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JAN. 1989

MACROECONOMIC ADJUSTMENT IN DEVELOPING COUNTRIES

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This article surveys the issue of short-run adjustment in developing countries. Such adjustment usually has two parts to it: improving the current account, and reducing inflation. The first task can be analyzed with the help of standard balance of payments theory. This theory uses the concepts of expenditure reduction and expenditure switching, concepts that originated with Meade (1951) and Johnson (1958). They will be used to introduce some simple concepts of adjustment costs with particular emphasis on distributive effects.

But this standard analysis does not allow for inflation. Another body of literature is concerned with inflation, with anti-inflationary policies and with the links between budget deficits and inflation. Since many developing countries, notably in Latin America, often face both a weak current account and rapid inflation, there is a need to show how the two parts of the adjustment problem interact.

Consider a small open economy with a current account deficit that needs to be removed. The less foreign credit that is available, the quicker this has to be done. The standard analysis is that total expenditures—by both government and the private sector, on both consumption and investment—have to fall. This is “expenditure reduction,” which reduces demand for both tradables and nontradables. In addition, there has to be a real devaluation, which shifts both the pattern of domestic demand from tradables toward nontradables and the pattern of output from nontradables towards tradables. This “switches” the pattern of demand and output so as to

*Improving
the Current
Account*

ensure that the decline in the demand for nontradables resulting from the reduction in expenditure does not lead to excess supply of nontradables. In other words, the “switching” policy ensures that the process of attaining “external balance” occurs while “internal balance”—maintaining overall employment—is being maintained.¹

If the exchange rate is used to bring about switching, it is essential that a real devaluation takes place as a result of nominal devaluation. A real devaluation will not be achieved if wages rise in line with import prices and consumer prices or if expenditure has not been reduced by enough to prevent excess demand and then some inflation of nontradable prices. Commonly, a nominal devaluation does initially bring about real devaluation, but its effects are gradually eroded. A great deal hinges on whether monetary policies are accommodating or not, and experiences have varied greatly among developing countries.²

It is possible for a nominal devaluation to bring about some expenditure reduction automatically, chiefly through the reduction in the real value of money balances that a general rise in prices would produce. In addition, a devaluation raises the prices of imported capital goods. If credit in nominal terms to the private sector (and also to the public sector) were kept constant, investment in real terms would decline.

Furthermore, a devaluation boosts the income of exporters—and thus the tax revenues of the government. If the extra revenue is not spent, the fiscal deficit—and hence the current account deficit—will fall. However, devaluation also raises the domestic currency value of the government’s debt service payments abroad, as well as of government imports. This will worsen the fiscal deficit, and hence the current account, unless other items of government expenditures are cut or taxes raised. In general, therefore, a devaluation will not automatically ensure the necessary reduction in real expenditure, though it might do so.³

The need to cut real expenditure imposes an inevitable cost. This *primary adjustment cost* arises even when there is an adequate switching policy or when real factor prices are flexible enough to maintain internal balance. A *secondary adjustment cost* arises when, for example, the switching mechanisms fail or real wages are rigid: this leads to a decline in overall employment or to underutilization of capacity. The primary cost is an unavoidable minimum. The secondary cost reflects inefficiency in adjustment. The aim of adjustment policies should be to make this cost as small as possible.

The Costs of Adjustment

The primary adjustment cost can be divided into a *present cost* and a *future cost*—broadly, the distinction between cutting con-

sumption and cutting gross investment. On this, different policies will have different effects. For example, public sector wages may be cut. The consumption of those employers is then likely to fall, though it may hold up if they save less. The amount by which consumption is reduced will depend on whether or not the employees believe the wage cuts to be temporary; and the external current account will improve by the reduction in the fiscal deficit.

