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8 Devaluation Controversies in the Developing Countries: Lessons from the Bretton Woods Era

Sebastian Edwards and Julio A. Santaella

In 1973, the international monetary system forged in Bretton Woods experienced a final collapse, as the industrial nations abandoned all efforts to sustain a fixed exchange rate regime and decided to adopt freely floating exchange rates. In spite of this significant change in the international financial system, throughout the 1970s most of the developing countries continued to rely heavily on fixed exchange rates, mainly pegging to specific countries within the spirit of an optimum currency area. For example, the December 1979 issue of *International Financial Statistics (IFS)* reports that 85% of the developing countries had some sort of fixed exchange rate system at that time.

During the 1980s and early 1990s, however, an increasing number of developing countries moved away from fixed exchange rates and adopted more flexible regimes. According to the December 1990 issue of *IFS*, the proportion of less developed countries (LDCs) that had some type of fixed exchange rate had declined to 67%. This movement toward greater exchange rate flexibility was, to a considerable extent, associated with the debt crisis unleashed in 1982. Those countries that had to cope with sudden cuts in external financing had very limited policy options. In an effort to engineer gigantic resource transfers to their creditors, most of these countries adopted adjustment packages that included, as an important component, the abandonment of fixed rate practices. It is in this context that, in the mid-1980s, we saw the end of long experiences with fixed exchange rates in countries such as Venezuela, Para-

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guay, and Guatemala. Many countries rapidly adapted to their new circumstances. The exchange rate ceased to be a sacrosanct variable linked to the nationalistic destinies of countries; during the late 1980s, a large number of economies had become increasingly comfortable with managed exchange rate regimes.

Recently, however, a number of observers and experts—including prominent members of the IMF Executive Board—have argued that the enthusiasm for devaluation and an active exchange rate policy has gone too far. It has been pointed out that, by relying too heavily on exchange rate adjustments, and by allowing developing countries to adopt administered systems characterized by frequent small devaluations, Fund programs have become excessively inflationary. According to this view, exchange rate policy in the developing countries should move toward greater rigidity—and even complete fixity—as a way to induce financial discipline and reduce inflation. This position, which is steadily gaining new supporters, has largely been influenced by current macroeconomic views that emphasize the role of expectations, credibility, and institutional constraints (see, e.g., Aghevli, Khan, and Montiel 1991; Agenor and Montiel, 1991; and Burton and Gilman, 1991).

It would be illusory, however, to think that a return to greater exchange rate fixity will completely eliminate situations of “fundamental disequilibrium.” In fact, most supporters of nominal exchange rate anchors concede that, under conditions of severe exchange rate misalignment, it is generally advisable to implement adjustment packages that combine fiscal and credit restraint with a discrete nominal devaluation (see Burton and Gilman 1991). What is perhaps paradoxical is that precisely this type of pegged arrangement, where the currency may be occasionally devalued by a large amount, was extremely controversial during the Bretton Woods period. In fact, the “devaluation issue” was often at the forefront of conflict between national authorities and the staff of the International Monetary Fund. Even under conditions of obvious “fundamental disequilibrium,” the economic authorities in the developing countries tended to resist devaluing their currencies. Instead, they often imposed trade and exchange controls in an effort to avoid a balance of payments crisis.¹ This historical resistance to devaluations had its roots in a deep skepticism about the effectiveness of exchange rate adjustment. In fact, it has been commonplace in the developing world to argue that large and discrete devaluations—and especially devaluations implemented within the context of IMF programs—have no effect on the external sector, result in output contractions, and worsen income distribution. (see Denoon 1986; Buirra 1983; and SELA 1986).

An important question in the current debate regarding the desirability of a

1. There has traditionally been a sense among some observers that LDCs have been forced by third parties—and in particular by the IMF—to devalue their currencies (see, e.g., Denoon 1986).

return to fixed rates revolves around the actual effectiveness of discrete and substantial devaluations in the context of a fixed rate regime. The purpose of this paper is to deal with this issue from a historical perspective. We analyze the conditions surrounding 48 *major* devaluation episodes in the developing countries that took place during the Bretton Woods period (1954–71). By focusing on the Bretton Woods era, we can examine the fundamental empirical features of large nominal devaluations in a historical environment with generalized fixed exchange rates.

This paper differs from previous work in three fundamental respects. First, a formal distinction is made between devaluations undertaken within the context of an IMF program and unilateral devaluations implemented without a formal IMF-sponsored program.² This distinction is particularly interesting because it allows a critical assessment of the role of the Fund; it provides a very natural benchmark for evaluating the results associated with IMF programs. In that sense, the traditional difficulty of finding appropriate “counterfactuals” to IMF programs is somewhat reduced.³ In this analysis, we ask why some countries sought IMF supports while others undertook adjustment-cum-devaluation programs on their own. We also inquire whether, on average, IMF devaluers tended to fare better than non-IMF devaluers. Second, in addition to analyzing the economic aspects of these devaluations, we investigate some important political developments surrounding these episodes. We inquire, in particular, whether countries that received IMF assistance were characterized by a different political environment than those that did not approach the Fund. We also analyze the extent to which the political structure affects the degree of success of an adjustment-cum-devaluation program. Third, we compare the main features of these Bretton Woods devaluations with a number of more recent devaluations.

The empirical approach followed here is based on Edwards (1988, 1989c) and combines nonparametric tests with cross-country regression analyses in an effort to understand the circumstances surrounding these forty-eight devaluations. A salient feature of our approach is that we analyze in detail the evolution of a number of key variables during the three years preceding and three years following the forty-eight devaluation episodes. In doing this, an effort is made to detect regularities across countries that will allow us to infer some general rules relating to the causes and effects of devaluations. At the same time, we point out peculiarities that help better understand the exchange rate history of a particular country. In addition to the groups of IMF and non-IMF devaluation countries, we defined a *control group* of twenty-four devel-

2. For lack of a better name, we call these *unilateral* devaluations. Notice, however, that, according to Bretton Woods rules, the Fund had to approve all nominal devaluations exceeding 10%.

3. Most studies evaluating the effectiveness of Fund programs have compared these programs with countries that have not undertaken an adjustment program. This has even been the case with recent efforts based on regression analyses.

oping nations that maintained a fixed nominal exchange rate for at least ten years; their behavior is compared to that of the devaluing countries. In these comparisons, a series of parametric and nonparametric tests were used.⁴

8.1 The Simple Economics of Devaluation, Adjustment, and Credibility

In this section, we briefly provide an analytic framework for the empirical analysis that follows. We first analyze the conditions leading to a situation of “fundamental disequilibrium” and external sector crisis and discuss the conditions under which devaluations are effective.⁵ We then analyze the role of an external multilateral agency, such as the IMF, in a stabilization program.

8.1.1 Fundamental Disequilibrium and the Theory of Devaluations

Fixed exchange rates introduce restrictions to macroeconomic policies: if a (small) country wants to maintain its parity, its inflation rate cannot exceed (for a significant period of time) the rate of world inflation. Historically, however, policymakers have tried to ignore the constraints imposed by fixed exchange rates by implementing rapid fiscal expansions. If, as is often the case, this increase in fiscal expenditures is mostly financed through domestic credit creation, we will have a number of macroeconomic effects. First, there will be an increase in the demand for tradable goods, a worsening of the current account, and, with other things given, a loss of international reserves. Second, there will be a higher demand for home goods, a higher domestic rate of inflation, a real exchange rate (RER) overvaluation, and a continuous erosion in the country’s degree of international competitiveness.

As international reserves draw lower, the government will usually try to tackle the situation by imposing exchange, capital, and trade controls. The parallel premium for foreign exchange will increase, and the black market will grow in scope. Naturally, these controls will not solve the crisis; they will merely slow down the loss of reserves and postpone the required adjustment. At some point the authorities will realize—or will be forced to recognize—that the country is following an unsustainable path and that adjustment is required. This stylized story suggests that the conditions faced by countries facing “fundamental disequilibrium,” and thus the need to devalue, can be summarized as follows: (1) fiscal and credit policies become “inconsistent”

4. This episodic strategy has modern precedents in Cooper’s (1971a, 1971b, 1971c) classic studies of devaluation and, more recently, in Harberger and Edwards’s (1982) study of balance of payments crises. However, Cooper did not deal with the period preceding the devaluation, and, contrary to this study and to Harberger and Edwards’s, he did not use a control group for comparison. Other studies that make use of the episodic approach employed in this paper are Kamin (1988) and Eichengreen (1990).

5. For a more technical representation of the economics of devaluation, see, e.g., Edwards (1989c) and Khan and Lizondo (1987).

with the objective of maintaining a fixed exchange rate; (2) there is a rapid rate of domestic inflation; (3) there is a large current account deficit; (4) international reserves become very low and continue to decline; (5) the parallel market premium increases; and (6) the RER becomes rapidly overvalued. Of course, a situation of “fundamental disequilibrium” can also be caused by a real shock (like a change in the terms of trade) that creates a macroeconomic gap that has to be closed.

The first fundamental step in an adjustment program is to tackle the sources of the initial disequilibrium: the fiscal imbalance has to be reduced and financial discipline reestablished. Another crucial element in the adjustment program is the correction of the situation of RER overvaluation. The relative price of tradables to nontradables faced by domestic agents has to increase to a level compatible with external equilibrium. There are two basic ways of achieving this required RER adjustment or RER devaluation. The first is to follow a *disinflationary policy*, where the reduction in aggregate demand attained through the fiscal adjustment forces a reduction in *nominal* prices of nontradable goods. This option, however, has two important drawbacks: under most circumstances it is too slow, and, if nominal prices (or wages) are inflexible downward, the transition will be characterized by unemployment and reduced production. The second basic alternative for reestablishing RER equilibrium is by engineering an increase in the domestic price of tradable goods through a nominal devaluation. In this case, of course, all the *nominal* devaluation is attempting to do is *speed-up* the adjustment. Even when realignment of relative prices is accomplished, the nominal devaluation is not the ultimate cause of the observed real exchange rate change; it is merely the vehicle through which the adjustment is attained.⁶

Naturally, for the nominal devaluation to be effective, in the sense of truly helping reestablish macroeconomic equilibrium in a smoother fashion, two main conditions have to be met. First, the devaluation has to be taken from a starting disequilibrium situation of RER overvaluation; second, the devaluation has to be accompanied by consistent macroeconomic and, especially, fiscal policies.⁷ If these conditions are not met, the devaluation will not be successful.⁸ In sections 8.2 and 8.3 below, we use data on forty-eight discrete

6. Eichengreen (1990) documents how, during the 1930s, some countries decided to follow a deflation while others chose to devalue their currency.

7. These may include the need to deindex labor and other contracts.

8. The above discussion clearly suggests that, in order for devaluations to “work,” there is no need, as is often suggested, for economic agents to have money illusion. Indeed, within this scenario, devaluations will facilitate the adjustment even when there are ultra-rational forward-looking economic agents. In fact, in a forward-looking world, devaluations undertaken within the context described here will tend to be particularly effective. The reason for this is that these highly informed rational individuals will clearly understand that the devaluation is facilitating relative price changes and, thus, is inducing the required expenditure switching away from tradable goods. Consequently, economic agents will not react to this exchange rate change in a perverse way. However, if the devaluation is not accompanied by consistent macroeconomic policies, the in-

devaluation episodes to analyze whether the experience in the LDCs during the Bretton Woods period conforms to the view on devaluation cases presented here.

8.1.2 Credibility, Commitment, and Adjustment

Recent work on stabilization and adjustment has emphasized the role of institutions and credibility. A number of authors have argued that, in order to put an end to macroeconomic and external sector disequilibrium, a “credible” change of the policy regime is needed (Sargent 1986; see also Edwards and Tabellini 1991a, 1991b). To the extent that a stabilization is not credible—that is, to the extent that the public does not expect that the program will achieve its intended results—the cost of adjustment escalates, and the probability of success becomes smaller (Dornbusch 1991).

This view leads governments naturally to look for ways of modifying and influencing expectations during a stabilization program. “Policy announcements” have been considered a possible vehicle for affecting inflationary expectations. However, it has been argued that in order for these announcements to be “credible”—and, thus, actually to affect expectations—it is necessary for the government to be able to precommit itself to a given course of action. This, of course, turns out to be difficult since societies many times lack the institutional setup required for the government to precommit itself credibly.

Under certain circumstances, however, *reputation* can act as a substitute for precommitment. According to this view, the desire of a government to preserve its reputation—or, even possibly, improve it—provides it with a constrained set of policy options (see Persson and Tabellini 1990). Some authors have recently suggested that expectations can also be coordinated and that credibility can be established if it is supported by an external institution, such as the League of Nations in the 1920s and the International Monetary Fund after 1950 (see Sachs 1989; Edwards 1989b; and Santaella 1991). The reason is that, by granting its “seal of approval” to a stabilization plan, the external institution enhances the confidence in the program. In principle, this “seal of approval” will be independent of the financing that the external institution can provide.⁹ In fact, the presence of external involvement can endow the stabilizing government with a “commitment technology” that gives a greater assurance that the announced program will indeed be fully carried out. This framework has two important empirical implications: first, we would expect that countries that have more difficulty establishing independent credibility would

formed public will anticipate a devaluation-inflation spiral, making the situation even more critical than before. Some cross-country evidence on the effectiveness of devaluations can be found in Cooper (1971a, 1971b, 1971c), Edwards (1989c), Kamin (1988), and Gylfason and Radetzki (1985).

9. Accounts of the support given by external credits and loans to stabilizing countries are in League of Nations (1946) and Dornbusch and Fischer (1986).

be more likely to approach the IMF; second, to the extent that IMF-sponsored programs provide additional credibility, it would be expected that, with other things given, countries that undertake an IMF stabilization-cum-devaluation adjustment program would have an advantage over those nations that unilaterally implement adjustment programs. These empirical propositions are confronted with data from our forty-eight devaluation episodes in the sections that follow.

8.2 Macroeconomic Policy, Fundamental Disequilibrium, and IMF Programs

In this and the following section, we analyze in detail forty-eight episodes of balance of payments and devaluation crises in the LDCs between 1954 and 1971. This investigation focuses on five important issues; (a) the role of “inconsistent” macroeconomic policies in generating “fundamental disequilibria” and in precipitating devaluation crises; (b) the differences, if any, between IMF and non-IMF devaluations; (c) the effectiveness of nominal devaluations as a means of restoring equilibrium and competitiveness; (d) the role of political forces in devaluation and IMF involvement; and (e) the determinants of successful stabilization-cum-devaluation packages.

8.2.1 The Data Set

Our data set consists of forty-eight major stepwise devaluations implemented by independent developing countries in the period 1948–71. In order for a devaluation episode to be included in our sample, it had to have the following properties: (1) the adjustment of the official rate had to exceed 14%; (2) the devaluation must have occurred after a period of at least two years where the country had a fixed exchange rate; and (3) the country in question must have had a population of at least one million people the year of the devaluation. Using the *International Financial Statistics (IFS)* tape and other sources, we identified sixty-nine devaluation episodes that met the three requirements set up above. Once those cases with no (or very little) data on the most important variables were eliminated, we were left with the forty-eight countries considered here. In that sense, then, an effort was made to identify, and then include, every one of the large step wise devaluation episodes that took place in the developing world during 1954–71. The final inclusion criteria were based exclusively on data availability.

The exact dates of our forty-eight devaluations, as well as the inception and expiration dates of IMF standby programs, are shown in table 8.1. Twenty-two of the forty-eight devaluations implemented a unilateral (i.e., non-IMF) devaluation, while twenty-six had IMF programs. All the IMF programs considered here were standby arrangements, which were envisaged in 1952 by the Fund to control drawings in the credit trenches. Standby programs soon became the main instrument through which the IMF imposed conditionality. The

Table 8.1 Devaluation Episodes and IMF Programs in Selected Developing Countries; 1954–71

| Country | Devaluation Date | IMF Program | |
|---------------------|------------------|----------------|---------------------------|
| | | Inception Date | Expiration Date |
| 1. Argentina | 28 Oct. 1955 | ... | ... |
| 2. Argentina | 2 Jan. 1959 | 19 Dec. 1958 | 18 Dec. 1959 ^a |
| 3. Argentina | 19 Mar. 1962 | 12 Dec. 1961 | 11 Dec. 1962 ^b |
| 4. Argentina | 18 June 1970 | ... | ... |
| 5. Brazil | 13 Feb. 1967 | 13 Feb. 1967 | 12 Feb. 1968 |
| 6. Chile | 15 Oct. 1962 | ... | ... |
| 7. Colombia | 18 June 1957 | 19 June 1957 | 18 June 1958 |
| 8. Colombia | 20 Nov. 1962 | 1 Jan. 1962 | 31 Dec. 1962 |
| 9. Colombia | 2 Sept. 1965 | ... | ... |
| 10. Colombia | 22 Mar. 1967 | 15 Apr. 1967 | 14 Apr. 1968 |
| 11. Costa Rica | 2 Sept. 1961 | 4 Oct. 1961 | 3 Oct. 1962 |
| 12. Ecuador | 14 July 1961 | 8 June 1961 | 7 June 1962 |
| 13. Ecuador | 17 Aug. 1970 | 14 Sept. 1970 | 13 Sept. 1971 |
| 14. Egypt | 7 May 1962 | 7 May 1962 | 6 May 1963 |
| 15. Ghana | 8 July 1967 | 25 May 1967 | 24 May 1968 |
| 16. Ghana | 27 Dec. 1971 | ... | ... |
| 17. India | 6 June 1966 | ... | ... |
| 18. Indonesia | 17 Apr. 1970 | 17 Apr. 1970 | 16 Apr. 1971 |
| 19. Israel | 9 Feb. 1962 | ... | ... |
| 20. Israel | 19 Nov. 1967 | ... | ... |
| 21. Israel | 21 Aug. 1971 | ... | ... |
| 22. Jamaica | 21 Nov. 1967 | ... | ... |
| 23. Korea | 23 Feb. 1960 | ... | ... |
| 24. Korea | 3 May 1964 | ... | ... |
| 25. Malawi | 20 Nov. 1967 | ... | ... |
| 26. Mexico | 19 Apr. 1954 | 16 Apr. 1954 | 15 Apr. 1955 |
| 27. Nicaragua | 1 July 1955 | ... | ... |
| 28. Pakistan | 1 Aug. 1955 | ... | ... |
| 29. Peru | 22 Jan. 1958 | 18 Feb. 1957 | 17 Feb. 1958 ^c |
| 30. Peru | 31 Aug. 1967 | 18 Aug. 1967 | 17 Aug. 1968 |
| 31. Philippines | 22 Jan. 1962 | 12 Apr. 1962 | 11 Apr. 1963 |
| 32. Philippines | 21 Feb. 1970 | 20 Feb. 1970 | 19 Feb. 1971 |
| 33. Sierra Leone | 22 Nov. 1967 | ... | ... |
| 34. Spain | 18 July 1959 | 17 Aug. 1959 | 16 Aug. 1960 |
| 35. Spain | 20 Nov. 1967 | ... | ... |
| 36. Sri Lanka | 22 Nov. 1967 | ... | ... |
| 37. Trinidad-Tobago | 23 Nov. 1967 | ... | ... |
| 38. Tunisia | 28 Sept. 1964 | 1 Oct. 1964 | 30 Sept. 1965 |
| 39. Turkey | 4 Aug. 1958 | ... | ... |
| 40. Turkey | 3 Aug. 1970 | 17 Aug. 1970 | 16 Aug. 1971 |
| 41. Uruguay | 15 Dec. 1959 | ... | ... |
| 42. Uruguay | 9 May 1963 | 4 Oct. 1962 | 3 Oct. 1963 |
| 43. Uruguay | 26 Apr. 1971 | 28 May 1970 | 27 May 1971 |
| 44. Venezuela | 18 Jan. 1964 | ... | ... |
| 45. Yugoslavia | 1 Jan. 1961 | 1 Jan. 1961 | 31 Dec. 1961 |
| 46. Yugoslavia | 25 July 1965 | 26 July 1965 | 25 July 1966 |

Table 8.1 (continued)

| Country | Devaluation Date | IMF Program | |
|----------------|------------------|----------------|-----------------|
| | | Inception Date | Expiration Date |
| 47. Yugoslavia | 23 Jan. 1971 | 22 Feb. 1971 | 21 Feb. 1972 |
| 48. Zaire | 24 June 1967 | 6 July 1967 | July 5, 1968 |

Sources: *Pick's Currency Yearbook* and *IMF Annual Reports and Reports on Exchange Restrictions*.

