ETHIOPIAN JOURNAL OF ECONOMICS, I(2), October 1992, pp. 13-37

EXCHANGE RATE POLICIES AND ECONOMIC PERFORMANCE IN SUB-SAHARAN AFRICA*[1]

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ABSTRACT: *A reform programme known as the structural adjustment programme (SAP) was introduced in the 1980s in over 30 sub-Saharan African (SSA) countries with poor growth performance and severe macroeconomic disequilibria. At the centre of this programme is the exchange rate adjustment aimed at improving economic growth and stabilization by enhancing the incentives to produce tradeables, particularly agricultural tradeables. An examination of data from a sample of 30 SSA countries reveals that the outcome of currency depreciation has not been encouraging. Its impact on output and export was at best insignificant. It has also triggered a high rate of inflation. Current account balance was positively influenced by devaluation but this was largely due to import compression, rather than export expansion. A positive response may have been constrained by structural bottlenecks such as limited technological and administrative capacity, inadequate infrastructure, rising cost of inputs and imperfect markets.*

1. BACKGROUND

Prior to the 1970s, Sub-Saharan Africa (SSA) as a whole experienced a stable and a high rate of growth. But the various shocks in the 1970s altered the internal and external economic environment of developing countries. The stability of the international trading system was shaken following the 1971 decision by the US Government to suspend the fixed-price gold convertibility of the dollar. The new variable exchange rates increased the vulnerability of poor economies to international price fluctuations. As this was combined with the oil shock, unprecedented drought in the case of some countries, rapid population growth, declining commodity prices, rising interest rates and the decline in the net inflow of capital and other resources, many oil-importing Sub-Saharan African (SSA) economies ended up in economic crisis. Between 1973 and 1980, GDP growth in SSA averaged 2.5% per annum in real terms, compared to 5.9% during 1965-73. Over the same period, the sectoral growth rates changed as follows:

* Financial support was provided by the UN/ECA. The author would like to thank Mr. Abebe Adera for his invaluable comments and encouragement. Thanks are also due to Drs. G.I. Abalu, J.K. Thisen and anonymous referees for their helpful comments. The views expressed herein do not reflect those of UNECA.

agriculture declined from 2.2% to -0.3%; manufacturing from 10.1% to 8.2%; and export earnings from 15.1% to 0.2%. The growth rates of agriculture have been declining since the mid-70s and have been outpaced by population growth in most SSA countries. SSA's share of world trade for major exports (excluding oil) has declined sharply.[2]

With a worsening balance of payment problems, imports were compressed severely, especially imports of investment goods. Consequently, industrial capacity utilization slowed down considerably. In addition, the growth momentum was seriously disrupted in most SSA countries by supply shortages, the breakdown of public infrastructure, lack of domestically-generated technology and mounting budget deficits in the 1970s and early 1980s. These problems were further compounded by political instability (as evidenced by the frequent military coups or changes of regimes) which led to growing lawlessness, increasing loss of policy directions and severe loss of human capital.

It was against this background that an economic reform program known as the structural adjustment program (SAP) was introduced in many SSA countries. SAP entails two basic components, stabilization measures which aimed at improving the balance between aggregate demand and supply through prudent monetary and fiscal policies, and structural reform which act on the supply side mainly through changes in the relative prices, including exchange rate adjustment or the incentive structure to make the economy more efficient and more flexible. Since the early 1980s, nearly 40 countries have pursued economic reform programmes with exchange rate realignment often constituting a central theme in these programmes.

The purpose of this study is to examine the importance of exchange rates in explaining the performance of output, export and economic stabilization in sub-Saharan African countries. More specifically, the aims of the study are to: (1) undertake a review of the available literature on the impact of exchange rate adjustment, and (2) empirically test the various hypothesis on the influence of exchange rates. Since the stagnation in agriculture is at the center of the economic crisis in Africa, the analysis has been expanded to include the impact of SAP on agricultural performance.

The rest of the paper is organized as follows: section 2 will provide a review of the available evidence. In section 3, the methodological approaches are briefly set out. This is followed by an empirical analysis in section 4 and conclusions in section 5.

2. THE IMPACT OF EXCHANGE RATE POLICIES: A REVIEW

In the 1970s and early 1980s, many SSA countries followed a passive exchange rate policy. The demand for foreign exchange often exceeded its supply, reflecting currency overvaluation, largely as a result of expansionary monetary and fiscal policies that brought higher inflation in the African countries (outside the CFA Zone) than in their major trading partners [46]. As many countries resisted nominal devaluation, their domestic currencies tended to be overvalued. The policies that protected infant industries and favoured industrial import substitution, as well as deteriorating terms of trade[3] further contributed to the exchange rate appreciation and poor performance of the agricultural sector [47].

Moving from overvalued to equilibrium real exchange rates or devaluation is generally regarded as one of the most important policy instruments in developing countries. Devaluation is primarily aimed at improving international competitiveness or the incentive to produce exportables, particularly agricultural exportables. The International Monetary Fund and the World Bank advocate substantial initial devaluations to regain some historical level of real exchange rate, and recommend a transition from a pegged regime (pegged to a single or a basket of currencies) to flexible exchange rate arrangements. The preferred alternative is a free-floating or an auction system, allowing market forces to determine the exchange rate.

