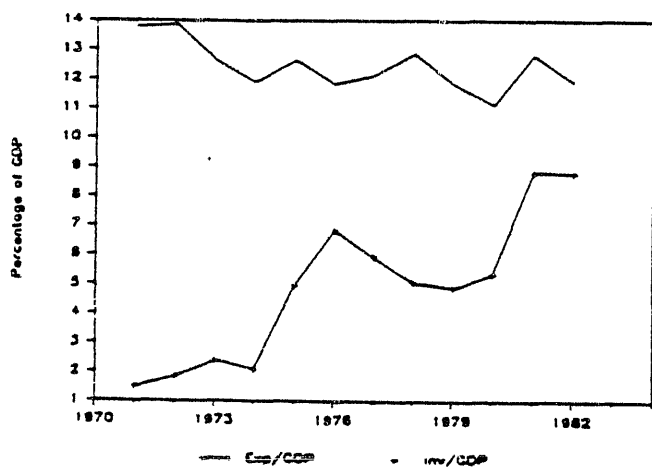
Public Expenditure and Investment

—— Exp/GDP · Inv/GDP

government expenditure and investment declined). As illustrated by the model in section 3, this adjustment mix whereby the windfalls from the shock are progressively rebated to producers (a reduction in the export tax) when the terms of trade return to normal levels is consistent with the observed real exchange rate depreciation.

The post-1978 oil boom was of much greater significance, but has elicited a similar response. While estimates vary, there is reason to believe that up to three-fourths of the oil revenues are being saved abroad. 18/ This is confirmed by the sizeable current account surpluses since 1978. In fact, the government has used some of the oil revenues to retire a small part of its foreign debt. Consequently, unlike that of other oil exporters, Cameroon's real exchange rate continued to depreciate in the first few years of the oil era. To the extent that this windfall was spent domestically, moreover, investment rather than consumption has been the recipient. The often-observed consumption boom following a period of real exchange rate appreciation during which the private sector perceives a permanent increase in wealth was therefore avoided in Cameroon. As the share of public expenditure in GDP fell slightly between 1978 and 1982, that of public investment almost doubled. That it was the private surplus rather than public which rose simply reflects the system of budget accounting in Cameroon. The bulk of oil reserves and its expenditure are entered in the compte hors budget, which is outside the official public financial accounts. The government has used its liquid position to raise the producer price on cash crops, keeping the real exchange rate from

appreciating and preventing the traditional export sector from contracting the "Dutch disease". Also, the expenditure mix towards investment rather than consumption, was more beneficial for future growth. However, because real wages have risen (the inevitable consequence of incomplete sterilization), there has been a decline in manufacturing's international competitiveness, as shown by the PPRER index.

4.2. Ivory Coast

With coffee and cocoa accounting for 50 percent of its export earnings, the 1975-77 boom in these commodities led to a sharp, but short-lived, improvement in the overall terms-of-trade. The 1979 oil crisis contributed to the cumulative 37 percent deterioration in the terms-of-trade between 1977-80. As in Cameroon, the stabilization fund was the main recipient of the windfall receipts between 1976 and 1978 which reached 16 percent of GDP at the peak of the coffee and cocoa boom in 1977.

Faced with these rapid changes in its external environment, Ivory Coast chose a different adjustment path than Cameroon. The government accelerated its investment program which had started around 1974 (see figure 2). The increase in public investment was mainly allocated to large projects with high unit costs, long gestation lags and low foreign exchange earning potential. Furthermore unlike the other two countries, government increased its expenditure share in GDP immediately following the coffee boom. As suggested by the stylized

