

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Economic Adjustment and Exchange Rates in Developing Countries

Volume Author/Editor: Sebastian Edwards and Liaquat Ahamed, eds.

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-18469-2

Volume URL: <http://www.nber.org/books/edwa86-1>

Publication Date: 1986

Chapter Title: Introduction to "Economic Adjustment and Exchange Rates in Developing Countries"

Chapter Author: Sebastian Edwards, Liaquat Ahamed

Chapter URL: <http://www.nber.org/chapters/c7668>

Chapter pages in book: (p. 1 - 16)

---

# Introduction

Sebastian Edwards and Liaquat Ahamed

In recent economic debates, the exchange rate has been singled out as one of the most important variables in the economies of developing countries. Some experts have argued, for example, that the exchange rate policies pursued by some developing countries in the late 1970s and early 1980s were inappropriate, resulting in acute real overvaluations of their currencies and contributing in an important way to the current debt crisis. According to the World Bank (1984), the dramatic deterioration in the agricultural sector of Africa during the last 15 years or so is due, to a large extent, to the unrealistic exchange rate policies followed in the majority of the countries in that continent. Moreover, the World Bank staff has forcefully argued that overvalued real exchange rates undermine exports, harm agriculture, and generate destabilizing capital outflows in the developing countries.<sup>1</sup>

At the more immediate policy level, policy makers and staff at the International Monetary Fund (IMF) and the World Bank are now regularly confronted with problems arising from exchange rate behavior. The following questions are commonly heard: Is the real exchange rate misaligned? How will the exchange rate policy affect the agricultural sector? How will a devaluation affect the country's ability to service its debt? Is nominal devaluation an effective tool to generate relative price changes and improvements in the balance of payments? In fact, nowadays it is difficult to tackle macroeconomic problems in the developing countries without addressing exchange rate issues.

Sebastian Edwards is an associate professor of economics at the University of California, Los Angeles, and a faculty research fellow at the National Bureau of Economic Research. Liaquat Ahamed is a senior investment analyst at the World Bank.

In spite of the very prominent role exchange rates have played in recent debates over the economies of developing countries, and in spite of the importance of the topic to policy, relatively few studies have systematically analyzed in detail the ramifications of exchange rate policy in these countries. The purpose of the essays and comments collected in this volume—which were presented at a joint National Bureau of Economic Research–World Bank conference in late 1984—is to provide a partial remedy to this situation. These papers cover issues ranging from the relationship between commercial policies and exchange rates, through the role of exchange rate policy in stabilization programs, to the effectiveness of devaluation as a policy tool and the interaction among exchange rates, the terms of trade, and capital flows.

The papers presented here concentrate on those exchange rate problems that are common among the developing countries. While there is a general recognition that in a number of respects all countries—poor and rich—face the same types of problems, it is also understood that some problems are more likely to occur in the developing countries. For example, very few developing nations have adopted floating exchange rates, pursuing instead a variety of exchange rate arrangements, such as fixed to a single currency, fixed to a basket of currencies, and a crawling peg. As a consequence of the exchange rate systems they have adopted, developing countries are more likely than developed countries to use abrupt devaluation as a component of a stabilization program. Furthermore, the economic structure of the poorer countries is vastly different from that of the richer countries. In the poorer countries there are many incomplete, or nonexistent, markets, including forward markets for foreign exchange and well-behaved financial markets.

In this introduction we first provide a reader's guide to the book, summarizing each chapter and its policy implications. We then outline a number of research issues raised in the general study of exchange rates in developing countries, issues we believe are still open and require additional attention by members of the profession.

### **Stabilization, Adjustment, and Exchange Rates**

The first four papers in this volume deal with the role of exchange rate policy in stabilization programs and in the adjustment process. Although these papers address mainly analytical issues, they are all motivated by the desire to understand existing policy problems that are fairly common to the developing nations.

