

THE EFFECTS OF DOMESTIC POLICIES AND EXTERNAL FACTORS ON THE REAL EXCHANGE RATE AND ECONOMIC PERFORMANCE IN SUB-SAHARAN AFRICA

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Abstract

This paper examines the relative contributions of domestic and external factors to real exchange rate changes in six sub-Sahara African countries during the period 1960–91. A vector autoregression (VAR) model is used to analyze the interrelationships between the current account, the budget balance and the real exchange rate. The results suggest that external factors such as the terms of trade and foreign income were as important as domestic policy mistakes in causing real exchange rate misalignment in sub-Saharan Africa.

I. Introduction

The past decade has seen an increase in focus on exchange rate policy, and the effects of real exchange rate misalignment on economic performance. This emphasis is evident in ongoing discussions about the causes of the debt crisis in Latin America, in which real exchange rate overvaluation has been blamed for current account deficits and capital flight. It has been suggested that countries such as Argentina, Mexico and the Philippines fell into the debt trap because of poor macroeconomic policies, while Indonesia, Korea and Turkey were able to avoid crisis by maintaining stable and competitive real exchange rates¹ The concern about real exchange rate misalignment has also featured prominently in current debates about the causes of agricultural decline in sub-Saharan Africa.²

In most of the discussions, real exchange rate misalignment and the associated balance of payments problems are attributed to policy mistakes in the developing countries.³ Some of the “inappropriate” policies mentioned include unsustainable fiscal policies, inflexible exchange rates regimes and excessive government control of economic incentives. Given the underdeveloped financial markets and limited domestic savings in the developing countries, central banks are left with the major responsibility in financing government budget deficits. If deficits are financed by printing more money

than the public wants to hold, prices will rise. Since many developing countries maintain inflexible exchange rate regimes, nominal exchange rates are not adjusted to account for the differences between domestic and foreign inflation, thus resulting in real exchange rate appreciation.

To date, only a limited amount of empirical work has been done on the role of the real exchange rate in economic adjustment in the developing countries. The most recent studies include Edwards (1988) and Cottani *et al.* (1990). These studies have addressed the issue of policy mistakes in some detail, and provided evidence on the negative correlation between real exchange rate misalignment and performance indicators for several developing countries. However, the studies are not suited to the experiences of the countries of sub-Saharan Africa. They do not distinguish between the effects of domestic policies and external factors on the real exchange rate, nor do they show the extent to which domestic policies are influenced by external economic events. It is impossible to understand fully the factors behind real exchange rate misalignment in sub-Saharan Africa without taking into account the adverse external environment of the 1970s. These factors are still in evidence in the 1990s, with the Gulf Crisis, and the continuing volatility in commodity markets. External shocks such as these have

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served to augment domestic inflationary pressures, thus reducing domestic policy options and contributing to real exchange rate misalignment.

The purpose of this paper is to examine the relative contributions of domestic and external factors to real exchange rate changes in six sub-Saharan African countries during the period 1960–91. In addition, the relationship between real exchange rate misalignment and economic performance is examined for the six countries. The study uses a vector autoregression (VAR) analysis to examine the interrelationships between the current account, the budget balance, and the real exchange rate in the six countries. The countries are divided into two groups: Cameroon, Cote d'Ivoire and Senegal belong to the CFA zone, and Ghana, Nigeria and Sierra Leone are former members of the Overseas Sterling Area. The economies of CFA zone are unique in having a common monetary policy, a convertible currency and a fixed exchange rate with respect to the French franc. Ghana, Nigeria and Sierra Leone also maintained fixed exchange rates from the 1960s to the mid-1980s. In principle, these countries possess a wider range of policy tools than the CFA countries. However, efforts to manage the real exchange rate were compromised by adverse external conditions and unsustainable macroeconomic policies.

II. Real Exchange Rates, Budget Deficits and Long-Run Equilibrium.

In this section, we present a simple model of the policy choices facing a developing economy.⁴ The main ideas are based on several stylized facts, and have been featured over the years in various stabilization programs, including those sponsored by the IMF and other institutions. The model is suited to the experiences of the countries of Sub-Saharan Africa because it focuses on the role of underdeveloped financial markets, fixed nominal exchange rates and budget deficits in real exchange rate adjustment.

This is a small open economy that maintains a fixed exchange rate. The country produces exports and home goods, and consumes imports and home goods. It is assumed that the monetary authorities follow a consistent sterilization policy, so that the domestic economy is

insulated from the monetary effects of exchange rate intervention. All revenues from the sale of the export goods accrue to the government, and it is assumed that in each period, a constant proportion of the revenues is passed on directly to the private sector in the form of non-distortionary subsidies.⁵ This means that private-sector disposable income can be expressed as a function of these subsidies, made through the government budget.

Full employment equilibrium in the home goods market is expressed as:

$$y = a(gb, r, RER) + g_H, \quad (1)$$

$$a_{gb} > 0, a_r < 0, a_{RER} > 0,$$

In (1), y is domestic real income, a is a real private domestic absorption on domestic goods, gb is the ratio of the budget deficit to domestic income, r is the real interest rate, RER is the real exchange rate, defined as the ratio of traded goods to home goods ($RER = P_T/P_H$), and g_H is real government expenditure on home goods.