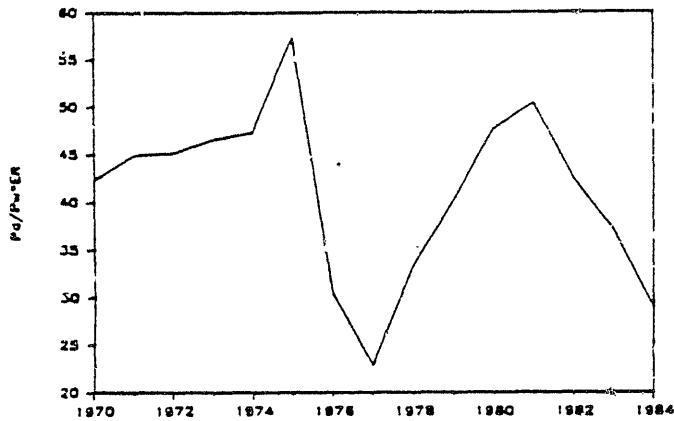# Ivory Coast -- Adjustment Indicators
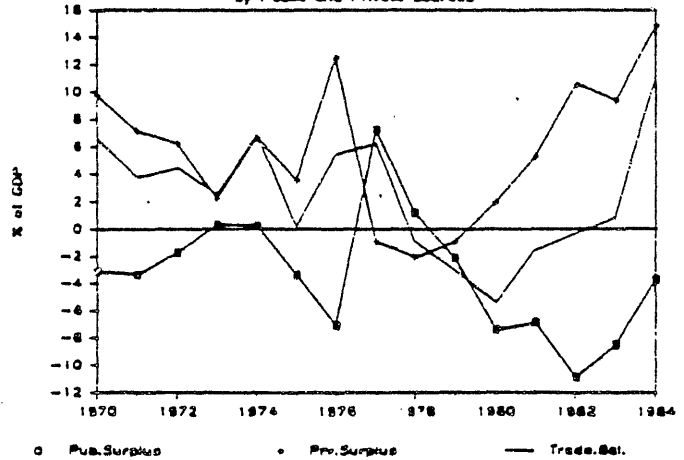
Terms of Trade
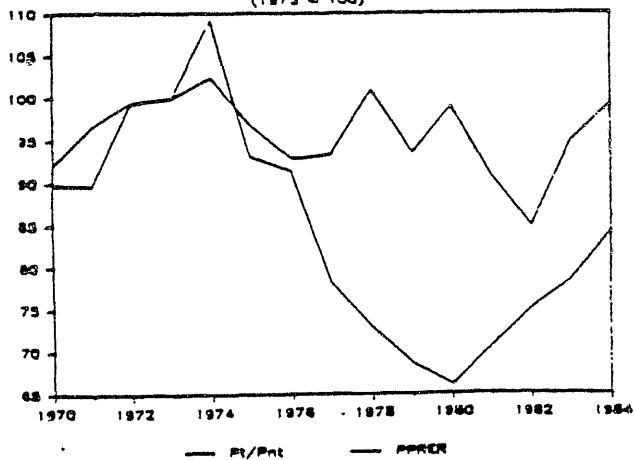(1973 = 108)
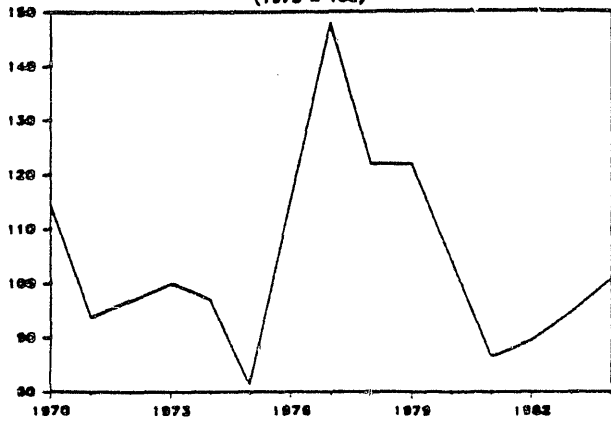
Gross Domestic Product
Index 1973 = 100
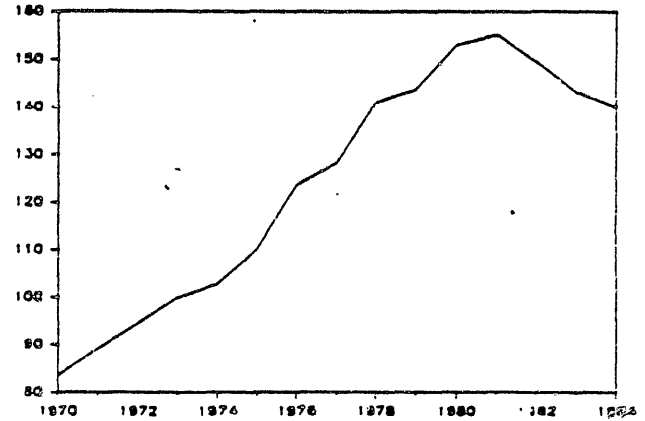
Ratio of Producer to World Price

Decomposition of Trade Balance
by Public and Private Sources

o Pub.Surplus   • Prv.Surplus   — Trade.Bal.