Another policy measure might be to cut subsidies for food or other products, so that their prices would rise. This would also bring a fall in the real income of the private sector, leading to a fall in both consumption and savings. Or, subsidies to government corporations might be cut, compelling the enterprises to raise prices. This would have much the same effect as cutting food subsidies: real incomes of consumers would fall, and they would have to reduce consumption. Finally, government or private investment may be reduced, perhaps by allowing the infrastructure to deteriorate. One would normally expect reduced investment to lead to some future cost. However, some investments—notably big schemes—may have been quite unsound; abandoning them may actually bring future benefits.

Adjustment is likely to be relatively easy if a current account crisis had been caused by an expenditure increase to which people had not yet fully adapted. There may have been a recent and large rise in public investment, perhaps induced by a discovery of natural resources or an improvement in the terms of trade. Or the government may have recently increased subsidies or allowed public corporations to get into large deficit. If all this is fairly new, it may not be too difficult to reverse.

But another possibility is that the crisis was caused by a more fundamental change, such as a serious deterioration in the terms of trade. Spending patterns may already be entrenched, the product of previously favorable terms of trade. Once people believe they have property rights in their high real incomes, cutting expenditures is much more difficult.

When the government has to cut its expenditures, it often has to turn to its real wage bill. It may have to choose between (a) holding back the nominal wages of its employees as prices rise and (b) reducing public employment. If (a) could be done sufficiently, (b) would not be necessary. But if real wages are rigid, unemployment might be inevitable because public employees who lost their jobs may not be able to move readily into other fields. Given time, however, there could be a desirable shift of labor to industries producing tradables.⁴

Another source of secondary adjustment costs is the imposition of import restrictions to “deal with” the current account deficit. This

is, regrettably, all too common and creates a familiar distortion cost which could be avoided by devaluing instead.⁵

Redistributive Effects

The well-known analysis of two instruments (expenditure switching and expenditure changing) and two targets (internal and external balance) provides the basis for the standard adjustment package: a combination of expenditure reduction and nominal devaluation. But, on the assumption that there is a real devaluation, what are the redistributive consequences of this package?

Cutting expenditures will have adverse effects on certain sectors, depending on the nature of the cuts. When investment is cut, the losses will be borne in the future. Real devaluation, in contrast, is a relative price change and will produce both gainers and losers. Exporters will gain. Urban workers, whether private or public employees, are likely to lose, owing to the higher prices of imports. In general, profits of nontradables producers are likely to fall; those of tradables producers to rise.

An analysis that combines both features of the package gives insights into the principal resistances to adjustment. For example, real wages of public employees may fall both because public expenditure has been cut and because their cost of living has risen (through higher prices of imports). They may also be consumers of exportables, the prices of which will also have risen, unless kept down by price controls. For other groups, there may be offsetting effects. Peasants producing export crops may lose through reduced subsidies—say, for fertilizer—or through higher prices for electricity from a public corporation that has had to reduce its losses. The same peasants will gain, however, from higher incomes for their crops, partially offset by higher costs of imported inputs.

Contrary to first expectations, some manufacturing industries that produce potentially tradable products may lose as a result of devaluation. Many developing countries have manufacturing sectors that are protected by import quotas, so the domestic prices of imports would not be raised by devaluation. Instead, importers who hold the scarce import licenses will have their profits squeezed. Although the manufactures are potentially import competing, quotas have actually turned them into nontradables, their prices depending on domestic demand and supply. Demand for these protected products will fall as a result of the general reduction in expenditure. And their costs will increase, both because the costs of imported inputs rise as a direct result of devaluation and because, in due course, the cost of labor may rise as export industries expand.

The crucial point about short-term adjustment is that there are

bound to be losers. This will make it more difficult to implement and may also result in cuts in investment rather than consumption. If a country cannot obtain enough foreign credit, it will have no choice but to cut expenditure, if not to devalue. But the choice of measures will be affected by the varying strength of interest groups. Net investment may even cease, so that the capital stock is run down.⁶

In short, adjustment may be “disorderly.” The loss of efficiency that results from disorderly adjustment could be counted as part of the secondary adjustment cost. But disorderly adjustment is certainly not inevitable, as the experiences of various countries have shown. A description of a successful orthodox adjustment—the case of the Republic of Korea, 1981–84—can be found in Aghevli and Marquez-Ruarte (1985).