^aCanceled on 2 December 1959, when a new standby arrangement commenced.

^bCanceled on 16 May 1962.

^cCanceled on 9 February 1958, when a new standby arrangement commenced.

^dCanceled on 29 July 1971, when a new standby arrangement commenced.

specific contents of these programs, however, were not homogeneous across our sample of twenty-six IMF programs; the concept of phasing (i.e., drawings in installments) was not introduced until 1956, and we had to wait until 1958 to observe whether drawings were made conditional on performance criteria.¹⁰

Table 8.2 contains the percentage change in the (official) exchange rate the year of the crisis and in the three subsequent years. As pointed out, all the countries in our sample devalued their currencies by at least 14% after having maintained a fixed (official) exchange rate with respect to the U.S. dollar (or a stable managed float, like in the cases of Peru in 1958, Argentina in 1962, and Brazil in 1967) for two or more years. The non-IMF episodes are shown in panel A; the average depreciation of the exchange rate was 61%, while the median was 39%. The IMF programs are shown in panel B; on average, they devalued by 52% (43% was the median). As can be seen, while most of these countries returned to a fixed (or almost fixed) exchange rate, a few decided to follow a crawling peg system after the crisis. Also, through the years, some of the countries in our sample suffered recurrent crises and devaluations.¹¹ The nature of these devaluations and the specific circumstances that surrounded the episodes were very diverse. Some of the devaluations occurred in a unified exchange system and consisted in de jure modifications of the par value or the gold content of the currency agreed with the IMF. More frequently, however, there were de facto devaluations in which the parity of the official exchange rate was maintained but the depreciation was effected by the introduction of a regime based on multiple exchange rates. In other episodes, devaluations were implemented through the unification of multiple nominal exchange rates

10. For discussions of the evolution of IMF policies, see Dell (1981), Guitián (1981), de Vries (1976, 1987), and Horsefield (1969).

11. From today's perspective, it is paradoxical to see Spain among the developing countries. However, during the Bretton Woods period, Spain's per capita income was similar to that of many developing nations.

Table 8.2 Devaluation Crises and the IMF in the Bretton Woods Period

| Country | Year | Rate of Devaluation (exchange rate in local currency units per dollar) | | | |
|-----------------------------|------|--|-------------|-------------|-------------|
| | | Devaluation Year | 1 Yr. After | 2 Yr. After | 3 Yr. After |
| <i>A. Non-IMF devaluers</i> | | | | | |
| Argentina | 1955 | 158.2 | 3.7 | -1.2 | 8.1 |
| Argentina | 1970 | 14.3 | 25.0 | .0 | .0 |
| Chile | 1962 | 130.5 | 25.6 | 7.2 | 29.4 |
| Colombia | 1965 | 50.0 | .0 | 16.7 | 7.1 |
| Ghana | 1971 | 78.2 | -29.6 | -10.2 | .0 |
| India | 1966 | 58.7 | -.4 | 1.1 | -.9 |
| Israel | 1962 | 66.7 | .0 | .0 | .0 |
| Israel | 1967 | 16.7 | .0 | .0 | .0 |
| Israel | 1971 | 20.0 | .0 | .0 | 42.9 |
| Jamaica | 1967 | 16.0 | .9 | -.7 | .3 |
| Korea | 1960 | 30.0 | 100.0 | .0 | .0 |
| Korea | 1964 | 96.7 | 6.3 | -.2 | 1.3 |
| Malawi | 1967 | 16.7 | .0 | .0 | .0 |
| Nicaragua | 1955 | 40.0 | .0 | .0 | .0 |
| Pakistan | 1955 | 43.2 | .5 | -.6 | .1 |
| Sierra Leone | 1967 | 15.9 | .9 | -.7 | .3 |
| Spain | 1967 | 16.2 | .2 | .3 | -.5 |
| Sri Lanka | 1967 | 24.1 | .0 | .5 | .0 |
| Trinidad-Tobago | 1967 | 16.0 | .9 | -.7 | .3 |
| Turkey | 1958 | 221.0 | .0 | .0 | .0 |
| Uruguay | 1959 | 175.0 | .0 | .0 | .0 |
| Venezuela | 1964 | 38.2 | .0 | .0 | .0 |
| <i>B. IMF devaluers</i> | | | | | |
| Argentina | 1959 | 108.1 | -.7 | .4 | 61.5 |
| Argentina | 1962 | 61.5 | -1.2 | 13.9 | 24.9 |
| Brazil | 1967 | 22.3 | 41.1 | 26.6 | 2.1 |
| Colombia | 1957 | 116.1 | 18.0 | .0 | 4.7 |
| Colombia | 1962 | 34.3 | .0 | .0 | 50.0 |
| Colombia | 1967 | 16.7 | 7.1 | 5.7 | 6.9 |
| Costa Rica | 1961 | 17.7 | .0 | .0 | .0 |
| Ecuador | 1961 | 20.0 | .0 | .0 | .0 |
| Ecuador | 1970 | 38.9 | .0 | .0 | .0 |
| Egypt | 1962 | 23.9 | .0 | .0 | .0 |
| Ghana | 1967 | 42.9 | .0 | .0 | .0 |
| Indonesia | 1970 | 16.0 | 9.8 | .0 | .0 |
| Mexico | 1954 | 44.5 | .0 | .0 | .0 |
| Peru | 1958 | 28.9 | 14.3 | -3.6 | .0 |
| Peru | 1967 | 44.4 | .0 | .0 | .0 |
| Philippines | 1962 | 94.1 | -.3 | .0 | .0 |
| Philippines | 1970 | 63.7 | .0 | 5.4 | -.8 |
| Spain | 1959 | 42.3 | .0 | -.2 | -.0 |
| Tunisia | 1964 | 23.8 | .0 | .0 | .0 |
| Turkey | 1970 | 65.0 | -5.2 | .0 | .0 |
| Uruguay | 1963 | 45.5 | 18.7 | 215.8 | 26.7 |

Table 8.2 (continued)

| Country | Year | Rate of Devaluation (exchange rate in local currency units per dollar) | | | |
|------------|------|---|----------------|----------------|----------------|
| | | Devaluation Year | 1 Yr. After | 2 Yr. After | 3 Yr. After |
| Uruguay | 1971 | 48.0 | 97.8 | 28.0 | 76.6 |
| Yugoslavia | 1961 | 18.7 | .0 | .0 | .0 |
| Yugoslavia | 1965 | 66.7 | .0 | .0 | .0 |
| Yugoslavia | 1971 | 36.0 | .0 | -8.2 | 9.3 |
| Zaire | 1967 | 203.0 | .0 | .0 | .0 |

Source: *International Financial Statistics and Pick's Currency Yearbook*.

or through the (temporary) withdrawal of the central bank's intervention in the exchange market, allowing the exchange rate to float momentarily to a higher parity at which a new peg was to be maintained. In the appendix, we present a brief description of each of the forty-eight devaluation episodes, and section 8.2.3 discusses in detail the experience with parallel and multiple exchange rate practices.

8.2.2 Macroeconomic Policies and Fundamental Disequilibria

Under fixed nominal exchange rates, macroeconomic policies determine whether the exchange rate chosen by the authorities can be sustained in the longer run. Under most circumstances, if macroeconomic policies become "inconsistent," international reserves will be eroded, the real exchange rate will experience an appreciation (i.e., overvaluation), and an exchange rate crisis—that is, a devaluation—will eventually occur. From an empirical point of view, it is not trivial to determine whether, for a particular country at a particular moment in time, macroeconomic policies have indeed become inconsistent with the fixed peg. In this section, we tackle this issue by comparing the evolution of macroeconomic policy in the devaluing countries with that of a control group of twenty-four fixed rate countries.¹²

Table 8.3 summarizes the behavior of five indicators of domestic credit and fiscal policies for our two groups of devaluing countries (IMF and non-IMF countries) and for the control group: (1) the rate of growth of domestic credit (panel A); (2) the rate of growth of domestic credit to the public sector (panel

12. This approach, of course, assumes that the control group followed sustainable policies. The countries, and years in the control group are the Côte d'Ivoire, the Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, Greece, Guatemala, Honduras, Iran, Iraq, Jordan, Malaysia, Mexico, Nicaragua, Nigeria, Panama, Paraguay, Singapore, Sudan, Thailand, Tunisia, Venezuela, and Zambia. For more details, and for some of the most important caveats in using the control group approach, see Edwards (1989c). In this paper, years included as observations in the control group have been restricted to the Bretton Woods period.

Table 8.3 Indicators of Macroeconomic Policy in Forty-eight Devaluation Episodes and a Control Group of Fixers

| | 3 Yrs. Prior | | 2 Yrs. Prior | | 1 Yr. Prior | | Year of Devaluation | | Control Group |
|---|--------------|------|--------------|------|-------------|------|---------------------|------|---------------|
| | Non-IMF | IMF | Non-IMF | IMF | Non-IMF | IMF | Non-IMF | IMF | |
| <i>A. Annual growth of domestic credit (%)</i> | | | | | | | | | |
| 1st quartile | 12.4 | 9.1 | 10.4 | 12.6 | 11.0 | 15.6 | 6.9 | 12.3 | 8.6 |
| Median | 23.5 | 16.7 | 16.1 | 19.6 | 17.8 | 18.7 | 15.4 | 17.1 | 14.7 |
| 3d quartile | 35.8 | 28.6 | 23.9 | 29.5 | 24.9 | 28.5 | 22.7 | 27.5 | 22.5 |
| <i>B. Annual growth of domestic credit to the public sector (%)</i> | | | | | | | | | |
| 1st quartile | 9.4 | < 0 | < 0 | 5.9 | < 0 | 8.8 | < 0 | 13.1 | -7.7 |
| Median | 27.6 | 5.8 | 12.6 | 28.2 | 11.5 | 14.3 | .0 | 29.1 | 12.0 |
| 3d quartile | 72.3 | 43.1 | 32.2 | 60.5 | 38.6 | 58.3 | 23.1 | 58.3 | 42.2 |
| <i>C. Ratio of domestic credit to public sector to total domestic credit</i> | | | | | | | | | |
| 1st quartile | 13.5 | 11.0 | 12.8 | 14.0 | 14.4 | 14.2 | 8.4 | 12.8 | 1.2 |
| Median | 24.9 | 22.2 | 25.1 | 23.6 | 27.2 | 21.8 | 26.0 | 24.8 | 16.3 |
| 3d quartile | 50.3 | 35.6 | 42.3 | 31.2 | 42.7 | 33.4 | 39.4 | 34.5 | 29.4 |
| <i>D. Fiscal deficit as percentage of GDP</i> | | | | | | | | | |
| 1st quartile | 1.5 | .1 | .9 | .5 | .7 | 1.0 | 1.0 | .5 | .4 |
| Median | 2.6 | 1.3 | 2.9 | 1.1 | 2.6 | 1.9 | 2.1 | 2.5 | 1.2 |
| 3d quartile | 5.6 | 2.6 | 4.8 | 2.5 | 4.4 | 3.2 | 4.8 | 4.3 | 2.5 |
| <i>E. Growth of domestic credit to the public sector as percentage of GDP (%)</i> | | | | | | | | | |
| 1st quartile | .7 | -.2 | -.2 | .1 | -.0 | .4 | -.8 | .7 | -.2 |
| Median | 1.8 | .5 | 1.0 | 1.2 | .9 | .9 | .5 | 1.5 | .5 |
| 3d quartile | 2.9 | 2.7 | 1.7 | 2.7 | 2.0 | 2.4 | 2.3 | 2.9 | 1.6 |

Source: Constructed by the authors from raw data obtained from *International Financial Statistics*

B); (3) the percentage of credit received by the public sector as a proportion of total domestic credit (panel C); (4) the fiscal deficit as a proportion of GDP (panel D); and (5) the increase in domestic credit to the public sector as a percentage of GDP. All the indicators have been constructed using data from various issues of *International Financial Statistics*, several *IFS* tapes, as well as the *United Nations Statistical Yearbook*. For the two devaluation groups, these indicators are reported for three years, two years, and one year prior to the devaluation and for the year of the devaluation. While panels A and B deal with monetary (or domestic credit) policy, the rest of the panels take us beyond the monetary realm and into the fiscal side of the economy.

A number of interesting facts emerge from this table. First, macroeconomic policies became increasingly expansive in the devaluing countries as the year of the devaluation drew nearer. Indeed, when the data for three years prior to the crisis are compared to those from the year of the devaluation, a clear shift to the right in most of the distributions can be detected. Second, IMF and non-IMF devaluers behaved quite differently. The table shows that two years and

one year prior to the devaluation the countries that ended up requiring IMF support were generally implementing more expansive policies than non-IMF devaluers. Moreover, computation of nonparametric χ^2 tests strongly suggests a different behavior across IMF and non-IMF devaluers. Finally, the devaluing countries as a group behaved quite differently than the control group. This is particularly clear for the fiscal policy indicators. For example, in the year of the crisis, half the devaluing countries allocated one-quarter or more of total domestic credit to the public sector; the median for the control group countries, on the other hand, was only slightly higher than 16%. Formal χ^2 tests indicate that, with a fairly high degree of probability, these policy indicators for the devaluing nations come from a different population than those for the control group.

Table 8.4 contains the χ^2 statistics that test the hypothesis that our fiscal policy indicators for devaluers and control group countries come from the same population. These χ^2 statistics show a very clear picture. First, they show that, for three of the indicators, the null hypothesis that devaluers and the control group belonged to the same population is rejected at fairly high levels of significance. Additionally, these χ^2 tests suggest quite clearly that, as the crisis date approached, macro policies in both devaluing groups tended to become more and more inconsistent with the goal of maintaining a fixed exchange rate (i.e., they became significantly more different than the control group).

Even though, when taken as a group, the devaluing countries behaved in a distinctively different way than the control group, the policies of some individual stepwise devaluers—Venezuela, for example—were fairly similar to those of the control group. Also, the countries that devalued their currencies following the British pound realignment of 1967 (Israel, Jamaica, Malawi, Sierra Leone, Spain, Sri Lanka, and Trinidad) provide interesting individual cases. The macroeconomic policy indicators in all these countries show that their policies were very expansive in the years immediately preceding 1967, relative both to the control group and to the United Kingdom. In fact, statistically speaking, none of these countries behaved differently than the rest of the devaluing groups. This suggests, then, that, even in the absence of the pound devaluation, many of these countries may have had to realign their parities.

As pointed out in section 8.1, expansive macroeconomic policies will have an effect on the current account, the level of foreign assets, inflation, and the real exchange rate. Table 8.5 contains data for the forty-eight episodes on the evolution of (1) the index of the (bilateral) real exchange rate with respect to the U.S. dollar;¹³ (2) the ratio of net foreign assets of the monetary system to

13. Since during the Bretton Woods period there was relative exchange rate stability, focusing on bilateral rather than multilateral RERs does not bias the analysis. In fact, for most of these countries, bilateral and multilateral real exchange rates behaved very similarly throughout the period under study.

Table 8.4 χ^2 Tests Comparing Fiscal Behavior in Devaluation Countries and the Control Group^a

| | 3 Yrs. before Devaluation | Year of Devaluation |
|---|------------------------------|------------------------|
| <i>A. Ratio of domestic credit to public sector to total domestic credit</i> | | |
| IMF devaluers | 8.4 (.015) | 8.4 (.015) |
| Non-IMF devaluers | 2.6 (.268) | 4.1 (.127) |
| <i>B. Fiscal deficit as percentage of GDP</i> | | |
| IMF devaluers | .2 (.898) | 6.3 (.042) |
| Non-IMF devaluers | 8.2 (.016) | 6.0 (.049) |
| <i>C. Growth of domestic credit to the public sector as percentage of GDP</i> | | |
| IMF devaluers | 2.4 (.307) | 8.6 (.013) |
| Non-IMF devaluers | 13.5 (.001) | 4.7 (.094) |

^aThis test is distributed $\chi^2(2)$. Figures in parentheses are levels of probabilities.

the domestic stock of money; and (3) the current account as a percentage of GDP for three years and one year preceding the crisis. The main difference between table 8.3 and table 8.5 is that the former summarizes the behavior of five key *exogenous* policy variables while the latter deals with *endogenous* variables whose behavior responds to macroeconomic policy and other shocks.