Real Exchange Rates
(1973 = 100)

— Pt/Pnt   — PPRCR

Public Expenditure and Investment
Shares in GDP

— Exp/GDP   • Inv/GDP
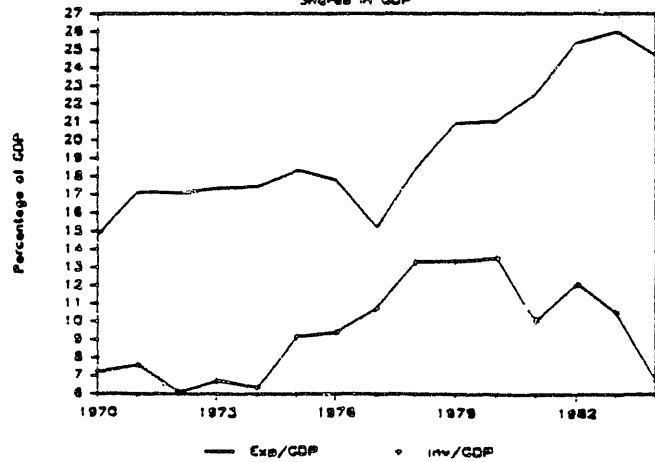
model of section 3, the expenditure pattern is consistent with the observed loss of manufacturing sector competitiveness.

When the short-lived commodity boom came to an end, the government continued its investment program raising further its investment share in GDP. Public expenditures too continued to rise rapidly with the public expenditure share in GDP rising from 15 percent in 1977 to 26 percent in 1982 when it reached its peak. [19/] On the other hand, the private sector perceived the temporary nature of the boom. As shown in the decomposition of the trade surplus (figure 2), they adjusted rapidly. Immediately following the boom, private expenditure surged, but fell just as quickly when terms-of-trade deteriorated.

Part of the increased public sector borrowing was financed internally (on average the money supply increased by 33 percent a year between 1975 and 1980), but much was external, and the debt service ratio which had averaged 8 percent during the 1965-75 period, quadrupled during 1980-85. When it came time for adjustment after 1980, it was achieved by the private sector which generated a large surplus to service the increased external debt. Not much expenditure switching was achieved by a reduction in non-tradable-intensive public expenditure. The post-1980 adjustment was mostly achieved by expenditure reduction and a consequent fall in GDP. This slow adjustment by the public sector stands in sharp contrast with Cameroon.

The implications of this public sector "boom" for the real exchange rate follows closely the predictions of the stylized model: an

initial real exchange rate appreciation between 1975 and 1977, accompanied by a sharper and sustained loss of competitiveness for the manufacturing sector (see figure 2). The commodity boom did not result in a sharp fall in the relative price of tradables (Pt/Pnt) for two reasons. First, when the boom ended, the windfall was rebated to producers through lighter taxation of coffee and cocoa. Second, there was a sizeable import component of public investment. Nevertheless, manufacturing lost competitiveness rapidly as the public sector deficit was financed by money creation. With a fixed exchange rate and downward real wage rigidity, expenditure switching would have been better achieved had the public sector curtailed its expenditures. Unfortunately, this path was not followed.

4.3. Senegal

At independence, Senegal had a higher GDP per capita than either Cameroon or Ivory Coast, a mature industrial base, and one of Africa's major metropolitan centers as its capital. Today, despite a quarter century of political stability, it is one of the poorest countries in sub-Saharan Africa; at $440 its GDP per capita is less than half that of Cameroon or Ivory Coast. The 1970s were a particularly volatile period for the country. A phosphate boom in 1973-75 [20] was followed by two droughts, in 1977-78 and 1979-80. However, most observers agree that the policies following these shocks, as much as the disturbances themselves brought on the economic crisis that gripped the country in the 1980s.

Certainly, the indicators in table 3 lend credence to this observation. Soon after the phosphate boom, the real exchange rate

appreciated. The windfall revenues were spent domestically on consumption rather than investment as the two lower charts on the right show. The trade deficit was dominated by the private sector's contribution, and public investment's share in GDP stayed practically constant.

