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Inflationary Rigidities and Orthodox Stabilization Policies: Lessons from Latin America

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Orthodox stabilization programs in Latin American countries have been notoriously unsuccessful in combating inflation, despite the imposition of stringent cuts in government deficits. In most cases inflation came down only slowly and temporarily, with concomitant declines in growth and employment. The Bolivian progam, one of the only Latin American successes, is contrasted with those of Argentina, Brazil, Chile, and Mexico. The problems of dealing with chronic inflation are compared with those of hyperinflationary countries, and the influence of price and wage rigidities, expectations, and credibility is explored. The study shows that fiscal restraint is a necessary but not sufficient condition for success, and that sound management of nominal variables (the exchange rate and money supply) are also necessary. The critical role of credibility is linked with price and wage rigidities in the chronic inflation countries, whereas the unsustainability of hyperinflation is seen to increase the credibility of and thus the potential for successful stabilization programs.

Despite the large number of stabilization programs implemented in Latin American countries over the years, inflation does not show any signs of retreating. The one exception is Bolivia, where tight monetary and fiscal policies produced stabilization quickly and with relatively low costs. In most other instances where orthodox policies were applied, inflation came down very slowly, and stabilization was accompanied by a reduction in growth and increases in unemployment.

The purpose of this article is to analyze the experience with orthodox stabilization policies in five Latin American countries. By "orthodox" we mean policies based on a tight fiscal stance not supported by price controls (which play an important role in the "heterodox" policies that lie beyond the scope of this study). A central issue is the difference in the relation of chronic inflation (defined as a long period of moderately high inflation) and hyperinflation with

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regard to the dynamic behavior of prices and wages. We also address questions about the relation between budget deficits and inflation. Is inflation always and everywhere in Latin America a *fiscal* phenomenon? Do reductions in the budget deficit always result in lower inflation rates?

Section I of the article analyzes why orthodox policies based on fiscal adjustment and exchange rate pegging were effective in stopping hyperinflation but were ineffective against chronic inflation. The effect of the elimination of inertia in hyperinflation, the erosion of government revenues, and the unsustainable nature of the hyperinflationary process are examined.

Section II analyzes three basic types of stabilization in countries with chronic inflation. The first type is based almost exclusively on fiscal adjustment, an approach undermined by the lack of nominal anchors and illustrated by the experiences of Brazil and Mexico in the 1980s. Using these experiences, we try to explain the paradox of the joint occurrence of a sharp cut in the fiscal deficit and an upsurge in the level of inflation.

This leads us, secondly, to consider programs which employ a monetary nominal anchor in conjunction with fiscal adjustment. We base the empirical analysis on the policies employed in Chile by the military regime in the mid-1970s. The problems of credibility and price rigidities are especially important in Chile, where the 1974–75 monetary tightening involved a high social cost in terms of unemployment.

Finally, we examine exchange-rate-based stabilization programs which often evolve out of the monetary-fiscal package described earlier. We analyze the relation between exchange rate and fiscal policies in the short and long runs, highlighting the role of credibility issues. The empirical analysis is based on three stabilization programs carried out by Argentina in the past thirty years, and on the experience of Chile toward the end of the 1970s. We conclude with the long-run view which extends beyond specific programs and emphasizes the importance of persistence in fiscal discipline and in adherence to nominal anchors.

I. Stopping Chronic Inflation and Hyperinflation

Stopping Hyperinflation: The Case of Bolivia

We draw here on Sachs (1986) and Morales (1987a, 1987b) to analyze the Bolivian hyperinflation of 1982–85 and its quick stabilization. During the 1960s and 1970s Bolivia had moderate inflation rates by Latin American standards. Inflation started to accelerate in 1982 and eventually reached an annualized rate of 45,000 percent.

It seems that the process was triggered by a sharp reduction in the external funds which had been used to finance the budget deficit. The government was then forced to finance the deficit domestically, mainly by printing money. This is shown in table 1 by the sharp increase in seigniorage, measured here as the change in base money as a percentage of gross domestic product (GDP). Due to

Table 1. *Annual Macroeconomic Indicators, Bolivia*

Year	*Budget deficit (as percentage of GNP)*	*Seigniorage (as percentage of GDP)*	*Inflation rates (averages)*	*GDP growth*	*Unemployment rate*	*Terms of trade*
1980	9.0	3.2	47.2	1.2	5.8	100.0
1981	7.8	1.6	28.6	−0.4	9.7	99.7
1982	14.7	12.2	133.3	−5.6	10.9	98.1
1983	19.1	10.0	269.0	−7.2	13.0	99.3
1984	27.4	15.9	1,281.4	−2.4	15.5	104.1
1985	9.1	8.8	11,749.6	−4.0	18.0	104.3
1986[a]	2.9	n.a.	276.3	−2.9	20.0	81.9

a. Preliminary figures.

Source: Inflation and seigniorage: International Monetary Fund (various years); other variables: Morales 1987a.

delays in tax collection and in the adjustment of public sector prices, as inflation accelerated it eroded the real value of government revenues (the Olivera-Tanzi effect) and further exacerbated the fiscal situation. Tax revenues were virtually eliminated by 1983, and seigniorage, which during most of the 1970s remained at 2 percent of GDP, jumped to 12 percent of GDP and remained around this level until stabilization.

In August 1985 a successful stabilization program was launched along strictly orthodox lines, which rapidly stopped inflation. The budget deficit was cut from more than 20 percent in 1984 to 3 percent in 1986 (see table 1), monetary discipline was imposed, and the exchange rate was stabilized. It is not apparent that the abrupt halting of inflation had any clear impact on output. As can be seen in table 1, the economy had been experiencing negative growth and continuous increases in unemployment since 1981; the worsening of output growth and the increases in unemployment that occurred in the second half of 1985 and during 1986 continued the downward trend that had started during the hyperinflation period. In addition, part of the output losses during the stabilization period were due to the sharp deterioration in the terms of trade in 1986 resulting from the collapse of the tin market.[1] The drastic reduction in inflation with what appears to be relatively small costs, followed the pattern of the classical European hyperinflations, as documented in numerous studies (see, for example, Sargent 1986).

Elimination of Inertia through Hyperinflation

One of the main explanations of the comparative ease of stopping hyperinflation, in contrast to chronic inflation, is the eradication of inflationary inertia by the very process of hyperinflation (Pazos 1972). In low- to moderate-infla-

1. Morales (1987a) claims that the stabilization effort should have led to an increase in output and that the absence of this expansion suggests that the program had a recessionary impact. He also argues that the costs of the stabilization program may have been larger than is suggested by the data on unemployment and growth in table 1. The cuts in government expenditure had a significant effect on social services and public investment, which could affect future growth.

tion economies there are explicit or implicit nominal contracts which tend to increase the effect of lags in the system. Given that these contracts are staggered, the reaction of inflation to policy measures is slowed down. The longer the duration of the staggered nominal contracts, the more persistent prices are likely to be (Taylor 1979) and the slower will be the reaction to stabilization policies. As inflation increases, parties to contracts shorten the period over which they are willing to restrict nominal prices (Pazos 1972), and during hyperinflation, contracts and price changes become almost entirely synchronized. Hyperinflation resembles a system of fully flexible prices and wages with no nominal rigidities, with the potential of responding very quickly to disinflationary measures. Inflation becomes a balloon which can be pulled down very rapidly.

In Bolivia, the response of inflation to the policy measures of September 1985 was very quick: the free market exchange rate appreciated immediately after the introduction of the stabilization package, whereas prices stabilized just one week later. This responsiveness, however, worked in the opposite direction as well. For example, the relaxation of fiscal control in December 1985 and early 1986, and other developments, caused a rapid upsurge in inflation, bringing it close to the hyperinflation levels. Exchange rate stabilization and tight fiscal control reestablished price stability almost immediately (see table 2). As we shall see, one does not find rapid reaction of inflation to equivalent policy measures in other orthodox stabilizations in Latin America.

An important implication of lack of inertia is the ability to stop inflation even in the presence of a balance of payments crisis. Dealing with such a crisis in an environment without price rigidities requires a change in relative prices which can in principle be achieved simultaneously with halting inflation. In Bolivia the collapse of the tin market in October 1985 prompted massive devaluations which led to only a temporary rise in inflation (table 2), as one would expect from an inertialess system. In chronic-inflation countries, however, the big devaluations which accompany these crises tend to increase inflation in the short as well as in the long term.