The first paper, by van Wijnbergen, focuses on the impact of currency devaluations on the levels of output and employment. In particular, this paper inquires into the conditions under which a devaluation will

result in a decline in aggregate output. Traditional models, especially Keynesian models, have tended to focus on the expansionary effects of devaluations on output. According to this view, the increase in competitiveness following a devaluation tends to raise the demand for domestic goods by switching expenditures from imports to domestically produced goods. To the extent that nominal prices or wages are rigid, the devaluation leads to an increase in output in the domestic goods sector. For some time now, however, a number of economists have argued, contrary to the traditional view, that under certain circumstances a devaluation can be contractionary, resulting in reduced aggregate output and employment. It has long been recognized, for example, that there are a variety of channels through which a deflationary impact on aggregate demand may offset the expansionary effects of expenditure switching and thereby produce a contraction in output. These channels include distributional effects either within the private sector or through a fiscal transfer from the private sector to the public sector; the real balance effect; or the consequence of the income effect of initially large trade deficits. Nonetheless, the paper by van Wijnbergen focuses to a greater extent on the contractionary effects of devaluation on aggregate *supply* rather than on aggregate demand.

The author constructs a simple macroeconomic model to elucidate three alternative channels by which a devaluation can exert a contractionary effect on aggregate supply. The first channel arises when, as is typical in many developing countries, imported goods play a significant role in the production process. A devaluation raises the relative price of imported inputs versus domestic final goods. The ensuing rise in variable costs induces a fall in the output that firms are willing to produce. This contractionary effect may be partly offset by possibilities of substitution between imported inputs and domestic factors in production and by the expansionary effects of expenditure switching. A second contractionary channel is created when real wages are indexed to some index such as the consumer price index, that accounts for both domestic and foreign goods. An increase in competitiveness implies that foreign goods become more expensive than domestic goods. If real wages are indexed to a consumption basket that includes foreign goods, this implies that real product wages rise and that the improvement in competitiveness occurs at the expense of domestic production. The third contractionary channel is a result of the effect of the increase in the price level on the real volume of bank credit. In many developing countries, firms finance fixed and working capital requirements through bank loans. The rise in the price level associated with a devaluation leads to a rise in nominal demand for bank credit, which, given a fixed nominal money supply, leads in turn to a rise in real interest rates and thus a rise in the interest component costs.

In the second chapter Mussa develops a model that explicitly links budgetary policies, the real exchange rate, and the balance of payments. To highlight the significance of the linkage between aggregate spending and income as determinants of the balance of payments, he assumes that the economy is at full employment, output is exogenously determined, and all prices are flexible. Private expenditures relative to private disposable income is determined by the level of net foreign assets held by the private sector and by expected real interest rates, which in turn depend on expectations about future changes in the domestic price level relative to the foreign price level (that is, the real exchange rate). The excess of government expenditures over taxation is financed by foreign debt. The key innovation in Mussa's model is his incorporation of a variety of dynamic effects, including the effect of the current account balance on the growth of net foreign assets held by the private sector and the impact of the expected real exchange rate in the future on current expenditure decisions.

The implications of Mussa's framework can be illustrated in their starkest form by considering an economy in which the nominal exchange rate is fixed and in which the budget deficit is set at a level that is incompatible with balance-of-payments equilibrium. Associated with the excess of expenditures over income are an appreciation in the real exchange rate and a consequent rise in nominal money balances to sustain the higher domestic price level.

This policy configuration—which has been quite common in a number of developing countries, most notably, Argentina in the late 1970s—is clearly not sustainable in the long run, since it requires a constantly expanding stock of government debt. The long-term instability of the policy is likely to be recognized by the private sector, which will come to anticipate a nominal devaluation. Expectations of a devaluation will in turn lead to rising domestic interest rates and a fall in the demand for domestic money balances, thus exacerbating the balance-of-payments disequilibrium and requiring even larger increases in foreign borrowing to support the nominal exchange rate. Mussa's paper traces through the dynamics associated with such cycles of crises followed by discrete devaluations, both in the case of fixed nominal exchange rates and under crawling peg regimes.

Mussa's model illustrates a recurring problem with devaluation crises in developing countries: the effects of speculation against the exchange rate. First, this speculation tends to create large shifts in the demand for money and thus poses considerable problems for monetary management. And second, speculative flows make it very difficult to assess the underlying balance-of-payments position, thereby complicating the task of determining the appropriate magnitude of the devaluation required to restore equilibrium.