Financial markets are largely underdeveloped in the LDCs, so that it is reasonable to assume that the capital account is closed. Accordingly, changes in the balance of payments are reflected solely through the current account. External balance is expressed in real terms as:

$$ca = x(RER) - im(gb, RER) + g_{im}, \quad (2)$$

$$x_{RER} > 0, im_{gb} > 0, im_{RER} < 0,$$

where x is real exports in domestic currency, im is real private consumption of imports, and g_{im} is real government consumption of imported goods. Again, import demand is expressed as a function of the budget deficit and the real exchange rate.

In the home goods market, full employment equilibrium is consistent with various combinations of the real exchange rate and the budget deficit. Higher government spending relative to income lead to excess demand in the home goods market, the price of home goods must rise, (RER must fall) to restore equilibrium. In Figure 1, the HH schedule represents internal balance thus defined.⁶ Points lying above and to the right of the HH line represent excess demand for domestic goods. These points represent lower domestic prices than what is required for equilibrium in the home goods market. Points

below and to the left of the HH line correspond to unemployment, or deficient absorption.

External balance is defined by the schedule FF. Increases in government spending, or lower taxes will result in excess demand for foreign goods, resulting in a deficit on the current account. This deficit must be corrected through a depreciation of the real exchange rate (an increase in *RER*). Thus the FF curve has a positive slope.⁷ Points to the left of FF curve show a surplus on the current account. For given budget shares, domestic prices are too low for external balance. Points below and to the right of FF represent deficits on the current account. Point A represents the point of internal and external balance.

The monetary sector is presented in the lower diagram of Figure 1. It is assumed that the entire budget is financed through the central bank. An increase in the budget deficit results in an expansion in the monetary base, and an increase in the rate of inflation. This relation is shown in the lower diagram. In Dornbusch (1982), it is assumed that money demand is more elastic at higher inflation rates, so that the monetary equilibrium schedule is highly non-linear. At point A, the economy is in internal and external balance. This equilibrium is consistent with a given level of the budget deficit, and an associated rate of inflation.

An increase in the budget deficit will move the economy to a point such as A'. In the home goods market, the increased real demand results in a real appreciation, which in turn leads to expenditure switching toward foreign goods, and thus a current account deficit. On the inflation side, increased deficits are accompanied by monetary expansion, leading to a higher rate of inflation at point A'. To move back to internal and external balance, the economy must go through a period of expenditure reduction as well as real depreciation. Since the nominal exchange rate is fixed, this adjustment can only take place through reductions in the budget deficit and associated monetary contraction, or trade policies designed to reduce consumption of foreign goods.

The analysis above suggests that in order to correct the problems with real exchange rate appreciation and the associated effects on the current account, policy makers in developing economies must commit to systematic fiscal

contraction. The real exchange rate is very sensitive to the fiscal balance because the central bank is obliged to finance a large proportion of government expenditures. In the 1970s, the inflationary tendencies were exacerbated by the oil shocks and volatility in the commodity markets. Unfortunately, many of the sub-Saharan countries did not use the nominal exchange rate as a policy tool to bring about real exchange rate depreciation. Since the mid-1980s, some countries have moved toward flexible exchange rates as part of Structural Adjustment Programs (SAPs). However, the efforts have been frustrated by chronic budget deficits and excessive monetary growth.

III. Empirical Evidence

The conclusions from the previous section regarding the linkage between budget deficits and current account deficits are quite consistent with the experiences of the sub-Saharan countries in the 1970s and 1980s. Cote d'Ivoire, Ghana and Nigeria have been cited as countries in which budget deficits and money creation played key roles in the accumulation of external debt and rising inflation.⁸ While the model is useful in outlining the constraints to stabilization policy in small open economies with underdeveloped capital markets, it suffers from two weaknesses. First, the theoretical analysis does not provide enough insight into the causal relationships between budget deficits, current account deficits and the real exchange rate. Second, it is inadequate in assessing the relative importance of domestic and external factors in causing changes in the real exchange rate.

Some of the interrelationships between the "twin deficits" and relative prices have been discussed in the literature. For example, it is recognized that budget deficits contribute to current account deficits in developing countries. On the other hand, declining export receipts limit government revenues thus contributing to budget deficits. A depreciation of the real exchange rate is expected to lead to an improvement in a country's competitive position, and in the current account. Moreover, current account deficits often lead policy makers to impose exchange controls and other restric-