The data in table 8.5 clearly capture the deterioration of the external sector in the period immediately preceding the devaluations. In thirty-nine of the forty-seven episodes with relevant data, the real exchange rate experienced a real appreciation in the three years prior to the devaluation. For the IMF devaluers, the average real appreciation was 12.0%, while, for the non-IMF devaluers, it was 9.4%. Naturally, this real appreciation was the result of domestic rates of inflation that increasingly exceeded the world rate of inflation. A χ^2 test indicates that, as the crisis date came closer, the rate of CPI inflation in both groups of devaluing countries became more distinct, in a statistical sense, from that of the fixed rate control group. As is apparent from table 8.5, there is quite a difference in the individual countries' experiences. While some countries (such as Colombia in 1965, Argentina in 1959 and 1962, Brazil in 1967, and Indonesia in 1970) went through a major deterioration in competitiveness, others (i.e., Venezuela in 1964, Trinidad in 1967, and Yugoslavia in 1961) experienced only an insignificant change in the real exchange rate index. It should be noticed, however, that there is a strong presumption that the

Table 8.5 Real Exchange Rates, Current Account, and Net Foreign Assets in Period Leading to Forty-eight Devaluations

| Year | Real Exchange Rate ^a | | Current Account as % of GDP | | Net Foreign Asset as % of Money Supply | | |
|-------------------------|---------------------------------|-------------------|-----------------------------|-------------|--|-------------|-------|
| | 3 Yrs. Prior | 1 Yr. Prior | 3 Yrs. Prior | 1 Yr. Prior | 3 Yrs. Prior | 1 Yr. Prior | |
| | <i>A. Non-IMF devaluers</i> | | | | | | |
| Argentina | 1955 | 110.2 | 100.0 | -3.6 | .0 | 1.7 | 3.7 |
| Argentina | 1970 | 117.2 | 100.0 | .7 | -1.0 | 7.3 | 6.3 |
| Chile | 1962 | 120.5 | 100.0 | -2.5 | -5.2 | 1.0 | -21.5 |
| Colombia | 1965 | 155.7 | 100.0 | -2.3 | -3.0 | -10.7 | -11.7 |
| Ghana | 1971 | 101.2 | 100.0 | -1.4 | -2.9 | -12.5 | -3.4 |
| India | 1966 | 121.2 | 100.0 | -2.5 | -2.9 | 2.3 | 1.2 |
| Israel | 1962 | 109.1 | 100.0 | -18.0 | -17.9 | 20.7 | 30.6 |
| Israel | 1967 | 107.0 | 100.0 | -23.6 | -14.6 | 42.4 | 34.4 |
| Israel | 1971 | 102.5 | 100.0 | -19.6 | -25.9 | 29.4 | 3.6 |
| Jamaica | 1967 | 99.7 | 100.0 | -10.1 | -14.7 | 16.8 | 25.5 |
| Korea | 1960 | 97.8 | 100.0 | -9.8 | -6.9 | 3.6 | 7.2 |
| Korea | 1964 | 127.7 | 100.0 | -8.6 | -10.4 | 27.2 | 4.9 |
| Malawi | 1967 | 97.6 | 100.0 | -12.0 | -17.2 | ... | 41.5 |
| Nicaragua | 1955 | 122.9 | 100.0 | ... | ... | 34.8 | 15.4 |
| Pakistan | 1955 | 102.6 | 100.0 | -2.5 | .6 | 33.1 | 26.8 |
| Sierra Leone | 1967 | 103.2 | 100.0 | -3.1 | -7.3 | 30.8 | 25.0 |
| Spain | 1967 | 113.8 | 100.0 | -5.7 | -8.0 | 11.3 | 6.1 |
| Sri Lanka | 1967 | 95.2 | 100.0 | -2.6 | -3.9 | 5.2 | -6 |
| Trinidad-Tobago | 1967 | 100.7 | 100.0 | -8.5 | -6.1 | 31.4 | 21.3 |
| Turkey | 1958 | 128.3 | 100.0 | -3.2 | -8 | 10.3 | 7.4 |
| Uruguay | 1959 | 129.8 | 100.0 | .2 | 1.1 | 10.6 | 3.4 |
| Venezuela | 1964 | 100.5 | 100.0 | 6.9 | 9.1 | 28.4 | 34.0 |
| Average change (%) | | | | -9.4 | -.3 | | -5.0 |
| <i>B. IMF devaluers</i> | | | | | | | |
| Argentina | 1959 | 147.5 | 100.0 | -1.4 | -2.3 | 4.8 | -.8 |
| Argentina | 1962 | 145.3 | 100.0 | .1 | -4.1 | 2.9 | 1.5 |
| Brazil | 1967 | 185.6 | 100.0 | -.0 | .0 | -58.7 | -11.4 |
| Colombia | 1957 | 102.2 | 100.0 | -.2 | -.8 | 17.9 | 8.6 |
| Colombia | 1962 | 108.1 | 100.0 | 1.6 | -3.0 | 1.2 | -1.8 |
| Colombia | 1967 | 78.7 ^b | 100.0 | -3.0 | -4.7 | -11.7 | -8.8 |
| Costa Rica | 1961 | 101.3 | 100.0 | -3.2 | -5.6 | 21.9 | 1.6 |
| Ecuador | 1961 | 101.2 | 100.0 | -.9 | -2.5 | 18.9 | 16.4 |
| Ecuador | 1970 | 104.3 | 100.0 | -5.8 | -7.9 | 19.1 | 11.3 |
| Egypt | 1962 | 101.3 | 100.0 | -.1 | -1.2 | 12.0 | 4.1 |
| Ghana | 1967 | 134.6 | 100.0 | -3.6 | -6.0 | 15.6 | -5.1 |
| Indonesia | 1970 | 178.9 | 100.0 | -9.3 | -7.2 | -22.0 | 9.2 |
| Mexico | 1954 | 117.2 | 100.0 | -3.4 | -1.7 | 30.6 | 22.5 |
| Peru | 1958 | 106.4 | 100.0 | -5.9 | -8.7 | 15.9 | 9.6 |
| Peru | 1967 | 119.5 | 100.0 | .3 | -3.7 | 23.9 | 18.0 |
| Philippines | 1962 | 105.7 | 100.0 | -.7 | -2.2 | 9.6 | 4.8 |
| Philippines | 1970 | 97.9 | 100.0 | -2.9 | -4.3 | 1.1 | -5.9 |

(continued)

Table 8.5 (continued)

| | Year | Real Exchange Rate ^a | | Current Account as % of GDP | | Net Foreign Asset as % of Money Supply | |
|--------------------|------|---------------------------------|--------------------|-----------------------------|-------------|--|-------------|
| | | 3 Yrs. Prior | 1 Yr. Prior | 3 Yrs. Prior | 1 Yr. Prior | 3 Yrs. Prior | 1 Yr. Prior |
| Spain | 1959 | 110.7 | 100.0 | -2.3 | -1.7 | 1.8 | .8 |
| Tunisia | 1964 | 98.9 | 100.0 | -10.1 | -10.5 | 22.9 | 3.4 |
| Turkey | 1970 | 101.3 | 100.0 | -.6 | -1.3 | 5.0 | 5.9 |
| Uruguay | 1963 | 136.7 | 100.0 | -6.0 | -3.6 | -2.1 | -40.8 |
| Uruguay | 1971 | 93.0 | 100.0 | 1.4 | -2.3 | -20.0 | -10.0 |
| Yugoslavia | 1961 | 99.7 | 100.0 | -2.6 | -2.1 | .0 | .0 |
| Yugoslavia | 1965 | 117.7 | 100.0 | -1.8 | -3.1 | 2.3 | -.9 |
| Yugoslavia | 1971 | 109.9 | 100.0 | -2.4 | -6.1 | -.7 | -2.8 |
| Zaire | 1967 | 110.1 | 100.0 | -1.9 | -2.6 | 15.5 | 10.0 |
| Average change (%) | | | -12.0 ^c | | -1.3 | | -3.4 |

Source: Constructed from raw data obtained from *International Financial Statistics*.

^aA decline in the index depicts real appreciation.

^bColombia devalued in 1965. This explains the evolution of the RER before the 1967 devaluation.

^cExcludes Colombia in 1967.

recorded average real rates of appreciation presented in table 8.5 provide an underestimation of the "true" magnitude of disequilibrium. This is because, in many cases in the period leading to the crisis, price controls became quite pervasive (like in centrally planned Yugoslavia), rendering official CPIs somewhat inadequate to construct RER indices.¹⁴

The evolution of net foreign assets and of the current account balance, also presented in table 8.5, clearly captures the effect of the inconsistent macro policies on the external accounts. In fifteen of the twenty-two non-IMF episodes, and in twenty-one of the twenty-six IMF cases, the ratio of net foreign assets to money experienced a decline during this two-year period. On average, for the non-IMF countries, the net foreign assets ratio declined 5.0 percentage points during the two years prior to the devaluation; the corresponding drop for the IMF devaluers was smaller (3.5 points) but reached a very low average ratio the year before the crisis (1.5%). That year the median of this indicator for both groups of devaluers was 5.1%, significantly below the median for the control group of more than 20%. Also, in twelve of the twenty-two non-IMF episodes, and in twenty of the twenty-six IMF devaluers, the current account balance worsened in the two years before the crisis, with the magnitude of deterioration reaching almost 1 percentage point of GDP in both groups. The year prior to the crisis, the median of the current account deficit

14. This is partially reflected in the data on the parallel market premium presented in table 8.6 below.

was 3.8% of GDP for the IMF group and 6.6% for non-IMF episodes, both higher than the 3.6% deficit for the control group.

In addition to the worsening of the current account, capital flight is a crucial force underlying the weakening position of these countries' external sector. Data not reported here show that, in spite of existing and increasing control on capital mobility, as the devaluation drew nearer, and as a result of the heightened expectations of devaluation, substantially larger amounts of funds flew from these countries.¹⁵

The data in table 8.5 clearly highlight the important fact that, although it is possible to identify a dominant pattern among these devaluation episodes, there are nontrivial differences across countries. In the majority of cases, the devaluation responded to the simultaneous depletion of international reserves and loss in competitiveness (i.e., real exchange appreciation). In a few episodes, however, it is not possible to detect either of these symptoms in the years prior to the crisis. In the case of the 1964 Venezuelan devaluation, for instance, the exchange rate adjustment amounted to a trade liberalization program in which the unification of nominal exchange rates was an important component. In Indonesia, a similar currency simplification took place with the 1970 devaluation.¹⁶

The lack of data on external terms of trade did not allow us to analyze for every country whether devaluations responded, at least partially, to an exogenously driven deterioration of the external sector. However, in some of the episodes for which we could gather data, the devaluation was preceded by a worsening in the terms of trade. Although this does not mean that the terms of trade deterioration was the ultimate cause of the devaluation crisis, it clearly indicates that external shocks can play a nontrivial role in unleashing external crises.

The data in table 8.5 show an important difference between IMF-devaluers and non-IMF countries. On average, those countries that requested IMF assistance had experienced a more dramatic loss in international competitiveness (measured by the extent of RER appreciation in the three-year period preceding the devaluation) and a more precarious situation in their net foreign asset position than those countries that devalued unilaterally. Also, IMF devaluers experienced a more serious worsening of the current account deficit than non-IMF devaluers: 1.3 percentage points of GDP versus 0.3 points for non-IMF countries. However, the average *level* of the current account deficit the year prior to the exchange rate adjustment was significantly higher in the unilateral adjusters than in the IMF devaluers. The main explanation for this is that, as shown in table 8.5, IMF devaluers initially had a lower availability of foreign assets than non-IMF countries and, thus, could not sustain deep current account deficits.

15. For data on capital flight for some of the countries in our sample as well as for a number of post-1971 major devaluations, see Edwards (1989c).

16. For more details of these and other cases, see the appendix.

8.2.3 Parallel Markets, Multiple Exchange Rate Practices, and Devaluation Crises

In table 8.6, we present data on multiple (official) exchange rates and on parallel (black) market premia in the period immediately preceding the devaluations. As can be seen, in many of these episodes, the period preceding the devaluation was characterized by the existence of multiple exchange rates. It is interesting to note, however, that, in most instances, the multiple rates were in place at least three years before the crisis and that, in most countries, there was no increase in the number of official rates as the devaluation date approached.

The data in table 8.6 show that, in thirty-four of the forty-five devaluation episodes with available data, there was a significant increase in the parallel premium during the period preceding the crisis. The median premium among IMF devaluers increased from 12.0% three years before the devaluation to 48.1% one month before, while it went from 37.5% to 63.1% for the non-IMF countries in the same period. This evolution of the parallel market premium reflects three interrelated forces. First, in the presence of a freely determined parallel rate, expansive domestic credit policies will usually be reflected in a depreciation of the free rate at the same time as the domestic rate of inflation increases and international reserves are eroded. Second, this hike in the premium is capturing the public's reaction to the movement toward greater exchange controls. In fact, the analysis of the evolution of foreign trade restrictions clearly shows that, in the vast majority of countries, regulations controlling international payments, commodities transactions, and capital movements became increasingly restrictive in the period immediately preceding the devaluations. Third, it also reflects the generalized expectations that the situation is increasingly unsustainable and will result in an eventual devaluation.¹⁷

As the data on the real exchange rate, net foreign assets, and the current account clearly show (see table 8.5 above), the imposition of exchange controls and payments restrictions did not succeed in putting an end to the erosion of foreign reserves, nor did it succeed in halting the deteriorating situation in the country's degree of international competitiveness. In fact, the data clearly suggest that these heightened impediments to trade managed, at most, to slow down the unavoidable crisis unleashed by the inconsistent macroeconomic policies. Moreover, not only did exchange controls fail to halt the depletion of international reserves, but the available evidence suggests that an important negative side effect of these trade restrictions and exchange controls is that they introduced serious distortions into these economies, greatly affecting their overall performance.

17. The fact that the black market premium is lower for IMF devaluations would suggest that countries with an *anticipated* adjustment endorsed by an external institution may have lower credibility problems in implementing a stabilization program than countries that do not.

Table 8.6 Multiple Exchange Rates and Parallel Premium before Devaluation

| | Year | No. of Official Exchange Rates before Devaluation | | Parallel Market Premium before Devaluation (%) | | | |
|--------------------------|------|--|-------|--|--------|--------|-------|
| | | 3 Yrs. | 1 Yr. | 3 Yrs. | 9 Mos. | 3 Mos. | 1 Mo. |
| <i>Non-IMF devaluers</i> | | | | | | | |
| Argentina | 1955 | 3 | 3 | 173.3 | 271.3 | 310.0 | 260.0 |
| Argentina | 1970 | 1 | 1 | .0 | .3 | .0 | .0 |
| Chile | 1962 | 2 | 1 | .0 | .3 | 1.0 | 13.9 |
| Colombia | 1965 | 3 | 3 | 37.5 | 42.8 | 110.6 | 114.4 |
| Ghana | 1971 | 1 | 1 | 74.5 | 61.9 | 46.3 | 34.3 |
| India | 1966 | 1 | 1 | 51.9 | 77.5 | 131.1 | 134.2 |
| Israel | 1962 | 1 | 1 | -.6 | 36.3 | 46.9 | 50.8 |
| Israel | 1967 | 1 | 1 | 7.8 | 5.6 | 13.9 | 9.9 |
| Israel | 1971 | 1 | 1 | -5.0 | 26.9 | 7.7 | 6.9 |
| Korea | 1960 | 1 | 1 | 110.0 | 144.0 | 156.0 | 174.0 |
| Korea | 1964 | 1 | 1 | 40.0 | 50.0 | 111.5 | 119.2 |
| Malawi | 1967 | 1 | 1 | N.A. | N.A. | N.A. | N.A. |
| Nicaragua | 1955 | 2 | 2 | 26.7 | 25.8 | 26.2 | 26.2 |
| Pakistan | 1955 | 1 | 1 | 64.0 | 93.9 | 67.6 | 63.1 |
| Spain | 1967 | 1 | 1 | .3 | .2 | .0 | .5 |
| Sri Lanka | 1967 | 1 | 1 | 163.2 | 180.3 | 173.1 | 152.1 |
| Turkey | 1958 | 1 | 2 | 196.4 | 346.4 | 542.8 | 667.8 |
| Uruguay | 1959 | 2 | 2 | 98.5 | 128.2 | 175.6 | 155.8 |
| Venezuela | 1964 | 3 | 3 | .0 | 35.5 | 35.5 | 35.5 |
| <i>IMF devaluers</i> | | | | | | | |
| Argentina | 1959 | 2 | 2 | 103.3 | 133.0 | 308.3 | 291.6 |
| Argentina | 1962 | 1 | 1 | .2 | N.A. | N.A. | N.A. |
| Brazil | 1967 | 1 | 1 | .0 | .9 | .5 | .5 |
| Colombia | 1957 | 1 | 1 | 38.4 | 66.8 | 3.5 | 1.8 |
| Colombia | 1962 | 3 | 3 | 11.1 | 33.4 | 34.7 | 58.0 |
| Colombia | 1967 | 3 | 4 | 35.9 | 19.2 | 46.3 | 48.1 |
| Costa Rica | 1961 | 1 | 1 | 23.2 | 32.1 | 36.2 | 37.5 |
| Ecuador | 1961 | 2 | 2 | 37.6 | 21.9 | 23.3 | 66.7 |
| Ecuador | 1970 | 2 | 2 | 11.1 | 22.5 | 23.9 | 55.6 |
| Egypt | 1962 | 2 | 2 | 3.3 | 91.4 | 125.7 | 128.6 |
| Ghana | 1967 | 1 | 1 | 62.0 | 70.5 | 135.2 | 135.2 |
| Indonesia | 1970 | 3 | 2 | 6.6 | N.A. | N.A. | N.A. |
| Mexico | 1954 | 1 | 1 | .0 | -1.0 | -1.0 | -.4 |
| Peru | 1958 | 1 | 1 | .0 | .0 | .0 | .0 |
| Peru | 1967 | 1 | 1 | 5.2 | 2.2 | 2.2 | 43.6 |
| Philippines | 1962 | 1 | 2 | 43.2 | 85.0 | 106.0 | 126.0 |
| Philippines | 1970 | 1 | 1 | 8.9 | 15.4 | 44.9 | 59.0 |
| Spain | 1959 | 2 | 1 | 12.9 | 38.6 | 41.6 | 38.6 |
| Tunisia | 1964 | 1 | 1 | 21.4 | 95.2 | 83.3 | 78.5 |
| Turkey | 1970 | 2 | 3 | 38.8 | 51.6 | 52.2 | 43.3 |
| Uruguay | 1963 | 1 | 1 | 3.8 | .4 | .3 | 1.4 |
| Uruguay | 1971 | 1 | 1 | 2.0 | 2.8 | 24.0 | 24.0 |

(continued)

Table 8.6 (continued)

| | Year | No. of Official Exchange Rates before Devaluation | | Parallel Market Premium before Devaluation (%) | | | |
|------------|------|--|-------|--|--------|--------|-------|
| | | 3 Yrs. | 1 Yr. | 3 Yrs. | 9 Mos. | 3 Mos. | 1 Mo. |
| Yugoslavia | 1961 | 3 | 3 | 18.6 | 18.6 | 26.5 | 58.2 |
| Yugoslavia | 1965 | 2 | 2 | N.A. | 39.5 | 41.9 | 54.7 |
| Yugoslavia | 1971 | 1 | 1 | 10.0 | 11.6 | 11.2 | 20.0 |
| Zaire | 1967 | 2 | 2 | 164.7 | 208.8 | 247.0 | 261.7 |

Source: *Picks Currency Yearbook* (several issues).