Structural Rigidities

In the short run some supply and substitution elasticities are very low, possibly even zero. If so, most of the short-run adjustment will have to take place either at great social cost or in parts of the economy where elasticities are relatively high. An extreme but not unknown condition is what Little (1982) has called “import starvation.” A country has become highly dependent on particular imports for which there are no domestic substitutes, at least in the short run; import restrictions may already have eliminated less essential imports and all those for which local production (though at high cost) is possible. The imports that remain are either essentials—such as medical supplies, petroleum, spare parts for vehicles—or basic components or materials for local manufacturing. Reducing imports further would cause unemployment and output losses in manufacturing. This is an unplanned consequence of a long-term policy of import substitution which has kept exports down to a level where only the most essential imports would be financed. The country needs trade reforms designed to foster exports. If it had done such reforms sooner, the need to reduce essential imports might never have arisen.

Countries with rapid inflation usually also have current account problems. But this association is not inevitable, so this section starts by considering a country with high inflation but no current account difficulties. The government wants to reduce inflation because of the dislocations it causes. The country’s inflation rate is higher than that of its trading partners, so the exchange rate will have to depre-

Reducing Inflation

ciate steadily—possibly with a “trotting peg”—to avoid continuing real appreciation.

It will now be assumed that the current account has to stay in balance or—when there is a given inflow of new foreign finance—that there is a deficit that does not, for the moment, need to be reduced. In such circumstances, adjustment refers to anti-inflationary policy, which will have some costs. In fact, the adjustment raises two quite distinct problems: the “inflation tax replacement” and the “price adjustment.”

The Inflation Tax Replacement

In most developing countries, monetizing the fiscal deficit is normally the essential cause of prolonged inflation. Holders of money balances have to save more to keep their real balances at desired levels. These savings in effect finance all or part of the government's dissavings. The reduction of real balances owing to inflation is known as the inflation tax.

Of course, other factors may be at work. The demand for real money balances will increase because of real economic growth. It may also increase because the monetized sector is expanding relative to the subsistence (or less monetized) sector. To that extent, a growing supply of money that finances a fiscal deficit need not lead to inflation. Furthermore, monetary growth need not be caused by a fiscal deficit: it can also result from expansion of credit to the private sector. And if inflationary expectations accelerated, the demand for real balances would fall, so that even a given growth in the money supply would lead to faster inflation.

Nevertheless, taking all this into account, it remains true that when inflation is high a principal explanation is usually a monetized budget deficit.⁷ Hence, if inflation is to be reduced, government expenditure has to fall or other sources of taxation have to be found. That is the “inflation tax replacement problem.” Because of the distortions and inefficiencies caused by inflation, the inflation tax is likely to be a very inefficient way of helping to finance public spending. It is thus possible that, for the economy as a whole, there may be a net gain (and hence no inflation adjustment cost at all) when the inflation tax is replaced by a well-constructed set of explicit taxes. This could also be true when public spending is cut, rather than taxes being raised.

The actual fiscal deficit, expressed as a proportion of gross national product, is likely to be much greater than the deficit that has to be eliminated if inflation financing is to end. There are three reasons. First, inflation usually leads to a reduction in tax revenue in real terms, even with given tax rates. This is because nominal tax collections lag behind nominal government expenditure, which fre-

quently adjusts more rapidly to inflation. Cutting the rate of inflation would therefore boost real tax revenues: the “Olivera-Tanzi effect.”⁸ Second, part of the deficit is likely to be bond-financed and so does not need to be reduced or eliminated in order to slow down monetary growth. Third (and discussed below), the deficit will itself decline owing to a reduced interest bill.