Moreover, when the terms of trade deteriorated after 1977, Senegal continued an expansionary policy to maintain private consumption and expand public consumption. The latter grew in real terms at an average rate of 6.7 percent from 1975-80, although per capita output declined by 0.6 percent a year during this period. The government responded to the shocks by increasing consumer subsidies, public sector employment and transfers to the parapublic sector. In addition, incentives to produce exports were not increased by much as the domestic price of the major cash crops remained well below their world price. The successive droughts and declining terms-of-trade called for a real exchange rate depreciation which, as the stylized model shows, could have been achieved by cutting government expenditure.

The outcome of all this is shown in the stubbornly negative trade balance and oscillating GDP figures of the last ten years. In addition, Senegal faces a debt crisis, or more appropriately, a "creditworthiness crisis" in the mid-1980s. The government had to undertake draconian structural adjustment measures in 1984. The outcome of this program is still to unfold. However there is little doubt that a different set of responses to the favorable and unfavorable shocks of the 1970's would have led to less drastic cutbacks in the 1980s.
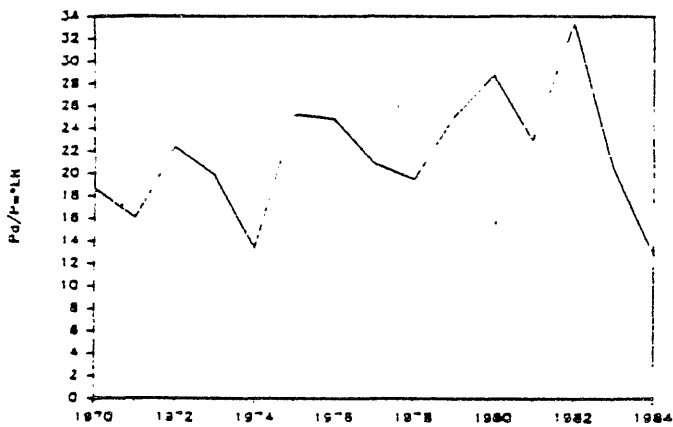
Senegal -- Adjustment Indicators
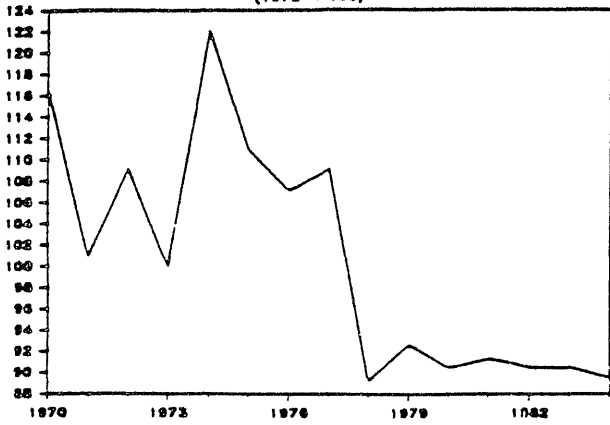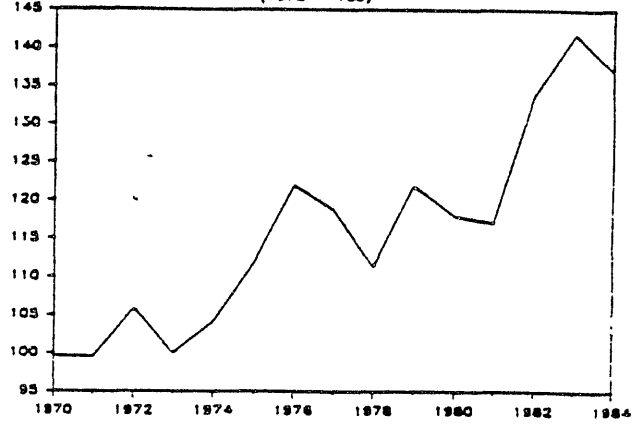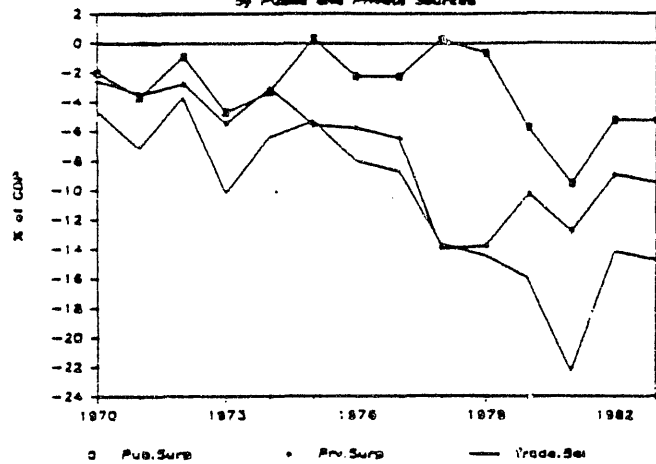
Terms of Trade
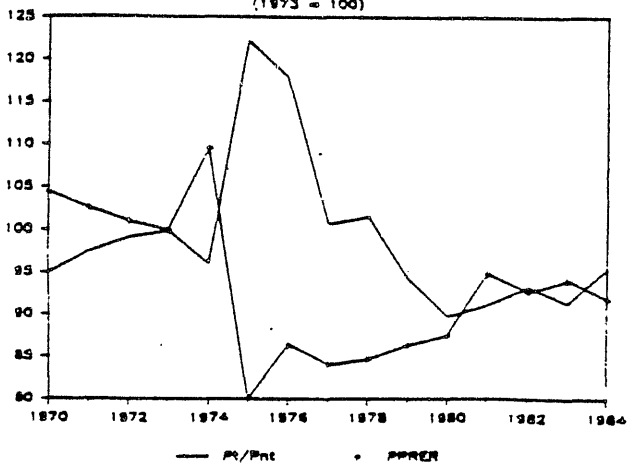(1973 = 100)