In theory, devaluation has both demand and supply effects. On the demand side, it can have both an expenditure-switching and expenditure-reducing effects. The expenditure-reducing effect of devaluation is associated with the rise in prices which reduces private sector financial wealth and expenditure. Since nominal values may not rise proportionately with devaluation, real wages and other factor incomes also tend to fall. The effect of devaluation on domestic absorption can thus be contractionary, i.e. reducing expenditure on all goods. But the expenditure-switching effect of devaluation works in the opposite direction for nontradeables. By altering the relative prices of tradeables and nontradeables, devaluation promotes substitution away from tradeables. Consequently, devaluation reduces domestic demand for tradeables, while the total (domestic and foreign) demand for domestically produced traded goods is perfectly

elastic and therefore is not affected by devaluation [27]. The effect on the demand of nontradeables can be positive if the expenditure-switching effect dominates the expenditure-reducing effect.

On the supply side, the effect of a real devaluation in the traded goods sector is positive. Real depreciation lowers the supply price of capital measured in terms of output price and thereby stimulates investment and production in the traded goods sector. The supply of nontraded goods, on the other hand, can be adversely affected. The rise in the price (in domestic currency) of imported intermediate inputs together with the rise in nominal wages may lead to contraction in their supply. The overall supply (traded and non-traded) effect can be positive, if the positive effect in the traded goods sector outweighs the negative effect in the nontraded goods sector.

Theoretically, it appears that devaluation reduces excess demand in the economy or lowers the current account deficit. But anything can happen with regard to inflation and output. Although devaluation may have favourable effects on external balance, it may have disquieting implications on inflation. This is particularly true if the authorities seek to achieve an overly devalued domestic currency (relative to the equilibrium real exchange rate), exerting considerable pressure on prices to rise. If wages and prices are flexible, the real exchange rate would quickly appreciate, necessitating another round of devaluation. Consequently, persistent attempts to achieve real depreciation through nominal devaluation would merely result in an acceleration of inflation. The problem may be compounded further if the supply response is inadequate. One way of minimizing the risk of losing control over inflation is to adopt tight monetary and fiscal policies [2] but this may have negative consequences on output.[4] Devaluation will have a contractionary effect on output if the depressing effects on aggregate domestic demand are not outweighed by the supply-stimulating aspects. This will hold particularly if the elasticities of import demand and export supply are small and the structure of production is weighted more towards tradeables than towards nontradeables [18].

The theoretical ambiguity, together with the inconsistent empirical findings, has meant considerable controversy over the impact of devaluation. At one end of the spectrum of views are those who cast doubt on the usefulness of devaluation. It is argued that significant devaluations by several competing countries will not produce an

improvement in the external terms of trade unless one assumes (against all the evidence) a highly price-elastic demand for agricultural commodity exports [11]. Krugman and Taylor [24] explained that devaluation can increase the domestic-currency price of imported inputs, and if the demand for them is inelastic, total production will decline. Mengisteab and Logan [23] concluded that there are not clear indications that devaluation has positively influenced growth or external balance. Others stressed that devaluation would have inflationary consequences, increasing the real cost of domestic factors of production and thereby decreasing the competitiveness of local goods and services [14, 37, 40]. It is argued that the effect of devaluation is wiped out by inflation, with little or no change in the real exchange rate.

Other studies tend to see the effects of devaluation as being dependent on a number of factors. For instance, one recent study [17] of 12 least developed countries, eight of which were African least developed countries[5], concluded that devaluation can be an efficient and appropriate method of reducing current account deficits in the least developed countries only if it is accompanied by domestic monetary restraint, if real wages are permitted to fall at least enough to prevent employment from declining and if sufficient foreign capital is procured to avert a reduction of GNP.[6] According to Mosley [33], the impact of a market-oriented policy varies from one country to another depending on the level of technological development, while according to Godfrey [12], there are countries which can benefit from devaluation and those which do not. For instance, Kenyan devaluation in September 1981 increased the rate of inflation and negated itself in less than one year, while the devaluation in Mauritius (1981) and Somalia (1982) brought relative real price changes as the inflationary pressure was kept under control. In Kenya, producers quickly passed on to consumers the increase in the cost of imported inputs after devaluation, leading to price increases that more than outweighed the rate of devaluation [12].

At the other end of the spectrum are those who are convinced that devaluation would have an expansionary effect on output and export (e.g. [3, 16, 49]). Devaluation encourages the production of tradeables by raising producer prices. DeRosa and Greene [9] indicated that simultaneous devaluations could not generate a sufficient deterioration in the terms of trade so as to reduce total export earnings. Because SSA's share of

primary commodities in world exports is generally low, simultaneous devaluations by a number of African countries are unlikely to reduce world commodity prices sufficiently to reduce their export earnings.[7] Khan & Knight [21] undertook a review of various studies which looked into the effects of devaluation on output and concluded that in the majority of the cases output growth would be higher after devaluation rather than lower.

The effects of devaluation on agriculture has attracted the attention of several authors, but disagreements over the issue are as widespread as ever. Much of the argument against devaluation is based on the assertion that non-price factors like technological and structural backwardness constrain the supply response of agriculture in Africa. The supply response of agricultural producers could be limited because of market imperfection, scarcity of labour and land, technological backwardness, lack of capital and inadequate rural infrastructure [5, 6]. Devaluation raises input prices long before higher prices on output are received, thereby failing to provide any incentive for producers [29, 34].