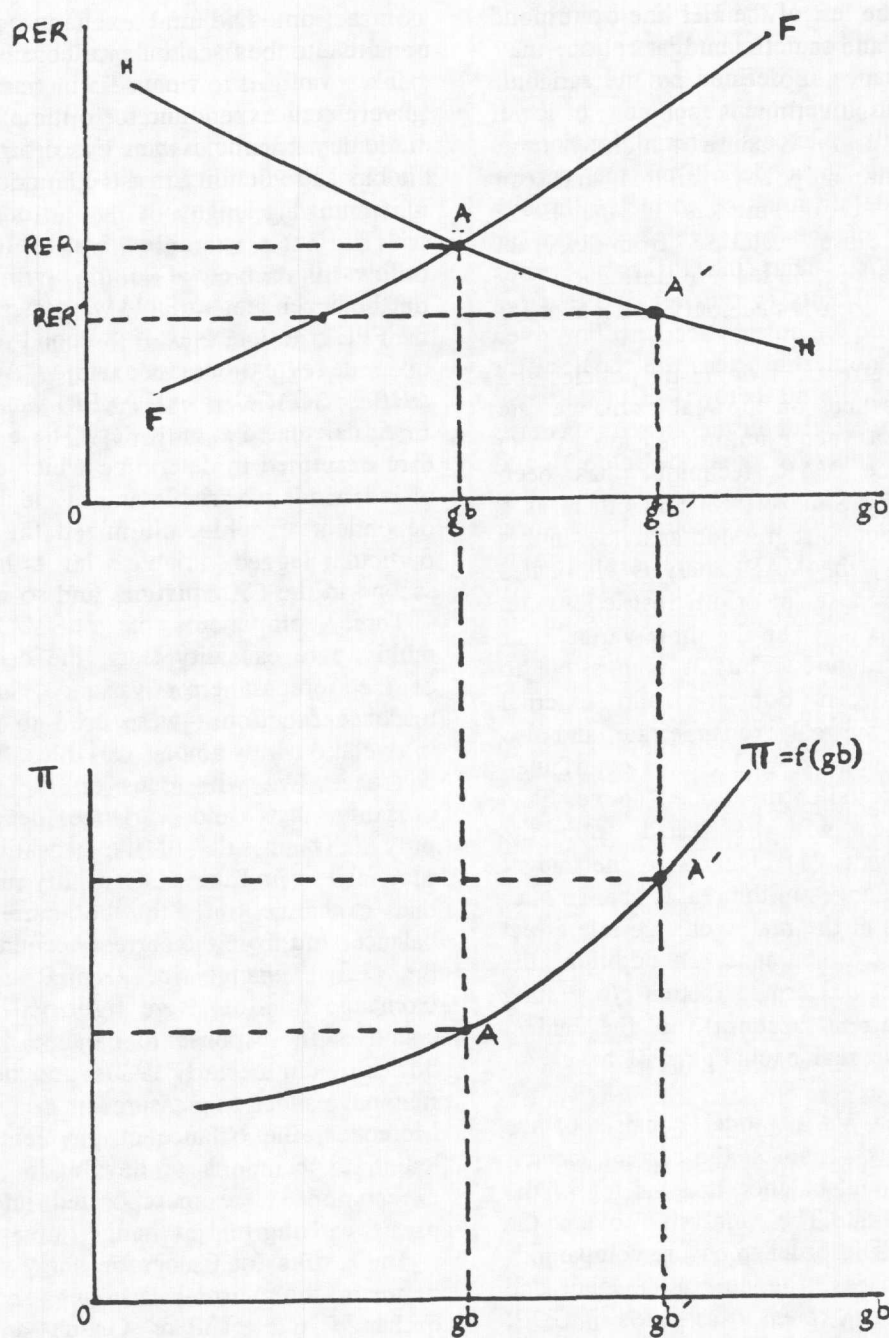


Figure 1.
Budget Deficits and the Real Exchange Rate: Money and Inflation

tions that may contribute to domestic inflation and real exchange rate appreciation. It is important to take these interrelationships into account in formulating policies to manage the real exchange rate.

The six countries in this study are price-takers in the markets for their imports and exports, so that changes in their current account balances depend largely on external factors. On the other hand, the decisions made regarding the govern-

ment budget are largely under the control of policy makers, and thus the budget balance may be considered as a domestic policy variable. While this classification is subject to some criticism, it is useful because it highlights the distinction between policy failures that can be attributed to decision makers in the home country, and those resulting from external factors. Domestic policies are influenced by external events, so it is necessary to account for feedback effects as well.

The relative effects of domestic policies and external disturbances on the real exchange rate are studied in a vector autoregression (VAR) framework. The VAR technique has been recommended by Sims (1982) and others as a reliable alternative to regression analysis. In this particular study, the VAR analysis eliminates the need to impose a priori restrictions on interrelationships between the three variables or the dynamic structure. Thus it is possible to distinguish between domestic and external determinants of the real exchange rate, and also the extent to which external factors contributed to the policy mistakes mentioned above. Two main hypotheses will be tested from the theoretical analysis: (1) changes in the budget balance cause changes in the real exchange rate, and (1) changes in the real exchange rate affect the current account balance. In addition, the contributions of external factors (operating through the current account) on the budget balance, and the real exchange will be examined.

The estimated VAR model consists of the three endogenous variables: the current account balance, the budget balance and the log of the real exchange rate. The analysis covers the period 1960–91.⁹ In order to ensure comparability across countries, the current account and budget figures are expressed as ratios of GDP. The real exchange rate is defined as the ratio of foreign to domestic prices:

$$RER = \frac{EP_F}{P}, \quad (3)$$

where E is the nominal exchange rate, expressed as domestic currency per unit of foreign currency, P_F is the foreign price level, and P is the domestic price level. This index has been

used in studies where price data on traded and nontraded goods are not available.¹⁰

The variables were first transformed to achieve stationarity, and the optimal lag for each of the dependent variables was determined using the Final Prediction Error (FPE) criterion.¹¹ The maximum lag length was set at four years. The order of the variables was determined as follows. In each equation, the optimal lag length for the dependent variable was determined using the FPE criterion. Next, a “second-round” set of bivariate regressions (for example, $\Delta CAGDP$ and ΔDEF , $\Delta CAGDP$ and ΔRER) was run and the $FPEs$ calculated at each step. These results were then examined to determine which combination of independent variable and lag length with the dependent variable minimized the FPE. This particular lagged variable with its lag appeared second in the CA equation, and so on.