The Need for Credibility

The importance of credibility in stabilization programs is recognized by most economists, and we shall argue that it is much easier to establish the required credibility in dealing with hyperinflationary outbursts than with chronic inflations. Credibility is not limited to expectations about the persistance of fiscal discipline, but relates also to the government's resolve to use an appropriate nominal anchor—such as the money supply or the exchange rate—to determine the domestic price level. If nominal policies are not credible, domestic prices and wages will continue to rise on the basis of expectations of accommodating policies by the government. The expectations (and the consequent continuation of price increases) may be self-fulfilling: the government may be forced to increase the money supply in order to avoid growth in unemployment or to devalue in order to avoid an appreciation of the real exchange rate.

Table 2. *Growth Rate of Nominal Variables, Bolivia*
(percent per month)

Month	*Year*	*Consumer price index*[a]	*Free market exchange rate*[a]	*Monetary base*[b]
September	1984	37.33	99.44	15.12
October		59.13	11.11	27.14
November		31.56	21.47	25.52
December		60.88	32.74	124.22
January	1985	68.76	197.84	36.63
February		182.77	93.25	39.50
March		24.94	−9.19	42.51
April		11.78	30.66	43.50
May		35.67	62.68	64.93
June		78.46	76.87	32.83
July		66.30	83.80	57.72
August		66.46	33.52	69.85
Beginning of stabilization program				
September		56.51	−8.02	46.07
October		−1.86	3.01	15.04
November		3.20	22.01	−0.36
December		16.80	25.55	48.39
January	1986	32.96	30.56	−10.35
February		7.95	−14.43	11.67
March		0.07	2.39	4.13
April		3.59	−1.76	8.57
May		0.97	1.88	10.53
June		4.26	−0.90	2.93
July		1.76	−0.69	6.91
August		0.66	0.06	−0.07
September		2.28	−0.52	9.06
October		0.58	0.57	9.19
November		−0.11	0.14	10.36
December		0.65	0.61	8.25

a. Month-to-month changes of monthly average levels.
b. End-of-month to end-of-month changes.
Source: Morales (1987a).

Did the Bolivian program enjoy greater credibility? Sachs (1986) argues convincingly that the program did not seem very credible from the point of view of sustainability in the light of the uncertain political setting. He claims, however, that long-run credibility in fiscal policies (of the type required by Sargent 1986) is not necessary for short-run stabilization as long as the exchange rate is stabilized. This is an example of a theory which claims that the need for credibility is smaller in hyperinflation, using implicitly the inertialess property of the system.

This thesis is quite obvious for an economy based only on tradables, given the law of one price. Inflation can be stopped immediately by fixing the exchange rate. Sustainability will be supported in the short run by the increase in international reserves resulting from the increase in the demand for money. If the budget is balanced, there will be no need to expand domestic credit, and the situation will be sustainable in the longer run as well. If a budget deficit

exists, increases in the money supply to finance the deficit will result in a loss in reserves up to the point where it will trigger a balance of payment crisis (see Krugman 1979).

The possibility of stopping hyperinflation through exchange rate stabilization can be extended to a model which includes nontradables and is based on agents with a long forward-looking view.[2] It is essential, however, that the system be free of inertial forces. This condition may be reasonably well satisfied in advanced stages of the hyperinflationary process, as we noted earlier. When inertia due to staggered contracts is not eliminated, as in the case of chronic-inflation countries, domestic prices will continue rising due to the influence of past contracts. Stabilization policies may be considered to be unsustainable, and this will be reflected in current contracts (as in Calvo 1983), causing continued inflation and a real appreciation.

This suggests that stabilization based on exchange rate stability is much less dependent on fiscal credibility under hyperinflationary conditions as compared with chronic-inflation processes. It must be stressed, however, that the foregoing argument refers only to fiscal credibility. One has still to explain the credibility in the persistence of exchange rate stabilization in the face of potential wage pushes based on expectations of continued accommodating devaluation.

Although Sachs's thesis seems quite convincing, most analysts of the Bolivian experiment tend to attribute to the fiscal adjustment not only longer-run stabilization but also the short-run success. In their view the exchange rate had a secondary role—its stabilization is a result of the drastic reduction in the fiscal deficit. A similar debate regarding the roles of fiscal and exchange rate policies for stopping hyperinflation has arisen in connection with the German hyperinflation of the 1920s (Dornbusch 1987).

An analysis which attributes successful anti-inflation programs to fiscal stabilization must also explain how the government's determination to stop monetary accommodation to inflation is made credible if the exchange rate stabilization is not binding. In the absence of this credibility, wage and price setters will continue the inflationary trend, expecting the central bank to accommodate. Why is it that in hyperinflation the fiscal adjustment is sufficient to generate the required credibility and put an immediate stop to inflation?

Factors Affecting Credibility

One factor which makes stabilization policies more credible under hyperinflation is that excessive seigniorage can be clearly identified as the cause of the inflationary acceleration. For this reason a policy which prevents the central bank from printing money to finance the deficit is a clear and credible solution.

2. This follows, for example, from Sidrauski-type models studied by Drazen and Helpman (1987), Calvo (1987), and Obstfeld (1985) when the exogenous real variables are constant over time. This point is explained in greater detail in Kiguel and Liviatan (1988).

The importance of recognizing the source of inflation and agreeing upon the response is what makes a quick stabilization possible.

This source of credibility is ordinarily not relevant for chronic-inflation processes where inflation often accelerates without any significant increase in seigniorage. This contrast between the inflationary processes is reflected in table 3. Whereas in Bolivia the acceleration in inflation was accompanied by drastic increases in the level of seigniorage, we find that in Brazil the level of seigniorage remained relatively constant in spite of a continuous rise in the rate of inflation. Argentina appears as an intermediate case.

A second factor affecting credibility of a stabilization program is the ability of the governments to offset some of the real effects of inflation acceleration (for example, by various forms of indexation). Chronic-inflation countries tend to develop sophisticated defense mechanisms which allow them to adapt to inflation. These mechanisms are all but absent in hyperinflation countries (see Morales 1987a for the case of Bolivia).

The ability of chronic-inflation countries to adjust to inflation is best re-

Table 3. *Inflation, Tax Revenues, and Seigniorage in Argentina, Bolivia, and Brazil*

Country	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*
Argentina							
Inflation (percent)[a]	159	101	104	165	344	627	672
Public sector revenues[b] (percentage of GDP)	29	31	32	28	29	31	32
Seigniorage (percentage of GDP)	5.9	4.8	3.5	7.8	8.6	7.1	6.5
Bolivia							
Inflation (percent)[a]	20	47	29	133	269	1,281	11,750
Revenues of central government[c] (percentage of GDP)	9.4	9.6	9.4	4.6	2.6	2.6	1.3
Seigniorage (percentage of GDP)	1.1	3.2	1.6	12.1	10.0	15.9	8.8
Brazil							
Inflation (percent)[a]	53	83	106	98	142	197	227
Total receipts of general government (percentage of GDP)[d]	28	28	31	34	32	30	33
Seigniorage (percentage of GDP)	3.3	2.0	2.0	2.1	2.0	2.7	2.7

Note: Inflation is annual average of CPI. Seigniorage is calculated as change during the year of base money divided by nominal GDP.

For Argentina, we used M1 instead of base money because this better approximates the concept of seigniorage net of interest paid on banks' reserves.

For Brazil, general government includes consolidated accounts of central government, states, and municipalities, as well as decentralized agencies of government. Years 1979 and 1980 are from an earlier series. The entries for the following three years in the latter series are 30, 31, 32.

a. From International Monetary Fund (various years).

b. From de Pablo (1987).

c. From Sachs (1986).

d. International Monetary Fund data.

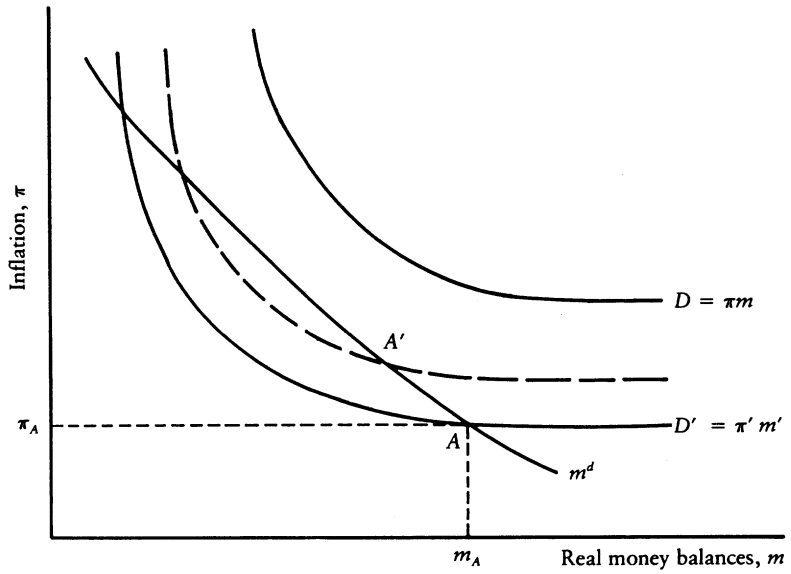
flected by the behavior of government revenues during inflationary accelerations. We have noted that a well-known feature of hyperinflationary processes is that the tax revenue base is eroded by inflation (the Olivera-Tanzi effect) thus exacerbating inflationary acceleration. Bolivia seems to have followed this pattern in the 1980s, whereas chronic-inflation countries have not. It can be seen in table 3 that as inflation began to accelerate in Bolivia, revenues (as a percentage of GDP) dropped from 9.4 to 1.3 percent. Note also that revenues were 2.6 percent in 1983 (with an annual rate of inflation of 269 percent), when the economy was not yet in a full hyperinflationary state.