Diakosavas and Kirkpatrick [10] analyzed the relationship between exchange-rate policy and agricultural export performance for a sample of 28 SSA countries and came up with less optimistic results. An improvement in export performance was associated with a depreciation of the exchange rate in the majority of SSA economies, but in only a limited number of countries was there evidence of statistically significant and positive relationship. While exchange-rate policy has a significant role to play in the recovery of agricultural sector's export performance, the study concluded, other supportive measures are equally important. Cleaver [8] also noted that the magnitude of the impact of exchange rate (or price) reform is less important compared to non-price factors such as the efficiency of farm input supply, agricultural research and extension, and credit services. According to Lipton [25], a 10% rise in farm output prices, relative to all other prices, may generate less extra output than a 10% rise in the rate of technical progress (due, say, to agricultural research), or even in general government expenditure on agriculture.

By contrast, raising producer prices through devaluation is viewed by some contributors as a key policy instrument to unlock the constraints in agricultural exports. For instance, a study by the World Bank [47] indicated the connection between changes

in the real exchange rates and the level of agricultural exports as being very close. On average, a percentage fall in the real exchange rate[8] reduces agricultural exports by 0.6-0.8 percentage point in all developing countries and by more than one percentage point in SSA. The higher elasticity of supply in SSA not only confirms that supply responses are high, but also shows that exports are sensitive to exchange rate changes when there is the opportunity of selling in the parallel market. But Green [13] pointed out that such results may confuse the smuggling and production effects of devaluation. The main short term impact of devaluation may be to bring back smuggled goods into the official channels, not raise production.

From the foregoing, it can be observed that the debate over exchange rate realignment is far from being settled. Arguments and research findings in favour of devaluation are being counter balanced by those with negative assessments and further research is required to arrive at a consensus. The following sections are intended to make some empirical contributions to the ongoing debate.

3. METHODOLOGY

Four different approaches have been developed to empirically assess the effectiveness of a policy or a package of policies such as SAPs: (1) the before-after approach, which compares macroeconomic performance after implementation with the performance prior to the implementation of the policy; (2) the with-without approach, which compares macroeconomic performance in reforming (adjusting) countries with the performance in non-programme (non-adjusting) countries; (3) the econometric approach, which evaluates the performance of the policy, often after adjustment is made for various differences in socio-economic and macroeconomic policies and external variables, using various econometric techniques; and (4) the simulation approach which compares the simulated performance of the policies under different sets of assumptions [20].

In this study, the with-without method as well as the econometric techniques are used. The changes between 1980-84 and 1985-88[9] in real exchange rates[10] were used out to divide a sample of about 30 SSA countries into two groups: those whose currency

depreciated (Group A) and those whose currency appreciated (Group B). Within the context of SAP, Group A countries may be considered as adjusting and Group B as non-adjusting countries. Using analysis of variance, each group was further divided into two subgroups - depending on whether the depreciation (or appreciation) was statistically significant or insignificant. Such classification is carried out in order to make a distinction between strongly and weakly adjusting or non-adjusting countries on a more objective way. Accordingly, Group A countries consisted of 19 countries of which 9 experienced significant currency depreciation (See Appendix I). Eleven countries were classified as Group B, and significant appreciation took place in six of them.[11]

The attempt was to find out whether an improved stabilisation and growth performance was associated with the changes in real exchange rates. This was achieved by comparing the performance indicators (e.g. GDP) of the countries in the two groups (or the four sub-groups) in 1985-88. It was hypothesized, for instance, economic performance was better in the group in which exchange rates depreciated (Group A) than in the group in which the rates appreciated (Group B). This approach, referred to as group comparison, nonetheless, attributes differences in performance exclusively to changes in exchange rates, when in fact initial differences in economic, technological, and technical factors are the real causes of the observed variation. A regression analysis was thus conducted to separate the effects of exchange rates from other policies or factors influencing performance. The data are obtained from various statistical publications of the World Bank, IMF, FAO and UNCTAD.

4. RESULTS

4.1 Group comparison

As shown in Table 1, the average growth rate of GDP for Group A was 4.1%, higher than the 3.0% growth rate for Group B. However, the superior performance of Group A was more apparent than real. Among Group A countries, the average performance of countries for which the real exchange rate significantly depreciated (or SD countries) was lower (3.8%) than ID countries or countries with insignificant depreciation (4.3%). Significant rate of currency depreciation was not accompanied by

higher GDP growth. The results at individual country level also confirm the limited importance of exchange rates. For example, three countries with the highest average annual growth rate (over 8%) pursued different exchange rate policies: significant depreciation in Botswana, insignificant depreciation in Mauritius[12] and marginal currency appreciation in Burkina Faso. Growth performance was not closely linked to exchange rate policies. It should be added that Botswana's success is based on diamond export and its experience is not very relevant to other African countries. For instance, the drought in the early 1980s, though punitive for the rural households, had little macro-economic impact on output growth in Botswana [19]. This is in sharp contrast to most African countries where overall growth is heavily dependent on weather conditions. Another SD country, Ghana, achieved above-average growth rates (particularly in comparison with the earlier years), but it too owed its success to other factors including large inflows of capital [44].

The performance of agriculture in Group A was slightly less than in Group B. And within Group A, the growth rate of agricultural output in SD countries (with significant real devaluation) was 4.0%, less than the 4.7% growth rate for ID countries. Significant real depreciation is not matched by a higher growth in the agricultural sector. Moreover, agricultural output grew, on average, by over 11% p.a. in two countries, Burkina Faso and Chad, and both experienced an appreciating currency. For the two countries, the rapid expansion of output in the mid-1980s was rather associated with good weather, not with any kind of economic policy.