8.2.4 Going to the Fund? Economic and Political Angles

Why do some devaluing countries go to the IMF while others stay strictly away from it? Moreover, how can we explain why some countries request IMF assistance to tackle a particular crisis but decide to face other crises—apparently equally deep and serious—on their own? In this subsection, we use our devaluation episodes data set to address these questions. In principle, we would expect that the decision to approach the IMF for assistance would respond to a combination of economic and political considerations, including the depth of the external crisis. From a political economy perspective, it would be expected that the degree of instability of the political system, as well as other institutional variables, would affect the decision to approach the IMF. We report results from a series of probit regressions aimed at trying to understand what determines the probability that a devaluing country will approach the IMF for assistance.

To the extent that the IMF provides technical assistance and financial support, it is expected that the probability of approaching the IMF, conditional on the fact that adjustment *will* be undertaken, should depend on the following class of economic variables. (1) First is the availability of technical expertise in the country in question. The lower this availability, the higher the expected probability of approaching the IMF. The measurement of this variable is difficult, and in the empirical analysis presented below we proxy it by each country's income per capita relative to that of the United States.¹⁸ (2) In general, we would expect that, the deeper the external sector crisis—measured through the use of indicators such as changes in the current account and a loss in international competitiveness—the higher the likelihood of approaching the IMF. (3) The final factor is the availability of foreign currency funds to withstand the transition without obtaining Fund financing. Countries with

18. The use of *relative* income per capita stems from the fact that we are using a cross section of devaluations that took place at different moments in time.

high reserves of foreign exchange or with higher borrowing ability will be in a better position to tackle a crisis on their own. We proxy this variable by the relative *level* of available foreign assets the year before the devaluation.

In addition to the economic variables discussed above, we would expect that the decision to approach the IMF will also depend on political and institutional variables. An important implication of the recent work on the political economy of stabilization is that countries with weaker, more unstable, and more polarized political systems will have greater difficulties in putting together a *credible* stabilization program. There are two reasons for this: first, the more unstable the political system, the less binding the government's *reputational* constraint will become (see, e.g., Persson and Tabellini 1990); second, countries with a more unstable political system will have a greater proclivity to rely on inflationary financing to fund public expenditures (see Cukierman, Edwards, and Tabellini 1992). An important empirical implication of this approach to stabilization is that countries with a more unstable political regime will tend to have a higher probability of approaching the IMF. In this way, they will be able to obtain a "seal of approval" for their stabilization and, thus, gain in credibility. In the empirical analysis reported above, we use a series of political variables to investigate this hypothesis.

The modern public choice approach to international organizations provides an additional rationale for considering political and institutional variables in explaining the probability of requesting IMF assistance (see, e.g., Vaubel 1986). According to this view, an important role of international organizations is to do national governments' "dirty work." By involving multinational bodies in the decision-making process, local politicians can shield themselves from the political fallout associated with unpopular policies.¹⁹ This implies that governments with a more unstable political base, and thus subject to suffering more heavily from unpopular policies, will recur more frequently to the IMF. A second implication of this public choice view is that, with other things given, countries with dictatorial regimes will have a smaller incentive to request IMF assistance. This is because dictatorial regimes can, in general, withstand unpopular adjustment programs without suffering serious political consequences (Vaubel 1986). Finally, ideological considerations are also likely to affect the decision to implement an IMF program. In general, we would expect that left-leaning governments would be less likely to approach the Fund.²⁰

In the probit analysis of IMF programs, the dependent variable took a value of one if the episode corresponded to an IMF devaluation and zero otherwise. The following political and economic variables were used as regressors (although not every one in every regression):

19. All these propositions assume that local politicians associate some cost with yielding some of their power to the international bureaucracy.

20. An abundance of political science papers look at the Fund program from an ideological, pressure-groups perspective (see, e.g., Haggard 1986).

1. GDP per capita the year of the devaluation, relative to the U.S. GDP per capita that same year. Its sign is expected to be negative. These data were obtained from Summers and Heston (1988).
2. Changes in the real exchange rate index in the two years prior to the devaluation. The sign is expected to be negative, capturing the fact that countries with a more dramatic loss in international competitiveness are more likely to go to the IMF.²¹
3. Change in the current account deficit in the three years prior to the crisis. Its sign is expected to be negative.
4. The net foreign assets ratio the year before the crisis. This measures the availability of own resources to withstand the adjustment. Its sign is expected to be negative, implying that the lower the availability of foreign resources, the higher the probability of requesting access to Fund financing.
5. Index of political unpopularity, measured as the incidence of politically motivated strikes, protests, and demonstrations. This index was calculated on a per capita basis and was computed as the average between 1948 and the year prior to the devaluation. We expect its coefficient to be positive. When alternative periodicities were used, no significant changes in the results were detected. The raw data used for constructing this and the other political indicators used in this analysis were taken from Taylor and Jodice (1983).
6. Index of political violence, measured by the incidence of politically related assassinations, attacks, and deaths. This index was calculated as was our variable 5, political instability, using the same source. We also expect a positive coefficient.
7. Frequency of attempted coups d'état (both successful and unsuccessful). We take this to be an alternative measure of political instability and expect its coefficient to be positive.
8. A dummy variable that takes the value of one if the government in office is democratic and zero if dictatorial. We expect its sign to be negative.
9. An ideological index that measures whether the country in office is right, center, or left.²² This index takes a value of zero if the government is right wing, one if it is of centrist orientation, and two if it is left wing. We expect its coefficient to be negative.

Table 8.7 contains several probit regressions on IMF programs. The results obtained are quite encouraging: the χ^2 statistics indicate that the overall regressions are significant at conventional levels, and the majority of the coefficients have the expected sign, although some of them are estimated somewhat

21. Variables 2–4 were obtained from *IFS*.

22. Of course, this type of classification of ideological inclination is always prone to some ambiguities. For example, how to classify Bourguiba's government in Tunisia or Mobutu's in Zaire? Our subjective analysis yielded a reduced number of leftist governments: those of Bourguiba, Nasser, Ghandi, and Tito and Israel's labor governments.

Table 8.7 Probit Analysis for IMF Programs

| | Eq. (1) | Eq. (2) | Eq. (3) | Eq. (4) |
|---------------------------|--------------------|--------------------|--------------------|--------------------|
| Constant | 1.481 (2.148) | 1.517 (2.178) | 1.245 (1.705) | .815 (1.551) |
| Relative GDP per capita | -2.556 (-1.549) | -3.098 (-1.975) | -2.414 (-1.503) | -2.528 (-1.890) |
| Δ RER | .014 (1.032) | .009 (.659) | .013 (.896) | -.006 (-.454) |
| Δ Current account | .022 (.217) | .028 (.276) | .019 (.194) | ... |
| Lagged net foreign assets | -.041 (-2.328) | -.043 (-2.455) | -.041 (-2.323) | ... |
| Political unpopularity | .001 (.682) | ... | ... | ... |
| Coups | 1.338 (1.409) | 1.623 (1.800) | 1.151 (1.207) | 1.000 (1.814) |
| Political violence | ... | ... | .018 (1.096) | .017 (.633) |
| Democracy | -.796 (-1.611) | -.849 (-1.678) | -.855 (-1.626) | -.564 (-1.284) |
| Ideology | -.218 (.711) | .263 (.830) | ... | ... |
| Log likelihood ratio | 16.695 | 16.537 | 18.484 | 8.058 |

Note: *t*-statistics are given in parentheses.

imprecisely. Overall, these regressions do provide support for the view that both political and economic variables determine the probability of going to the Fund. From the economic point of view, our estimations indicate that relative GDP and net foreign asset position are the most important determinants in the decision to go to the Fund: poorer countries and countries facing a more severe exchange crisis have a higher probability of requesting Fund assistance. Surprisingly, exchange rate appreciation and deterioration in the current account do not seem to be as important as the other economic determinants.²³ On the political side, table 8.7 shows that countries with a higher frequency of coups and less democratic regimes are more likely to undertake a program endorsed by the IMF. The two indices of political instability have the expected signs, but their standard errors are rather high. Finally, the coefficient of ideology variable is estimated very imprecisely and has the opposite sign to what we expected. Since it is very likely that countries with a long history of coups and political instability may lack reputation and suffer from more severe cred-

23. These results are different from those obtained by Conway (1991), who finds that a higher current account deficit in a previous period, among other things, is a significant determinant of participation in an IMF program. On the other hand, he finds that foreign exchange revenues were not significant. Conway does not control for the political determinants. Moreover, he does not use an episode as an observation, he studies only the period 1976-86, and he is not conditioning on a devaluation.

ibility problems than countries with a history of constitutional government transfers and political tranquility, the results obtained give some support to the idea of a “seal of approval” espoused in section 8.1. We interpret these results as promising and suggestive. We believe that further formal empirical studies of the political economy of adjustment are likely to shed important new light on this area of inquiry.

8.3 The “Effectiveness” of IMF-Sponsored and Unilateral Nominal Devaluations during the Bretton Woods Period

Were these devaluations successful? Was it worthwhile engaging in these programs? Is there any evidence that IMF devaluers fared any better than non-IMF countries? In this section, we address these issues by focusing on the behavior of the three sets of variables of section 8.2—real exchange rates, net foreign assets, and current account ratios—for the period immediately following our forty-eight devaluations. Although the great majority of the IMF programs considered in this study were restricted to a one-year duration, we look at performance in the three-year period following each devaluation. The spirit of IMF programs is, of course, that, after the program is over, the country will continue to do well. We start our analysis by investigating whether these devaluations affected the real exchange rate. We then analyze the role of accompanying macro policies and finally analyze the response of net foreign assets and the current account balance. In section 8.4, we look at some political aspects of adjustment.

8.3.1 Nominal Devaluations, Real Devaluations, and the External Sector

Tables 8.8 and 8.9 deal with real exchange rate behavior during the three years following our forty-eight devaluation episodes. Table 8.8 presents the index of the bilateral (with respect to the U.S. dollar) real exchange rate one year before the devaluation, the year of the devaluation, and one, two, and three years after the devaluation. As can be seen, in the majority of cases (twenty of twenty-two non-IMF and twenty-one of twenty-six IMF episodes), the RER was higher (i.e., more *depreciated*) three years after the devaluation than the year prior to the devaluation. Moreover, in a large number of cases, by three years after the adjustment program the RER index exceeded its value three years prior to the devaluation. This provides preliminary information suggesting that these nominal devaluations were, as a group, largely successful in helping generate RER realignments.

Table 8.9 looks at the issue of nominal and real devaluations from a different perspective. This table presents data on the cumulative ex post elasticity of the real exchange rate. This cumulative “effectiveness” index of nominal devaluations is computed in the following form:

$$(1) \quad \text{Effectiveness Index}_k = \frac{\hat{\text{RER}}_k}{\hat{\text{E}}_k}$$

Table 8.8 Real Exchange Rate Indexes in the Aftermath of Forty-eight Devaluation Episodes^a

| Country | Year | Year Prior | Devaluation Year | 1 Yr. After | 2 Yrs. After | 3 Yrs. After |
|-----------------------------|------|------------|------------------|-------------|--------------------|--------------------|
| <i>A. Non-IMF devaluers</i> | | | | | | |
| Argentina | 1955 | 100.0 | 229.5 | 218.2 | 177.8 | 148.0 |
| Argentina | 1970 | 100.0 | 104.3 | 99.7 | 65.8 | 46.1 |
| Chile | 1962 | 100.0 | 203.2 | 176.5 | 130.0 | 134.1 |
| Colombia | 1965 | 100.0 | 148.2 | 127.1 | 138.0 ^b | 142.6 ^b |
| Ghana | 1971 | 100.0 | 166.3 | 111.6 | 96.1 | 96.1 |
| India | 1966 | 100.0 | 146.8 | 129.5 | 130.1 | 131.9 |
| Israel | 1962 | 100.0 | 151.2 | 143.9 | 131.9 | 129.5 |
| Israel | 1967 | 100.0 | 114.8 | 115.5 | 116.3 | 112.7 |
| Israel | 1971 | 100.0 | 110.6 | 102.9 | 96.6 | 117.5 ^b |
| Jamaica | 1967 | 100.0 | 113.2 | 110.2 | 107.4 | 103.7 |
| Korea | 1960 | 100.0 | 118.0 | 217.3 | 204.4 | 170.2 |
| Korea | 1964 | 100.0 | 152.5 | 145.4 | 187.9 | 172.8 |
| Malawi | 1967 | 100.0 | 123.9 | 114.7 | 117.1 | 112.5 |
| Nicaragua | 1955 | 100.0 | 123.5 | 131.8 | 141.0 | 135.8 |
| Pakistan | 1955 | 100.0 | 144.7 | 198.6 | 185.9 | 182.3 |
| Sierra Leone | 1967 | 100.0 | 110.5 | 114.3 | 112.3 | 111.3 |
| Spain | 1967 | 100.0 | 108.9 | 107.5 | 109.5 | 106.3 |
| Sri Lanka | 1967 | 100.0 | 122.1 | 117.8 | 114.9 | 112.5 |
| Trinidad-Tobago | 1967 | 100.0 | 114.3 | 108.6 | 109.7 | 111.3 |
| Turkey | 1958 | 100.0 | 271.2 | 220.1 | 217.6 | 216.9 |
| Uruguay | 1959 | 100.0 | 201.4 | 146.8 | 118.5 | 107.4 |
| Venezuela | 1964 | 100.0 | 135.1 | 135.9 | 137.3 | 138.1 |
| <i>B. IMF devaluers</i> | | | | | | |
| Argentina | 1959 | 100.0 | 97.6 | 76.3 | 67.2 | 85.2 ^b |
| Argentina | 1962 | 100.0 | 126.8 | 100.4 | 93.9 | 93.1 |
| Brazil | 1967 | 100.0 | 94.0 | 111.4 | 119.5 | 103.2 |
| Colombia | 1957 | 100.0 | 193.1 | 201.8 | 188.9 | 190.3 |
| Colombia | 1962 | 100.0 | 131.4 | 99.2 | 84.4 | 125.0 ^b |
| Colombia | 1967 | 100.0 | 108.5 | 112.2 | 112.3 | 116.4 |
| Costa Rica | 1961 | 100.0 | 115.6 | 112.5 | 108.9 | 106.1 |
| Ecuador | 1961 | 100.0 | 115.0 | 112.0 | 105.7 | 101.6 |
| Ecuador | 1970 | 100.0 | 136.9 | 130.7 | 126.6 | 126.6 |
| Egypt | 1962 | 100.0 | 127.7 | 126.5 | 122.2 | 108.9 |
| Ghana | 1967 | 100.0 | 157.2 | 146.8 | 144.1 | 145.1 |
| Indonesia | 1970 | 100.0 | 106.8 | 116.1 | 114.1 | 98.4 |
| Mexico | 1954 | 100.0 | 137.9 | 119.1 | 117.6 | 115.1 |
| Peru | 1958 | 100.0 | 121.5 | 123.3 | 109.5 | 102.8 |
| Peru | 1967 | 100.0 | 131.7 | 113.5 | 111.4 | 109.0 |
| Philippines | 1962 | 100.0 | 184.8 | 174.1 | 160.5 | 160.3 |
| Philippines | 1970 | 100.0 | 149.1 | 133.9 | 133.8 | 131.9 |
| Spain | 1959 | 100.0 | 133.2 | 131.5 | 127.4 | 121.5 |
| Tunisia | 1964 | 100.0 | 119.4 | 114.1 | 113.3 | 110.5 |
| Turkey | 1970 | 100.0 | 159.2 | 134.8 | 126.3 | 123.9 |
| Uruguay | 1963 | 100.0 | 119.8 | 100.2 | 205.9 ^b | 155.3 ^b |
| Uruguay | 1971 | 100.0 | 153.0 | 105.5 | 91.5 | 106.8 |
| Yugoslavia | 1961 | 100.0 | 105.1 | 94.9 | 86.0 | 79.1 |

(continued)

Table 8.8 (continued)

| Country | Year | Year Prior | Devaluation Year | 1 Yr. After | 2 Yrs. After | 3 Yrs. After |
|------------|------|------------|------------------|-------------|--------------|--------------|
| Yugoslavia | 1965 | 100.0 | 127.8 | 104.3 | 98.4 | 95.9 |
| Yugoslavia | 1971 | 100.0 | 121.8 | 109.2 | 94.4 | 100.9 |
| Zaire | 1967 | 100.0 | 222.9 | 152.3 | 148.3 | 141.7 |

Sources: Constructed from raw data obtained from various issues of *International Financial Statistics*.

*An increase in the index depicts *real* depreciation.

^bA new devaluation took place that year. Consequently, this value is not relevant in evaluating the effectiveness of the devaluations.

where k refers to the number of years since the devaluation, \hat{RER}_k is the accumulated percentage change in the real exchange rate between the year prior to the devaluation and k years after the devaluation ($k = 0, 1, 2, 3$), and \hat{E}_k is the accumulated percentage change in the nominal exchange rate during the same period. This elasticity provides an index of the degree of *erosion* experienced by the real exchange rate during the three years after the devaluation. A value of one means that the nominal exchange rate adjustment has been fully transferred into a one-to-one *real* devaluation. A negative value of the index, on the other hand, indicates that more than 100% of the nominal devaluation has been eroded and that, at that particular point, the real exchange rate is below its value one year before the crisis. The advantage of this indicator is that it measures the “effort,” in terms of nominal devaluation, that a country has had to make in order to achieve a 1% real depreciation. Consequently, it corrects for those cases where the discrete devaluation is followed by a crawling peg, where the authorities try to maintain a high level of the RER by successive rounds of nominal devaluations and, most of the time, higher inflation. The actual value of this ex post elasticity index measures in a broad (and preliminary) sense what percentage of the devaluation has been “effective.”

As in table 8.8, the data in table 8.9 show a fairly high degree of effectiveness of nominal devaluations: in twenty-seven of the forty-eight episodes, the ex post RER elasticity is equal to or greater than one-half, one year after the devaluation. Three years after, twenty-six of the forty-eight countries have an effectiveness index that exceeds 0.33. For IMF countries, the median RER elasticity one year after the crisis was 0.49, while, for unilateral devaluers, the value was 0.57. The difference between the two groups is accentuated three years after the devaluation: the index is 0.23 for IMF devaluers and 0.50 for non-IMF countries.