This contrasts sharply with the chronic-inflation countries, which also experienced a rapid acceleration of inflation following the external shocks of the late 1970s and the debt crises of the 1980s. In Argentina inflation rose from around 100 percent in 1981 to around 600 percent in 1984, while public sector revenues dropped only temporarily in 1982 and 1983 (only by about 3 percent of GDP) and were restored in 1984. Similar robustness of revenues can be seen in Brazil as well as in other chronic-inflation countries.

The ability of chronic-inflation countries to avoid excessive seigniorage and their skill in adjusting their finances to inflation has also made it possible for them to avoid the slippage into hyperinflation of the Bolivian type. This resulted in making inflation sustainable, at least for the medium run, even if it reached a high plateau. In this environment the public tends to view disinflationary programs as postponable, thus reducing their credibility. This contrasts with the explosive nature of hyperinflation which, after some stage, seems to be unsustainable even in the short run. This contributes to the credibility of a feasible program—such as an end to money-financing of the fiscal deficit. Note also that because Bolivia was not traditionally a high-inflation country, programs to achieve price stability were more credible.

The distinction between a high sustainable level of inflation and a runaway hyperinflation is crucial for our foregoing argument. Because this point is not always well understood, we may clarify the issue by means of figure 1. Consider a situation in which the economy has a budget deficit that has to be financed through money creation. In a stationary equilibrium the deficit will be equal to the revenue obtained from the inflation tax—that revenue is equal to the monetary base times the inflation rate. This is shown in figure 1, where D and D' ($D > D'$) represent two possible budget deficits, and where πm and $\pi' m'$ are the corresponding revenues from inflation. These schedules are downward sloping because in order to finance a given budget deficit a reduction in inflation (the tax rate) requires an increase in real money balances (the tax base). The m^d curve represents the money demand equation. It is downward sloping because an increase in the rate of inflation raises the opportunity cost of holding money and reduces money demand. The stationary rate of inflation and the stock of real money balances will be determined by the intersection of the two curves. At a stable equilibrium point such as A, the economy will have a constant rate of inflation, π_A and will hold real money balances, m_A.

Figure 1. *Inflationary Financing of Budgetary Deficits*



Key: D, D' = budget deficits; m^d = demand for money.

As the deficit grows, however, the deficit schedule shifts up. When it reaches a position above m^d, people are not willing to hold large enough quantities of money to finance the deficit at any combination of inflation and real money balances so that there is no stationary solution and the economy must embark on a hyperinflationary process in which inflation is increasing constantly. The government can extract resources from the private sector through *increases* in inflation as a result of rigidities in the adjustment of the money market or when expectations do not fully and instantaneously adjust to actual inflation (see Kiguel, forthcoming). This type of development is consistent with the data on inflationary acceleration and with the unsustainable levels of Bolivian seigniorage since 1982 that are reported in table 1.

This interpretation of the Bolivian hyperinflation stands in contrast with that of Kharas and Pinto (1987) and Sanginés Krause (1987).[3] Although these authors explain the higher inflation rates as resulting from higher seigniorage levels, they view the acceleration of inflation as just a transitory phase in the adjustment to a new higher *stationary* inflation level. In figure 1, this would correspond to a movement from A to A', which would become a new long-run stable equilibrium at a higher level of seigniorage. This interpretation, however, does not account for the fact (as shown in table 1) that inflation was accelerating over the years at an increasing rate rather than converging.

3. Sachs (1986) is not clear on this point. In private correspondence he fully agrees with our view.

II. Orthodox Stabilization in Chronic-Inflation Countries

Stabilization strategies implemented in chronic-inflation countries face quite different circumstances and constraints than those in hyperinflation economies. We find it useful to organize the analysis of chronic inflation around three types of stabilization programs: (1) those based primarily on fiscal adjustment; and those based on a combination of fiscal adjustment with a nominal anchor which may take the form of (2) monetary or (3) exchange rate policy.

Fiscal Deficits and Monetary Accommodation

We begin by delineating the distinctions between fiscal and monetary aspects of stabilization and their relation to the concepts of inertia and monetary accommodation. The related empirical concepts are primary, quasi-fiscal, and operational deficits.

We use a theoretical example adopted from Calvo and Fernandez (1983). Consider an inflation tax model where the primary budget deficit, D, is defined as the difference between real expenditures and taxes (that is, total expenditure excluding interest payments, minus taxes). The size of D is determined by the fiscal authority at the treasury, whereas monetary authorities in the central bank are in charge of financing this deficit and conducting a banking policy.

The central bank supplies the treasury with base money to cover D and pays a nominal interest rate (i_r) on private bank reserves. Assume for simplicity that money consists only of bank deposits (no currency) which earn a nominal rate, i_d. Thus bank reserves are identical to base money.

If i denotes the nominal market interest rate on commercial loans and a is the constant reserve ratio, then in a competitive banking system the interest rate on deposits is the weighted sum of interest rates on commercial loans and on bank reserves:

$$i_d = i(1 - a) + i_r a \tag{1}$$

Given h as the real value of the monetary base and L as the demand for real bank deposits ("money"), we have

$$h = aL \tag{2}$$

We assume that L depends negatively on the differential between commercial loan rates and the rate on bank deposits, $i - i_d$, which is the opportunity cost of holding money, and, by equation 1, equals $a(i - i_r)$. Assuming further that i equals the inflation rate, π, we may write the demand for deposits as:

$$L = L(x),\ x = a(\pi - i_r) \tag{3}$$

The budget deficit equation in the steady state is given by $D = (\pi - i_r)h$, which indicates that the seigniorage, πh, is used to finance the fiscal deficit and

the interest on reserves. Substituting equations 2 and 3 into the fiscal deficit equation, we may write

$$D = xL(x);\ x = a(\pi - i_r) \tag{4}$$

which shows that a given D determines x but not π. The inflation rate, π, will vary inversely with the reserve ratio, a, (if $\pi > i_r$) and directly with the interest rate on reserves, i_r.

This example brings out some important conclusions. First, a given budget deficit is consistent with many inflation rates. Second, a zero budget deficit is consistent with any inflation level if $i_r = \pi$. Thus if the central bank returns all the seigniorage to the public in the form of interest on bank reserves (which implies $\pi = i_d$), then inflation is indeterminate.[4]

These findings about the relation of the deficit to inflation rates provoke questions about the emphasis that the Sargent-type school of rational expectations puts on eliminating the deficit as an immediate cure for inflation. The answer would probably be that when $D = 0$, the "natural" solution for $x = 0$ is $x = i_r = \pi = 0$ rather than $i_r = \pi > 0$. This can be rationalized by the presumption that because $D = 0$ there is no reason for agents to expect $\pi > 0$.

This would not be the case at all, however, in situations where agents have deep-rooted expectations of continued inflation. The source of the inflationary expectations may vary. It could result from a backward-looking approach, from a basic pessimism about the government's ability to control inflation, or from the public's expectations that the government intends to use inflation to erode real wages and increase employment (as in Barro and Gordon 1983). Whatever the cause, if the central bank does not fully accommodate the growth of the money supply in the face of rises in prices and wages, this could lead to a recession. The central bank may decide to accommodate inflationary expectations rather than risk this outcome.