Gross Domestic Product
(1973 = 100)

Ratio of Producer to World Price

Decomposition of Trade Balance
by Public and Private Sources

□ Pub.Surp • Prv.Surp — Trade.Bal

Real Exchange Rates
(1973 = 100)

— Pr/Pnt • PPRER

Public Expenditure and Investement
Shares in GDP

— Exp/GDP ○ Inv/GDP
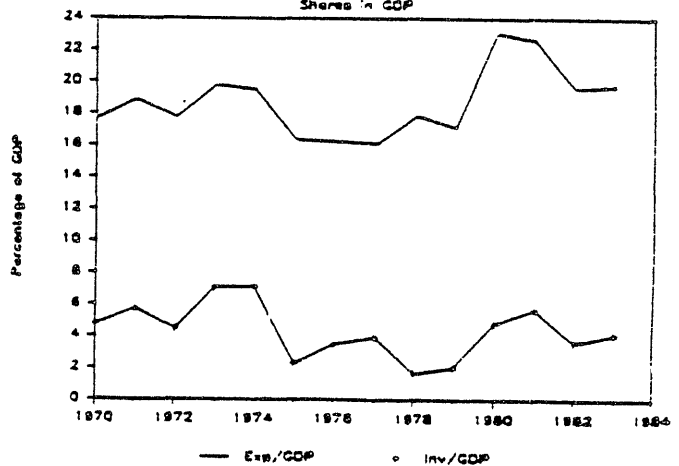
5. <u>Conclusions</u>

This paper has examined growth and adjustment in the CFA monetary union. Two themes were addressed: Is participation in a monetary union likely to be beneficial for developing countries, and how does adjustment to exogenous shocks take place in developing economies with a fixed exchange rate? The first issue was analyzed by a statistical comparison of growth rates of CFA and non-CFA countries in which an attempt was made to control for other factors and thereby isolate the implications of membership in to a monetary union. We showed that for most of the comparisons CFA Zone countries grew slower than comparators, although the difference in growth rates was often small and not statistically significant. However when comparisons were restricted to other Sub-Saharan countries, CFA countries almost always compared favorably. In further comparisons, we divided the sample into two subperiods: (1960-73) and (1973-82). The second subperiod corresponded to the period fo supply shocks and commodity boom, generalized floating, and greater autonomy for the CFA Zone in settling monetary policy. The results show that for nine of the eleven classifications, the performance of CFA Zone countries improved vis-a-vis comparators. Even though the comparisons are based on a very crude statistical analysis, the results cast doubt on the preoccupation that the CFA monetary union has not been functioning adequately.