The final outcome of adjustment programs—including the RER effect of devaluations—will largely depend on the accompanying macroeconomic policies. If, as shown in Edwards (1989c), the nominal devaluation is accompanied by expansive macroeconomic policies, the real effect of the nominal de-

Table 8.9 Ex Post Real Exchange Rate Elasticities of Devaluations^a

| Country | Year | Devaluation Year | 1 Yr. After | 2 Yrs. After | 3 Yrs. After |
|-----------------------------|------|---------------------|----------------|------------------|-------------------|
| <i>A. Non-IMF devaluers</i> | | | | | |
| Argentina | 1955 | .82 | .70 | .47 | .26 |
| Argentina | 1970 | .30 | -.01 | -.80 | -1.26 |
| Chile | 1962 | .79 | .40 | .14 | .11 |
| Colombia | 1965 | .96 | .54 | .51 ^b | .49 ^b |
| Ghana | 1971 | .85 | .45 | -.30 | -.31 |
| India | 1966 | .80 | .51 | .50 | .55 |
| Israel | 1962 | .77 | .66 | .48 | .44 |
| Israel | 1967 | .89 | .93 | .98 | .76 |
| Israel | 1971 | .53 | .15 | -.17 | .24 ^b |
| Jamaica | 1967 | .83 | .60 | .46 | .22 |
| Korea | 1960 | .60 | .73 | .65 | .44 |
| Korea | 1964 | .54 | .42 | .81 | .65 |
| Malawi | 1967 | 1.44 | .88 | 1.02 | .75 |
| Nicaragua | 1955 | .59 | .79 | 1.03 | .89 |
| Pakistan | 1955 | 1.03 | 2.25 | 2.00 | 1.90 |
| Sierra Leone | 1967 | .66 | .84 | .76 | .68 |
| Spain | 1967 | .55 | .46 | .57 | .39 |
| Sri Lanka | 1967 | .91 | .74 | .60 | .50 |
| Trinidad-Tobago | 1967 | .90 | .50 | .60 | .68 |
| Turkey | 1958 | .77 | .54 | .53 | .53 |
| Uruguay | 1959 | .58 | .27 | .11 | .04 |
| Venezuela | 1964 | .92 | .94 | .98 | 1.00 |
| <i>B. IMF devaluers</i> | | | | | |
| Argentina | 1959 | -.02 | -.22 | -.31 | -.06 ^b |
| Argentina | 1962 | .44 | .01 | -.07 | -.05 |
| Brazil | 1967 | -.27 | .16 | .16 | .03 |
| Colombia | 1957 | .80 | .66 | .57 | .54 |
| Colombia | 1962 | .91 | -.02 | -.46 | -.25 ^b |
| Colombia | 1967 | .51 | .49 | .38 | .40 |
| Costa Rica | 1961 | .88 | .70 | .50 | .35 |
| Ecuador | 1961 | .75 | .60 | .29 | .08 |
| Ecuador | 1970 | .95 | .79 | .69 | .68 |
| Egypt | 1962 | 1.16 | 1.11 | .93 | .37 |
| Ghana | 1967 | 1.33 | 1.09 | 1.03 | 1.05 |
| Indonesia | 1970 | .43 | .59 | .52 | -.06 |
| Mexico | 1954 | .85 | .43 | .40 | .34 |
| Peru | 1958 | .74 | .49 | .22 | .07 |
| Peru | 1967 | .71 | .31 | .26 | .20 |
| Philippines | 1962 | .90 | .79 | .65 | .64 |
| Philippines | 1970 | .77 | .53 | .47 | .45 |
| Spain | 1959 | .79 | .74 | .65 | .51 |
| Tunisia | 1964 | .81 | .59 | .56 | .44 |
| Turkey | 1970 | .91 | .62 | .46 | .42 |
| Uruguay | 1963 | .44 | .00 | .24 ^b | .09 ^b |
| Uruguay | 1971 | 1.10 | .03 | -.03 | .01 |
| Yugoslavia | 1961 | .28 | -.27 | -.75 | -1.12 |

(continued)

Table 8.9 (continued)

| Country | Year | Devaluation Year | 1 Yr. After | 2 Yrs. After | 3 Yrs. After |
|------------|------|---------------------|----------------|-----------------|-----------------|
| Yugoslavia | 1965 | .42 | .07 | -.02 | -.06 |
| Yugoslavia | 1971 | .61 | .26 | -.23 | .02 |
| Zaire | 1967 | .61 | .26 | .24 | .21 |

*See the text for explanations.

^bIncludes the effect of new devaluations that took place that year.

valuation will tend to be eroded. Table 8.10 contains data for the three years following each devaluation on three of the indicators of domestic credit and fiscal policies considered in section 8.2: (a) rate of growth of domestic credit; (b) rate of growth of domestic credit to the public sector; and (c) proportion of total domestic credit received by the public sector. As can be seen, IMF devaluers exhibit tighter macroeconomic policies than non-IMF countries. Interestingly enough, this difference across groups was maintained three years after the devaluation, even after most IMF programs had expired. It is also educational to compare the evolution of macro indicators in the devaluing countries with the behavior of these indices for the control group of twenty-four fixers. In half the forty-eight episodes, the rate of growth of domestic credit was below the *third* quartile figure for the fixers both one and three years after the devaluation.

In order to gain additional insights into the way in which macroeconomic policies and nominal devaluations affected the RER during these episodes, a number of cross-sectional regressions on the real exchange rate effect of nominal devaluations were estimated. These regressions take each devaluation episode as an observation and consider the rate of change of the real exchange rate as the dependent variable. The independent variables include the rate of nominal devaluation, the rate of growth of domestic credit, the rate of growth of domestic credit to the public sector, the change in the ratio of the fiscal deficit to GDP, and a dummy (equal to one) in the presence of an IMF program. The equations estimated were of the following form:

$$(2) \quad \hat{RER}_k = \alpha_0 + \alpha_1 \hat{E}_k + \alpha_2 \hat{M}_k + \alpha_3 \text{IMF} + u.$$

\hat{RER}_k is the *accumulated* percentage change in the real exchange rate between the year prior to the devaluation and k years after the devaluation (for $k = 1, 2, 3$ years), for episode n . \hat{E}_k is the percentage change of the nominal exchange rate during the same period, for episode n . Given the nature of the data set used, in most stepwise devaluation cases $\hat{E}_1 = \hat{E}_2 = \hat{E}_3 = \hat{E}$ = initial devaluation. \hat{m}_k is a measure of accumulated macroeconomic measures between the year preceding the devaluation and year k . Among these measures, \hat{C} stands for growth in domestic credit, \hat{CPS} is growth of credit to the public

Table 8.10 Macroeconomic Policies after Devaluation Episodes

| Country | Year | Growth of Domestic Credit | | Growth of Domestic Credit to the Public Sector | | Ratio of Domestic Credit to Public Sector to Total Domestic Credit | |
|-----------------------------|------|---------------------------|--------------|--|--------------|--|--------------|
| | | 1 Yr. After | 3 Yrs. After | 1 Yr. After | 3 Yrs. After | 1 Yr. After | 3 Yrs. After |
| <i>A. Non-IMF devaluers</i> | | | | | | | |
| Argentina | 1955 | 13.4 | 43.6 | -36.4 | 68.9 | 5.8 | 36.7 |
| Argentina | 1970 | 41.9 | 94.7 | 14.3 | 133.3 | 2.1 | 4.8 |
| Chile | 1962 | 33.9 | 44.9 | 45.4 | 55.4 | 43.4 | 48.6 |
| Colombia | 1965 | 17.9 | 16.4 | -6.1 | -1.5 | 24.9 | 21.5 |
| Ghana | 1971 | 12.2 | 48.8 | 24.1 | 52.6 | 43.4 | 46.4 |
| India | 1966 | 8.7 | 9.8 | 6.3 | 3.9 | 57.8 | 52.6 |
| Israel | 1962 | 34.1 | 18.4 | 438.9 | 18.0 | 12.7 | 13.2 |
| Israel | 1967 | 37.8 | 28.1 | 111.4 | 35.4 | 29.1 | 40.8 |
| Israel | 1971 | 12.5 | 74.6 | -5.5 | 96.7 | 35.9 | 31.4 |
| Jamaica | 1967 | 22.5 | 20.2 | 29.5 | 394.1 | 6.7 | 7.9 |
| Korea | 1960 | 128.1 | 17.3 | 78.2 | 8.3 | 27.6 | 31.3 |
| Korea | 1964 | 31.3 | 69.9 | -7.0 | 21.3 | 18.0 | 7.4 |
| Malawi | 1967 | 1.4 | 2.7 | 93.8 | -61.2 | 17.3 | 8.1 |
| Nicaragua | 1955 | 11.4 | 5.4 | 20.0 | .0 | -10.3 | -7.7 |
| Pakistan | 1955 | 21.5 | 8.5 | 29.7 | 10.9 | 69.4 | 75.9 |
| Sierra Leone | 1967 | -8.7 | 36.8 | -37.5 | 250.0 | 23.8 | 26.9 |
| Spain | 1967 | 21.0 | 14.0 | 18.2 | 4.4 | 26.0 | 22.5 |
| Sri Lanka | 1967 | 13.6 | 10.0 | 6.1 | 9.6 | 63.7 | 61.2 |
| Trinidad-Tobago | 1967 | 17.3 | 27.5 | 62.3 | 61.4 | 22.1 | 17.6 |
| Turkey | 1958 | 13.0 | -3.0 | 10.5 | 157.7 | 13.5 | 41.9 |
| Uruguay | 1959 | 26.3 | 25.5 | -23.8 | 347.1 | 3.3 | 11.0 |
| Venezuela | 1964 | 10.7 | 8.9 | -20.7 | -14.8 | -13.4 | -11.8 |
| Median | | 17.6 | 19.3 | 19.1 | 28.3 | 24.4 | 29.1 |
| Average | | 23.7 | 28.3 | 39.8 | 74.3 | 25.0 | 28.0 |
| <i>B. IMF devaluers</i> | | | | | | | |
| Argentina | 1959 | 27.8 | 14.0 | 14.6 | 23.6 | 36.7 | 35.1 |
| Argentina | 1962 | 23.5 | 27.7 | 41.3 | 26.0 | 40.1 | 42.8 |
| Brazil | 1967 | 55.6 | 29.3 | 33.5 | -4.7 | 21.1 | 12.5 |
| Colombia | 1957 | 12.1 | 11.2 | 3.0 | -1.8 | 22.4 | 19.6 |
| Colombia | 1962 | 16.7 | 23.0 | 12.6 | 45.7 | 24.1 | 31.3 |
| Colombia | 1967 | 16.4 | 17.2 | -1.5 | -6.4 | 21.5 | 14.2 |
| Costa Rica | 1961 | .0 | 14.7 | -22.6 | 19.5 | 9.0 | 11.0 |
| Ecuador | 1961 | 1.9 | 10.8 | 3.3 | -41.0 | 11.0 | 4.8 |
| Ecuador | 1970 | 13.0 | 7.8 | 18.7 | -31.9 | 27.8 | 16.0 |
| Egypt | 1962 | 20.4 | 7.3 | 35.1 | 12.0 | 52.1 | 57.5 |
| Ghana | 1967 | 12.5 | 3.4 | 18.5 | -6.5 | 59.3 | 48.3 |
| Indonesia | 1970 | 35.9 | 64.7 | 29.4 | -281.6 | 11.4 | -1.3 |
| Mexico | 1954 | -1.9 | 13.0 | -5.7 | 25.1 | 26.8 | 22.8 |
| Peru | 1958 | 14.3 | 11.1 | 30.3 | -8.5 | 30.5 | 22.5 |
| Peru | 1967 | 12.1 | 13.2 | 18.5 | -12.8 | 36.3 | 25.0 |
| Philippines | 1962 | 25.3 | 6.2 | 17.8 | -23.1 | 12.3 | 8.2 |

(continued)

Table 8.10 (continued)

| Country | Year | Growth of Domestic Credit | | Growth of Domestic Credit to the Public Sector | | Ratio of Domestic Credit to Public Sector to Total Domestic Credit | |
|-------------|------|---------------------------|--------------|--|--------------|--|--------------|
| | | 1 Yr. After | 3 Yrs. After | 1 Yr. After | 3 Yrs. After | 1 Yr. After | 3 Yrs. After |
| Philippines | 1970 | 11.9 | 13.0 | 5.0 | -47.7 | 14.4 | 5.8 |
| Spain | 1959 | 9.2 | 15.7 | 2.4 | -3.8 | 40.6 | 30.4 |
| Tunisia | 1964 | 14.2 | 7.2 | 11.1 | -1.9 | 33.0 | 28.1 |
| Turkey | 1970 | 20.8 | 22.0 | 29.9 | -21.6 | 19.4 | 10.1 |
| Uruguay | 1963 | 55.7 | 5.9 | 15.4 | 36.4 | 10.9 | 19.4 |
| Uruguay | 1971 | 87.5 | -83.3 | 60.0 | 122.2 | 17.8 | 181.8 |
| Yugoslavia | 1961 | 36.8 | 10.0 | 150.0 | .0 | 19.2 | 12.1 |
| Yugoslavia | 1965 | 25.2 | 16.3 | 22.4 | -10.8 | 9.4 | 6.4 |
| Yugoslavia | 1971 | 18.6 | 23.4 | 53.8 | 30.4 | 7.6 | 7.8 |
| Zaire | 1967 | 11.2 | 29.1 | 10.0 | 20.7 | 80.7 | 69.7 |
| Median | | 16.6 | 13.1 | 18.5 | -2.9 | 22.0 | 19.5 |
| Average | | 22.2 | 12.8 | 23.5 | -5.5 | 26.8 | 28.5 |

Source: Constructed from several issues of *International Financial Statistics*.

sector, and ΔDEF is the change in the fiscal deficit. IMF is a dummy variable that takes the value of one if the episode in question corresponds to an IMF devaluation. The results from this type of equation allow us to get an idea of the average effects of the nominal devaluations on the RER maintaining other macroeconomic variables constant. The results obtained from the estimation of this equation are presented in table 8.11.

Overall, these regressions are quite revealing. Controlling for macro policies, the nominal devaluation exerts a strong influence on the real exchange rate, although its effect diminishes from around 0.68 in the year of the devaluation to approximately 0.15 after three years. Moreover, these results strongly confirm the key role of macroeconomic policies in adjustment programs. In every equation but one, the macro variables had a negative coefficient, and in many significantly so. If macroeconomic policies are expansive, it is likely—as was the case with the Argentinian devaluations of 1959, 1962, and 1970, the Brazilian devaluation of 1967, or the Yugoslav devaluations of 1961 and 1965 and others depicted in table 8.8 above—that the real effect of the nominal devaluation will be rapidly eroded.

In order to analyze whether the IMF exerts an independent effect over the real exchange rate in the period following the devaluation, we added an IMF variable to the regressions in table 8.11. In every case, the coefficient of this dummy turned out to be insignificant, indicating that, apart from its influence through macroeconomic policies, the IMF does not appear to have an independent effect on the RER. This dummy may be capturing an additional factor

Table 8.11 Nominal Devaluations, Macroeconomic Policies, the IMF, and Real Devaluations: Cross-Episode Regressions (ordinary least squares)

| Const. | \hat{E}_k | \hat{C}_k | $C\hat{P}S_k$ | $D\hat{E}F_k$ | IMF | \hat{R}^2 |
|-----------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------|
| <i>A. k = 0 years</i> | | | | | | |
| .063 (1.362) | .689 (13.273) | -.0006 (-.614) | ... | -.009 (-.715) | -.065 (-1.247) | .800 |
| .061 (1.302) | .684 (13.235) | ... | -.0001 (-.112) | -.005 (-.465) | -.073 (-1.308) | .798 |
| <i>B. k = 1 year</i> | | | | | | |
| .209 (3.355) | .484 (7.992) | -.008 (-4.366) | ... | -.019 (-1.380) | -.099 (-1.477) | .619 |
| .146 (2.262) | .411 (6.748) | ... | -.004 (-3.447) | -.024 (-1.533) | -.063 (-.813) | .568 |
| <i>C. k = 2 years</i> | | | | | | |
| .334 (5.184) | .358 (7.799) | -.014 (-5.195) | ... | -.029 (-1.862) | -.111 (-1.509) | .591 |
| .187 (2.842) | .308 (6.082) | ... | -.005 (-3.180) | -.022 (-1.199) | -.131 (-1.536) | .456 |
| <i>D. k = 3 years</i> | | | | | | |
| .408 (4.160) | .093 (2.677) | -.009 (-2.332) | ... | .005 (.305) | -.184 (-.895) | .186 |
| .314 (4.421) | .162 (4.019) | ... | -.008 (-3.355) | -.011 (-.630) | -.170 (-1.021) | .274 |

Note: *t*-statistics are given in parentheses.

consistent with our analysis of the determinants of the use of IMF credit. In section 8.2, we noted how countries with more critical economic and political conditions were more likely to rely on the Fund, and therefore the negative sign of the IMF dummy in table 8.11 may indicate a reversion to that state of economic and political instability once the Fund program expired. Further evidence in section 8.4 will shed some light on this issue.

8.3.2 Devaluation Programs and the External Sector

The ultimate goal of an adjustment-cum-devaluation program is to generate an improvement in the external position of the country. Table 8.12 contains summary data on the evolution of the ratio of the current account balance to GDP and the ratio of net foreign assets to money after the devaluation. These indicators give the accumulated changes of the levels of these variables one, two, and three years after the crisis from their levels one year before the de-

Table 8.12 Current Account and Net Foreign Assets Behavior in the Three Years Following the Forty-eight Devaluation Episodes

| | 1 Year | | 2 Years | | 3 Years | |
|--|--------|---------|---------|---------|---------|---------|
| | IMF | Non-IMF | IMF | Non-IMF | IMF | Non-IMF |
| <i>A. Change in current account balance/GDP*</i> | | | | | | |
| First quartile | .4 | -2.8 | -.2 | -3.5 | -1.3 | -3.6 |
| Median | 1.9 | -1.2 | 1.2 | .3 | .6 | -1.2 |
| Third quartile | 3.2 | 1.1 | 3.0 | 2.1 | 4.0 | 2.3 |
| Mean | 2.2 | -.9 | 1.8 | -.9 | 1.3 | -1.1 |
| <i>B. Change in net foreign asset ratio*</i> | | | | | | |
| First quartile | -6.3 | -4.1 | -3.7 | -4.4 | -4.6 | -4.6 |
| Median | .4 | 1.3 | 2.7 | -.7 | 2.8 | -.8 |
| Third quartile | 3.8 | 10.7 | 9.8 | 8.2 | 10.2 | 5.3 |
| Mean | .9 | 3.1 | 1.9 | 2.3 | 4.2 | -1.6 |

Sources: Constructed from raw data obtained from *IFS*.