A balanced fiscal budget and absence of monetary accommodation, therefore, are conceptually different. There is no logical requirement that if the deficit is zero then inflation must be zero also. Thus $D = 0$ is not a sufficient condition for $\pi = 0$—it is, however, a necessary one. We can see this from a rearrangement of equations 3 and 4:

$$\pi = \frac{D}{aL(x)} + i_r$$

One may consider the interest paid on the monetary base ($i_r h$) as losses of the central bank or a quasi-fiscal deficit. The elimination of fiscal plus

4. When we take account of currency, the indeterminateness of π with $D = 0$ requires, in addition, that the central bank returns to the public the amount of the inflation tax on currency. The latter component will be small when inflation is high, because real currency holdings will fall relative to interest-bearing deposits.

quasi-fiscal deficits implies an end to inflation in the long run because $D + i,h = \pi h$. It must be realized, however, that this involves not only the requirement that the government live within its fiscal constraint but also it should be willing to stop accommodating stubborn inflationary expectations.

Finally, to clarify the concept of "operational deficit," we introduce the possibility of bond finance. By ignoring the private banking system we formulate a budget equation in which the deficit plus nominal interest payments on the stock of bonds outstanding are financed by seigniorage and the sale of new government bonds:

$$D + ib = \frac{\dot{H}}{P} + \frac{\dot{B}}{P}$$

where $i = r + \pi$ (r being the real interest rate), $b = B/P$, which is the real stock of government bonds (B = nominal bonds, P = price level), and $\dot{H}$ and $\dot{B}$ are issues of new money and new bonds. In the steady state, the stock of real bonds (b) is constant so that the rate of change of new bond issuance is equal to the rate of change in inflation: $\dot{B}/B = \pi$. Then if b is constant across steady states and D is constant, it is the "operational deficit," defined as $D^o = D + rb = \pi h$, which determines π (that is, the inflation tax finances the primary deficit plus real interest payments), whereas $D + ib = D^o + \pi b$ represents the "public sector borrowing requirements," which are determined indirectly by D^o.

Thus, in this model the cause of long-term inflation is the operational deficit while borrowing requirements are the effect. Note also that if inflation increases because of other causes (such as import prices), then borrowing requirements will be inflated.[5] It is for these reasons that the operational deficit is the more appropriate concept for economic analysis.

Examples of Fiscal-based Stabilization

Mexican Stabilization of 1983. This program took place against a background of a swelling public sector deficit (with an operational deficit of 10 percent of GDP in 1981), a record current account deficit (reaching 6.7 percent of GDP in 1981 compared with 2–3 percent in 1977–79), a tremendous increase in the public debt (from 18 to 39 percent of GDP between 1980 and 1982), and uncontrolled increases in nominal wages.[6]

In 1982, the last year of the Lopez Portillo administration, the government responded with the announcement of a moderate (3 percent) cut in the federal budget and a massive devaluation of 70 percent in February (followed by 45

5. With monetary accommodation by the central bank (as in the previous model), the operational deficit may remain constant.

6. This part is based on an excellent account by Diaz (1987) and International Monetary Fund and World Bank data.

Table 4. *Annual Macroeconomic Indicators, Mexico*

Indicator	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*[a]
Growth rates							
GDP per capita[b]	5.4	5.1	−3.1	−7.6	0.8	−0.1	−1.4
Consumption per capita[b]	4.9	4.8	−1.4	−9.1	0.2	−0.8	−7.7
GDP deflator	29	27	61	92	62	54	78
Nominal devaluation[c]	−4	−1	114	96	25	40	143
Real industrial wages	−4.4	1.2	1.9	−26.0	2.9	1.8	−19.2
Imports (real)	31.9	20.3	−37.0	−41.7	19.8	11.8	−18.0
Operational deficit/GDP (percent)	5.2	10.0	6.5	2.4	2.1	2.1	2.7
Primary deficit/GDP (percent)	n.a.	9.4	5.1	−5.1	−5.0	−3.3	n.a.
Real effective exchange rate[d]	100	91	134	138	114	113	152
Current account balance (billions of U.S. dollars)	−8.1	−13.8	−6.2	5.4	4.1	1.2	−1.3

n.a. Not available.
a. Preliminary figures.
b. At constant prices.
c. Effective exchange rate.
d. Index.
Source: World Bank data.

percent in August). This sequence of policies led to an acceleration of inflation from a rate of around 20–30 percent in 1978–81 to about 100 percent in 1982.[7]

The drastic adjustment began in 1983 under the new administration of Miguel de la Madrid, who implemented a cut in the operational budget deficit from a level of 10 percent of GDP in 1981 and 6.5 percent in 1982 to 2.1 percent in 1983–85 (see table 4). Note also the even larger reduction in the primary deficit (that excludes interest payments altogether), which fell by 14 percent of GDP between 1981 and 1983.

As a result of the shock treatment, real GDP fell by 5 percent in 1983. Despite the stringent fiscal measures and the general recessionary shock, inflation (measured by the GDP deflator) remained at an annual rate of around 90 percent in 1983, falling to around 60 percent in 1984–85 and then rising to nearly 80 percent in 1986. Inflation rose to a new plateau following the elimination of the operational budget deficit. The program was successful, however, in alleviating the current account deficit, which moved from 6.7 percent of GDP to a surplus of 3.8 percent in 1983 and 2.5 percent in 1984.

Brazil 1983–84. Since 1979 Brazil also had to deal with a deteriorating current account deficit (which reached a record level of 9 percent of GDP in 1982) and a mounting external debt. The inflationary situation, however,

7. Given such an unexpected jump in inflation, the statistical ex-post real interest rate may become negative, so that a spurious negative relation with the operational deficit is possible if the debt is not indexed. This seems to have biased downward, to some extent, the operational deficit for Mexico for 1982.

Table 5. *Annual Macroeconomic Indicators, Brazil*

Indicator	*1982*	*1983*	*1984*	*1985*
Growth rates				
GDP[a]	0.9	−2.5	5.7	8.3
Consumption[a]	3.0	−3.0	2.8	7.1
Imports (constant prices)	−6.0	−17.4	−2.9	—
GDP deflator	93	152	211	235
Nominal devaluation[b]	93	221	220	235
Real industrial wages[c]	7.5	−8.6	−1.4	6.3
Operational deficit/GDP (percent)	8.3	4.8	2.7	4.3
Real effective exchange rate[d]	100	123	123	128
Current account balance (billions of U.S. dollars)	−16.3	−6.8	—	−0.2

— Negligible.
a. At constant prices.
b. Against dollar, annual averages.
c. In São Paulo.
d. Index.
Source: International Monetary Fund data.

started to deteriorate much earlier than in Mexico. After a plateau rate of about 40 percent annual inflation in 1974–78, inflation accelerated to around 75–85 percent in 1979–80 and to 100 percent in 1981–82. The operational budget deficit (defined as public sector borrowing requirements net of "monetary correction") increased, reaching 8 percent of GDP in 1982 (table 5).

In order to deal with these difficulties, in 1983–84 Brazil undertook a stabilization program supported by an extended agreement with the International Monetary Fund. The reduction in the budget deficit was the key element in the program, which was intended to halve the current account deficit and reduce the inflation rate to 40 percent in 1984 and to 20 percent (annually) in 1985.

The results were quite similar to the Mexican experience. The program was successful in reducing the operational fiscal deficit, which fell from 8.3 percent of GDP in 1982 to 2.7 percent in 1984, a drastic change by any standard. The current account deficit dropped dramatically, from 8.9 percent of GDP in 1982 to 3.7 percent in 1983, and turned into a small surplus in 1984. Annual inflation doubled, rising from around 100 percent in 1981–82 to 200 percent in 1984 and 1985.[8]

The foregoing examples demonstrate that a deep cut in or elimination of the operational budget deficit is not a sufficient condition for stopping inflation. One may speculate whether a persistent policy of this type could reduce inflation gradually in the long run. The fact that inflation seems to have risen to a new plateau does not support this supposition. Recall that there is no theoretical necessity for inflation to be influenced by a budget cut which is not accompanied by nominal policies. In any event, it is quite clear that the reaction of

8. Inflation fell temporarily in 1986 due to price controls implemented in the Cruzado plan.

inflation to a sharp budget cut in these cases was entirely different from the Bolivian case.

Government emphasis on the external imbalance seems to have led to policies which caused inflation to respond inversely to the change in the budget deficit. Because the main objective of these programs was to deal with the external crisis, not only were the authorities willing to accept higher inflation, but the acceleration in inflation served as a tool to reduce real wages and improve the current account balance.[9]

Tables 4 and 5 show that both countries stepped up the rate of nominal devaluation dramatically, which led to an outburst of inflation and significantly eroded the real wage, especially in Mexico. This in turn improved the current account by increasing competitiveness and reducing aggregate private consumption. This is a typical case in which the acceleration in inflation was not related to a fiscal objective. The increase in inflation, which had its origin in the faster devaluation of the exchange rate, was an important element in the adjustment process.