A shift from the inflation tax to, say, a value added tax will have important redistributive effects, just as devaluation does. Inflation taxes all money holders, whereas alternative taxes are likely to bear heavily on specific groups, who may therefore resist the new taxes. If taxes cannot be increased, government spending will have to be reduced—leading again to sectoral resistance.

The Price Adjustment

The concern so far has been with the budgetary problem that an anti-inflationary policy presents. The “price adjustment problem” is a quite separate matter. Assuming that the country is in a steady state of inflation, where all prices—notably the nominal interest rate, the nominal exchange rate, and the nominal wage—are fully adjusted to expected inflation, then actual inflation is equal to expected inflation. The real interest rate, the real exchange rate, and the real wage are not raised or reduced just because there is inflation.

The government then introduces an anti-inflationary program, requiring a reduction in the fiscal deficit and leading to a reduction in monetary growth. Product prices may fail to respond in reasonable time; major distortions in relative prices can result; so overall costs and redistributive effects can be imposed. These costs are not inevitable, but a few examples show what might happen.

1. Firms and other price setters are surprised by the anti-inflationary policy, do not expect the program to last, and hence continue to raise prices on the basis of the initially expected inflation. This has been called “inertial inflation”—inflation that does not respond quickly to demand contraction. Given the policy of monetary restraint, the real money supply therefore falls, the real interest rate rises, and the economy contracts. The anti-inflationary policy has a classic deflationary effect.

The implication is that, if this “inertia” is to be overcome, the policy shift must be widely understood and credible. Such conditions are not easy to attain when previous attempts to slow inflation have failed. And the fact that an anti-inflationary policy is likely to involve some painful deflation leads to the view that such a policy would not be sustained for political reasons. This view itself then becomes one cause of the deflation. This does not mean that “inertial deflation” will continue forever, but only that a difficult transi-

tion is possible and that the firmness of the anti-inflationary program must be clearly established.

2. The rate of increase of wages fails to adjust to the slower rate of money growth as rapidly as do product prices, so real wages rise. In industrial countries and in the formal sectors of some developing countries, nominal wages tend to be somewhat inflexible, possibly because of explicit or implicit contracts. By contrast, product prices may be quite flexible. Once again, the policy implication is that the anti-inflationary program must be well understood and believed.

A specific cause of wage inflexibility is indexation. This is usually lagged, so that wages in the current period are adjusted to price changes in a previous period. This means that when price inflation slows, wage inflation slows less rapidly—so real wages rise. This squeezes profits and is likely to increase unemployment. The policy implication is that, if indexation itself cannot be ended, its formula should be adjusted to prevent real wages from rising.

3. Firms may have locked themselves into debts which carry nominal interest rates adjusted to the initially expected rate of inflation. Although the loans may be fairly short term, a sudden decline in the rate of inflation could raise real interest rates substantially, redistributing wealth from debtors to creditors and thus causing bankruptcies. In addition, since high inflation tends to benefit the financial sector, a reduction of inflation can squeeze it tightly.

In considering these costs of reducing inflation, it must be remembered that the starting point is never a well-adjusted, steady-state inflation. With rapid inflation, relative prices are always distorted. Normally there are institutional rigidities and various controls that prevent some prices, but not others, from adjusting to the rate of growth of nominal demand. The motivation for controls is usually a misplaced effort to control inflation—not at the source but by tackling some of its symptoms. Hence some nominal interest rates are controlled, leading to negative real rates; some product prices may be controlled, leading to shortages and distortions in resource allocation; and frequently the exchange rate is not depreciated sufficiently to compensate for the excess of domestic over foreign inflation, leading to a squeeze on the profitability of industries producing tradables and to a current account deficit. All these disadvantages will be diminished as inflation slows.

Exchange Rate and Heterodox Policies

In trying to minimize the part of the inflation adjustment cost that is caused by the price adjustment problem, two approaches have been tried.