Three components of the VAR model—multivariate causality tests, the decomposition of the forecast error variance, and impulse response functions—were used to analyze the interrelationships among variables. To conserve on space, we will focus on the multivariate causality tests and variance decompositions only.¹² The results of the causality tests are summarized in Table 1. Causality runs from the real exchange rate to the current account balance, and from the current account balance to the real exchange for Ghana and Nigeria. Exchange controls were tightened in the two countries in response to balance of payments difficulties in the early 1980s, and these controls may have added to pressures on domestic prices. Moreover, the balance of payments problems led to expectations of devaluation, and these expectations were incorporated into domestic prices, causing real exchange rate appreciation.

The results for Cameroon show no causality between the current account and the real exchange rate. Unlike Ghana and Nigeria, policy makers in Cameroon were able to absorb most of the adverse effects of volatile commodity prices through the commodity stabilization fund. This explains why changes in the current account are not relevant in explaining the real exchange rate. For the other CFA countries (Cote d’Ivoire and Senegal), causality runs from the current account to the real exchange rate only. The two countries borrowed heavily in the international capital markets in the late 1970s

TABLE 1
Results of the Multivariate Granger-Causality Tests

	Cameroon	Cote d'Ivoire	Ghana	Nigeria	Senegal	Sierra Leone
RER causes	0.3798	0.0896	0.0189*	0.0283*	0.1546	0.0369*
CAGDP	(2)	(2)	(3)	(2)	(1)	(2)
CAGDP causes	0.6607	0.0214*	0.0367*	0.0025**	0.0059	0.0667
RER	(2)	(2)	(3)	(2)	(1)	(2)
DEF causes	0.5477	0.0226*	0.0403*	0.0192*	0.6942	0.0466*
CAGDP	(2)	(2)	(2)	(3)	(2)	(3)
CAGDP causes	0.0428*	0.3125	0.0303*	0.0268*	0.0016**	0.0430*
DEF	(2)	(2)	(2)	(3)	(2)	(3)
RER causes DEF	0.0342*	0.0001**	0.0028**	0.2362	0.0766	0.3149
(1)	(2)	(2)	(2)	(3)	(1)	(3)
DEF causes RER	0.0762	0.0264*	0.0093*	0.0001**	0.0641	0.0300*
(1)	(2)	(2)	(3)	(1)	(3)	(3)

In statistical terms "X causes Y" means "the null hypothesis that X does not Granger-cause Y can be rejected." The results are based on annual data reflecting first-differences. The entries denote marginal significance levels for the t-statistics on the respective terms in the underlying VARs. The numbers in parentheses below the marginal significance levels are lags as chosen by the FPE criterion.

** significant at the 1 percent level

* significant at the 5 percent level

and the capital inflows were absorbed mainly through monetary growth and higher prices. The fact that the current account balance is not responsive to the real exchange rate in the CFA countries is a reflection of the preferential trading relationship with France.

In four countries (Cote d'Ivoire, Ghana, Nigeria, and Sierra Leone), causality from the budget balance to the real exchange rate can not be rejected at the 95 percent level. Within this group of countries, two-way causality is indicated for Cote d'Ivoire and Ghana. The link from the real exchange rate to the budget balance suggests that some effort was made to accommodate rising prices through government spending. This is evident in the results for the two countries, and Cameroon. Regarding the "twin deficits," Ghana, Nigeria and Sierra Leone exhibit two-way causality. The budget balance Granger-causes the current account only in Cote d'Ivoire, and the direction of causality is from the current account to the government budget in Cameroon and Senegal.

The results point to strong linkages between the budget balance and the real exchange rate. In addition, it is evident that some of the problems with the budget were caused by external factors operating through the current account.

The variance decompositions in the VAR

model break down the variance of the forecast error for each variable into components that can be attributed to the each of the explanatory variables. In Table 2, the real exchange rate is explained primarily by its own innovations. The budget balance constitutes the second largest component of the decomposition in Cote d'Ivoire, Ghana, Nigeria and Sierra Leone. This is consistent with the results of the causality tests, and it provides further support for the propositions regarding the effects of money-financed deficits on domestic prices. The contributions of the budget balance are quite substantial in Ghana and Sierra Leone, where they account for about 30 percent of the forecast error between periods four and eight.