But should a one-time reduction in the real wage be associated with a long-term increase in the level of inflation (and devaluation) rather than with a one-time jump in prices? When nominal wages are fully adjusted according to past inflation,[10] whether through formal indexation (as in Brazil) or an informal procedure (as in Mexico), a one-time change in the price level will have only a temporary effect on real wages. An increase in the *rate* of inflation will reduce wages permanently, however, through an acceleration in the deterioration of the purchasing power of wages over the period.

This follows from the fact that with fixed intervals of wage adjustment an increase in inflation will erode the real value of wages during the intervals (for a more thorough discussion, see Lopez and Bacha 1983). If the frequency of wage adjustment increases, as is often the case following a big nominal shock, then a given reduction in the real wage will require an even larger increase in inflation. In Mexico the frequency of wage adjustment increased from twice a year in 1982–85 to three and later to four times a year. (See also Ablin 1985 for an application of this mechanism to the Israeli experience.)

What lessons can be drawn from these experiences for future stabilization programs? The main lesson is that it is essential that stabilization programs supplement fiscal measures with appropriate nominal anchors. This is not an easy task, as the following discussion will make amply clear. It is made even more difficult when balance of payments difficulties exist. Under a given scheme

9. This is an erosion of the real wage in terms of consumables, which is the relevant concept from the point of view of affecting absorption—declines in the real wage in terms of tradables is the relevant concept from the point of view of competitiveness. It is assumed that the contractionary fiscal policy which leads to a reduction in the trade deficit requires, in equilibrium, a reduction in *both* types of real wages, jointly with a real depreciation of the exchange rate.

10. In Mexico the wage compensation lagged behind actual inflation in 1982–83 but approached full compensation later.

of wage indexation, a reduction in inflation (implied by using nominal anchors) will raise the real wage, which will not be consistent with eliminating the external disequilibrium.

Given external imbalances, the stabilization program requires different wage-setting rules, so that a reduction in the real wage can be achieved jointly with controlling inflation. This is what Chile did in 1982 by deindexing wages and eliminating the "wage floor" established by 1979 legislation. In other political environments, however, such policies may not be feasible except within the framework of an incomes-policy-supported stabilization program.

The Fiscal-Monetary Combination

We have just noted that fiscal policy by itself cannot provide the nominal anchor which is needed for stabilization. We also know that the central bank could eventually bring about price stability if it were to discontinue the accommodation of inflation through the quasi-fiscal channel. It is argued, however, that such a step would cause excessive unemployment when there are strong inertial forces in the inflationary process.

The Chilean Experiment. The Chilean stabilization of 1974–75 (after the overthrow of the Allende regime) is among the few cases in which a government applied fairly persistent monetary contraction in the face of accelerating inflation. The monetary crunch was part of a comprehensive stabilization program which included a drastic cut in the budget deficit—from 25 percent of GDP in 1973 to 10.5 percent in 1974 to 2.6 percent in 1975 (see table 6). It is because these policies were followed in a persistent and decisive manner by a tough military regime which embraced a free market philosophy that this program stands out as a classical orthodox stabilization. The Chilean stabilization seems therefore to provide one of those rare cases of a social experiment where we can test the efficiency of the orthodox fiscal-monetary package in chronic-inflation countries.

The results of this and related experiments in the Southern Cone are documented in many studies. Among the more recent are the contributions of Foxley (1983), Corbo (1983), Ramos (1986), and Edwards and Edwards (1987), on which we draw heavily. The results of the initial fiscal-monetary phase of the Chilean experiment in which the exchange rate policy was basically to maintain purchasing power parity, were disappointing from the traditional monetarist point of view. During this phase (September 1973 to June 1976) the danger of hyperinflation was averted, but inflation, which reached 500 percent in 1973, had not fallen below 250 percent (annualized) by the end of this period. Unemployment rose dramatically, from 4.6 percent in 1973 to 16.8 percent in 1975, and real GNP fell 14.4 percent in 1975 (see table 6).

These results should be very disturbing for traditional monetarists. The sharp cut in the budget deficit cannot be denied. But some doubts were raised about the severity of the monetary contraction, for the nominal money supply continued to rise at high rates (Harberger 1981). The relevant question, however, is

Table 6. *Annual Macroeconomic Indicators, Chile*

Indicator	*1971*	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*
Percentages													
Per capita GNP growth rate	7.1	−2.9	−7.1	−0.7	−14.4	1.8	8.0	6.4	6.5	6.0	3.9	−15.7	−2.4
Unemployment rate	5.7	3.7	4.6	9.2	16.8	19.4	18.6	17.9	17.7	17.4	15.6	28.2	24.5
Inflation rate[a]	26.7	108.3	441.0	497.8	379.2	232.8	113.8	50.0	33.4	35.1	19.7	9.9	27.3
Nominal devaluation			455.0	649.5	490.3	165.8	64.9	47.0	17.7	4.7	0.0	30.5	54.9
M2/GNP[b]	17.0	17.5	12.9	6.4	7.1	7.6	10.5	12.5	14.6	16.2	19.6	31.9	27.3
Public sector surplus/GNP	−10.7	−13.0	−24.7	−10.5	−2.6	−2.3	−1.8	−0.8	1.7	3.1	1.7	−2.3	−3.8
Current account surplus/exports	−17.8	−48.1	−19.7	12.9	−27.1	5.4	−21.8	−37.8	−26.1	−33.9	−88.4	−48.6	−26.6
Indexes													
Real wage	119.3	108.2	80.0[c]	64.8	62.1	63.0	71.1	75.7	82.0	89.4	97.5	97.1	86.8
Real effective exchange rate[d]	91.9	96.4	107.2	93.5	100.2	87.1	84.4	97.7	87.4	75.1	67.4	78.9	83.5
Terms of trade	80.6	75.5	84.7	88.3	55.4	59.3	54.1	48.6	54.7	51.6	44.6	39.8	40.7

a. Variations in the consumer price index.
b. M2 = currency plus demand, savings, and time deposits.
c. January–August.
d. Exchange rate variations deflated by the difference between external and internal wholesale price index.
Source: Based on Ramos (1986).

whether monetary growth was contractionary relative to the force of inflationary inertia.

Table 6 shows that the ratio of M2 to GNP fell in the 1974–76 period and remained at the much lower levels while inflation fell gradually. Because a decline in inflation leads to an increase in demand for money, this constitutes indirect evidence of contractionary monetary policy.

Despite the monetary crunch and the reduction in the budget deficit, inflation stabilized in 1974 at around 45 percent per quarter, which is an indication of considerable price rigidity. The continued rigidity of inflation in 1975 is often attributed to the sharp fall in copper prices at the end of 1974, which led to large devaluations at the beginning of 1975.

It should be reemphasized that in conjunction with the devaluations, the government undertook sharp reductions in the fiscal deficit, which in 1975 included a cut of 27 percent in real government expenditures (Foxley 1983, p. 55). Because the devaluation was supported by a restrictive fiscal policy and a tight monetary stance during 1975, (Foxley 1983, pp. 31–33) in principle there was no reason for the devaluation to impede the decline in inflation. The persistence of inflation during this time indicates that there were strong inertial forces at work. The results of this case stand out in sharp contrast with the Bolivian experiment, where in spite of the severe external shock during the stabilization, control over inflation was reestablished very rapidly.

It is because of dissatisfaction with the slow pace of price adjustment under the fiscal-monetary package that Southern Cone countries switched in the second part of the 1970s to exchange-rate-based stabilization (Ramos 1986).

Exchange-Rate-Based Stabilization

An exchange-rate-based stabilization program is designed to reduce inflation by using fiscal adjustment as the main real policy variable and the exchange rate as the main nominal anchor. This does not mean necessarily that the exchange rate is to be fixed. A low crawling peg or a gradually reduced rate of devaluation in the "*tablita*" fashion will also provide a nominal anchor as long as it is determined as an exogenous policy parameter.

Fiscal support for an exchange-rate-based stabilization is essential. This is especially the case because money tends to become endogenous, depending on the degree of capital mobility. The fixed exchange rate, however, can be maintained for a while, reducing inflation even without fiscal support and inducing capital inflows due to the increase in the demand for money. The initial capital inflows and the increase in international reserves create a deceptive impression of success. When the exchange rate is fixed without the fiscal support, however, as we mentioned in section I, there would later be a balance of payments crisis.

The presence of inertial forces in wage and price setting as well as pessimistic expectations (on the basis of past experience) constitute another source of difficulties for exchange-rate-based stabilizations (see Kiguel and Liviatan 1988).

We may classify failures of exchange-rate-based stabilizations as, first, those caused primarily by inappropriate fiscal policies and, second, those caused mainly by price rigidities and credibility problems (which are interrelated).