The impact of exchange rate adjustment on export appeared positive as exports grew by 5.1% in Group A, compared to 3.8% p.a. in Group B. A strong export recovery was recorded in Group A countries such as Ghana and Mauritius. Nonetheless, on average, SD countries again failed to outperform ID countries. A similar result was obtained for agricultural exports: countries with significant currency depreciation had a lower growth rate (4.6%) than countries with insignificant depreciation (5.2%).

Table 1. Currency Depreciation/Appreciation and Economic Performance

Group A	Annual Average Percentage Changes							
	Real Exchange rate	Current Account Balance (%GDP)	Inflation	GDP	Agricultural output	Export	Agricultural exports	Imports
Botswana	SD	15.820	9.080	8.730	1.930	15.550	2.140	6.200
Ghana	SD	-4.200	26.520	4.950	1.860	22.170	6.320	7.370
Madagascar	SD	-11.530	16.730	1.830	2.000	-5.500	-7.340	2.750
Mauritania	SD	-28.950		3.700	3.420	8.320	-2.880	6.220
Nigeria	SD	-0.050	14.850	2.600	5.330	3.500	12.060	-10.850
Tanzania	SD	-14.930	31.900	3.730	5.150	3.500	-6.360	7.870
Zaire	SD	-12.100	60.900	2.600	3.900	-1.250	2.570	2.750
Zambia	SD	-12.800	46.930	2.880	7.630	-7.280	28.020	-0.250
Zimbabwe	SD	-1.380	10.680	3.400	5.020	5.650	7.090	0.430
Average		-7.791	27.199	3.824	4.027	4.962	4.624	2.499
Burundi	ID	-13.580	5.900	5.780	5.980	8.620	19.690	-3.150
Gambia, The	ID	-7.300	27.520	4.050	4.800	3.000	18.080	4.900
Kenya	ID	-5.650	7.630	6.050	4.200	4.680	1.860	9.470
Malawi	ID	-4.730	20.900	2.230	2.130	-1.450	-1.960	5.800
Mauritius	ID	0.080	4.500	8.830	2.920	18.770	15.210	20.500
Niger	ID	-4.450	-3.050	3.650	8.830	3.600	-5.370	6.470
Sierra Leone	ID	-5.900	92.600	0.400	4.570	-5.150	1.260	-4.550
Sudan	ID	-8.000	44.870	1.480	1.870	-5.520	1.380	-6.370
Swaziland	ID	-7.430	13.950	5.400	5.750	24.100	9.310	
Uganda	ID	-4.150	180.650	5.700	6.130	0.680	-7.790	9.320
Average		-6.111	39.547	4.277	4.720	5.133	5.167	4.710
Group B								
Cameroon	SA	-4.450	5.900	2.180	1.930	-0.650	3.600	6.450
Chad	SA	-30.150	0.400	6.770	13.880	5.900	-2.940	
Mali	SA	-22.300	1.600	4.400	5.930	9.020	0.540	6.900
Rwanda	SA	-10.730	1.930	1.550	-1.030	-2.920	20.800	8.480
Senegal	SA	33.420	3.330	4.300	7.130	6.700	0.050	2.400
Togo	SA	-12.750	0.580	3.680	3.610	11.970	7.630	5.420
Average		-18.967	2.290	3.813	5.242	5.003	4.947	5.930
Burkina Faso	IA	-16.700	1.480	8.130	11.430	13.330	8.800	9.650
CAR	IA	-17.650	0.400	1.930	3.130	1.350	-0.160	0.050
Cote d'Ivoire	IA	-1.150	4.130	0.880	6.830	-0.900	-0.560	6.670
Ethiopia	IA	-7.750	3.500	2.750	1.630	1.530	6.830	6.100
Gabon	IA	-17.360	0.730	-3.080	0.800	-3.800	7.020	-5.580
Average		-12.126	2.048	2.122	4.764	2.302	4.386	3.378

SD = Significantly depreciating exchange rate (at 10% or less); ID = Insignificantly depreciating exchange rate; andSA = Significantly appreciating exchange rate.IA = Insignificantly appreciating exchange rate

Despite significant devaluation, agricultural exports grew by negative rates in Madagascar, Mauritania and Tanzania, while increasing by an average of 20.8% in Rwanda, a country with significant currency appreciation.

Imports were adversely affected by increasing exchange rates: imports grew at a slower pace of 3.6% in Group A, compared to 4.7% in Group B. Moreover, imports grew at a much lower rate of 2.5% in SD countries. For many countries, the growth rates of imports were lower than the growth of exports.

The current account deficit (as a proportion of the GDP) was -6.9% for Group A and -13.0% for Group B countries, indicating that countries whose currencies depreciated had improved their current account position. Excluding Mauritania (a country with an unusually high proportion of deficit), significant depreciation coincided with lower current account deficit.

On the inflation front, the results have been more conclusive. The average annual inflation rate was 34.1% for Group A, nearly fifteen times higher than the rate for group B (2.2%).[13] Among SD countries only Botswana experienced a less than 10% rate of inflation. Four (out of 10) ID countries and all countries in Group B had less than 10% inflation rate, implying that countries with significant currency appreciation had a low rate of inflation.