The current account balance represents the second largest component of the decomposition for Cameroon and Senegal. The external factors are very important in the case of Senegal, accounting for as much as the contributions of the real exchange rate over periods four through eight. Cote d'Ivoire is different from the other CFA countries because of the importance of the budget balance in the decompositions for the real exchange rate. This result is not surprising, given the expansionary fiscal policies launched in that country following the coffee and cocoa booms of the mid-1970s. It has been observed

TABLE 2.
Variance Decompositions for the Real Exchange Rate

Country	Period	Proportion of the variance of the forecast error of ΔRER explained by (%)		
		ΔRER	ΔDEF	$\Delta CAGDP$
Cameroon	2	89.85	1.33	8.82
	4	86.24	5.26	8.50
	6	80.12	9.00	10.88
	8	78.50	9.92	11.58
Cote d'Ivoire	2	89.89	7.24	2.87
	4	80.35	13.13	6.52
	6	72.52	17.74	9.74
	8	72.60	16.85	10.55
Ghana	2	88.78	7.91	3.31
	4	60.63	22.70	16.67
	6	60.11	29.69	10.20
	8	57.71	30.54	11.75
Nigeria	2	86.87	6.86	6.27
	4	81.86	12.02	6.12
	6	77.51	17.69	4.80
	8	85.11	10.39	4.50
Senegal	2	85.27	3.03	11.70
	4	61.86	17.45	20.69
	6	45.36	18.56	36.08
	8	42.50	19.19	38.33
Sierra Leone	2	76.74	15.74	7.52
	4	62.18	28.34	9.48
	6	58.22	30.61	11.17
	8	53.30	34.20	12.50

that a large proportion of the fiscal expansion was accommodated through monetary expansion.¹³ In each of the countries, except Nigeria, the contribution of the current account increases continuously over the eight-period horizon. This suggests that some time elapses before an external shock is fully absorbed into relative prices.

The variance decompositions for the budget balance are presented in Table 3. Again, the budget balance is explained primarily by its own innovations. In Ghana, Nigeria and Sierra Leone, the current account represents the second largest component of the forecast error. This is a reflection of the narrow export bases in these countries. In the case of Nigeria, the current account ratio accounts for almost as much as the contributions of the budget balance during periods six and eight. For the CFA countries, innovations in the budget balance are quite large, and the real exchange rate accounts for

the second largest component of the forecast error.

The multivariate causality tests and variance decompositions are quite consistent with respect to the relationships between the current account, the budget balance and the real exchange rate. In Ghana, Nigeria and Sierra Leone, external factors are very important in explaining changes in the budget balance. The results also show that government budget deficits contribute to changes in the real exchange rate. For the CFA countries, the link between the current account and the real exchange rate is more direct. To the extent that changes in the terms of trade, foreign income, and other exogenous factors are adequately reflected in the current account balances of the sub-Saharan countries, the results show that external factors were at least as important as domestic policy mistakes in influencing the real exchange rate.

TABLE 3.
Variance Decompositions for the Budget Balance

Country	Period	Proportion of the variance of the forecast error of ΔDEF explained by (%)		
		ΔDEF	ΔRER	$\Delta CAGDP$
Cameroon	2	94.06	5.67	0.27
	4	92.97	5.53	1.49
	6	91.34	6.14	2.52
	8	91.04	6.37	2.59
Cote d'Ivoire	2	96.11	0.72	3.17
	4	82.92	14.14	2.94
	6	80.67	15.08	4.25
	8	79.71	15.21	5.08
Ghana	2	68.65	8.43	22.92
	4	62.49	14.08	23.43
	6	60.70	15.23	24.07
	8	60.03	15.73	24.24
Nigeria	2	81.98	4.29	13.73
	4	68.05	6.66	25.29
	6	43.91	19.29	38.80
	8	44.83	11.70	43.47
Senegal	2	99.27	0.18	0.55
	4	88.11	3.24	8.67
	6	83.21	10.72	6.07
	8	73.56	15.87	10.57
Sierra Leone	2	63.21	16.71	20.08
	4	57.39	20.58	22.03
	6	52.04	20.49	27.47
	8	50.29	19.62	30.09

IV. Real Exchange Rate Misalignment and Economic Performance

Real exchange rate misalignment has serious implications in the developing economy. Countries that have allowed their real exchange rates to become overvalued have also experienced balance of payments problems, declines in employment and capital flight. It is not surprising that real exchange rate management has been advanced as the primary ingredient in the Structural Adjustment Programs (SAPs) launched in several sub-Saharan countries in the mid-1980s. In this section, the effects of real exchange rate misalignment on economic performance will be examined.

Real exchange rate misalignment refers to a deviation of the actual real exchange rate from an equilibrium or long-run value. The equilibrium real exchange rate is not fixed. It changes over time in response to real factors such as the terms of trade, real interest rates abroad,

expected capital flows, exchange and capital controls, technological change, and the composition of government spending. The real exchange rate may deviate from the equilibrium level in the short-run due to unsustainable fiscal and monetary policies. In the long-run it is expected that the real exchange rate will move toward the equilibrium level consistent with internal and external balance.

In this study, the index of real exchange rate misalignment is determined as:

$$MISALIGN = \frac{RER^* - RER}{RER}, \quad (4)$$

where RER is the log of the real exchange rate, defined as in (3), and RER^* is the log of the equilibrium real exchange rate. From this formulation, an increase in $MISALIGN$ means that the equilibrium level of the real exchange rate exceeds the actual level. This represents a

real exchange rate overvaluation, and a decline in competitiveness. The values for RER^* are obtained from a distributed lag model in which the real exchange rate is expressed as a function of its lagged values, the terms of trade, the foreign real interest rate, capital flows, and the share of government spending in GDP. The lag lengths are determined using the FPE criterion, as before. The index of real exchange rate misalignment is compared to the growth rate of real output ($YHAT$) and the ratio of the current account to GDP ($CAGDP$) in scatter diagrams that appear in Figures 2-7.