*Relative to one year prior to devaluation.

valuation. These data show important differences in behavior across IMF and non-IMF devaluers. While, on average, those countries that requested IMF assistance experienced a fast and significant current account improvement, most non-IMF countries did not see an improvement even three years after the devaluation. By the third year, fifteen of twenty-six IMF devaluers had a stronger current account position than the year before the devaluation. The average improvement was, in fact, 1.3 percentage points of GDP. After three years, however, the majority of the non-IMF devaluers (thirteen of twenty-two) had experienced a worsening in the current account ratio. (Table 8A.1 in the appendix contains the detailed data for the individual countries.) This difference in behavior across both groups of devaluers is formally picked up by a battery of χ^2 tests. For one year after the devaluations, the $\chi^2(2)$ had a value of 6.7, while it was 4.5 for three years after the crisis, which rejects the null hypothesis that both groups come from the same population at conventional significance levels.²⁴

The data on net foreign assets, displayed in panel B of table 8.12, show a slightly different story, with non-IMF countries having a stronger performance in the early years. After three years, however, the majority of the countries in both groups had experienced an improvement in their net foreign asset position, with IMF devaluers having fared, on average, substantially better than

24. These results coincide with other studies that have investigated the effects of IMF programs. One of the most recent ones (Conway, 1991) also finds a striking improvement in the current account in the period 1976-86.

non-IMF countries (for detailed information on the performance of individual countries, see table 8.A.1 in the appendix). Those countries that did not experience an improvement in their current account and net foreign asset positions correspond largely to those that failed to generate a real exchange correction and maintained expansive macro policies.

8.4 The Political Economy of Failed Devaluations

Although the broad picture that emerges from our previous analysis is one of overall effectiveness in the majority of the adjustment-cum-devaluation programs, the sample includes some spectacular failures. In this section, we address this issue, trying to understand why in some countries the programs failed so precipitously while in others they attained varying degrees of success. We start by classifying the forty-eight episodes into successful and failed programs. We then provide an analysis of the extent to which political development in these nations can help explain these differences in program outcomes. Our empirical analysis is motivated by the new literature on the political economy of macroeconomic policy. Since it is based on limited data, the analysis should be considered as preliminary and somewhat tentative. We think, however, that it provides some interesting results, suggesting that this is a promising avenue for further empirical investigations.

8.4.1 Successful and Unsuccessful Devaluations

In this section, we attempt to classify our forty-eight episodes as “successful” or “unsuccessful” devaluations. To do this, we have concentrated on the behavior of three key indicators during the period following the devaluations:

1. Real exchange rates (with a focus on the effectiveness index reported in table 8.9 above);
2. Net foreign assets of the monetary system;
3. Current account as a percentage of GDP.

An episode was defined as a failure if in any of the three years after the devaluation more than 90% of the real exchange rate effect of the devaluation had been eroded—that is, the effectiveness index is less than 0.1—or if, even when the effectiveness index was above 0.1, both the net foreign assets and the current account positions had worsened three years after the devaluation.²⁵ All other episodes were classified as having been effective. However, in order to have a finer analysis, these “effective” programs were divided into two groups: “successful” and “limited success.” Successful countries are those where the real exchange rate elasticity of the devaluation exceeded 0.3 after three years and where the current account *or* net foreign assets exhibited an

25. Colombia's devaluation in 1965 did not conform to this classification but was nevertheless classified as a failure because Colombia had to devalue again in 1967.

improvement three years after the crisis. All the rest of the countries were classified as having limited success. This specific definition of success and failure—like any other such classification—is somewhat arbitrary. However, by using these indicators, we have concentrated on the most immediate targets of devaluations. The cutoff points allowed us to be “generous” with respect to strictly “successful” devaluations while at the same time being strict in the consideration of unsuccessful devaluations.

Table 8.13 contains the forty-eight episodes classified according to this criterion. As can be seen, among the twenty-two non-IMF devaluers, there are eight clear-cut successful cases, six clear-cut failures, and eight limited success cases. For the twenty-six IMF devaluers, there are eight clear-cut suc-

Table 8.13 Successful and Unsuccessful Devaluation Episodes

| Country | Year | Country | Year |
|-----------------------------|------|-------------------------|------|
| <i>A. Non-IMF devaluers</i> | | <i>B. IMF devaluers</i> | |
| 1. Successful: | | 1. Successful: | |
| India | 1966 | Colombia | 1967 |
| Israel | 1962 | Ecuador | 1970 |
| Korea | 1964 | Ghana | 1967 |
| Malawi | 1967 | Mexico | 1954 |
| Sierra Leone | 1967 | Philippines | 1962 |
| Spain | 1967 | Philippines | 1970 |
| Turkey | 1958 | Spain | 1959 |
| Venezuela | 1964 | Turkey | 1970 |
| 2. Limited success: | | 2. Limited success: | |
| Chile | 1962 | Colombia | 1957 |
| Israel | 1967 | Costa Rica | 1961 |
| Jamaica | 1967 | Egypt | 1962 |
| Korea | 1960 | Peru | 1967 |
| Nicaragua | 1955 | Tunisia | 1964 |
| Pakistan | 1955 | Zaire | 1967 |
| Sri Lanka | 1967 | 3. Unsuccessful: | |
| Trinidad-Tobago | 1967 | Argentina | 1959 |
| 3. Unsuccessful: | | Argentina | 1962 |
| Argentina | 1955 | Brazil | 1967 |
| Argentina | 1970 | Colombia | 1962 |
| Colombia | 1965 | Ecuador | 1961 |
| Ghana | 1971 | Indonesia | 1970 |
| Israel | 1971 | Peru | 1958 |
| Uruguay | 1959 | Uruguay | 1963 |
| | | Uruguay | 1971 |
| | | Yugoslavia | 1961 |
| | | Yugoslavia | 1965 |
| | | Yugoslavia | 1971 |

Source: See the text for an explanation.

cessful episodes, twelve unsuccessful ones, and six cases of limited success. Out of the twelve unsuccessful IMF devaluers, four had their programs canceled: Argentina in 1959 and 1962, Peru in 1958, and Yugoslavia in 1971.

Our analysis has placed great emphasis on the role of accompanying macroeconomic policies when evaluating the degree of success of a devaluation. In order to investigate the relation between success and macroeconomic policies formally, a series of χ^2 tests was performed. The results obtained are quite supportive of the view that macroeconomic policies make a difference in the degree of effectiveness that a devaluation achieves. For many of the monetary and fiscal indicators included, it is possible to reject (at conventional levels of confidence) the null hypothesis that "effective" and "failed" devaluations come from the same population. This is especially the case for the annual growth of domestic credit in the year after the devaluations ($\chi^2 = 6.8$) as well as three years after ($\chi^2 = 5.3$).

8.4.2 Political Instability and Failed Adjustment

Naturally, the statement that some devaluation programs failed because the authorities did not implement, alongside the devaluation, consistent macroeconomic policies begs the question as to why this was the case. Why are some countries able to regain fiscal and credit disciplines while others are unable (or unwilling) to do so.

An important empirical implication of some of the new literature on the political economy of stabilization is that countries with weaker, more unstable, and more polarized political systems will generally face greater difficulties in implementing the fiscal adjustment required for a devaluation to be successful. The reason for this is that, in more unstable countries with weaker governments, it will be difficult to come to a decision on which groups should bear a higher percentage of the adjustment costs. Thus, countries with weaker and more polarized political systems will either delay the adjustment or not carry it out as originally designed (Alesina and Drazen 1991).

In order to investigate these implications of the theory, we used the data set compiled by Taylor and Jodice (1983) to define a number of political variables for the period *following* the adjustment. In particular, we are interested in obtaining data capturing, on the one hand, the degree of political resistance generated by the adjustment program and, on the other hand, the extent to which the government repressed dissidents. We also obtained information on whether there was a coup attempt in the period immediately following the devaluation.

Table 8.14 contains data on five indices of political instability for the forty-six episodes for which we have data. As can be seen, "failure" countries indeed appear to have a more unstable political structure: the frequency of politically motivated strikes and riots there is higher than in the "effective" devaluation countries. Additionally, in the unsuccessful countries, the govern-

Table 8.14 Indices of Political Instability and Weakness in Devaluation Episodes: Means^a

| | 1 Yr. After Devaluation | | | 3 Yrs. after Devaluation | | |
|--|-------------------------|---------|--------|--------------------------|---------|--------|
| | Successful | Limited | Failed | Successful | Limited | Failed |
| 1. Politically motivated strikes | .06 | .04 | .10 | .02 | .00 | .13 |
| 2. Political demonstrations and riots | .26 | .09 | .37 | .10 | .70 | .21 |
| 3. Government repression of dissidents | .80 | .64 | 1.97 | .51 | .73 | .83 |
| 4. Index of government transfers | .60 | .54 | .61 | .67 | .31 | .83 |
| 5. Index of coup attempts | .27 | .23 | .67 | .00 | .23 | .28 |

Source: Constructed from data obtained from Taylor and Jodice (1983).

^aThere were no data on the two Korean episodes.

ments tried to exercise stricter control of dissidence. Finally, “failure” episodes experienced a higher incidence of coups. In fact, it is quite impressive how many “failure” episodes were followed by a coup attempt: Argentina’s four episodes, Colombia in 1965, Ecuador in 1961, Uruguay in 1963 and 1971, and Ghana in 1971.

In order to gain additional insights into the influence of political instability and weakness on the outcome of devaluation episodes, we estimated a series of probit regressions. The dependent variable was defined as a dummy that took a value of one if the episode was classified as being either a “success” or a “limited success” and a value of zero if the episode was a failure. In addition to the political instability and weakness variables in table 8.14, we also included our measures of political ideology, democracy, and IMF presence from section 8.2.3 at the time of the devaluation. As a way to reduce serious simultaneity problems, we restricted the independent variables to one year after the devaluation. The results obtained from this analysis are in table 8.15.

As can be seen, the results are quite interesting. Every coefficient has the expected sign, and a number of them are significant at conventional levels, providing some (preliminary) support to the view that governments with greater political instability and weakness have more difficulty implementing successful adjustment. What is particularly interesting is that these results suggest that, with other things given, countries that had a democratic rule at the time of the devaluation have a greater probability of success, although the coefficient is estimated quite imprecisely. This implies that, in order to “put the house in order” and in implementing adjustment programs based on financial discipline, there is no need to eschew democracy. This point was made forcefully by Carlos Díaz Alejandro in the early 1980s, when the pessimism associated with the debt crisis created doubt about the probability of coexistence of democratic rule and “sound” economic policy in the LDCs.

Table 8.15 Probit Analysis of Effectiveness and Failure of Devaluation Programs

| | Eq. (1) | Eq. (2) |
|------------|-------------------|-------------------|
| Constant | 5.82 (1.455) | .584 (1.540) |
| Riots | -.271 (-.822) | -.271 (-.823) |
| Strikes | -1.331 (-.893) | -1.331 (-.894) |
| Repression | -.106 (-1.085) | -.106 (-1.010) |
| Coups | -.400 (-1.523) | -.400 (-1.531) |
| Democracy | .270 (.623) | .271 (.627) |
| Ideology | .003 (.010) | . . . |
| χ^2 | 7.530 | 7.530 |

Note: *t*-statistics are given in parentheses.

8.5 Bretton Woods and After: A Preliminary Comparison of Inflation and Growth

At the time the Bretton Woods system was abandoned, a number of observers thought that a more flexible regime would generate more efficient adjustment paths. The main idea was that greater flexibility in exchange rate management would allow countries to correct external imbalances without incurring "unnecessary" reductions in real income. In a sentence, it was thought that a greater flexibility would "reduce the real costs of adjustment." On the other hand, a minority of analysts pointed out that moving away from fixed parities was likely to generate an increase in worldwide inflation.²⁶ Others, however, argued that this did not have to be the case and that countries could maintain low inflation through monetary discipline.

Now that enough time has elapsed since the demise of the Bretton Woods regime, we can look back and ask whether the move to a system of exchange rate flexibility indeed reduced the "real costs of adjustment" without greatly affecting inflation. In this section, we address this issue by undertaking a preliminary, but nevertheless suggestive, comparison of our forty-eight devaluations during the Bretton Woods period with a series of devaluations undertaken during the decade that followed the collapse of the fixed rate system. The sample of devaluations that occurred during the turbulent 1970s and early 1980s was obtained from Edwards (1989c) and includes seventeen episodes.²⁷

26. Some of these debates are summarized in de Vries (1987).

27. The exact devaluations are Bolivia in 1972, 1979, and 1982, Chile in 1982, Costa Rica in 1974, Ecuador in 1982, Egypt in 1979, Indonesia in 1978, Jamaica in 1978, Kenya in 1981, Korea in 1980, Mexico in 1976 and 1982, Nicaragua in 1979, Pakistan in 1972 and 1982, and Peru in 1975.

Owing to space restrictions, and in order to concentrate on some of the more controversial aspects of this debate, we focus exclusively on inflation and real GDP growth.

Table 8.16 contains data on growth and inflation in the three-year period following the devaluations. As before, the data are disaggregated for the IMF and unilateral devaluers. Simple inspection reveals that, in the post-Bretton Woods era, output tended to decline more sharply in the period immediately following the devaluation. However, in both periods, the rate of economic growth recovered its pace after three years. The recovery also seems to be less dynamic during the post-Bretton Woods period. However, it is important to keep in mind that the external environment was less supportive in the 1970s and 1980s and, in particular, that both GDP in industrial countries and world trade were growing at lower rates after 1971 than during the 1960s. In fact, GDP in industrial countries grew on average 4.6% per year during 1955–71, while it grew only 2.8% during 1971–82.

The differences in GDP growth rates become minor when compared to the differences in inflation. As seen in table 8.16, inflation is always higher during the post-Bretton Woods period, and the inflationary effect of the devaluation is significantly more substantial during the 1970s and early 1980s than under the fixed exchange rate system. Of course, to a large extent the reason for this is that, after the Bretton Woods collapse, there was no longer an institutional setting that helped maintain cross-exchange rates constant.²⁸ In fact, the devaluers of this period resorted more to crawling pegs than to stepwise devaluations, further fueling inflationary pressures. Another important aspect of table 8.1 is that the behavior of IMF and unilateral devaluers follows the broad cross-period description outlines above, although there are some differences within periods. The rate of growth of GDP was lower the year of the devaluation for IMF devaluers than for the non-IMF episodes in the Bretton Woods group, but it picked up very quickly and even exceeded the performance of the unilateral devaluers one year after the devaluation. This recovery was not as prominent in the decade after Bretton Woods.²⁹

8.6 Concluding Remarks

In this paper, we have investigated empirically the historical circumstances surrounding forty-eight major discrete devaluations in the developing countries during the Bretton Woods period. We looked at both the conditions leading to these devaluations and the external sector performance in the period following the adjustment. Four aspects of devaluation programs were ana-

28. On the variability of the nominal and real exchange rates for these different institutional settings, see Edwards (1989a).

29. Again, this is consistent with Conway (1991), who finds a significant contemporaneous reduction in economic growth during an IMF program but a positive, although weaker, effect later on. He also finds an increase in the rate of inflation with increased participation in IMF programs.

Table 8.16 Growth and Inflation Following Devaluation Episodes: The Bretton Woods Period and One Decade Later

| | Year of Devaluation | | 1 Yr. After | | 2 Yrs. After | | 3 Yrs. After | |
|---|---------------------|---------|-------------|---------|--------------|---------|--------------|---------|
| | IMF | Non-IMF | IMF | Non-IMF | IMF | Non-IMF | IMF | Non-IMF |
| <i>I. The Bretton Woods period</i> | | | | | | | | |
| A. Growth of GDP: | | | | | | | | |
| First quartile | .3 | 2.4 | 2.9 | 2.4 | 3.1 | 2.7 | 3.5 | 3.3 |
| Median | 3.3 | 4.7 | 5.2 | 4.9 | 4.9 | 4.8 | 7.3 | 5.9 |
| Third quartile | 5.5 | 9.5 | 7.0 | 6.4 | 9.2 | 8.7 | 9.5 | 9.3 |
| Mean | 2.7 | 5.3 | 4.8 | 4.9 | 5.8 | 6.1 | 7.1 | 6.6 |
| B. Rate of inflation: | | | | | | | | |
| First quartile | 4.7 | 2.2 | 5.8 | 4.2 | 6.2 | 2.1 | 4.0 | 4.8 |
| Median | 8.5 | 9.5 | 14.8 | 9.2 | 7.6 | 5.7 | 7.4 | 7.1 |
| Third quartile | 21.9 | 13.4 | 24.5 | 15.2 | 14.9 | 18.3 | 22.2 | 18.5 |
| Mean | 15.8 | 9.7 | 18.1 | 11.5 | 14.4 | 10.3 | 16.0 | 13.1 |
| <i>II. One decade after Bretton Woods</i> | | | | | | | | |
| A. Growth of GDP: | | | | | | | | |
| First quartile | -4.4 | -1.2 | -3.0 | -1.2 | -1.7 | 2.7 | -.2 | 1.4 |
| Median | .5 | 2.1 | 4.4 | 2.7 | 3.9 | 5.4 | 2.5 | 5.2 |
| Third quartile | 4.4 | 5.6 | 7.7 | 6.3 | 5.4 | 6.8 | 5.5 | 9.0 |
| Mean | -1.8 | 1.1 | 2.9 | 2.0 | 2.1 | 4.7 | 2.6 | 4.1 |
| B. Rate of inflation: | | | | | | | | |
| First quartile | 5.9 | 9.5 | 20.4 | 21.1 | 10.5 | 14.9 | 10.2 | 7.0 |
| Median | 11.8 | 18.0 | 23.1 | 30.2 | 23.9 | 24.2 | 14.8 | 23.1 |
| Third quartile | 48.2 | 29.0 | 35.3 | 47.5 | 27.3 | 44.2 | 24.8 | 57.8 |
| Mean | 35.6 | 21.8 | 57.7 | 37.8 | 198.3* | 29.3 | 1,691.3* | 35.4 |

Source: Constructed from raw data obtained from *International Financial Statistics*.

*Includes the Bolivian hyperinflation.

lyzed in detail. First, we investigated whether there are differences between countries that devalued within the framework of IMF programs and those that undertook devaluations unilaterally. Second, we made an effort to determine whether, in general, devaluations were an effective policy tool that facilitated these countries' adjustment. Third, we analyzed what the economic determinants of successful devaluations are. Finally, we investigated the role of political economy developments, and, in particular, political instability, in determining the degree of success of stabilization programs.