The next paper, by Aizenman and Frenkel, examines the interaction among labor markets, real shocks, monetary policy, and exchange rates. The authors develop a one-good model with an imported intermediate input, to analyze the properties of alternative rules for wage rate indexation under different exchange rate regimes. The issue of wage indexation has become an important policy problem in many developing countries suffering from chronic inflation. For example, a number of observers have recently pointed out that the existence of 100 percent wage rate indexation in the presence of fixed exchange rates played a crucial role in the collapse of some of the recent economic liberalization attempts in the Southern Cone of Latin America.

In their model Aizenman and Frenkel assume that wages are set in advance by multiyear contracts. Consequently, once real shocks—which affect the demand for or supply of labor, or both—take place, the real wage cannot adjust and a welfare loss results. Within this context the authors develop a formal framework to analyze the optimality properties of indexation rules that link the nominal wage alternatively to the CPI, the value-added price index, and the nominal gross national product. They find that the relative ranking of these rules will depend on the relative elasticities of labor demand and supply.

Aizenman and Frenkel then establish that under flexible exchange rates, there is a dual relationship between wage rate indexation rules and monetary accommodation rules. This result has some important policy implications, since it suggests that, in this type of setting, economic authorities have to be careful not to implement monetary policies that would generate negative welfare consequences through their effect on the labor market. Policy makers should ensure, for example, that one policy does not undo what another policy is designed to achieve.

A particularly interesting aspect of Aizenman and Frenkel's analysis has to do with the joint determination of the optimal degree of exchange rate intervention and the optimal degree of wage indexation. The authors show that within the context of their model—characterized by real shocks, multiyear wage contracts, and imported intermediate inputs—a fully flexible or completely fixed exchange rate regime will almost never be optimal. This result, of course, has important policy implications for those developing countries that are trying to develop a more adequate exchange rate system.

In the fourth chapter Dornbusch analyzes the role of unconventional exchange rate systems in the adjustment process. In particular, he looks at the main properties of multiple exchange rates for commercial transactions. Even though Dornbusch concentrates on multiple rates for commercial transactions, unconventional exchange rate systems have in practice been applied to both commercial and financial transactions; in fact, systems of dual rates that differentiate between the current and

capital accounts of the balance of payments have been historically important in a number of countries. Moreover, since the debt crisis arose these unconventional systems have experienced a relatively widespread revival among the less developed nations.

The principal question addressed by Dornbusch is whether there are circumstances under which—in spite of the distortions that they introduce—multiple exchange rate practices represent a desirable policy option. To tackle this question Dornbusch organizes his discussion around some of the more important fiscal and macroeconomic aspects of multiple rates. He first points out that by introducing a differential between buying and selling rates, a multiple exchange rate system is equivalent to an implicit tax-subsidy structure. Furthermore, to the extent that different exchange rates apply to inputs and to final goods, a multiple exchange rate system will result in a structure of differential rates of effective protection. To the extent that a multiple rate system is equivalent to an implicit system of tariffs, it will have the same efficiency costs as the implicit tariff system and thus will be only the second- or third-best device to achieve domestic objectives.

Dornbusch then moves on to analyze some of the macroeconomic effects of a system of multiple exchange rates. He posits that the imposition of multiple rates has the advantage that it can be aimed at those goods that have higher elasticities of demand. Thus, multiple rates may be a desirable policy option to address *temporary* balance-of-payments difficulties. To determine whether multiple rates are in fact desirable, the economic authorities should weigh the costs, which stem from the traditional efficiency losses, against the benefits, which are based on the ability to generate an adjustment that has a smaller impact on unemployment and income distribution than would otherwise be possible.

### **Economic Reform, Foreign Shocks, and Exchange Rates**

The next two papers, by Calvo and by Obstfeld, analyze the effects of different exchange rate policies on economic liberalization attempts. For many years economists have advocated that the developing countries liberalize their economies, giving a more prominent role to market-determined prices. The opening up of these economies, both to trade in goods and to capital movements, has traditionally been an important component of reform proposals designed to liberalize these economies.