The scatter diagrams show a strong negative correlation between $MISALIGN$ and $YHAT$ for Cameroon, Cote d'Ivoire, Nigeria, Senegal and Sierra Leone. This indicates that real exchange rate overvaluation has contributed to the decline in output growth in the five countries. The result for Ghana may be explained partly by the trade and exchange reforms implemented in the early 1980s, to correct the overvaluation of the Ghanaian cedi. These policies are still in effect today, and they have contributed to the resurgence in economic activity.¹⁴ The expected inverse relationship between the misalignment index and the current account holds for all the countries in the study, except Cameroon. The results for Cameroon may be attributed to discovery of crude oil and the trade surpluses in the 1970s.

V. Conclusions

As many developing countries embark on Structural Adjustment Programs (SAPs), more

attention is being paid to the factors that influence the real exchange rate, and the effects of real exchange rate misalignment on economic performance. From the experiences of successful adjusters such as Indonesia and South Korea, it has been learned that sustained economic growth requires prudent policies to manage the real exchange rate. These policies are essential for reducing balance of payments problems and stabilizing foreign exchange markets. Real exchange rate policies are also important for stimulating employment, and for protecting the traditional export sectors in developing economies.

Even though the CFA countries were not able to use the nominal exchange rate as a policy tool for most of the sample period, there is no evidence that their economies suffered unduly as a result. However, external factors were quite important in influencing the real exchange rate in Cameroon and Senegal. Cote d'Ivoire is unique among the CFA countries because of the strong link between the budget balance and the real exchange rate. In Ghana, Nigeria, and Sierra Leone, the results show that budget deficits are very important in the explaining movements in the real exchange rate. The deficits in turn are very sensitive to changes in the current account. The results also show that real exchange rate misalignment contributes to current account deficits and lower output growth in sub-Saharan Africa.

From these results, it is evident that external factors that operate through the current account