One approach has been to fix the nominal exchange rate—or at least to have a preannounced path for it (called *tablita* in Argentina).⁹ The exchange rate is maintained by market intervention and in an indirect way prices of tradable goods will then be somewhat controlled, depending on inflation abroad. When import-competing goods are only imperfect substitutes for imports, the control is inevitably imperfect. The bigger weakness in such an approach is that, if domestic credit continues to expand faster than the exchange rate depreciates, prices of nontradables will rise faster than those of tradables. In short, the real exchange rate will appreciate—with the usual adverse effects on resource allocation. It is therefore crucial that the exchange rate policy be accompanied by orthodox credit restraint.

The alternative is a broader, “heterodox” approach (Dornbusch and Simonsen 1987; Blejer and Liviatan 1987), which really embraces the first as a special case. It was tried in 1985–86 in Israel, Argentina, and Brazil. The approach involves many prices—product prices, wages, the exchange rate, the nominal interest rate—being controlled or at least made subject to predetermined scales. In theory, at least, this does not replace the “orthodox” policy of monetary restraint through reducing the fiscal deficit; it merely supplements it. The idea is that, for a transitional period, controls take the place of market expectations in determining prices and wages.

The central problem is familiar: getting relative prices right. If they were initially in reasonable equilibrium, with no notable shortages or excess demands, and if there were no changes in demand and supply conditions, in the terms of trade, and so on, it would be simplest to freeze all prices and wages. In practice, enforcing a comprehensive freeze is difficult, so some relative prices will change in unplanned directions, and there are usually some underlying shifts in demand and supply that require changes in relative prices. For example, shifting from an inflation tax to explicit taxes or to cuts in public spending is bound to change equilibrium relative prices. Furthermore, one cannot assume that relative prices were initially in “equilibrium.” It may be necessary to make some once-and-for-all price and wage changes before the whole set is frozen, and these preparatory changes are not easy to get through.

In some cases, prices of state enterprises have been frozen or prevented from rising sufficiently while wages have continued to increase. The increased subsidies needed to keep the enterprises afloat have then undermined the policy of monetary restraint which is the key orthodox element of the anti-inflationary program, and without which the heterodox element will achieve very little. Finally, it may be difficult to convince people that prices will not rise

again when controls are removed, since they may attribute the short-term decline in inflation more to the price and wage controls than to the decline in monetary growth.

***Two Adjustment Challenges:
Current Account and Inflation***

A current account deficit is quite likely to be caused by a fiscal deficit (including the deficits of all public agencies).¹⁰ In addition, in most developing countries that have serious and prolonged inflation, the explanation is continued monetary expansion resulting from monetization of a fiscal deficit. Thus a fiscal deficit can cause both a current account and an inflation problem, and there have been plenty of cases where the two have coexisted. It is therefore necessary to combine the analyses of the two adjustment problems.

Financing the Fiscal Deficit

It will now be assumed that the fiscal deficit is financed in two ways: partly by borrowing abroad and partly by the inflation tax. It will therefore be assumed that the government does no domestic borrowing, other than from the central bank; nor has it done any in the past, so it and the central bank combined have no indebtedness in domestic currency. The whole of the public sector's interest bill is on foreign debt. The complication of domestic debt will be introduced later.

The need to reduce a current account deficit means that foreign borrowing has to fall. Unless there is increased inflationary financing, the fiscal deficit must be reduced either by cutting government expenditure or increasing taxes. To avoid unemployment, the reduction in the fiscal deficit has to be associated with real devaluation.

Similarly, a reduction in inflation requires the money-financed fiscal deficit to be cut. Unless there is to be more foreign borrowing (and hence a worse current account), cutting the fiscal deficit also requires cuts in government spending or increases in taxes. Because of the price adjustment problem (which leads to a temporary decline in the real money supply and possibly a temporary rise in real wages), there may also be temporary unemployment. The conclusion is that cutting government spending or raising taxes could both improve the current account and reduce inflation. How much one objective rather than the other is achieved depends on which of the two forms of financing—foreign borrowing and monetization—is reduced more.