To address the theme of adjustment with a fixed exchange rate, we used a simple model to show the relationship between the instruments of adjustment — tariffs, taxes and government expenditure — and the targets — the real exchange rate and current account deficit. This model was then used to illustrate the combination of current account deficits and real exchange rate changes for a terms-of-trade shock and different government expenditure patterns. The model was also used to highlight the implications of changes in taxation of the cash crop and of changes in restrictions on imports on the real exchange rate. The model was found to account well for the different adjustment patterns by Cameroon, Ivory Coast and Senegal to similar positive terms-of-trade shocks.

The paper concluded with a comparative assessment of adjustment in Cameroon, the Ivory Coast and Senegal. We developed a common set of macroeconomic indicators consistent with our stylized model and found that the simple structure of the stylized model accounted well for the different adjustment experience to similar shocks across the three countries. Cameroon avoided strong real exchange rate appreciation following terms-of-trade improvements and windfalls associated with the oil price hike of the late seventies by restraining public expenditure and sterilizinng most of the windfall gains. The real exchange rate was also stabilized by taxing the foreign exchange proceeds of coffee and cocoa during the boom and, later on, raising the price to producers, when the boom was over. By contrast, Ivory Coast chose a different path with an expanding public sector investment program that was financed partly by external borrowing. The real exchange appreciated and

manufacturing sector competitiveness fell sharply for an extended period until adjustment to the growing external deficit took place. In Senegal, public sector subsidies continued to be financed by taxation exports so the required real exchange rate depreciation after successive drought did not occur. The government continued to remain in deficit and adjustment was postponed. Both Senegal and the Ivory Coast did not achieve the required real exchange rate depreciation when terms-of-trade moved unfavorably and droughts occurred. With a fixed exchange rate and some relative price rigidity, they failed to achieve expenditure switching by fiscal restraint which would have moved the real exchange rate in the right direction.

This paper began with the question "Do CFA countries benefit from membership in the Zone?" Our conclusions are that (i) they have had higher growth than their African neighbours; (ii) this gap has widened since 1973, and their relative performance vis-a-vis other developing countries has improved during this turbulent decade, suggesting that the discipline imposed by Zone membership has been useful in adjusting to these shocks; (iii) the fixed exchange rate does not, in principle, hinder adjustment to external imbalances; (iv) variations in the outcome of adjustment experiences of different countries can be attributed to differences in domestic policies rather than to the rules of Zone membership.

Solution of the Model

The model considered in the main text is repeated here for convenience in level form.

$$E = AL_1^{\alpha} \tag{3.1}$$

$$O = BL_2^{\beta} \tag{3.2}$$

$$\frac{C}{M} = K\left(\frac{P^*(1+t)e}{P}\right)^{\alpha} \tag{3.3}$$

$$L_1 + L_2 = \bar{L} \tag{3.4}$$

$$\alpha\pi(1-s)AL_1^{\alpha-1} = \beta P L_2^{\beta-1} \tag{3.5}$$

$$O = C + G \tag{3.6}$$

$$\kappa eF + tP^*M + s\pi E = PG \tag{3.7}$$

$$(P^*/e)M = (\pi/e)E + F \tag{3.8}$$

This is a system of eight equations with the following eight endogenous variables: O, M, E, C, L_1, L_2, P, F. Exogenous policy variables are G, t, s. The terms-of-trade represented by π and P^*, are also considered exogenous. The model is homogenous of degree zero in all prices and the exchange rate, so we select $e = 1$ as numeraire. By choice of units we choose $P^* = 1$. Thus, a terms of trade change will come from changes in the exogenous variable π.

Log-differentiation of the above system of equations yields the following (where $\hat{Z} \equiv dZ/Z$):

$$\hat{E} = \alpha \hat{L}_1 \tag{A1}$$

$$\hat{Q} = \beta \hat{L}_2 \tag{A2}$$

$$\hat{C} - \hat{M} = \sigma(\hat{\tau} - \hat{P}) \tag{A3}$$

$$\lambda \hat{L}_1 + (1-\lambda)\hat{L}_2 = 0 \tag{A4}$$

$$\pi + \hat{\zeta} + (\alpha-1)\ \hat{L}_1 = \hat{P} + (\beta-1)\hat{L}_2 \tag{A5}$$