To sum up, the above results may not be considered as conclusive as the average growth rates were heavily influenced by observation from a few countries, but there are some notable patterns which suggest that the response of output and exports to a significant exchange rate increase for the sample countries was minimal. For most countries, significant currency depreciation led to little or no improvement in economic performance, while the rate of inflation increased rapidly. If allowance is made for some extreme observations (i.e. dropping some countries from the groups), ID countries will emerge as the best performers in terms of output and exports. On the basis of the group comparison, one can thus infer that undertaking substantial initial devaluation, as recommended by the IMF and the World Bank, may not be wholly beneficial.

4.2 Regression analysis

In order to further explore the effects of exchange rate adjustment, taking other factors into account, a regression analysis was carried out using data from the sample countries. The results further confirmed the observation drawn from group comparison.

The output effect:- The average growth rates[14] of GDP and agricultural output for the period 1980 to 1988 were regressed on a number of independent variables, including the average annual percentage change in real exchange rate or the rate of real currency depreciation (RER) during 1980-88. Other independent variables considered in the regression analysis were: (a) the average annual change in domestic credit (DOCR) - a contractionary monetary policy of SAP which entails credit restriction (aimed at dampening inflationary pressures) has been criticized on the ground that it would have a deflationary effect, and it was thus hypothesized that the lower the supply of credit the lower is the growth of output; (b) the annual average changes in public consumption (PCON) - a reduction in public consumption (aimed at controlling inflation) may adversely affect public services with detrimental consequences for output; (c) the annual average changes in financial flows (FLOW) - the higher the level of foreign assistance the higher is the growth of output; (d) the annual average changes in the ratio of domestic investment to GDP (INV) - a positive relationship between output and the ratio of investment to GDP was hypothesized; (e) the annual average changes in merchandise imports (IMP) - since most critical inputs are imported in SSA, higher output growth was hypothesized to be positively related to high growth of imports; (f) technological and social development -a higher degree of technological and social development was generally thought to be correlated with rapid growth, and the level of development was approximated by variables such as the proportion of agricultural population (APOP), per capita GNP (PGNP), the rate of illiteracy (ILLI) and dummy variables for LDC countries (DLDC), i.e. 1 for LDC and 0 for non-LDC countries; and (g) domestic shock -a dummy variable for countries directly or indirectly affected by war and drought (DSHOCK) i.e. 1 for affected and 0 for non-affected countries.[15] As shown in Table 2[16], the rate of depreciation was negatively correlated with GDP. The coefficient of RER remained negative and significant, suggesting that an increase in the rate of depreciation led to a contraction of output for the countries under consideration.

It appeared that the supply-stimulating aspects were too weak and were dominated by demand-restraining or contractionary effects of devaluation. Meanwhile, the coefficients of PCON was significantly positive. This result tends to contradict the policies of structural adjustment programmes which view public consumption as a drag on the economy. By contrast, DOCR[17] was negatively and significantly related to GDP, implying that the claim that tight credit policies lead to contraction of output cannot be substantiated. The coefficient of IMP was positive and was statistically significant in the case of total output.[18] The view that imports play a key role in the production process of African countries has been validated. All the remaining variables (some not shown in the Table) including INV, FLOW, ILLI, APOP, PGNP and DSHOCK had statistically insignificant coefficients. Some variables such as INV and DSHOCK had the expected signs while others like PGNP came out with unexpected signs.

In the equations of agricultural growth, RER had a negative and insignificant coefficient (see Table 2). The data provided no evidence that the relationship between the rate of currency depreciation and the growth rate of agricultural production was significantly positive. A positive and significant relationship was observed between INV and agricultural growth. Consistent with the results for GDP, the coefficients of DOCR in the equations of agriculture were negative.[19] Interestingly, the coefficient of PGNP was negative and significant, indicating that the performance of agriculture tends to weaken at higher levels of income. As is evident from the coefficient of DMINE, the difference between mineral and non-mineral exporting countries in terms of export performance was not significant. All the other explanatory variables were found to have little or no influence on the performance of agriculture. The insignificance of some variables such as DSHOCK could be due to measurement problem or poor quality of data, rather than the absence of any relation between output and weather shock such as drought.

Table 2
Real Exchange Rate and its impact on output and export:
Regression Results

	GDP		Agri. Output		Total Export		Agri. export	
C	2.001	1.698	0.829	1.207	6.459	6.873	-28.457	-25.811
	(1.674)	(1.448)	(0.667	(0.997)	(2.204)	(2.390)	(-1.253)	(-1.114)
RER	-0.046*	..	-0.003	..	-0.078	..	0.430	..
	(-1.850)	..	(-0.130)	..	(-1.081)	..	(0.769)	..
IMP	..	0.123*	..	..	..		..	..
	..	(1.770)	..	..	..		..	..
TERM	..	..	..	..	-0.079	0.073	3.307	3.069
	..	..	..	..	(-0.228)	(0.214)	(1.227)	(1.116)
CONC	..	..	..	..	-3.875	-3.000	50.714	54.039
	..	..	..	..	(-0.799	(-0.628)	(1.349)	(1.404)
DMINE	..	..	..	..	-2.846	-2.581	-14.670	-13.880
	..	..	..	..	(-1.439)	(-1.332)	(-0.957)	((-0.89)
PCON	0.120*	0.112*	..	..	..	..	..	..
	(2.034)	(1.631)	..	..	..	..	..	..
DOCR	..	-0.026	..	-0.013	..	-0.079	..	-0.032
	..	(-1.315)	..	(-0.720)	..	(-1.597)	..	(-0.08)
INV	0.045	0.069	0.169*	0.157*	..	..	..	..
	(0.710)	(1.084)	(2.580)	(2.454)	..	..	..	..
PGNP	-0.001	-0.001	-0.002*	-0.002*	..	..	..	..
	(-1.210)	(-1.598)	(-2.657)	(-2.577)	..	..	..	..
DSHOCK	0.112	0.175	0.114	0.257	..	..	..	..
	(0.180)	(0.267)	(0.178)	(0.391)	..	..	..	..
R^2	0.300	0.376	0.295	.310	0.161	0.205	0.195	0.175
R^2 (adj.)	0.148	0..206	0.178	.194	0.021	0.072	0.061	0.038
F.Stat	1.975	2.210	2.512	2.689	1.154	1.545	1.452	1.275