Lessons from Argentina's Stabilizations. Argentina's exchange-rate-based stabilizations over the past thirty years represent failures due essentially to lack of persistence in fiscal discipline. In this section we consider three major Argentinian stabilization programs (described more fully in Kiguel and Liviatan 1988), which include the Frondizi's stabilization of 1959–62, the Krieger-Vasena stabilization of 1967–70, and the Martinez de Hoz *tablita* policy 1979–81.[11]

Figure 2 shows that one common feature of all three stabilizations is the U-shaped pattern of the budget deficit. There is always a drastic reduction in the deficits at the beginning of the program, and the fiscal discipline remains in effect for a limited period of time. At a later stage, however, the budget deficit returns to (if not exceeds) the levels prevailing before the plan. The reduction in the rate of devaluation is the dominating force in pulling down inflation. This is seen clearly in figure 2C: the deficit started rising in 1978 while inflation continued to be pulled down by the declining rate of devaluation. But this policy is always abandoned with (or after) the rise in the fiscal deficit. It seems hard to dispute the conclusion that in Argentina the basic cause of the failure of stabilization programs is the inability to persist with the contraction of the fiscal deficit. This is the main lesson from Argentina's history of stabilizing inflation.

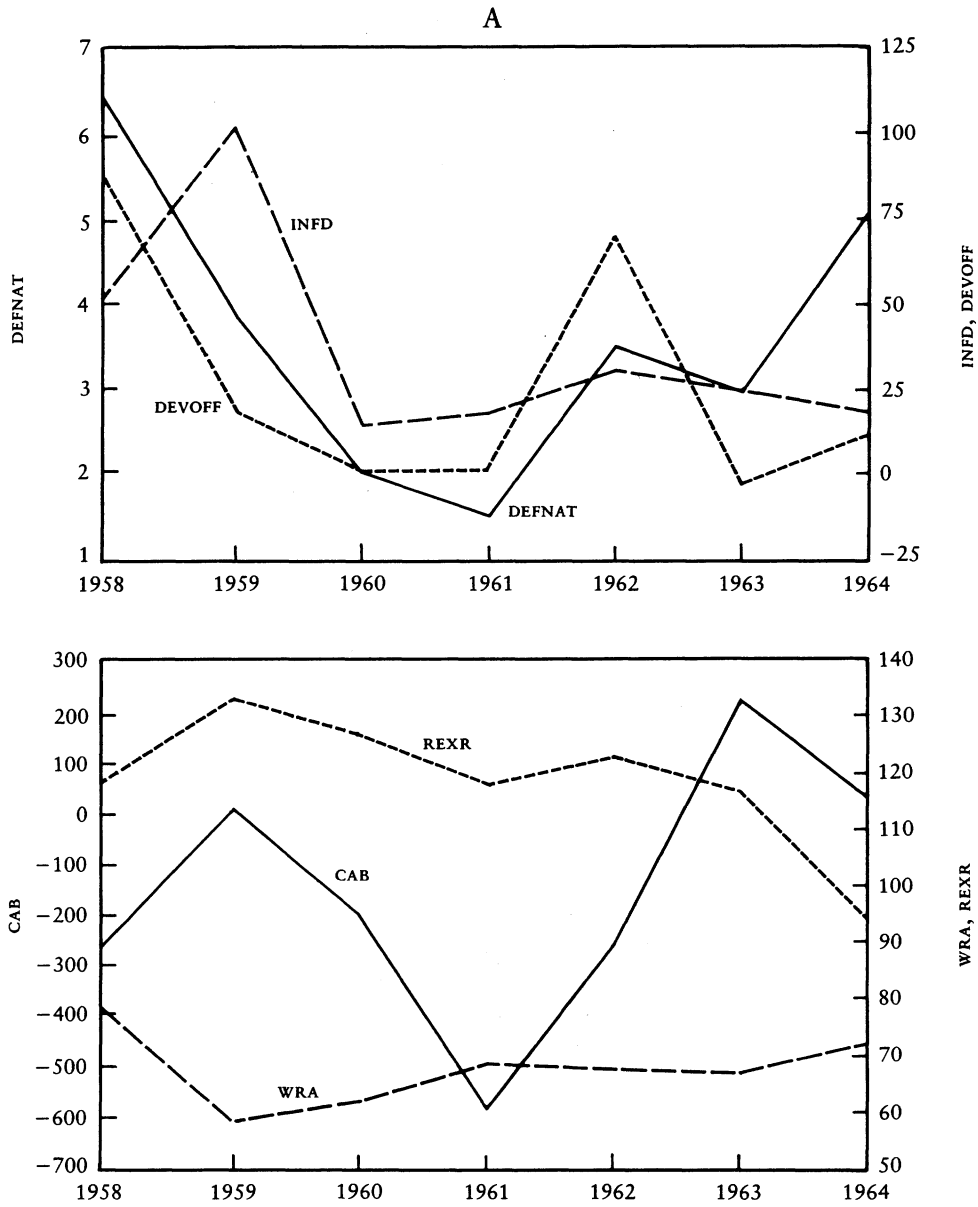
Another feature of the programs is that despite the cut in the budget deficit the current account deteriorated almost continuously from the beginning of each exchange rate stabilization, accompanied by a reduction in the real exchange rate and an increase in real wages. The current account fell to unsustainable negative values (see lower panels of figure 2).

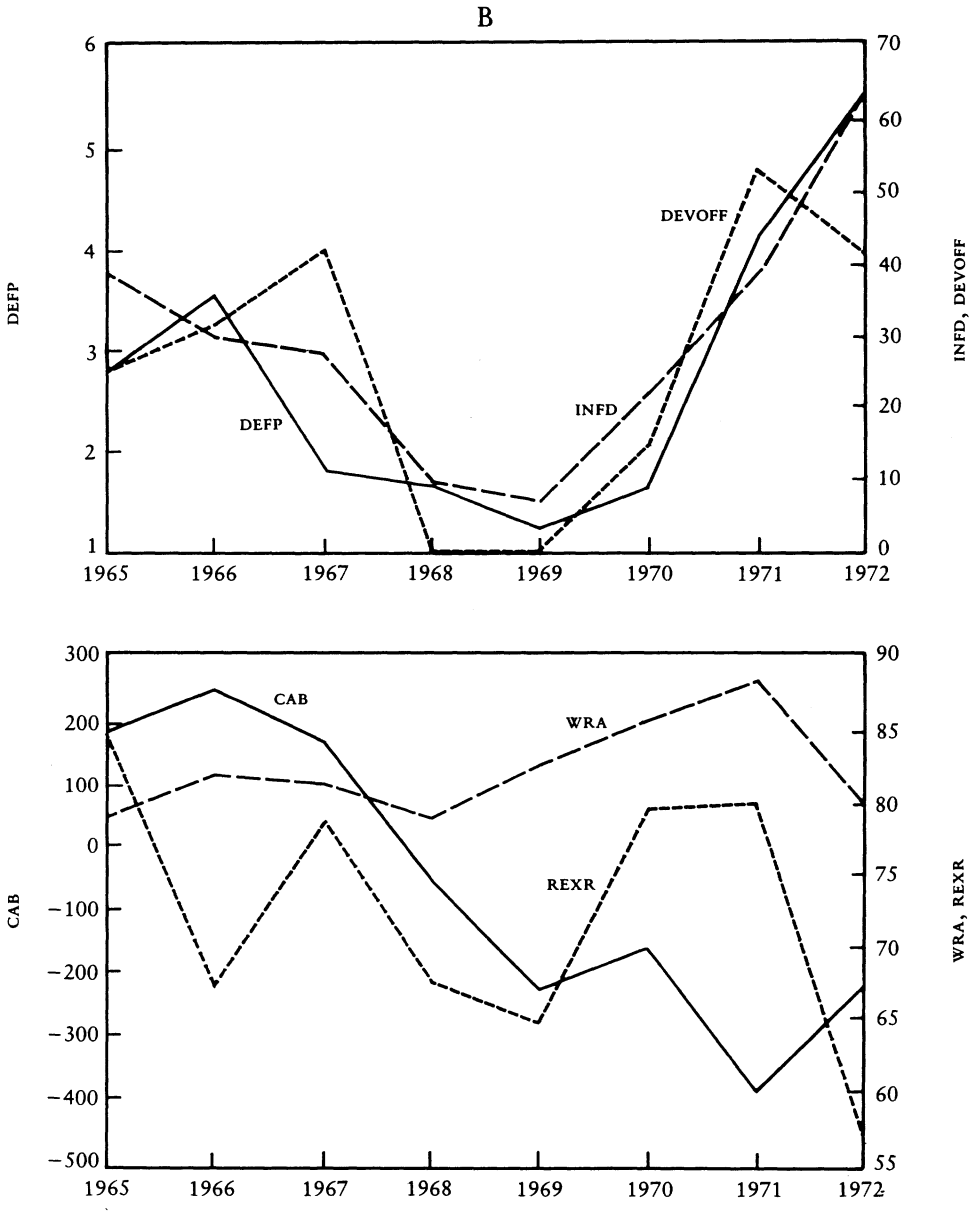
A possible explanation for the current account decline is the lack of credibility in the persistence of fiscal policies, which leads to expectations of future resumption of devaluations. According to recent theoretical studies (as in Calvo 1987; and Obstfeld 1985), the increase in real balances during the stabilization period will induce an increase in consumer spending if ordinary consumption and consumption of liquidity services are complements. In addition, expected future devaluations and quantitative restrictions on imports stimulate the advance of the purchase time of durable goods (Dornbusch 1985). Lack of credibility can also be reflected in a sluggish reduction of domestic inflation relative to current devaluations, leading to a reduction in the domestic real interest rate (see Kiguel and Liviatan 1988).