$$\gamma \hat{G} + (1-\gamma)\hat{C} = \hat{Q} \tag{A6}$$

$$\mu_3 \hat{F} + \mu_2(\hat{t} + \hat{M}) + \mu_2(\hat{s} + \hat{\pi} + \hat{E}) = \hat{P} + \hat{G} \tag{A7}$$

$$\hat{M} = \delta(\hat{\pi} - \hat{E}) + (1 - \delta)\hat{F} \tag{A8}$$

where

$$\hat{\tau} = \frac{t}{1 + t}\ \hat{t} \qquad\qquad \gamma = \frac{G}{G + C}$$

$$\lambda = \frac{L_1}{L_1 + L_2} \qquad\qquad \mu_1 = \frac{tM}{PG}, \ \mu_2 = \frac{s\pi E}{PG} \text{ and } \mu_3 = 1 - \mu_1 - \mu_2$$

$$\hat{\zeta} = \frac{-s}{1 - s}\ \hat{s} \qquad\qquad \delta = \frac{\pi E}{M}$$

Note from the definition of the parameters that an increase in the tariff rate implies an increase in $\hat{\tau}$ but that an increase in the export tax implies a <u>decrease</u> in $\hat{\zeta}$.

Combining (A1), (A2), (A4) and (A5) gives us the following output supply elasticities for the export and semi-tradables sectors

$$\hat{E} = \phi\ (\hat{\pi} - \hat{P} + \hat{\zeta}) \tag{A9}$$

$$\hat{Q} = \Omega \, (\hat{P} - \hat{\pi} - \hat{\zeta}) \qquad\qquad (A10)$$

where $\quad \Phi = \alpha \left(1-\alpha + \frac{(1-\beta)\lambda}{1-\lambda}\right) > 0$

and

$$\Omega = \frac{\lambda\beta}{\alpha(1-\lambda)} \; \Phi > 0.$$

Expressions (A8) and (A9) show that an increase in the relative price of the semitradable $(\hat{P} > 0)$ elicits a positive supply response for the semitradable sector and that an increase in the export tax $(\hat{\zeta} < 0)$ decreases the supply of the cash crop sector.

For the time being, we assume there are no changes in taxes, i.e. $\hat{t} = \hat{s} = 0$. Then we can examine the effect on $\hat{F}$, the current account deficit, brought about by a favorable terms of trade shock, $(\hat{\pi} > 0)$ accompanied by an increase in government spending $(\hat{G} > 0)$. Combining (A3), (A6), (A7) and (A8), we obtain the following equation:

$$\hat{F} = \theta \; \{\left(\delta - (\eta + \delta\Phi) \; \Delta\Psi\right] \; \hat{\pi} + [1 + \frac{\gamma\mu_2}{1-\gamma} + (\frac{\gamma}{1-\gamma})(\eta + \delta\Phi) \; \Delta \;]\hat{G} \qquad (A11)$$

where

$$\eta = \sigma + \frac{\Omega}{1-\gamma}$$

$$\Delta = \frac{1}{1 + \mu_3 \; \Phi - \eta\mu_2}$$

$$\Theta = \frac{1}{(\eta + \delta\Phi)\ \Delta\ \mu_1\ -\ (1\ -\ \delta}$$

We can now consider the case where $\hat{\pi} = 0$ (i.e., the boom is over) and the country is attempting to lower its deficit by a combination of import tariffs, export taxes and government expenditure reduction. Solving for $\hat{F}$ in terms of $\hat{t}$, $\hat{s}$ and $\hat{G}$ we obtain:

$$\hat{F} = \left\{\ \mu_2\left[\frac{1 + (1 - \sigma)t}{1+t}\right] - \frac{\sigma t}{\Delta(\eta+\delta\Phi)(1+t)}\ \right\}\ \hat{t}$$

$$+ \left\{\frac{\mu_3 - \psi s}{1-s} + \left(\frac{\Omega}{1-\delta} + \delta\Phi\right)\frac{s}{1-s}\ \right\}\ \hat{s}$$

$$+ \left\{\ 1 + \frac{\gamma\mu_2}{1-\gamma} + \frac{\gamma}{(1-\gamma)(\eta+\delta\Phi)\Delta}\ \right\}\ \hat{G}.$$

APPENDIX 2

Parameters for Model Simulation

_____

The parameter values used to calculate the coefficients in equations (3.9) - (3.12) are reported below:

$\sigma = 0.5$

$\alpha = 0.6$

$\beta = 0.4$

$\lambda = 0.4$

$\gamma = 0.2$

$\mu_1 = 0.2$

$\mu_2 = 0.4$

$\mu_3 = 0.4$

$\delta = 0.8$

$t = 0.10$

$s = 0.25$

FOOTNOTES

1/ See Bhatia (1984, Ch. 2) and P. and S. Guillaumont (1983, Chs. 2-4) for a description of the institutional mechanisms.