In the 1970s the countries in the Southern Cone of Latin America—Argentina, Chile, and Uruguay—initiated major efforts to liberalize their economies, implementing sweeping reforms that included creating active and rapidly growing domestic capital markets, reducing import tariffs, and eliminating capital controls. A decade later, the evidence

indicated those efforts had to a large extent failed. In fact, in all three countries the reforms have been partially reversed. Severe financial crises arose that resulted in the collapse and virtual nationalization of the banking sectors of the countries. At this time there is no clear agreement among the experts on the primary causes for these failures. Nonetheless, many experts do agree that exchange rate management had an important effect on the outcome of these experiments.

This case of Southern Cone reforms, in which freer banking was associated with severe financial disruptions, serves as the grist for Calvo's analysis. The author develops an overlapping-generations model of an open economy to address a set of important questions regarding financial liberalization efforts. Using a formal welfare criterion, he examines the optimal rate of devaluation, the optimal rate of inflation, the optimal degree of capital mobility, and the optimal degree of "freeness" of the domestic banking sector. For the purposes of this investigation, Calvo develops increasingly complex versions of his model. In the simplest version he finds that with no banks and no distortions in the capital market, the optimal rate of devaluation is zero (that is, fixed rates are optimal); the optimal rate of inflation is also zero; and capital should be allowed to flow freely in and out of the country. When money and banks are introduced into the picture, and when currency and deposits are assumed to be perfect substitutes, the results indicating that zero rates of devaluation and inflation are optimal still hold, as long as there are no distortions in the capital market.

Calvo then considers the case of foreign demand for the small country's currency. He shows that, under the assumption that the central bank maintains its reserves in the form of an international bond, the complete liberalization of the domestic banking system is still optimal. But in order to attract foreign funds, the central bank may have to offer some type of deposit insurance. If the central bank provides this insurance by holding zero-interest bonds, a loss of resources will result. In turn, the bank may then find it advisable to discourage foreign deposits by reducing the rate of return on domestic bank deposits. Calvo argues that an alternative way to solve this problem would be to provide the deposit insurance by having the domestic banking system become a member of some international banking system or by allowing foreign banks to operate fully at home.

In his contribution, Obstfeld develops a model to analyze the dynamics of the real exchange rate following a program of liberalization with stabilization. As in the case of Calvo, Obstfeld's inquiry is motivated by the recent experience of the Southern Cone. His model considers a stabilization program that uses a preannounced rate of nominal devaluation as the principal tool to combat inflation.<sup>2</sup> The model emphasizes the importance of private portfolio shifts that ac-

company a decline in the preannounced nominal rate of depreciation. The economy analyzed is characterized by sluggish nominal wages that depend on inflationary expectations but adjust only gradually to labor market conditions. The budget deficit is financed by domestic credit creation; but to maintain the announced exchange rate, the central bank intervenes in the foreign exchange market. To keep his model simple, Obstfeld abstracts from the problems associated with an incompatibility between the exchange rate and monetary and fiscal policy by assuming that the budget deficit is set endogenously in such a manner that the resulting growth in domestic credit is adequate to accommodate the rate of depreciation. Thus, there remains only one key policy variable: the rate of depreciation.

Obstfeld uses the model to consider the effects of a reduction in the rate of depreciation in the two polar cases of capital immobility and perfect capital mobility. In a situation of capital immobility, the fall in the rate of inflation associated with a decline in the rate of devaluation results in higher real interest rates and thus a deflationary impact on demand. That impact in turn produces a real depreciation in the short run. In effect, the increased demand for domestic assets is met by cutting expenditures. Over the long run, however, the surplus in the balance of payments and the concomitant expansion in domestic liquidity tends to reflate the economy, eventually leading to a real appreciation. On the other hand, in a situation of capital mobility, the change in the rate of nominal depreciation is neutral and has no impact on the real exchange rate. The fall in the rate of nominal depreciation raises the demand for money. Nonetheless, the public can increase its nominal holdings by borrowing foreign exchange and selling it to the central bank. In effect, the ability of the private sector to borrow abroad implies that the central bank can fully accommodate the portfolio shift of the private sector by accumulating foreign reserves with no impact on spending.

### **Case Studies**

Four of the papers collected in this volume are case studies of a varied array of countries: Colombia, Greece, Kenya, and the countries of the West African Monetary Union.

In the first of these case studies, Edwards develops a simple model for analyzing the macroeconomic interrelation among a commodity export sector, the real exchange rate, and the rest of the economy. The model, which is used to analyze the case of coffee in Colombia, emphasizes the importance of money creation and inflation during an export boom.