Our analysis shows that those countries that approached the IMF for assistance were initially facing a deeper economic crisis than those countries that decided to face the imbalances on their own: they had suffered greater losses in competitiveness, suffered deeper worsening in the current account, and reached more serious levels in their net foreign asset positions. Additionally, we found that countries with a more unstable political history had a greater probability of approaching the IMF. We interpreted this finding as providing

some support for the view that countries with a record of political instability have greater difficulties designing credible adjustment programs; as a result, they have a greater incentive to obtain a “seal of approval” as a substitute for reputation.

Given the above discussion, it is perhaps not too surprising that the IMF countries engineered, on average, larger devaluations. In our analysis of the aftermath of these crises, we follow these countries for a period of four years. Our results show that, in general, these devaluations were quite “successful”: in the majority of the countries, the RER was realigned, the current account balance improved, and the net foreign assets position became stronger. On average, IMF devaluers experienced greater improvements in the external sector indicators.

Our data analysis clearly shows that a key element in determining the degree of a devaluation program is the package of policies implemented alongside it. The data show that IMF devaluers were more conservative, implementing, in general, tighter macroeconomic policies. However, and perhaps surprisingly, we also found that IMF devaluers were more prone to inflationary pressures, as evinced by the erosion of their real devaluations.

Although our investigation shows unequivocally that these historical devaluations were, in general, successful, it also shows that, during this period, there were a large number of fundamental failures. Invariably, these failures were related to an inability (or unwillingness) to implement consistent fiscal and macro policies. In section 8.5, we provide some preliminary analyses that tries to explain these failures in terms of political economy developments. We found that, in general, countries that experienced a greater degree of political instability in the period following the crisis, especially with respect to coup attempts, tended to end up having an unsuccessful experience. The government’s weakness does not allow these nations to withstand the criticism associated with the program. Interestingly enough, we found that, although the degree of political instability following the crisis plays a role in explaining success, the historical political environment was less important. Another finding in this section is that, with other things given, countries with a democratic regime at the moment of the devaluation have a higher probability of success.

Finally, this study suggests quite clearly that the hopes that the post-Bretton Woods regime would allow for a reduction in the “real costs of adjustment” were not met.

Although this study has not addressed directly the current debate on the merits of returning to greater exchange rate fixity in the LDCs, it has dealt in detail with the economics of devaluation in a fixed exchange rate context. Our evaluation of the causes of “fundamental disequilibria,” the LDCs relationship with the IMF, and the politics and economics of exchange rate adjustment has shown that, at least with respect to these areas, Bretton Woods was not as bad as it sometimes seemed.

Appendix

The Forty-Eight Devaluation Episodes: A Brief Description

In this appendix, we provide a brief description of the circumstances surrounding our forty-eight devaluations (for details on the devaluation episodes, see table 8A.1). The information presented here has been obtained from various sources, and especially from various issues of *Pick's Currency Yearbook* and the *IMF Report on Exchange Restrictions*.

1. *Argentina 1955*. On 28 October 1955, almost one month after overthrowing Perón's government, a new regime implemented an economic reform that included a devaluation. The official price of the dollar was increased to 18.00 pesos, replacing three previous official rates (5.00, 7.50, and 13.95 pesos). Multiple export rates were maintained, while a special import rate and an open fluctuating free market were created. The latter closed the year at 36.00 pesos to the dollar.

2. *Argentina 1959*. On 30 December 1958, Frondizi abolished the basic official rate that had been set at 18.00 pesos per dollar and initiated an austerity program based on conservative monetary management. The "uncontrolled" free rate had closed in 1958 at 40.00 pesos to the dollar, and a freely fluctuating exchange rate was created on 2 January 1959. The value of the dollar opened in this market at around 65.00 pesos, and it closed the year at 83.00 pesos. Differential rates for exports and imports were maintained.

3. *Argentina 1962*. After two years of a stable currency, a full crisis developed in early 1962, and Frondizi was ousted by the military. New austerity measures and exchange restrictions were implemented, and official support for the peso was withdrawn from the freely fluctuating market on 19 March 1962. The exchange rate dipped to 134.00 pesos per dollar after having closed 1961 with a parity of 83.02.

4. *Argentina 1970*. A period of currency stability starting in 1967 came to an end in 1969, when inflationary pressures resurfaced again. On 1 January 1970, a new currency was introduced: the peso Argentino, equal to one hundred old pesos. The official exchange rate was devalued from 3.50 to 4.00 pesos to the dollar on 18 June 1970. This parity was again affected during 1971, when, after a period of political crisis in the military government, a series of mini-devaluations were implemented. At that time, multiple exchange rates were imposed.

5. *Brazil 1967*. The cruzeiro experienced a period of surprising stability after the 1965 devaluation. However, inflation was not eliminated, and a devaluation-cum-currency reform was implemented on 13 February 1967. The official parity was cut from 2,210.00/2,220.00 to 2,700.00/2,215.00 cruzeiros per dollar, and a new "hard" cruzeiro, equal to one thousand old

Table 8A.1 Change in Current Account and Net Foreign Assets Ratios

| Country | Year | Changes from Year Prior to Devaluation | | | |
|-----------------------------|------|--|--------------|--------------------------|--------------|
| | | Current Account Ratio | | Net Foreign Assets Ratio | |
| | | 1 Yr. After | 3 Yrs. After | 1 Yr. After | 3 Yrs. After |
| <i>A. Non-IMF devaluers</i> | | | | | |
| Argentina | 1955 | -1.4 | -2.3 | 1.1 | -4.5 |
| Argentina | 1970 | .8 | 2.9 | -3.0 | -5.1 |
| Chile | 1962 | 1.3 | 4.0 | -16.8 | 3.1 |
| Colombia | 1965 | -1.7 | -.5 | 2.9 | 6.1 |
| Ghana | 1971 | 7.0 | -2.2 | 17.0 | 5.0 |
| India | 1966 | -.1 | 1.8 | -.8 | 3.6 |
| Israel | 1962 | -3.2 | -.9 | 18.8 | 10.8 |
| Israel | 1967 | -5.0 | -11.4 | -5.0 | -30.8 |
| Israel | 1971 | 4.6 | -11.2 | 21.6 | 9.0 |
| Jamaica | 1967 | -2.3 | 5.8 | 4.7 | -2.6 |
| Korea | 1960 | -1.7 | -3.5 | 19.9 | -2.3 |
| Korea | 1964 | 4.0 | 1.6 | 8.6 | 18.7 |
| Malawi | 1967 | -.1 | 1.8 | -4.2 | -.5 |
| Nicaragua | 1955 | ... | ... | -4.0 | -4.0 |
| Pakistan | 1955 | -3.0 | -3.1 | 4.5 | -5.3 |
| Sierra Leone | 1967 | .8 | 7.2 | 18.2 | 25.9 |
| Spain | 1967 | 1.9 | 6.4 | -1.4 | -1.0 |
| Sri Lanka | 1967 | .4 | -1.2 | -10.8 | -17.5 |
| Trinidad-Tobago | 1967 | -1.2 | -3.6 | 3.1 | -4.5 |
| Turkey | 1958 | -2.6 | -2.6 | -1.4 | 3.7 |
| Uruguay | 1959 | -7.0 | -4.7 | -5.6 | -44.2 |
| Venezuela | 1964 | -8.7 | -7.3 | 1.4 | .8 |
| <i>B. IMF devaluers</i> | | | | | |
| Argentina | 1959 | .6 | .2 | 7.9 | -5.7 |
| Argentina | 1962 | 6.0 | 5.1 | -1.9 | -.4 |
| Brazil | 1967 | -1.3 | -1.3 | .8 | 12.7 |
| Colombia | 1957 | 1.9 | -.3 | -11.7 | -7.7 |
| Colombia | 1962 | -.0 | 2.6 | -10.8 | -4.2 |
| Colombia | 1967 | 1.3 | 1.2 | 3.2 | 4.5 |
| Costa Rica | 1961 | .5 | -.4 | -2.6 | -7.5 |
| Ecuador | 1961 | .7 | -.5 | .2 | 3.9 |
| Ecuador | 1970 | -4.1 | 5.3 | -6.2 | 21.3 |
| Egypt | 1962 | -5.4 | -2.1 | -7.5 | -10.4 |
| Ghana | 1967 | 4.6 | 3.1 | -7.4 | 1.7 |
| Indonesia | 1970 | 3.1 | 4.0 | -6.6 | 10.7 |
| Mexico | 1954 | 1.9 | -1.5 | 16.2 | 13.1 |
| Peru | 1958 | 6.1 | 7.3 | 4.1 | 8.9 |
| Peru | 1967 | 2.8 | 6.4 | -3.9 | 9.5 |
| Philippines | 1962 | 3.1 | 1.8 | .9 | .7 |
| Philippines | 1970 | 2.5 | 3.9 | -.1 | 26.4 |
| Spain | 1959 | 4.6 | .6 | 7.5 | 9.8 |
| Tunisia | 1964 | -5.9 | -3.0 | 6.5 | -11.5 |

Table 8A.1 (continued)

| Country | Year | Changes from Year Prior to Devaluation | | | |
|------------|------|--|--------------|--------------------------|--------------|
| | | Current Account Ratio | | Net Foreign Assets Ratio | |
| | | 1 Yr. After | 3 Yrs. After | 1 Yr. After | 3 Yrs. After |
| Turkey | 1970 | .4 | 3.5 | 2.6 | 6.7 |
| Uruguay | 1963 | 3.7 | 7.8 | -4.9 | -18.1 |
| Uruguay | 1971 | 1.4 | -1.6 | 10.0 | 10.0 |
| Yugoslavia | 1961 | .4 | -1.0 | 3.7 | .0 |
| Yugoslavia | 1965 | 1.9 | .7 | .5 | .3 |
| Yugoslavia | 1971 | 2.8 | -5.4 | 1.7 | .7 |
| Zaire | 1967 | 24.9 | -2.0 | 33.8 | 33.7 |

Source: Constructed from raw data obtained from *International Financial Statistics*.

units, was introduced. Growing fiscal and trade deficits forced tighter currency controls and a new devaluation on 28 December, when the new rate was set at 3.20 cruzeiros to the dollar.

6. *Chile 1962*. A reversion to a dual rate system was implemented by the Alessandri administration on 15 January 1962 in order to cope with exchange rate pressures. The external imbalance was not completely contained, and on 15 October the Central Bank ceased supporting the official bank rate set at 1.05 escudos to the dollar, which was thus put on a fluctuating basis, reaching initially a level of 1.395 and closing the year at 1.66 escudos per dollar. The broker's (free) rate closed 1962 with a dollar value of 2.41 escudos.

7. *Colombia 1957*. The introduction of the exchange certificate in late 1956 did not solve Colombia's payments conditions. In May 1957, President Rojas fell, and the new government enacted a new currency reform on 18 June. The former basic rate of 2.50 pesos per dollar was abolished, and a new system of multiple rates was created. The system was based on the exchange certificate, which was set initially at 4.88 pesos to the dollar and reached 5.20 in December.

8. *Colombia 1962*. The newly inaugurated government of Leon Valencia tried to handle the pressure on exchange reserves by adopting a "stabilization" package during 1962. The measures undertaken proved to be insufficient, and on 20 November and 21 December the exchange rate system was modified, with the exchange certificate being devalued from 6.50/6.71 to 7.10/9.00 pesos per dollar. The coffee and other rates underwent similar adjustments.

9. *Colombia 1965*. During 1965, Colombia experienced economic and political hardships. To face the shortage of foreign exchange, the coffee rate was adjusted first in March and then subsequently during the year. In May, a state of siege was declared, and the National Front Coalition, still under Leon Val-

encia, all but collapsed, worsening the financial crisis. In July, more stringent capital controls and government budget adjustments were announced, and on 2 September the exchange certificate auction system was replaced by a dual system of preferential and intermediate official rates alongside the fluctuating free rate. The preferential rate was set initially at 9.00 pesos per dollar and equal to the old selling rate of the exchange certificate. The intermediate rate was established at 13.50 pesos to the dollar.

10. *Colombia 1967*. To reduce the drain of reserves, a controlled capital market rate was established in late 1966, in fact abolishing the free exchange market rate. On 22 March 1967, President Lleras Restrepo announced a new economic program that included a new exchange rate structure. The intermediate rate of 13.50 pesos per dollar was replaced by a certificate market rate that was established initially at the same rate but that was allowed to fluctuate, reaching 15.79 in December. The coffee rate was abolished, but other rates continued to function.

11. *Costa Rica 1961*. On 2 September, 1961, Costa Rica devalued the colon from a par of 5.60 per dollar to one of 6.625 to the dollar. The multiple exchange rate system, which had been in effect for many years (although it had been simplified a number of times), came to an end.

12. *Ecuador 1961*. Banana and cacao exports fell dramatically during 1961, forcing the government of Velasco Ibarra to restrict imports, tighten credit, raise revenues, and cut public expenditures. On 14 July the sucre was devalued from 15.00 to 18.00 units to the dollar. This parity applied to all exports and imports, while the use of the free fluctuating rate was narrowed and mixed rates were abolished. The austerity measures improved the economic conditions but prompted the ouster of the chief executive in November by Arosemena Monroy.

13. *Ecuador 1970*. In order to meet deep budgetary problems, the new Velasco Ibarra administration introduced emergency tax measures. Challenged by Congress and the Supreme Court, Velasco Ibarra took dictatorial powers in May 1970. To further handle economic problems, the sucre was devalued on 17 August. The official rate (18.00 sucres per dollar) and all other multiple rates were unified at 25.00 units per dollar, ending the ten-year-old de jure dual rate system and the de facto multiple rate regime. On 22 November 1971, the dual system was reinstated.

14. *Egypt 1962*. After Nasser's extensive nationalization program in previous years, the secession of Syria from the United Arab Republic in 1961 and severe trade deficits created a delicate economic situation in 1962. In January the government decreed the repatriation of all national bank notes, and on 7 May a devaluation was effected. The numerous export and import rates were replaced by an effective single exchange rate, in which the basic official rate of 2.87 dollars per pound was depreciated to a new parity of 2.30 dollars to the pound.

15. *Ghana 1967*. The military government that deposed Nkrumah in Feb-

ruary 1966 tried to carry out a deflationary program to relieve pressures on the foreign exchange market. In February 1967, a new currency was introduced: the new cedi, with a parity of 1.40 units per dollar. This rate was reduced on 8 July to a new value of 0.98 dollars. Later in 1967, a tax reform to induce foreign investment was adopted.

16. *Ghana 1971*. The civilian rule under Busia failed to improve the social and economic conditions of Ghana. The cocoa crisis of 1971 had to be faced, with unpopular taxes and a series of partial devaluations implemented through export bonuses, taxes on remittances, and tourist rates. Following the floating of the U.S. dollar on 15 August, Ghana kept its link to the pound sterling until 4 November, when this tie was broken and the official rate of 0.98 dollar per cedi was reinstated. An additional drop in cocoa prices forced a huge devaluation on 27 December, when the new official rate was set at 0.55 dollars to the cedi. The devaluation prompted a coup on 12 January 1971, by Acheampong, who, once in power, revalued the cedi to a new parity of 0.78 dollars.

17. *India 1966*. Indira Gandhi, who had become prime minister in January 1966, devalued the rupee on 6 June from 4.75 to 7.50 units to the dollar. This measure was supported by a five-year plan and was seen as an attempt to put an end to a long situation of monetary instability, food shortages, and payments difficulties.

18. *Indonesia 1970*. Thanks to the oil boom of 1969, the foreign exchange market, gross monetary reserves, the payments situation, and tax revenues had improved in Indonesia. This allowed a simplification of the exchange rate structure on 17 April 1970. The export bonus certificate rate (327.00 rupiahs per dollar) and the complementary foreign exchange rate (378.00) were replaced by the new flexible general exchange rate (378.00) and the flexible credit exchange rate (326.00). On 10 December the exchange rate was unified to the flexible general exchange rate of 378.00 rupiahs per dollar, applicable to all exchange transactions.

19. *Israel 1962*. In order to meet upward price pressures that had intensified in 1961, as well as the requirement on the recent GATT membership, Ben Gurion's government devalued the Israeli pound. On 9 February 1962, the parity was lowered from 1.80 to 3.00 pounds per dollar, and existing multiple exchange rates were abolished. The action was also accompanied by a partial liberalization of imports.

20. *Israel 1967*. The Israeli economic upsurge, prompted by the spectacular military victory of Israel in June, was interrupted by the British pound devaluation. Israel matched that devaluation by reducing its exchange rate from 3.00 to 3.50 pounds to the dollar on 19 November 1967.

21. *Israel 1971*. Four years of explosive economic expansion had deteriorated substantially the balance of payments and fueled inflationary pressures. Following the floating of the dollar on 15 August 1971, the pound was devalued from 3.50 to 4.20 units to the dollar, effective 21 August. Golda Meir's government complemented this measure with a credit squeeze, severe price

controls, and additional taxes. The pound also followed the U.S. de jure devaluation of the dollar on 20 December, keeping the same nominal parity but altering the gold content 7.89%.

22. *Jamaica 1967*. Being a member of the sterling area, the Jamaican pound was devalued on 21 November 1967 from 1.40 to 1.20 dollars per pound. Thus, the parity of 2.00 Jamaican pounds per pound sterling was maintained.

23. *Korea 1960*. On 23 February 1960, the exchange rate was devalued from 500.00 hwan per dollar to a new parity of 650.00 units to the dollar. In April, the government led by Rhee collapsed, and a new administration under Chang initiated a more comprehensive economic program. As part of this ambitious program, the multiple exchange rate system was reformed. On 2 February 1961, an exchange rate of 1,250.00 hwan per dollar was established. A flexible certificate rate, initially fixed at 50.00 hwan per dollar, had to be added for all commercial and financial dealings.

24. *Korea 1964*. The 1962 currency reform replaced ten hwan by one unit of the new currency, the won. After being elected in 1963, Park adopted an austerity plan to face inflationary and foreign exchange problems. On 10 January 1964, all imports were subject to a surcharge of 50.00 won per dollar to be added to the effective rate of 130.00 units per dollar. On 3 May, a unitary floating system was established based on a rate of 255.00 won per dollar.

25. *Mexico 1954*. Mexico devalued its peso by raising the dollar value from 8.65 to 12.50 pesos on 18 April 1954.

26. *Malawi 1967*. Malawi was a member of the sterling area, and its pound was at par with sterling. It therefore dropped from 2.80 to 2.40 dollars per pound on 20 November 1967, in the midst of dropping exchange revenues and growing trade deficits.

27. *Nicaragua 1955*. An extensive monetary reform, designed to improve the position of the Cordoba, took place on 1 July 1955. The basic official rate was devalued from 5.00 to 7.00 cordobas to the dollar, the export rate was kept, and other official rates were abolished.