2/ Bhatia (1985) reviews the criticisms.

3/ Controlling for income per capita levels, P. and S. Guillaumont (1983, p. 223) show that CFA Zone members' openness is high compared with other African countries, but low on a world-wide comparison.

4/ Mundell (1972) argues that low levels of intraregional trade in Africa are due to artificial barriers as well as to natural barriers (lack of transportation and communication policy). In the CFA Zone there are no artificial barriers. Natural barriers and the lack of effective demand would then account for low levels of intraregional trade.

5/ We do not mention the microeconomic benefits deriving from the use of a common money. The allocative benefits from a common money are well known and are reviewed in Tower and Willett (1976, pp. 6-15).

6/ Convertibility of the CFA Zone is of course linked to convertibility of the FF. With few exceptions, FF convertibility has been maintained since 1967.

7/ World Bank (1981) stresses that the monetary union arrangements of the CFA Zone do not require a full integration of monetary fiscal and debt policy.

8/ We do not mention the evidence suggesting that inflation leads to lower growth and consequently that, by lowering inflation the CFA Zone has been beneficial to it members. Controlling for other factors, Kormendi, Lavy and McGuire (1985) find for a sample of 63 developing countries that average growth rates over the period 1968-82 are inversely related to average inflation rates over the same period.

9/ Two theoretical explanations have been advanced recently in support of the negative correlation between growth and inflation. The first is that relative price variability increases with inflation which implies that producers will be more prone to making errors in their input and output decisions because of their inability to predict changing relative prices. The second proposition comes from the new neoclassical macroeconomics. It states that monetary variability adds noise to the ex-ante real returns resulting in increased uncertainty about the real returns and hence may lead to a decline in the marginal propensity to invest.

10/ The difference between the GLS estimates and the OLS and LSDV estimators depends on the extent of cross-section correlation among residuals and the length of the time-series. See Maddala (1977, pp. 327-8).

11/ The above models are estimated using the GLS estimator proposed by Fuller and Battese (1974). An alternative is to use the estimator proposed by Parks (1967) where the residuals follow a first-order autoregression with contemporaneous correlation between cross-sections. If indeed the model exhibits autocorrelation of the first order, the Parks estimator results in higher efficiency and correctly estimated variances. Tests with this estimator however, often resulted in estimated values of $\rho > 1$ which in turn resulted in near-singularity of the GLS covariance matrix since p was set close to 1. Hence our selection of the Fuller-Battese estimator.

12/ For the CFA Zone, one country, Gabon was both above the income per capita cut-off point and below the population cut-off point. It was included in the sample because it belongs to the CFA Zone.

13/ Of course, when the Zone is included as one country in a regression, the 12 member countries of the CFA Zone are excluded, and vice versa.

14/ But, if there was excess money creation -- as might have been the case in 1974 -- this might lead to distortionary forms of adjustment to external shocks in the presence of price rigidities, and hence to lower growth.

15/ The Ivory Coast might have monopoly power in cocoa and coffee, but not enough to consider an optimal export tax framework.

16/ Following Brazil's frost in July 1975 which reduced world production by one third coffee prices doubled in 1976 and rose another 60 percent in 1977. The futures price of cocoa showed increases of 64 and 85 percent in 1976 and 1977.

17/ In 1974 phosphate prices increased by almost 400 percent.

18/ The oil sector was, and continues to be, under a cloud of official secrecy, perhaps to avoid public pressure to spend the revenues. Data about oil exports are systematically underreported in the official statistics.

19/ The increased government investment and expenditure shares in GDP are, of course, due in great part to adjustment by the privator sector.

20/ Phosphates account for 10 percent of the country's exports, and groundnuts for about 50 percent.

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