Edwards's model has two components: a real block and a monetary block. When permanent monetary equilibrium is assumed, the results obtained from the real block of the model correspond to the traditional Dutch-disease literature, which shows that an export boom will generate an equilibrium real exchange rate appreciation. But when monetary disequilibrium in the short run is assumed, a richer set of results emerges. Edwards's model points to the fact that under fixed or managed nominal exchange rates, an export boom usually results in the accumulation of international reserves, money creation, and inflation. In fact, this inflation can, in the short run, exceed what is required to generate the equilibrium real appreciation. According to Edwards this has been the case in a number of countries, including Colombia, where increases in the price of coffee have traditionally been associated with higher rates of base-money creation and with inflation. Moreover, according to Colombian authorities, one of that country's recurrent economic problems has been how to avoid an excessive real appreciation during coffee booms.

Edwards tests his model using annual data for Colombia for the years 1960–82. He finds that during that period changes in world coffee prices indeed resulted in important changes in the rates of money creation and inflation. In fact, his regression results suggest that the link between money creation and inflation has been one of the most important means by which changes in coffee prices have affected the real exchange rate in Colombia.

In the next study Branson develops a simple macro model of two sectors to analyze the effects of devaluations on stabilization programs. The model differs from more traditional approaches by incorporating intermediate inputs, wage indexation, and rigid prices. Branson then applies his model to the case of Kenya, comparing the macro effects of a devaluation with those of an "equivalent" cut in government expenditures. The issues he addresses are similar to those tackled by van Wijnbergen in the first chapter of this volume.

Branson emphasizes, in particular, intermediate inputs and wage indexing as factors contributing to a contractionary impact of devaluation. He also outlines some important policy implications in his comparison of the effects of a devaluation and a cut in government expenditures on the balance of payments and the real economy. Traditional monetary and Keynesian models have tended to view these two measures as complementary, balancing the expansionary effects of an improvement in competitiveness with the deflationary effects of fiscal restraint. When a devaluation has a contractionary effect, these two instruments become to some degree substitutes. But Branson argues that when elasticities of substitution in production are low, devaluation

tends to have a more pronounced stagflationary effect than cuts in government expenditure for the same drop in the balance-of-payments deficit.

A nominal exchange rate devaluation will have a persistent effect on the real economy and on relative prices only if there is some stickiness or rigidity in the nominal prices. According to Branson, without nominal price or wage rigidity, center stage in a stabilization program moves away from the nominal exchange rate to those government policies that directly affect the overall level of spending relative to income—and, particularly in the context of developing countries, to budgetary policies. (The earlier paper by Mussa also emphasizes this issue.)

In the third case study, on Greece, Katseli analyzes the effects of alternative nominal exchange rate policies on the real exchange rate. In particular, she investigates whether the way in which a nominal devaluation is implemented—through a discrete stepwise adjustment or through small nominal devaluations à la a crawling peg— differentially affects the real exchange rate response. From a policy perspective this is an important question. One of the fundamental goals of a devaluation is to improve competitiveness in the tradable goods sector, by generating a real devaluation. Many times, however, and for different reasons, nominal devaluations fail to do this. A crucial question, then, is whether the way in which the nominal devaluation is carried out has anything to do with these failures.

Katseli's model, which draws on the recent industrial organization literature, focuses on the use of contracts in monopolistic pricing setting. The author indicates that both the magnitude and the frequency of nominal exchange rate adjustments are important determinants of real exchange rate behavior. More specifically, according to her model, discrete nominal exchange rate adjustments, by providing an "information signal," result in shorter contracts and faster price responses. As a consequence, under discrete and large nominal exchange rate adjustments, the real exchange rate response will be smaller than under payment and small crawling-peg types of adjustments.

Katseli tests the main implications of her model using aggregate, sectoral, and product-level monthly data for Greece. The results do offer some support for those implications; the data suggest that the nominal prices of nontraded goods adjust faster after a discrete nominal devaluation than they otherwise would. The interpretation of the results is somewhat difficult, however, because a number of products were subject to price controls in Greece during the period under study.