Figures in bracket are t-stat.
* = Significant at 10% or below level of significance

Export performance:- The average annual changes in total and agricultural exports were regressed on the average annual changes in RER and additional variables such as the barter terms of trade, TERM (worsening terms of trade was hypothesized to reduce the capacity to import essential inputs, thus negatively affecting export activities), export concentration, CONC[20] (the higher the degree of concentration the greater the risk of being affected by the fluctuation of the world market), domestic credit, DOCR, dummy variable for LDCS, DLDC, and dummy variable for mineral (including oil) exporting countries, DMINE,[21] were included. It was not possible to include producer prices due to lack of data. Based on the assumption that currency appreciation and the degree of price distortions are closely related, the response to the latter can, however, be inferred from the former.[22]

The regression analysis (Table 2), like the results from the group comparison, failed to substantiate the view that real exchange rate depreciation will positively and significantly affect exports. The coefficient of real exchange rate was positive and statistically insignificant for agricultural exports and negative, though insignificant, in the case of total exports. The influence of the other variables was minimal, very much in accord with the output equations. Total as well as agricultural exports were negatively (but insignificantly) affected by domestic credit (DOCR). The average change in the terms of trade (TERM) was also insignificantly related and its coefficient was positive only in the case of agricultural exports. As observed by Svedberg [39], the relationship between export performance and barter terms of trade appeared weak.[23] The coefficients of the remaining variables including CONC, DLDC and DMINE remained insignificant.[24]

Stabilization:- The average rate of inflation was regressed on the average changes in real exchange rate (RER), public consumption (PCON) domestic credit (DOCR) and GDP and the results are shown in Table 3.[25] The coefficient of RER was positive and highly significant, suggesting that currency depreciation has led to rising prices. The coefficient of GDP has the expected negative sign (though not significant) in one of the equations fitted. DOCR was positively and significantly related to inflation, while PCON was only marginally related. Overall, inflation was closely related to credit expansion and changes in real exchange rates.

Table 3
Real Exchange Rate and Its Impact on Current Account Balance, Inflation and Import: Regression Results

	Inflation		Curr. Ac. Bal.		Tot.Imports	Tot.Exports
C	6.900	-5.327	-15.564	-15.507	2.200	3.428
	(0.804)	(-1.089)	(-8.824)	(-7.802)	(2.149)	(3.015)
RER	1.130*	..	0.192*	..	-0.124*	-0.093
	(3.441)	..	(1.946)	..	(-1.936)	(-1.322)
PCON	1.095	-0.624	0.455*	0.344	..	..
	(1.329)	(-1.228)	(1.807)	(1.219)	..	..
DOCR	..	1.295*	..	0.107	..	..
	..	(9.714)	..	(1.395)	..	..
GDP	-0.683	0.246	..	..	..	..
	(-0.254)	(0.170)	..	..	..	..
R^2	0.419	0.821	0.231	0.180	0.118	0.061
R^2 (adj.)	0.349	0.799	0.171	0.117	0.087	0.026
F.STAT	6.011	38.146	3.896	2.851	3.749	1.748

Figures in bracket are t-stat.
* = Significant at 10% or below level of significance

The current account balance was positively and significantly influenced by the changes in exchange rate. Considering the observation that exchange rates influence imports negatively and significantly while having no significant impact on exports (see Table 3), the improvement in the current account appeared to have been brought about more by a reduction in imports than by an increase in exports. This suggests that currency depreciation adversely affects output partly because of its negative impact on imports.[26] In other words, an improvement in the balance of payment may have been achieved at the cost of reduced availability of essential imported goods. The coefficient of PCON and DOCR came out with a wrong sign, implying that the external deficit of the sample countries was not directly related to monetary and fiscal policy.

5. CONCLUSIONS

The findings in this study point to four general conclusions. First, the results obtained do not confirm the view that exchange rates positively influence agricultural or total output and export. The evidence from the group comparison showed that; on average, countries with significant currency depreciation were outperformed by countries with insignificant depreciation. The benefit of substantial initial devaluation (as recommended by the IMF and the World Bank) appeared doubtful. High growth rates were also recorded in countries with depreciating as well as appreciating currencies. These observations were consistent with the findings from the regression analysis which revealed that the supply-enhancing aspects of devaluation were outweighed by the contractionary effects on the aggregate domestic demand. These results suggest that unless basic development bottlenecks such as unfavourable institutional arrangements and political instability are resolved, devaluation could not be expected to work under the conditions of most African countries.

Second, the impact of exchange rate on macroeconomic stability has been mixed. The evidence gave support to the widely held belief that devaluation triggers inflation. On the other hand, its effect on current account was positive, but this beneficial effect was obtained at the cost of imports. To the extent that inflation rates rose sharply and imports were compressed as a result of devaluation, the absence of a positive and significant impact on output is only to be expected.