28. *Pakistan 1955*. The Pakistan rupee did not follow the pound sterling and Indian rupee devaluations of 1949. It was not until 1 August 1955 that Pakistan devalued her currency for the first time, when the official value was increased from 3.31 to 4.76 rupees to the dollar, at par with the Indian rupee.

29. *Peru 1958*. External and internal pressures jeopardized the peg of 19.00 soles per dollar maintained by the Central Bank in the fluctuating free market since 1949. On 22 January 1958, the Central Bank stopped intervening, forcing a de facto devaluation. Several attempts were made by Prado's government to stabilize the soles at different levels during the year, and the value of the dollar closed at 25.10 soles. Tax hikes, import controls, and wage freezes were also implemented during the year.

30. *Peru 1967*. The 1960 currency reform abolished the fluctuating exchange rate system and established a single officially controlled exchange

rate. Belaunde's expansive policies, together with collapsing export prices, put serious pressures on the soles. On 31 August 1967, the Central Bank withdrew its support from the exchange market, allowing the rate to jump from 26.82 to 38.70 units to the dollar. The latter was the parity on 9 October, when the Central Bank began intervention in the newly created certificate market in a dual exchange system. These events occurred in the midst of a full-fledged economic financial and political crisis, which ended with the 1968 military coup.

31. *Philippines 1962*. In April 1960, a free rate was legalized to coexist with the official parity of 2.00 pesos per dollar. The initial free rate was set at 3.20 pesos and later revalued to 3.00 pesos per dollar. On 22 January 1962, soon after his inauguration, Macapagal instituted an ambitious economic program of monetary stability that included an exchange decontrol component. Exchange controls were relaxed, and a truly fluctuating free rate was established. The free rate closed 1962 at 3.70 pesos per dollar. However, the old parity of 2.00 pesos was maintained for some transactions.

32. *Philippines 1970*. The official par value was raised from 2.00 to 3.90 pesos in late 1965. To cope with a currency that had deteriorated during the initial Marcos years, the Central Bank instituted a multiple rate structure on 21 February 1970. This new structure was based on an official fluctuating free market rate or "guided" rate set initially at 5.50 pesos per dollar and mixed rates for exports and imports. In May, the mixed rate for exports was abolished. The "guided" rate closed 1970 at 6.435 pesos to the dollar.

33. *Sierra Leone 1967*. The leone was a currency of the sterling area and followed the sterling devaluation on 22 November 1967. The leone depreciated from a value of 1.40 dollars to a new value of 1.20 dollars, maintaining the parity of 2.00 leones per pound sterling.

34. *Spain 1959*. A series of partial devaluations during the 1950s introduced a multiplicity of exchange rates while keeping an official par value of 11.22 pesetas per dollar. An extensive monetary reform was finally implemented on 18 July 1959. The most important rate of the old system, the controlled free market rate, stood at 42.00 pesetas per dollar at the moment of the unification of all exchange rates at a parity of 60.00 pesetas to the dollar. An austerity program, including interest rate action, tight credit, and budget improvements, was also adopted.

35. *Spain 1967*. Facing increasing trade deficits and a drain of foreign exchange, Spain followed the British devaluation on 20 November 1967. The dollar value was unexpectedly cut from 60.00 to 70.00 pesetas.

36. *Sri Lanka 1967*. Ceylon also followed the pound sterling devaluation on 22 November 1967. However, the reduction in the value of her rupee, from 4.76 to 5.95 rupees per dollar, was higher than the depreciation of the British currency. The measure, together with increases in export duties and the adjustment of the domestic price of rice and wages, was intended to help the deteriorated balance of payments.

37. *Trinidad and Tobago 1967*. Along with the pound sterling, to which the Trinidad and Tobago dollar was linked at 4.80 dollars per pound, the Trinidad and Tobago dollar was devalued from 1.714 to 2.00 units to the U.S. dollar on 23 November 1967.

38. *Tunisia 1964*. In June 1964, France ended Tunisia's privileged trade position as another retaliation in a war of trade restrictions and nationalizations. Faced with no more French aid and with little official reserves, Bourguiba's government devalued the dinar on 28 September 1964. The parity was changed from 0.42 to 0.525 dinars per dollar and was effected within the framework of a stabilization program.

39. *Turkey 1958*. In a long history of currency deterioration, a partial devaluation took place in 1956 with the introduction of the tourist lira (5.25 units per dollar), which would coexist with the official parity (2.80 liras per dollar). In 1958, a major economic reform program was implemented by the Menderes's regime, including the freezing of credits, the control of public expenditures, the temporary ban of imports, and the abolition of export subsidies. As a part of this plan, a selling exchange rate of 9.00 liras per dollar was created on 4 August while maintaining three buying rates (4.90, 5.60, and 9.00 liras per dollar). The basic rate of 2.80 was kept on the books and became inoperative until it was aligned with the effective rate of 9.00 liras per dollar in the de jure devaluation of August 1960.

40. *Turkey 1970*. In the midst of a profound financial economic crisis, the fourteen-nation Aid Consortium, which had poured millions of dollars into the country, threatened to cut off all foreign assistance. The lira was devalued on 3 August 1970, from 9.00 to 15.00 units to the dollar for almost all commercial and financial transactions, eliminating all other exchange categories. The economic crisis led to the coup d'état in March 1971, in which Demirel was deposed by the military.

41. *Uruguay 1959*. The newly elected conservative National party began an austerity program to "save the peso" in 1959. A comprehensive monetary reform was undertaken on 15 December. The cumbersome system of multiple rates was replaced by a unified freely fluctuating exchange rate. The basic rate had been 1.52/2.10 pesos per dollar at the end of 1958, while the certificate rate closed 1958 at 4.10. The new free rate ended 1959 with a value of 11.10 pesos per dollar.

42. *Uruguay 1963*. Tight capital controls were imposed in 1963 in order to contain the flight from the peso. These were not enough, and eventually, on 9 May, the Central Bank withdrew its peg of 10.95 pesos per dollar from the exchange market and temporarily suspended all private foreign exchange dealings. On May 29, the Bank was back in the market at 16.15/16.55 pesos per dollar and closed 1963 at 16.30/16.40. A new gold parity was also created just under 15.00 pesos to the dollar. The "free" market was no longer free since banks were forbidden to sell foreign exchange to private individuals.

43. *Uruguay 1971*. The economic and political situation had become chaotic, and, given the disturbances by the revolutionary group Tupamaros', Pacheco Areco began to rule by decree in a state of siege. Trade and capital controls were tightened, and, on 26 April 1971, a multiple exchange structure was established. The official rate of 250.00 pesos per dollar was kept for special transactions, while a surcharge of 50.00 pesos would apply to consular fees, 75.00 pesos for subsistence, and 100.00 for traveling. All these surcharges were revised upward several times during 1971. The rate for traditional exports and most imports closed the year at 370.00 pesos per dollar, the rate for consular fees and subsistence at 500.00 pesos, and travel at 600.00 pesos. In early 1972, the new government of Bordaberry reformed the currency system to a two-tier exchange market.

44. *Venezuela 1964*. Since 1962, Venezuela had enjoyed a marked improvement in its economic and financial conditions. On 18 January 1964, the newly elected Leoni administration implemented a major exchange reform that initiated a trend toward a unification of the multiple rate system. Most transactions were moved from the controlled rate of 3.33/3.35 bolivars per dollar to an import rate of 4.45/4.50 bolivars, while the official free market was abolished.

45. *Yugoslavia 1961*. For a number of reasons, the three Yugoslav devaluations considered in this study fall in a somewhat different category than the rest of our episodes. Although the country was more liberalized than other Eastern European countries, central planning was still imposed in Yugoslavia, and Tito's government retained control of most prices and investment funds. On 1 January 1961, the currency structure was simplified. The settlement rate was devalued from 632.00 to 750.00 dinars per dollar and applied to most transactions, making the official 300.00 dinars rate inoperative. On 1 January 1962, the tourist and diplomatic rates were aligned to the 750.00 dinars per dollar rate, unifying the exchange rate, except for some export premiums.

46. *Yugoslavia 1965*. The devaluation of 25 July 1965 was part of an extensive economic reform program that included trade liberalization, administrative simplification, and tight credit. The official rate of 750.00 dinars was devalued to 1,250.00 dinars per dollar after a temporary financial rate had been established earlier in the month. Beginning in January 1966 a hard dinar, equal to one hundred old dinars, was introduced.

47. *Yugoslavia 1971*. Another overexpansion brought the economy to the crisis point. The expected devaluation of the dinar came to pass on 23 January 1971, and the parity was increased from 12.50 to 15.00 dinars to the dollar. There was also a price and wage freeze, and finally the private sector was allowed to issue bonds. The dinar followed the floating of the dollar, but on 21 December it was further devalued to a new official parity of 17.00 dinars per dollar.

48. *Zaire 1967*. After several years of civil war, political unrest, and eco-

nommic troubles, the financial situation of the Congo became unsustainable. The Belgians cut off their traditional aid as a retaliation for the nationalization of the copper mining company. Mobutu increased the official dollar rate on 24 June 1967 from 150.00/180.00 to 500.00 Congo francs. Simultaneously, a new currency was introduced: the zaire, equal to one thousand Congo francs.

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Comment Stanley Fischer

Sebastian Edwards and Julio A. Santaella have written an interesting and useful paper, with a surprising result—that the bulk of the Bretton Woods-era nominal devaluations that they examine were successful both in depreciating the real as well as the nominal exchange rate and in improving the current account, as much as three years after the devaluation.

In addition, they show that devaluations supported by the IMF were on the whole more successful than those conducted outside the Fund's auspices. Their a priori argument that Fund programs may be more successful because the Fund's seal of approval increases the government's credibility is not supported by the empirical results, which show no extra credibility effect from the Fund once the effect of policy variables is taken into account. It remains possible that the Fund's presence—its seal of approval and the constraints it imposed—gave governments the ability to persist with policies that would not otherwise have been politically viable.

Among other results, the support for orthodoxy provided by their empirical confirmation that expansionary macroeconomic policies destroy the effectiveness of nominal devaluations is reassuring. The reduced-form results that political factors by and large affect the success of devaluations in the expected way are also encouraging for the many who had confidently made such assertions without checking the regression evidence.

In my comments, I will first raise questions about the results themselves and then discuss the broader context into which Edwards and Santaella have set the issue—the operation of the Bretton Woods system and the inflationary bias of flexible exchange rates.

Are These Results too Good to Be True?

Whenever the empirical evidence agrees so comfortably with the conventional wisdom, it is time to be suspicious. Here are a few points where the robustness of the results should be checked.

What is the population underlying the sample that is studied? These thirty-seven are all the devaluations, larger than 15%, during the Bretton Woods period for which data were available. The breakdown between IMF and non-IMF devaluations is highly correlated with that between Latin American and non-Latin American devaluations. Does this affect the results? For example, is the IMF more effective in Latin America? Or is the IMF more needed in Latin America? Why are the countries that approach the IMF in more trouble to start with? Does negotiating with the Fund delay adjustment, or does the availability of Fund resources delay adjustment? Does the fact that several devaluations are associated with the British devaluation of 1967 matter?

What about the control group? Not enough information is provided about the control group. For instance, what countries are in the group? Nor is the control group exploited enough. For instance, given that devaluations were carried out in different years, it would be useful to try to account for year effects by calculating how much a given variable, such as the real exchange rate, changed relative to the average change in that variable in that year for the control group countries.

Can the probit analysis also be used to analyze what determines whether countries devalue? At present, the probit regression is used in examining what determines whether countries go to the IMF when they devalue, but it is not used to examine when countries choose to devalue.

What results are due to selectivity bias? Some care has to be taken to avoid selectivity bias. For instance, the authors note that many of the countries in the sample used exchange controls to attempt to avoid devaluations but that they were not successful. One cannot conclude from this that exchange controls are necessarily ineffective in preventing devaluations.

The Broader Context

Edwards and Santaella motivate the paper by referring both to criticisms of the IMF and to the question of whether flexible exchange rates have an inflationary bias. They partly answer critics of the Fund by showing that Fund-supported devaluations work on average. But the Fund's critics also frequently complain that Fund programs are unnecessarily bad for growth. This criticism has to be set in context: the Fund is often called on when the domestic situation is out of hand after a period of unsustainable growth; the Fund's effect on a before-after basis may therefore look especially bad. A more careful look at the evidence will in all likelihood show that going to the Fund on average improves growth performance relative to two alternatives—devaluing without Fund support and not adjusting at all.

Devaluations do increase the price level. Those results are implicit in the paper, when the effectiveness index—which measures the pass-through of devaluation—is studied. Domestic prices rise on average, but on average not by as much as the exchange rate. Further, the pass-through is on average less for the IMF-supported devaluers.

Of course, this does not answer the question of whether a floating rate system is inflationary. That has to be determined, not by examining the pass-through effects of individual devaluations, but rather by examining the average rates of inflation under adjustable peg and floating rate regimes, respectively. Although causation is an obvious issue, there can be little doubt that a fixed rate or adjustable peg system constrains monetary policy more effectively than a floating rate regime.

In examining exchange rate systems, we have to distinguish among three systems: floating rate, adjustable peg, and irrevocably fixed rates. Edwards and Santaella are quite clear that they are comparing floating and adjustable

peg systems. They do not make the comparison between the performance of countries that adjusted their pegs and that of those that took the exchange rate commitment as sacrosanct, such as the franc-zone countries in Africa. The inflation performance of these countries has been excellent since 1946, when they fixed their exchange rates, and their growth performance was very good until the late 1970s. However, several of the CFA countries, particularly the Côte d'Ivoire, overexpanded during the late 1970s commodity booms and had to adjust during the 1980s. But they did not adjust, and growth has been slower than that in neighboring countries that were free to devalue. By any reasonable analysis, the CFA franc is overvalued, domestic prices—especially wages—are declining too slowly, and the countries should devalue.

The franc-zone experience both suggests the desirability of some exchange rate flexibility and reminds us that the real question about monetary arrangements is how they affect real economic performance.

Comment Albert Fishlow

Sebastian Edwards and Julio Santaella have usefully looked at pre-1973 IMF and non-IMF devaluations, applying a methodology already used by Edwards in previous work. They argue that there is a difference between IMF and non-IMF devaluing countries, with the former facing more serious crises than the latter. In addition, they find that IMF countries produced larger devaluations and experienced, on average, greater improvement in indicators of external sector performance. Finally, an analysis of the political economy of failure seems to justify some confidence that democratic devaluers have a higher probability of success.

While appreciative of the important contributions made by the paper in its extension of systematic analysis to the earlier period, I would like to question some of the key conclusions reached by the authors.

In the first instance, I point to the inherent bias in the classification of countries into IMF and non-IMF categories. This serves as a basic organizing principle of the paper. Yet fully seven of twenty-two observations relating to non-IMF devaluations refer to the realignment of sterling-based countries at the time of the 1967 pound revaluation; by contrast, fourteen of twenty-six IMF cases refer to Latin America, while only seven of the twenty-two non-IMF situations do. In these circumstances, it is not at all clear what the contrast between IMF and non-IMF programs means. Are we simply measuring the seriousness of the crisis or contrasting Latin American devaluation episodes

with others? It might have been better to contrast the decisions of the same countries when they follow IMF supervision with their practice when launching their own programs of adjustment.

In the second place, I note the attempt to specify IMF devaluing countries in table 8.7, seeking to differentiate these countries from the other devaluers by both economic and political characteristics. This exercise shows relatively weak results. Lagged net foreign assets alone can claim .05 levels of significance, with an inverse relation to democracy and relative GDP per capita next in order. This is telling us that nondemocratic poorer countries with a lack of reserves were more likely to utilize Fund programs. But the very lack of importance of exchange rate appreciation and deterioration of the current account must make one suspicious that this result is a consequence of the special set of IMF and non-IMF inclusions as noted above. Even the authors do not take the results fully seriously, as their own extensive subsequent attention to exchange rate depreciation shows. Indeed, there they maintain that macroeconomic policy plays a key role in adjustment programs.

A third important subject addressed by the paper is the attempt to understand the reasons for success or failure in these forty-eight devaluation experiences. The first requirement is a satisfactory classification of the cases. I question here the criteria used. It is quite striking to see Brazil in 1967 classified as a failure just prior to its rapid expansion in product a year later; equally, Peru in the same year is measured as a limited success although the program led to military intervention. And, as noted above, seven of the sixteen successful devaluations recorded for the non-IMF group were revaluations required by devaluation of the pound in 1967.

In the second place, I wonder whether the subsequent political economy analysis of "successful" devaluation, treating limited successes equally with full ones, leads us as fully to a defense of democracy as the authors suggest. No variables are statistically significant in the two probit analyses reported in table 8.15, and that of democratic form has the lowest *t*-value, .627, in equation (2). This would seem a weak basis for asserting that, "in order to 'put the house in order' and in implementing adjustment programs based on financial discipline, there is no need to eschew democracy." Note, moreover, that the measure of coups now has the highest, but insignificant, negative value: successful devaluation is negatively associated with the frequency of coups. But, as we saw earlier, there was a positive coefficient between coups and IMF programs. Are we getting back anything here except the predominant classification of IMF programs as failure?

Edwards and Santaella conclude by contrasting the Bretton Woods regime with what came after. They attempt to assess whether the movement to exchange rate flexibility reduced the costs of adjustment without affecting inflation. As they point out, however, the two periods are startlingly different in real growth rates of industrial countries as well as in inflation rates. This

makes the question of the IMF system perhaps secondary to the oil shocks and other changes in the 1970s and 1980s. Such a comparison may tell us relatively little about the change in exchange rate policy.

I have tried to focus in this Comment on differences with the authors in order to encourage still further analysis of this Bretton Woods period. I would be remiss, however, not to conclude by recognizing the important advances that they have already made in focusing on this first period of IMF adjustment in the way they have done.

General Discussion

William Branson characterized the system before 1973 as one with a nominally fixed exchange rate at the center and periodic nominal and real devaluations at the periphery. After 1971, it was a system with nominal and real floating at the center and pegging to baskets of currencies by the periphery. *Stanley Black* pointed out that, because the study focuses on the pre-1971 period, it is biased in favor of finding successful devaluations because devaluation was more likely to be successful in the stable environment of the Bretton Woods system. *Willem Buiter* argued that whether countries did or did not go to the IMF may be explained by factors not captured by the regressions, such as world economic conditions and global interest rates.

Alan Stockman raised the issue that large changes in real exchange rates seem to have only small effects on quantity variables such as the current account balance, output, and employment. *Michael Mussa* said that this was an example of Stigler's law, that all measured elasticities are small. He cited historical examples of significant effects on the current account of changes in real exchange rates that are not well explained by the econometrics.