In the last case study, Macedo analyzes the functioning of the West African Monetary Union (UMOA). This paper has considerable policy importance, since it outlines the significant characteristics of one of the very few genuine monetary unions in the world. This paper will

therefore serve as an important basis for future discussions of the desirability of alternative exchange and monetary regimes in the developing countries. The paper is organized in two parts. In the first the author develops a stylized four-country model of a monetary union, and in the second he analyzes the salient features of the UMOA.

It has long been recognized that fixed-peg exchange rate regimes do not impose adjustment costs when nominal domestic prices are fully flexible. But they hamper the adjustment to shock, whether real or monetary, when nominal prices or wages are not fully flexible. Macedo extends this analysis to the case of a small country that decides to peg not to some optimally chosen basket of foreign currencies but to the currency of a single large country, which in turn floats based on currencies in the rest of the world. He finds that when domestic prices are fully flexible, monetary disturbances do not affect the real exchange rate. On the other hand, when domestic prices are not fully flexible, the small economy becomes more subject to monetary shocks emanating from the large country to whose currency it is pegged.

The model provides another crucial insight into monetary unions such as the UMOA. A balance-of-payments deficit (surplus) in the union results in a transfer of resources from (to) the large country to whose currency the union is pegged. Even when domestic prices are fully flexible and monetary disturbances per se do not affect the real exchange rate of the countries in the union, the distribution of the transfer across countries can result in real exchange rate changes.

Although Macedo does not empirically test his model with UMOA data, the second part of his paper does discuss the behavior of the monetary union in light of the model's results. In particular, he finds that, as implied by his theoretical construct, the way in which the transfer from France has been distributed among the union countries during the last few years seems to have affected the behavior of the real exchange rate in those countries. The author also points out that any calculation of the costs and benefits of the UMOA should explicitly take into account the role of the transfer of resources, which, according to the current agreement, France has to make to the union when the union runs a deficit.

### **The Real Exchange Rate and Adjustment**

The last paper in the volume, by Harberger, provides a general analytical survey of the role of the real exchange rate in the adjustment process. In some sense this chapter pulls together many of the topics addressed in the previous papers. Harberger formulates a framework for analyzing the way in which the equilibrium real exchange rate reacts to different exogenous and policy-induced shocks. His approach is

general enough to allow most traditional models of exchange rate behavior as special cases.

The paper begins with a discussion of an appropriate definition of the equilibrium real exchange rate and an analysis of how this equilibrium rate is affected by alternative shocks, under both floating and fixed nominal rates. In particular, Harberger investigates how the equilibrium real exchange rate reacts to the imposition of an import tariff; the imposition of an export tax; a capital inflow spent on imports; a capital inflow spent on nontradables; a change in the world price of exports; and a change in the world price of imports. In fact, many of these disturbances are the subject of more detailed analyses in some of the other papers in the volume: Mussa and Dornbusch look at tariffs; Obstfeld and Calvo analyze the role of capital inflows; and Edwards focuses on the consequences of a change in the price of exports.

Harberger devotes an important part of his paper to discussing the concept of the real exchange rate. He notes that this concept has caused a great deal of confusion in economics; at least four or five competing definitions of the real exchange rate are employed on fairly regular basis. Harberger points out that it is important to clarify what is really meant by “the” real exchange rate. He argues that from an analytical perspective, the most useful definition of the real exchange rate is the nominal exchange rate deflated by a theoretical general price index. This is a novel proposition, since it does not correspond to any of the more common definitions used in the literature. Harberger avers that only when this definition is used does the real exchange rate react to all the different disturbances in the way the theory predicts. From a practical point of view, however, it is not easy to find the appropriate general price index. After discussing a number of alternatives, Harberger arrives at the conclusion that, given availability and periodicity, the consumer price index is the best real-world counterpart to the ideal theoretical price index.

### **Future Research**

The papers collected in this volume examine a number of important issues regarding the role of exchange rates in the adjustment process of developing countries. Needless to say, the topics covered do not exhaust the subject. There are many important problems that have not been tackled in this volume, or elsewhere in the literature. We hope this book will encourage researchers to devote time and energy to better understanding the general topic of exchange rates in the developing countries.