These expansionary factors provide a possible explanation for the fact that in all four programs the deterioration in the current account (at least in the early stage) was associated with an upsurge in the level of economic activity following the initiation of exchange-rate stabilization.

11. The Krieger-Vasena program had "heterodox" elements, but nonetheless exhibited a behavior similar to the other, more orthodox, programs.

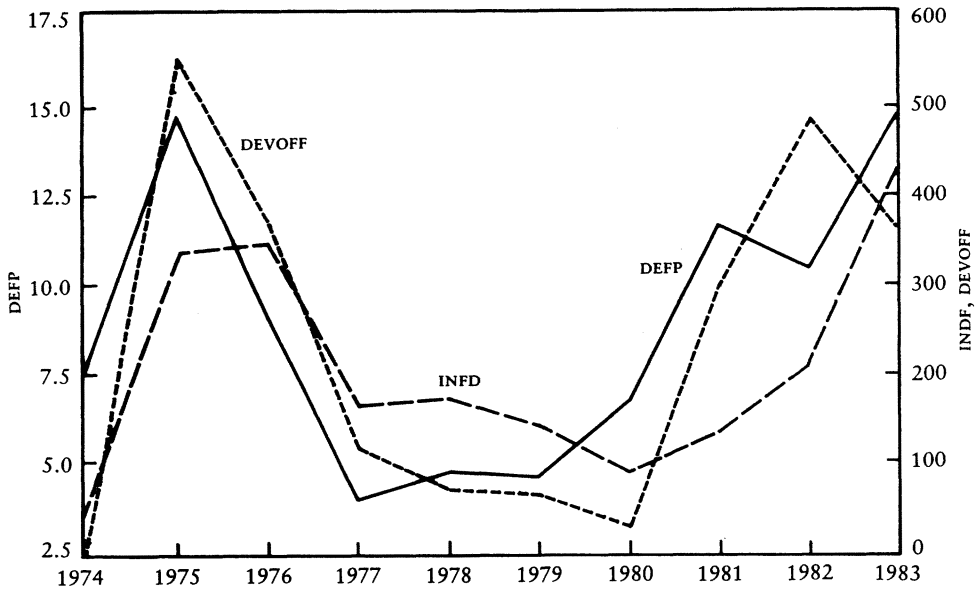
Figure 2. *Stabilization Programs in Argentina*

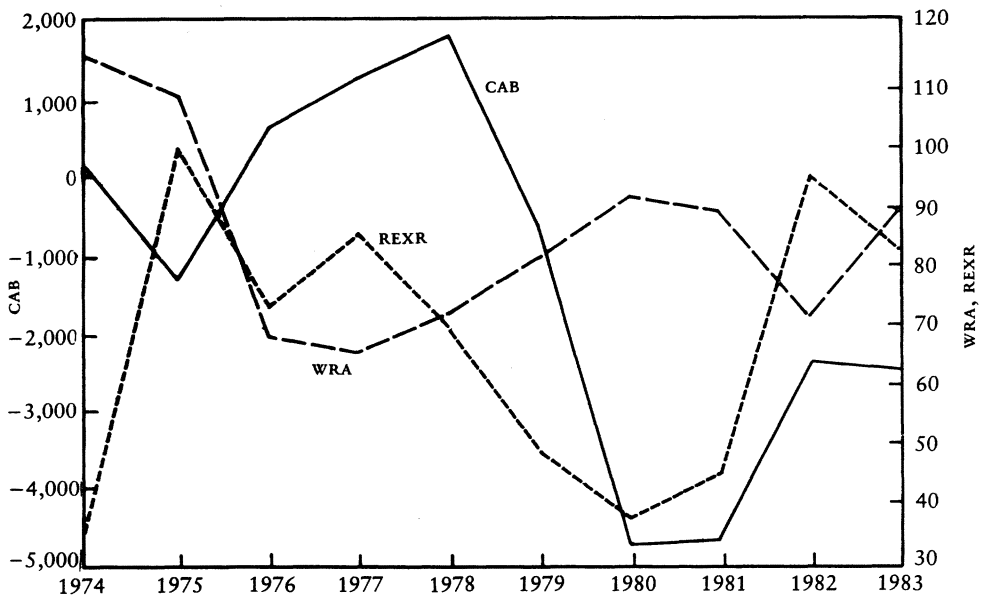




(Figure continues on the following page.)

C





Note: Deficits are calculated by the "above line" approach. The deficit does not include the quasi-fiscal deficit of the central bank. DEVOFF: devaluation rate in official exchange rate. REXR: real exchange rate index. CAB: current account balance, millions of U.S. dollars. WRA: real wage index. INFD: inflation rate, December to December, consumer price index. DEFP: public sector primary deficit, percentage of GDP without interest payments. DEFNAT: national government deficit, percentage of GDP.

Sources: real wage index: Fundación Mediterranea data. National government deficit (1958–61): CONADE (Consejo Nacional de Desarrollo) data. Public sector primary deficits: de Pablo and Martinez (1987). All others: World Bank data and International Monetary Fund (various years).

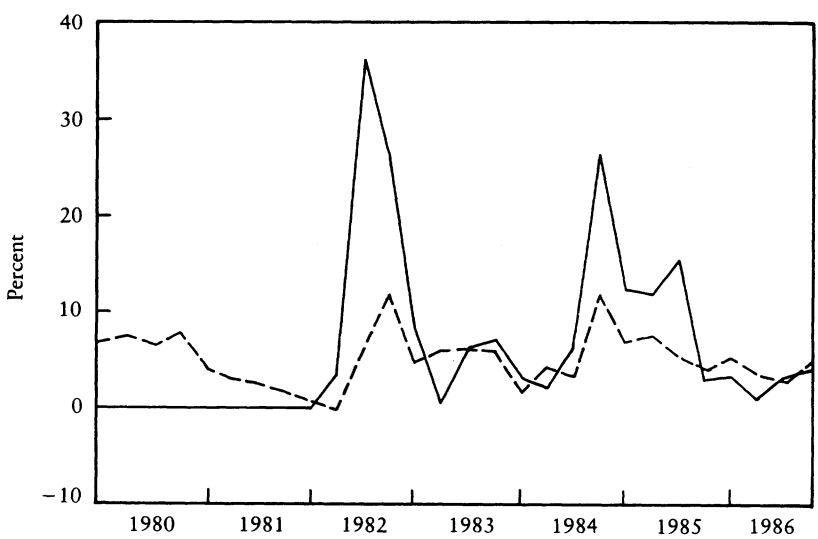
The Chilean Experiment. The Chilean experiment with exchange-rate-based stabilization differs radically from that of Argentina with respect to the role of fiscal policy. In Chile the use of the exchange rate as a stabilizing instrument began in mid-1976 (according to Ramos 1986), first in the form of some discrete revaluations then in a *tablita* announcing the future rate of devaluation, and eventually, in mid-1979, in the form of a fixed exchange rate. This policy was accompanied by a gradual reduction of tariffs.

As is seen in table 6 above, this policy had systematic fiscal support, with the small original public sector deficit turning gradually into a surplus in 1979–81. Thus the eventual failure to maintain exchange rate stabilization cannot be explained by the standard fiscal argument, along the lines of the Krugman model (1979).

Although the policy was eventually successful in bringing down inflation to international levels (see figure 3), it is noteworthy that this took five years, with the decisive period of pegging the exchange rate lasting three years. Under the exchange-rate stabilization strategy in Chile, inflation exhibited the same kind of stubbornness as in the fiscal-monetary phase.