The implications for the exchange rate are interesting. The improvement of the current account requires a real devaluation if employment is to be maintained. At the same time the reduction in

inflation requires a reduced rate of nominal depreciation, so as to maintain a given real rate. When a reduction in the deficit is meant to lead to improvements on both fronts, various desirable time paths for the nominal exchange rate can be envisaged. At first, as inflation is reduced, the rate of nominal depreciation might continue as before, until the desired real depreciation is attained; after that, the rate of nominal depreciation would decline in line with the decline in the rate of monetary expansion.

It also follows that either objective—current account improvement or reduced inflation—can be achieved at the expense of the other. Suppose the fiscal deficit is given. A shift from money financing to foreign borrowing will reduce inflation and worsen the current account; whereas a shift from foreign borrowing to money financing will increase inflation but improve the current account. It must be reiterated that in all cases appropriate exchange rate adjustment is assumed. Difficulties often arise because the exchange rate adjustment is not appropriate.

Borrowing Domestically

It is now necessary to introduce government debt held domestically and denominated in domestic currency. One part of government expenditure then consists of interest payments on domestic debt, and the deficit may be financed partly by issuing more domestic debt.

For a given fiscal deficit, the choice is no longer purely between (a) money financing leading to inflation and (b) foreign borrowing leading to a current account deficit. There is also the option of crowding out some domestic investment: the government can borrow more domestically and so divert funds away from private borrowers. Like foreign borrowing and the generation of inflationary expectations, this will create a future cost.

One last complication should be noted: that inflation generates inflationary expectations, which in turn raise the nominal interest rate. The higher the nominal interest rate, the larger the fiscal deficit (with taxes and other government expenditures given). The extent of this effect depends on the length of maturity of government bonds and whether or not they carry floating rates. Anything that reduces inflationary expectations will then reduce the fiscal deficit.¹¹

If there is a shift from foreign borrowing to money financing, it is likely that expectations of inflation would increase—so the government's interest bill and thus the fiscal deficit would also increase. A shift away from money financing would, for the same reason, reduce the fiscal deficit. If the noninterest fiscal deficit (sometimes called the "primary deficit") were reduced by cutting ordinary (non-

interest) expenditures or by raising taxes, and this led to less money financing, the total fiscal deficit would actually fall by more than the decline in the primary deficit. A part of the fiscal deficit is thus endogenous, depending on the manner of financing of the deficit. This part would disappear if inflation were not expected.

Abstract

The short-run adjustment problem in developing countries involves both the improvement of the current account and the reduction of inflation. In both cases, the usual reason for adjustment is shown to be the fiscal deficit. The article distinguishes primary adjustment costs, which are inevitable, from secondary costs, which result, for example, from failure to devalue or from real wage rigidity. The article then analyzes the effects of expenditure reduction and currency devaluation on various sectors of the economy. Reducing inflation involves both an inflation tax replacement and a price adjustment problem, and "heterodox" policies designed to deal with the latter are discussed. If the fiscal deficit cannot be reduced, the article argues, improving the current account may be at the cost of increasing inflation and likewise reducing inflation may be at the cost of worsening the current account.

Notes

An expanded version of this article will appear in *Public Policy and Economic Development: Essays in Honour of Ian Little*, edited by M. Fg. Scott and D. K. Lal (Oxford: Oxford University Press, 1989). I am indebted to valuable comments from Mario Blejer, Guillermo Calvo, Morris Goldstein, Anthony Lanyi, and Sarath Rajapatirana. The paper was written while I was at the International Monetary Fund, but the views expressed do not necessarily represent those of the Fund.

1. There is a diagrammatic exposition of the standard analysis in chapter 1 of Corden 1985, which also contains references to the origins of these ideas. The basic theory originated with Meade 1951, the concept of "switching" with Johnson 1958, and the formal dependent economy model with Salter 1959. The implications of various switching devices, including quantitative restrictions, and their relation to expenditure adjustment are explored geometrically in a short-run model with fixed exports in Corden 1960. The concern in this article with sectoral (distributional) effects of adjustment expands on the discussion in chapter 2 of Corden 1985. A formal framework that focuses on monetary and credit aggregates is in Khan and Knight 1981.