The first obvious agenda for future research is to determine a set of general principles that could be used by policy makers in developing

countries who must decide what type of nominal exchange rate system to adopt. Although there has already been some progress in this area, the roundtable discussion at the NBER–World Bank conference was a further reminder that economists are still far from agreeing on what this set of principles should be.<sup>3</sup>

A second important goal of future research should be to improve our empirical understanding of the effectiveness of nominal devaluations as tools of economic policy. We now have a fairly impressive set of theoretical models describing this subject, but the empirical verification of these models is lagging alarmingly behind. As Katseli points out in chapter 9, the primary policy objectives of nominal devaluations have been to generate a real devaluation or improvement in the international competitiveness of the country and to generate an improvement in the external position of the country. It will therefore be important to use historical data to analyze the extent to which these objectives have in fact been achieved. This type of analysis should, of course, account for the concomitant effects of other macroeconomic policies pursued alongside the nominal devaluations.

A related issue has to do with the empirical analysis of contractionary devaluation. A number of analytical papers, including the ones by van Wijnbergen and Branson in this volume, have pointed out that devaluation as a component of stabilization may reduce aggregate output and employment. To date, however, the empirical analysis of this topic has been quite sketchy and incomplete; most studies have taken the form of “before and after” analyses or simulation studies.

The determinants of real exchange rate variability also deserve further analysis. It is well established that “excessive” real exchange rate variability may result in nontrivial welfare costs. From an empirical point of view, however, our understanding of the determinants of real exchange rate movements in developing—and, for that matter, in developed countries—has been very limited. As Díaz-Alejandro pointed out in his comment on Harberger’s paper, policy makers will greatly benefit from better information on how some of the theoretical determinants of the real exchange rate—such as the terms of trade and capital flows—have actually affected the real exchange rate in some of these countries.

Future research should also focus on the general issue of devaluation crises. Once again, the empirical analysis of this subject lags behind the theoretical developments. More specifically, it would be interesting to test the historical role played by different factors in devaluation crises. The developing countries present an extremely valuable sample, since many of them have gone through major exchange rate and balance-of-payments crises in the last three to four decades. One important factor in these crises has been the consistency, or lack thereof, among

exchange rate, fiscal, and monetary policies. Argentina in 1981 offers perhaps the most dramatic recent example of clearly inconsistent fiscal and exchange rate policies eventually leading to a major economic crisis.

A final topic that deserves attention—especially in the aftermath of the international debt crisis—is the determination of an optimal policy mix to face external sector disequilibria. Theoretically, countries can address a balance-of-payments problem with four alternative strategies: they can reduce absorption; they can generate expenditure switching through commercial policy or a devaluation; they can run down their international reserves; or they can borrow from abroad. Since the debt crisis began, this last tool, borrowing from abroad, has been severely limited for most of the developing countries. Consequently, the use of exchange rate policy, international reserves, and commercial policy to face temporary balance-of-payments difficulties has become increasingly widespread. Work on this topic, at both the theoretical and the empirical level, would be most welcome. In particular, economists need to develop a general optimizing framework that can help determine the optimal rate of devaluation, reserves holdings, and use of commercial policy to adapt to different types of disturbances.

## Notes

1. On the relation between exchange rate policies and the debt crisis, see Cline (1983). Pffferman (1985) provides a general discussion of the interaction between exchange rate policies and the process of economic development.

2. A preannounced rate of devaluation (the so-called *tablita*) was used in Argentina, Chile, and Uruguay in the late 1970s as a way to reduce the inflation rate.

3. A roundtable discussion on appropriate exchange rate regimes for the developing countries took place at the NBER–World Bank conference. Manuel Guitián chaired the discussion, and Carlos Díaz-Alejandro, Arnold Harberger, and Deepak Lal provided opening remarks.

## References

- Cline, W. 1983. *International debt and the stability of the world economy*. Washington, D.C.: Institute for International Economics.
- Pffferman, G. 1985. Overvalued exchange rates and development. *Finance and Development* 22 (March): 17–19.
- World Bank. 1984. *Towards sustained development in Sub-Saharan Africa*. Washington, D.C.: World Bank.

---

# I      Stabilization, Adjustment, and Exchange Rate Policy in Developing Countries

This Page Intentionally Left Blank