The asynchronization between inflation and devaluation led to a real appreciation of over 30 percent with respect to 1975 and 20 percent with respect to 1976. Comparing 1981 with 1983, after the policy was abandoned, we estimate overvaluation at around 20 percent. During the adjustment period, the external position deteriorated significantly, causing a reversal of the policy and a severe crisis, which resulted in an astounding drop of 15.7 percent in real

Figure 3. *Devaluation and Inflation in Chile*



Key: ——— devaluation rate, quarterly basis; – – – inflation rate, quarterly basis.

Source: International Monetary Fund (various years).

GNP in 1982 (see Corbo 1985, Edwards and Edwards 1987, and Ramos 1986 for a complete account).

One of the explanations offered for the sluggish reaction of domestic prices to exchange rate stabilization in Chile was the existence of backward-looking wage indexation (Corbo 1985; Dornbusch 1985; and Edwards and Edwards 1987). This explains how the lagged convergence of domestic price inflation to the rate of devaluation leads to an overvaluation of the level of the real exchange rate.

An alternative explanation ties the real appreciation to the economic boom which was stimulated by the opening of the capital market in Chile (Corbo 1983; Edwards and Edwards 1987). Either theory can be used to explain a transitory overvaluation of the currency. Neither of them, however, can explain the inability of the system to generate a real devaluation at a later stage, which would have been consistent with a restoration of external and internal balance. Under a fixed exchange rate system a real devaluation requires a fall in domestic prices, which is precluded by downward rigidity in these prices. Price rigidities and the perception that eventually the situation must be corrected through a nominal devaluation of the exchange rate provide a plausible explanation for the persistence of the overvaluation of the domestic currency. We should point out, however, that the effect of price rigidities on the convergence process in principle can be offset by overshooting in the fiscal adjustment (see Kiguel and Liviatan 1988).

III. Concluding Remarks

So far we have discussed causes of the failure of stabilization in chronic-inflation countries. Is there any case of a success in this area from which we may draw some positive conclusions for orthodox stabilization programs?

It seems that the only example which we can use from the past fifteen years is Chile. In spite of the failures of individual programs and the severe errors committed in their course (on this see Edwards and Edwards 1987, Ramos 1986, and Foxley 1983) it must be pointed out that Chile was consistent in its fiscal and nominal policies. Fiscal discipline has been maintained up to this date, with the deficit rising temporarily only in connection with the 1982 recession. Similarly, nominal anchors were upheld consistently. In 1982 formal wage indexation was abolished, signaling a policy of nonaccommodation. Chile was also much more restrained than Argentina in its monetary policies following the financial crisis of the early 1980s.

It seems that as a result of the persistence of these policies Chile managed to overcome the symptoms of a chronic-inflation country. This can be inferred not merely from the current low level of inflation (less than 15 percent a year) but mainly by the speed in which it stabilized inflation after the big devaluation of 1982. The reaction to a balance of payments crisis has always been a most effective test for the extent of a country's chronic inflation, for such crises often

raise the inflation plateau. We have seen this happen in the cases of Brazil and Mexico in the 1980s. The reaction of Chile to a similar crisis is quite different, however, with inflation remaining low in spite of sharp devaluations.

The first lesson we may draw from the Chilean success is that curing a chronic inflation by orthodox methods can be successful but the treatment may take a decade or even more. During this period fiscal and nominal discipline must be maintained *persistently*. It is the persistence rather than the specific policies (types of exchange rate or wage policies) which is the key to the success.

The main drawbacks of this success are the low average growth rate and the severe crises which shook the Chilean economy along the way. This raises the question of whether the heterodox policies can offer a better alternative, which is the subject of a separate study.

References

Ablin, R. 1985. "Inflation as the Equilibrator of Real Wages in the Israeli Economy." Discussion Paper Series 85.05. Jerusalem: Bank of Israel.

Barro, Robert J., and Gordon David B. 1983. "A Positive Theory of Monetary Policy in a Natural Rate Model." *Journal of Political Economy*, 91: 589–610.

Calvo, Guillermo A. (1983) "Staggered Contracts and Exchange Rate Policy," in J. A. Frenkel, ed., *Exchange Rates and International Macroeconomics*, NBER.

———. 1987. "Balance of Payments Crises in a Cash-in-Advance Economy." *Journal of Money, Credit and Banking* 19: 19–32.

Calvo, Guillermo A., and Roque Fernandez. 1983. "Competitive Banks and the Inflation Tax." *Economic Letter* 12: 313–17.

Corbo, Vittorio. 1983. "Desarrollos Recientes en la Economia Chilena." *Cuadernos de Economia* 20: 5–20.

———. 1985. "Reforms and Macroeconomic Adjustment in Chile during 1974–84." *World Development* 13, no. 8: 893–916.

de Pablo, Juan Carlos, and Alfonso Martinez. 1987. "Argentina." World Bank Economics and Research Staff. Processed.

Diaz, Francisco Gil. 1987. "Macroeconomic Policies, Adjustment, and Growth in the Long Run (Mexico's Experience)." World Bank Economics and Research Staff. Processed.

Dornbusch, Rudiger. 1985. "Inflation, Exchange Rates, and Stabilization." National Bureau of Economic Research Working Paper 1739. New York. Processed.

———. 1987. "Lessons from the German Inflation Experience of the 1970s" in R. Dornbusch, S. Fischer, and J. Bossous, eds., *Essays in Honor of Franco Modigliani*, Cambridge, Mass.: MIT Press.

Drazen, Allan, and Elhanan Helpman. 1987. "Stabilization with Exchange Rate Management." *Quarterly Journal of Economics* (November): 835–55.

Edwards, Sebastian, and Alejandra Cox Edwards. 1987. *Monetarism and Liberalization: The Chilean Experiment*. Cambridge, Mass.: Ballinger.

Foxley, Alejandro. 1983. *Latin American Experiments in Neoconservative Economies*. Berkeley: University of California Press.

Harberger, Arnold. 1981. "Comment on Foxley." In W. Cline and S. Weintraub, eds., *Economic Stabilization in Developing Countries*, 226–28. Washington, D.C.: Brookings Institution.

International Monetary Fund. Various years. *International Financial Statistics*. Washington, D.C.: International Monetary Fund.

Kharas, Homi, and Brian Pinto. 1987. "Exchange Rate Rules, Black Market Premia, and Fiscal Deficits: The Bolivian Hyperinflation." World Bank Country Policy Department. Washington, D.C. Processed. Available upon written request to Kiguel and Liviatan.

Kiguel, Miguel A. Forthcoming. "Stability, Budget Deficits, and Monetary Dynamics of Hyperinflation." *Journal of Money Credit and Banking*.

Kiguel, Miguel A., and Nissan Liviatan. 1988. "Inflationary Rigidities and Orthodox Stabilization Policies: Lessons from Latin America." World Bank Planning, Policy, and Research Working Paper 4. Washington, D.C.

Krugman, Paul. 1979. "A Model of Balance of Payments Crises." *Journal of Money, Credit and Banking* 11: 311–25.

Lopez, Francisco, and Edmar Bacha. 1983. "Inflation, Growth and Wage Policy." *Journal of Development Economics* 13: 1–20.

Morales, Juan Antonio. 1987a. "Inflation and Stabilization in Bolivia." Universidad Catolica Boliviana. Processed. Available upon written request to Kiguel and Liviatan.

———. 1987b. "Precios, Salarios y Política Económica Durante la Alta Inflación Boliviana de 1982 a 1985." Universidad Catolica Boliviana. Processed. Available upon written request to Kiguel and Liviatan.

Obstfeld, Maurice. 1985. "The Capital Flows Problem Revisited: A Stylized Model of Southern Cone Disinflation." *Review of Economic Studies* 52: 605–26.

Pazos, Felipe. 1972. *Chronic Inflation in Latin America*. New York: Praeger.

Ramos, Joseph. 1986. *Neoconservative Economics in the Southern Cone of Latin America, 1973–1983*. Baltimore, Md.: Johns Hopkins University Press.

Sachs, Jeffrey. 1986. "The Bolivian Hyperinflation and Stabilization." National Bureau of Economic Research Working Paper 2073. New York. Processed.

Sanguinés Krause, Allen. 1987. "Ortodoxia o Heterodoxia? La Estabilization de la Economia Boliviana (1985–1986)." *Estudios Economicos*, numero extrordinario, October: 143–65.

Sargent, Thomas J. 1986. *Rational Expectations and Inflation*. New York: Harper & Row.

Taylor, John. 1979. "Staggered Wage Setting in a Macro Model." *American Economic Review Papers and Proceedings* 69: 108–13.