2. Edwards 1987 analyzes eighteen Latin American devaluation episodes and shows in each case what happened to the real exchange rate in the three years after the devaluation. He calculates for each episode an "effectiveness index" and shows that, when there was stepwise devaluation, in most cases the real exchange rate effect was quickly eroded, sometimes completely after three years. When there was a "crawling peg," however, the real exchange rate did stay down, this result being obtained by frequent nominal depreciations. See also Connolly and Taylor 1976 for earlier evidence.

3. It is a well-known proposition that a devaluation may be deflationary for the kinds of reasons discussed here (and others). See Diaz-Alejandro 1965 and Krugman and Taylor 1978. The concern has usually been that it may reduce real expenditures too much, rather than too little. In any case, explicit expenditure policy, whether fiscal or monetary, is always available to supplement or alternatively to compensate for the expenditure-reducing effects of devaluation.

4. Government wage policy in Africa is discussed in Lindauer, Meesook, and Suebsaeng 1988.

5. The choice between import restrictions and devaluation as a switching device when the current account has to be improved is an important issue discussed in detail in Corden 1987.

6. For developing countries with debt service problems and hence serious adjustment needs, there was a big fall in the investment ratio after 1981. For the three years 1979–81, the ratio of gross capital formation to gross domestic product averaged more than 25 percent for them, but for the period 1983–86 it was down to 19 percent. (These figures refer to a large group of countries defined by the International Monetary Fund as “countries with recent debt servicing problems” and are calculated from the *World Economic Outlook*, October 1987.)

7. It is well known from the theory of hyperinflation (Cagan 1956) that if inflationary expectations exceed the actual rate of inflation the latter will accelerate, essentially because the demand for real balances relative to GDP is falling. As the inflation tax rate rises, the base of the tax actually falls. Hence the revenue from the inflation tax (expressed as a proportion of GDP) would fall if the monetized budget deficit increased beyond a certain point: sufficient private savings to finance the budget deficit at an initial rate of inflation could not be generated, thus leading to a dynamic monetary disequilibrium—that is, hyperinflation.

8. See Olivera 1967 and Tanzi 1977.

9. This was tried in Argentina, Chile, and Uruguay in the 1970s. There is now a large literature analyzing these episodes. For a detailed description of the Chilean episode, see Edwards and Edwards 1987 and for overviews of all three “Southern Cone” experiences, see Corbo and de Melo 1987.

10. This statement is based on casual impression and awareness of particular cases. The empirical issue was analyzed in Kelly 1982. Kelly’s empirical work, based on analysis of programs of the International Monetary Fund between 1970 and 1980, led to the conclusion that “(i) external imbalances in years prior to program years tended to be associated with large fiscal imbalances, and (ii) that reductions and increases (relative to gross national product (GNP)) in the current account/overall balance of payments deficit in the year of Fund programs tended to be associated with reductions and increases (relative to GNP) in the overall government deficit/domestically financed government deficit.” It must also be added that association of fiscal deficits with current account deficits cannot automatically be regarded as indicating causation.

11. Hence the fiscal deficit might be adjusted for inflation to yield the “operational deficit.” On the measurement of fiscal deficits in the presence of inflation, see Tanzi, Blejer, and Teijeiro 1987.

Aghevli, Bijan B., and Jorge Marquez-Ruarte. 1985. *A Case of Successful Adjustment: Korea's Experience During 1980–84*. Occasional Paper 39. Washington, D.C.: International Monetary Fund.

Blejer, Mario I., and Nissan Liviatan. 1987. “Fighting Hyperinflation: Stabilization in Argentina and Israel, 1985–86.” *IMF Staff Papers* 34, no. 3 (September): 409–38.