Third, the level of production and export in the sample countries was characterized by a high degree of variability. For instance, the annual growth rate of GDP varied between -4.5% (in 1983) and 17.6% (1986) in Mali and between -10.1% (1984) and 8.4% (1987) in Uganda. The extent of variability was even more visible in the case of agricultural output, rising, for instance, from -22.9% (1984) to 49.2% (1985) in Chad. The same was true for exports. Such large-scale swings were related less to changes in macro-policies than to bad luck such as drought, war and civil strife.[27] For instance, since agriculture is heavily dependent on nature in most cases, production and yield tend to vary more with rainfall than with prices. Until the random shocks associated with weather and political problems are minimized or brought under control,

economic policies such as exchange rates are bound to have no appreciable impact on growth.

It would be incorrect, however, to interpret our results as evidence against 'getting price right'. There is little doubt that currency overvaluation has acted as a disincentive and has harmed agricultural producers by reducing output prices and farm incomes. Studies have shown that the decline in the supply of export crops in various African countries were largely due to overvalued currency and low prices (e.g. [4, 30, 36, 47]). In as much as farmers avoid (via parallel markets) low prices paid by parastatals, currency overvaluation is avoided by smuggling into neighbouring markets. Indeed, the negative consequences of currency overvaluation are obvious. But the point that needs to be emphasized is that various aspects of production have also deteriorated with the distortions of exchange rates in Africa and the crisis cannot be addressed through exchange rate reforms alone. Lack of research and support institutions, unfavourable growing conditions and poor infrastructure often constrain the response of output. Because of market imperfections and institutional problems, devaluation may raise input prices long before the higher prices on output are received and thereby prevent output growth or even force a cutback. The absence of measures to tackle the technological, infrastructural, management and institutional bottlenecks is believed to have rendered the effort of 'getting price right' or exchange rate reforms in most African countries ineffective. A comprehensive package consisting of both price and non-price measures, together with serious attention to the sequencing of the different measures, is required for a successful adjustment programme in Africa.

The implications for Ethiopia are clear. A number of factors need to be taken into account to make devaluation an effective policy instruments. It should be pointed out that agriculture which is the mainstay of the economy is characterized by low and rapidly declining yield levels, diminishing farm size, uncertain land tenure system, worsening weather conditions, severe environmental degradation, decaying rural infrastructure, deteriorating living conditions and weak research and support institutions. The industrial sector has stagnated because of poor agricultural performance, excessive government intervention and policy distortions. Lack of diversification, declining volume of export and unfavourable terms of trade have weakened the export sector. Above all,

the socialist policies of the previous regime have made speculation more profitable than productive activities for the private sector. The present government has yet to restore stability and security in many parts of the country. In this context, a cautious approach to devaluation is imperative.

In order to get a positive response, devaluation needs to be preceded by measures primarily aimed at rehabilitating the physical state of the economy, restoring peace and security and inspiring confidence among investors. This may also include steps such as restructuring and privatization of government enterprises, restitution of confiscated properties to former owners, distributing unoccupied land to would-be private investors, conferring full property rights on land and market liberalisation. Such measures could be simultaneously implemented with stabilization policies such as tight credit policy, mainly to discourage unproductive and speculative activities. Once adequate foundations for directly productive activities have been laid down, stability has been restored and the necessary social and physical infrastructure has been put in place, it becomes prudent to undertake devaluation and liberalisation of the financial sectors. Otherwise, the inflationary pressure of devaluation would be uncontrollable and the expected supply response would not be attained.

It would be a remiss to conclude this paper without mentioning a few caveats to the above findings and conclusions. First, the analysis was based on a quantifiable cross-sectional data with high level of aggregation. As a result, many country-specific events were overlooked. In several countries, transport and communication has been sparse and frequently out of operation; the system of governance has been bureaucratic, undemocratic, corrupt and inefficient; the natural resources have been degraded by massive erosion, desertification and deforestation; and the manufacturing or the technological base has been weak or in a cumulative decline. The effects of such confounding factors can only be fully captured through case studies based on a detailed analysis of specific technical, institutional, political, and social factors. The results from the cross-country studies above, therefore, need to be supplemented with findings from cases studies. Second, exchange rate policy is only one part of the cluster of reforms known as 'structural adjustment programmes' (SAPs). Its effect is crucially influenced by the extent, duration and the sequence in which the other SAP policies are

implemented. A more comprehensive study using a unified analytical approach is required to separate the effects of exchange rates from the effects or lack of other policies and to generate information on the sequence and complementarily between different policies.

NOTES

1. This paper is part of a larger study undertaken under the auspices of the United Nations Economic Commission for Africa (UNECA)

2. The share of developing Africa in the total world merchandise export declined from 4.8% in 1970 to 1.8% in 1989. Over the same period, the share of developing Africa in the total agricultural and mining exports declined form 9.1 to 3.4% and from 10.0 to 4.7%, respectively. In 1988, the whole of SSA, with more than 400 million inhabitants, was reported to have export revenues below those of Singapore, a country of 2.5 million people [39].

3. Deteriorating international terms of trade (as well as a decline in net capital inflow) would normally result in reduced supply of foreign exchange. As a result, the demand for foreign exchange exceeds its supply, leading to currency overvaluation.

4. For example, Van Wijnbergen [42] showed that the deflationary impact of tight monetary policy can be substantial.

5. African countries included in the study were: Botswana, Burundi, Ethiopia, Malawi, Rwanda, Somalia, Sudan and Tanzania.