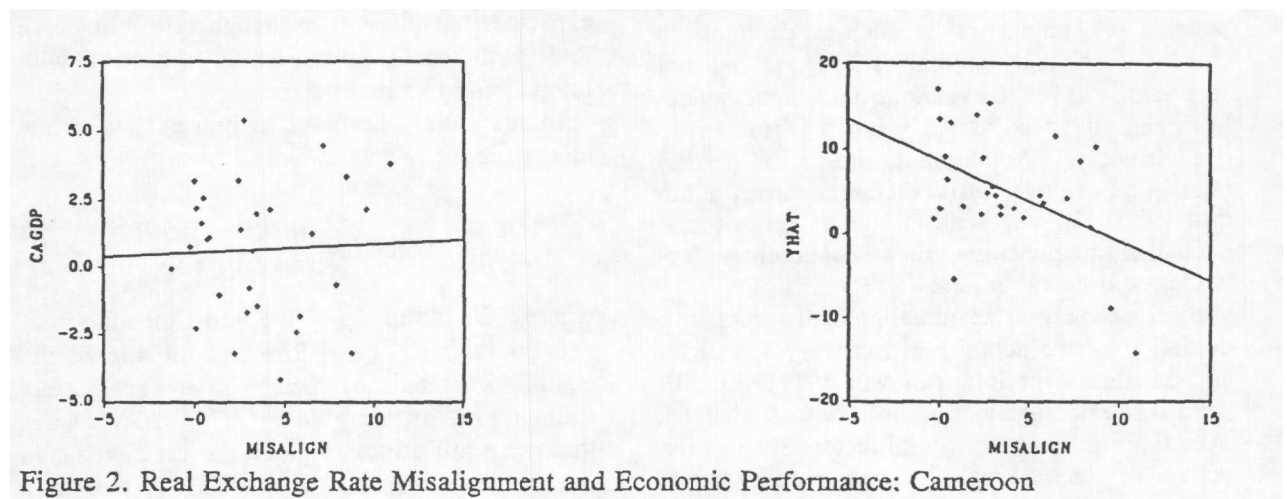


Figure 2. Real Exchange Rate Misalignment and Economic Performance: Cameroon

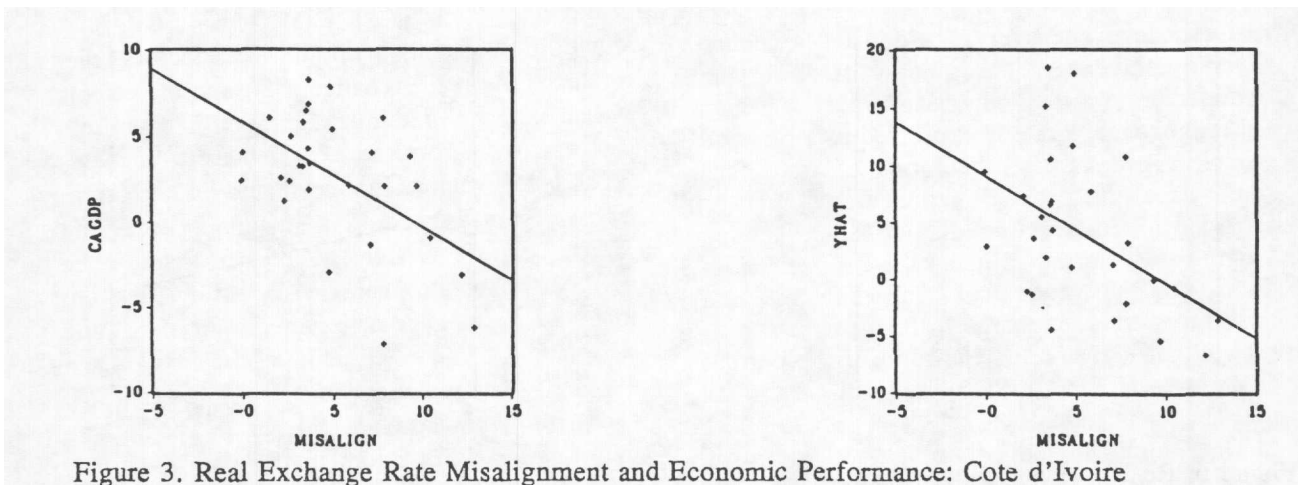


Figure 3. Real Exchange Rate Misalignment and Economic Performance: Cote d'Ivoire