Cagan, Phillip. 1956. “The Monetary Dynamics of Hyperinflation.” In Milton Friedman, ed. *Studies in the Quantity Theory of Money*. Chicago: University of Chicago Press.

Connolly, M., and D. Taylor. 1976. “Testing the Monetary Approach to Devaluation in Developing Countries.” *Journal of Political Economy* 84, no. 4: 849–59.

References

- Corbo, Vittorio, and J. de Melo. 1987. "Lessons from the Southern Cone Policy Reforms." *World Bank Research Observer* 2, no. 2 (July): 111-42.
- Corden, W. Max. 1960. "The Geometric Representation of Policies to Attain Internal and External Balance." *Review of Economic Studies* 28: 1-22.
- . 1985. *Inflation, Exchange Rates, and the World Economy: Lectures in International Monetary Economics*, 3d ed. Oxford: Oxford University Press.
- . 1987. *Protection and Liberalization: A Review of Analytical Issues*. Occasional Paper 54. Washington, D.C.: International Monetary Fund.
- Diaz-Alejandro, C.P. 1965. *Exchange Rate Devaluation in a Semi-Industrialized Country*. Cambridge, Mass.: MIT Press.
- Dornbusch, Rudiger, and Mario Henrique Simonsen. 1987. *Inflation Stabilization with Incomes Policy Support*. Discussion: Mario Brodersohn, Michael Bruno, and G. G. Johnson. New York: Group of Thirty.
- Edwards, Sebastian. 1987. *Exchange Controls, Devaluations, and Real Exchange Rates: The Latin American Experience*. NBER Working Paper 2348. Cambridge, Mass.: National Bureau of Economic Research.
- Edwards, Sebastian, and Alejandra Cox Edwards. 1987. *Monetarism and Liberalization: The Chilean Experiment*. Cambridge, Mass.: Ballinger.
- International Monetary Fund. 1987. *World Economic Outlook*. Washington, D.C.
- Johnson, H. G. 1958. "Towards a General Theory of the Balance of Payments." In H. G. Johnson. *International Trade and Economic Growth*. London: Allen and Unwin.
- Kelly, Margaret R. 1982. "Fiscal Adjustment and Fund-Supported Programs, 1971-80." *IMF Staff Papers* 29, no. 4 (December): 561-602.
- Khan, Mohsin S., and Malcolm D. Knight. 1981. "Stabilization Programs in Developing Countries: A Formal Framework." *IMF Staff Papers* 28, no. 1 (March): 1-53.
- Krugman, P. R., and L. Taylor. 1978. "Contractionary Effects of Devaluation." *Journal of International Economics* 8, no. 3: 445-56.
- Lindauer, David L., Oey Astra Meesook, and Parita Suebsaeng. 1988. "Government Wage Policy in Africa: Some Findings and Policy Issues." *World Bank Research Observer* 3, no. 1 (January): 1-26.
- Little, Ian M. D. 1982. *Economic Development: Theory, Policy, and International Relations*. New York: Basic Books.
- Meade, J. E. 1951. *The Balance of Payments*. London: Oxford University Press.
- Olivera, Julio H. G. 1967. "Money, Prices and Fiscal Lags: A Note on the Dynamics of Inflation." *Banca Nazionale del Lavoro Quarterly Review* 26.
- Salter, W. E. G. 1959. "Internal and External Balance: The Role of Price and Expenditure Effects." *Economic Record*, Melbourne, Australia, 35 (August): 226-38.
- Tanzi, Vito. 1977. "Inflation, Lags in Collection, and the Real Value of Tax Revenue." *IMF Staff Papers* 24, no. 1 (March): 154-67.
- Tanzi, Vito, Mario I. Blejer, and Mario O. Teijeiro. 1987. "Inflation and the Measurement of Fiscal Deficits." *IMF Staff Papers* 34, no. 4 (December): 711-38.