6. Gylfason and Radetzki also indicated that it is impossible to avoid a small reduction of real wage earnings in favour of profits temporarily, if devaluation is to have a positive effect on the current account.

7. The only exception is the case of cocoa producers, which could face a temporary decline in export earnings. Even for cocoa exporters, however, devaluation could lead to significantly higher volumes of nontraditional exports, as well as greater production of traditional exports.

8. The real exchange rate falls or currency depreciation takes place when the local currency per unit US dollar (after adjusting for inflation) declines over a given period of time. The method by which real exchange rate is calculated is given in section 3.

9. A similar periodization was adopted in a study made by the World Bank and UNDP [49]. The period 1980-84 represented the before-SAP or the initial stage of SAP and 1985-88 represented the period after the introduction of SAP.

10. Real exchange rates are defined as the nominal exchange rate (local currency over US$) multiplied by the ratio of the US consumer price index to the domestic consumer price index. This approach, which is based on the purchasing power parity (PPP), has the drawback of including a large number of nontraded goods which are not important in the determination of international competitiveness. The change in the relative incentives guiding resource allocation across tradeable and nontradeable sectors is not well captured.

Despite these caveats, the method is easier to calculate and can provide a good indication of the changes in the real exchange rate.

11. Most countries belong to the CFA zone.

12. It should be noted that Mauritius, often considered as one of the most successful examples of adjusting countries [32], undertook a moderate (not a significant) devaluation of its currency.

13. The rate of inflation in countries such as Uganda and Sierra Leone has been exceptionally high and it seems to be exacerbated by other factors such as a high degree of credit expansion.

14. The average refers to a simple arithmetic average of the annual growth rates for the period 1980-88.

15. These countries were identified as Burundi, Chad, Ethiopia, Malawi, Mauritania, the Sudan, Uganda, Tanzania, Zaire, Zambia and Zimbabwe (cf. [13]).

16. The change in domestic credit was exceptionally high in Botswana and it significantly affected the regression results. Indeed, the financial system in the country is unique in that the Government is a large-scale long-term lender and the Central Bank is a large-scale short-term deposit taker [1]. Being an outlier, Botswana was thus dropped from the sample in the regression analysis. The Durbin Watson statistic has not been reported since it has no real meaning for a cross-sectional data of the type used in this study.

17. High correlation between DOCR and RER has prevented the inclusion of DOCR and RER in the same equation.

18. Because IMP and RER were highly correlated the two variables have been treated separately in the regression analysis.

19. With no information on credit allocated for agriculture, it was hypothesized that the changes in total supply of credit are closely related to changes in agricultural credit.

20. Export concentration refers to Hirschmann index normalized to make values ranging from 0 to 1 maximum concentration (UNCTAD, Handbook of International Trade and Development Statistics, various issues)

21. This is simply to check if there are differences in the performance of export between mineral and non-mineral exporting countries. The variable was defined as 1 for mineral exporting and 0 for non-mineral exporting countries.

22. This assumption was also based on the findings of Cleaver [8] who showed that because the rate of currency depreciation and the degree of price distortion are so closely related (the latter incorporates to some extent the former) both cannot be included as independent variables in the same equation.

23. Foreign exchange earnings of SSA countries grew rapidly in the early years of 1954-69 and declined in 1970-85, although the terms of trade were unfavourable in both periods [39].

24. Although highly suggestive, it is impossible to draw any firm conclusions from the export equations since the values of F-stat and R^2 were very low.

25. This model of inflation draws on the study made by London [28]. It was hypothesized that GDP is inversely related to output, while PCON and DOCR are positively related.

26. Note that imports were positively and significantly related to output (Table 2).

27. Note that the macroeconomic policy variables, for the most part, explained less than 30% of the variation in output and export. Owing to measurement problems, the influence of non-policy factors such as DSHOCK was minimal according to our model.

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Appendix I
Changes in Real Exchange Rate: Analysis of Variance

Group A	Local currency per US$ (annual % Change)		
	1980-84	1985-88	Kind of change
Botswana	1.23	1.70	SD
Ghana	26.68	87.70	SD
Madagascar	525.70	829.00	SD
Mauritania	62.25	70.73	SD
Nigeria	0.99	2.91	SD
Tanzania	21.69	42.14	SD
Zaire	34.74	53.48	SD
Zambia	2.02	5.34	SD
Zimbabwe	1.26	1.51	SD
Burundi	113.12	122.88	ID
Gambia, The	3.55	3.80	ID
Kenya	14.87	16.31	ID
Malawi	1.44	1.69	ID
Mauritius	11.93	13.42	ID
Niger	344.31	351.03	ID
Sierra Leone	5.83	9.17	ID
Sudan	2.22	2.23	ID
Swaziland	1.55	2.01	ID
Uganda	6.88	8.23	ID
Group B			
Cameroon	389.68	299.70	SA
Chad	487.71	365.61	SA
Mali	395.60	332.24	SA
Rwanda	98.75	83.66	SA
Senegal	428.26	324.51	SA
Togo	401.51	276.89	SA
Burkina Faso	375.58	337.30	IA
CAR	392.58	340.28	IA
Cote d'Ivoire	348.28	308.76	IA
Ethiopia	2.38	2.33	IA
Gabon	389.90	328.37	IA

SD = significant depreciation (at 10% or less); ID = insignificant depreciation; SA = significant appreciation; and IA = insignificant appreciation.