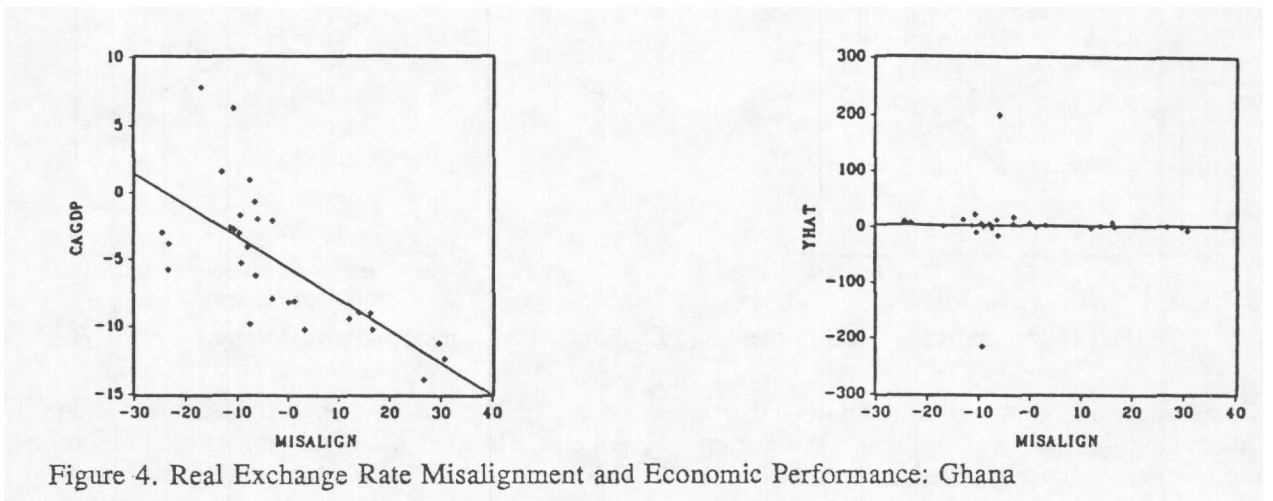


Figure 4. Real Exchange Rate Misalignment and Economic Performance: Ghana

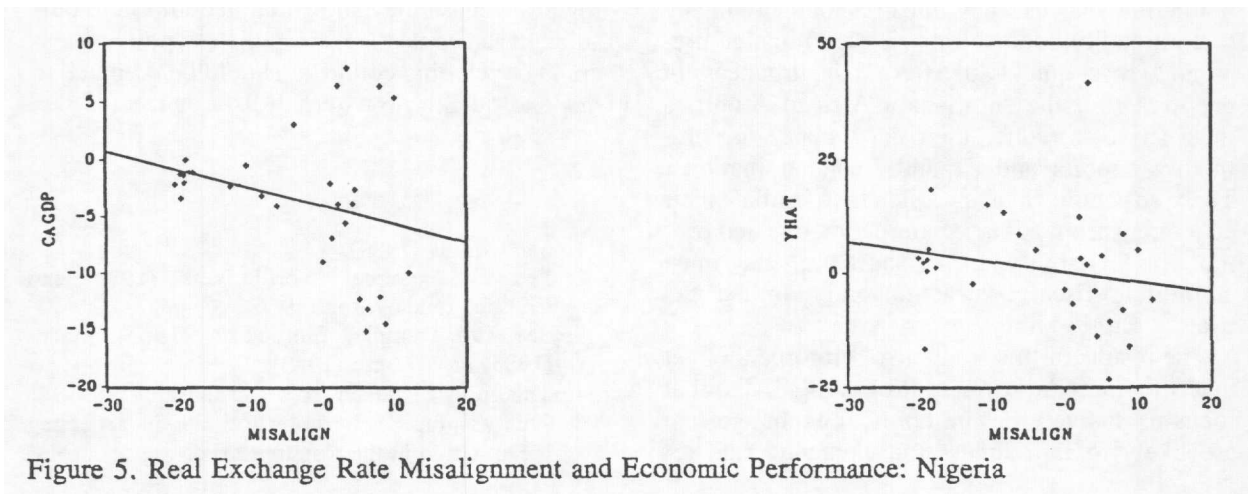


Figure 5. Real Exchange Rate Misalignment and Economic Performance: Nigeria

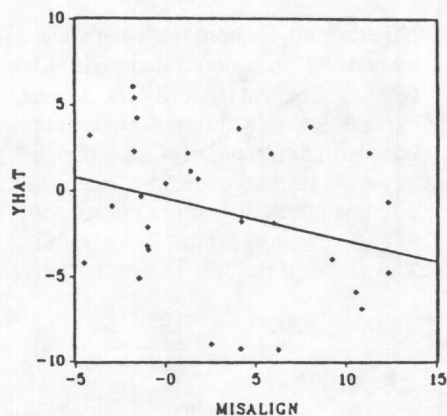
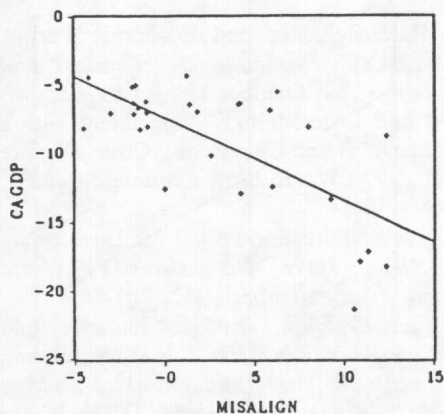


Figure 6. Real Exchange Rate Misalignment and Economic Performance: Senegal

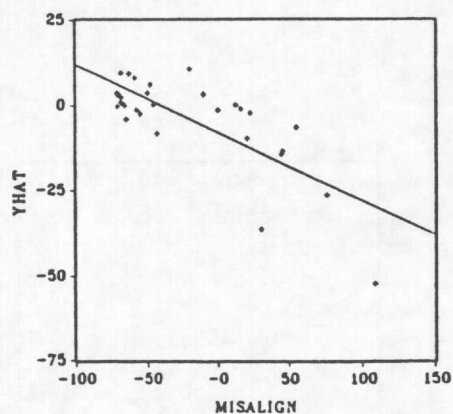
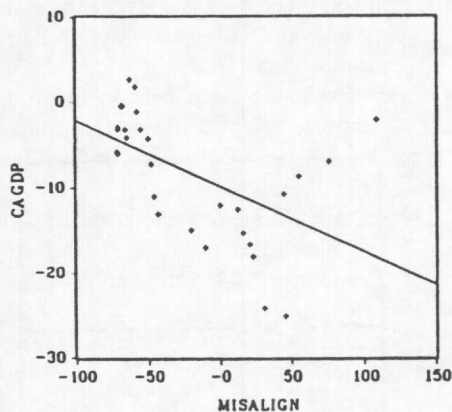


Figure 7. Real Exchange Rate Misalignment and Economic Performance: Sierra Leone

are as important as domestic policy mistakes in influencing the real exchange rate. As developing economies are integrated more closely into the international system, they will become more vulnerable to such external shocks. This means that policy makers in sub-Saharan Africa must pursue policies that do not cause large macroeconomic imbalances, they must respond cautiously to commodity booms, and yet they must be prepared to react quickly to external disturbances. In the long run, the sub-Saharan African countries must strive to reduce their dependence in commodity exports and expand financial markets. These structural changes will help to insulate their economies from adverse external factors and promote price stability. In the short run, they must commit to fiscal contraction and nominal exchange rate flexibility.

The results of this study also reinforce the fact that Structural Adjustment Programs (SAPs) that focus exclusively on the nominal exchange rate are likely to fail, unless the exchange rate re-

forms are backed by appropriate anti-inflation policies. The evidence to this point from the sub-Saharan countries shows that the effects of nominal devaluations on the real exchange rate are eroded rapidly if fiscal and monetary policy are not used to maintain stable prices. The events of the 1970s and 1980s are quite instructive in this regard because they show that in addition to pursuing consistent domestic policies, policy makers in developing countries should be prepared to respond quickly to external disturbances.

Notes

1. See Collins (1989).
2. See for example, World Bank (1984) and Chhibber and Wilton (1986).
3. See for example, Dornbusch (1985), Sachs (1985) and Weisner (1985).
4. This model is taken from Dornbusch (1982).
5. This assumption is quite accurate in reflecting the situation in the resource-exporting countries,

Nigeria and Cameroon, where the oil sector is owned by the government. In Cote d'Ivoire, Ghana, Senegal and Sierra Leone, the main exports are sold through government marketing boards. These countries also depend heavily on export taxes and exchange controls. Under such circumstances, it is quite realistic to assume that export revenues accrue to the public sector.

6. The slope of the *HH* schedule is given as:

$$\frac{dRER}{dgb} \Big|_{HH} = - \frac{a_{gb}}{a_{RER}} < 0.$$

7. The slope of the *FF* schedule is:

$$\frac{dRER}{dgb} \Big|_{FF} = \frac{im_{gb}}{(X_{RER} - im_{RER})} > 0.$$

8. See Greene (1989) and World Bank (1994).
9. Annual data are used because quarterly data on the current account balance, the government budget or GDP are not available for any of the six countries.
10. See for example, Edwards (1988, 1989).
11. See McMillin (1986, 261–63) for a description of the FPE criterion.
12. The complete results are available from the authors upon request.
13. See Devarajan and de Mello (1987, p. 455–459).
14. See World Bank (1994).

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