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Exchange-Rate-Based Stabilization in Argentina and Chile

A Fresh Look

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Exchange-rate-based stabilization programs supported by a sustained fiscal adjustment generally reduced long-term inflation. Success was not easy, however, because rigid adherence to the exchange rate rule many times resulted in strong overvaluation of the currency and balance-of-payments problems before stabilization was finally secured.



Summary findings

Exchange-rate-based stabilization is designed to reduce inflation by using the exchange rate as the main nominal anchor. This does not necessarily mean a fixed exchange rate. A crawling peg with a low rate of depreciation or a pre-announced gradual reduction in the rate of devaluation are alternative ways to use the exchange rate as a nominal anchor.

Exchange-rate-based stabilization (ERBS) has been widely used in the high-inflation economies of Latin America. Argentina, Chile, and Uruguay adopted a pre-announced crawling peg in the late 1970s (the famous *tablitas*) to bring down inflation, with mixed results. Israel and Mexico used the exchange rate as a nominal anchor, and inflation came down significantly. More recently, Argentina relied on a fixed and convertible exchange rate (the convertibility plan) to bring to an end four decades of inflation. So far, the outcomes have been good.

Kiguel and Liviatan find that ERBS have generally been more effective than money-based programs in bringing down inflation in the high inflation economies. But when inflation was reduced gradually, the process resulted in continuous (sometimes significant) real appreciation. Even fixing the exchange rate in Chile in 1979 did not reduce the underlying rate of inflation.

Argentina's recent convertibility plan has been more successful in bringing inflation down significantly than previous money-based programs (from monthly rates of about 10 percent to just 1.5 percent in a few months). One could argue that this is a special case, since Argentina was coming from full-blown hyperinflation, so Kiguel and Liviatan compared the fixed-exchange-rate periods in Argentina and Chile, and came up with useful insights.

Argentina's greater success cannot be explained only by fiscal arguments. When Chile fixed its exchange rate

in 1979, it was already enjoying a budget surplus. Argentina in 1991 was running a small deficit — smaller than in previous years, but a deficit.

Perhaps a better explanation is the government's perceived strong commitment to the fixed exchange rate and the potential large costs of reneging on it. The convertibility law made devaluation far more difficult (requiring congressional approval) and reduced the chances of discretionary devaluations. And the government tied its own hands further by legalizing the use of the dollar as unit of account and means of exchange. The costs of abandoning the fixed exchange rate were also perceived to be greater in Argentina. Devaluation was (and is) perceived as opening the door for renewed hyperinflation, a dreadful scenario. Chile did not face this threat so it was more difficult — and took longer — to convince the public that the government was determined to maintain the parity.

Governments tend to stick to the fixed exchange rate longer than is prudent. It is now apparent that some flexibility at an earlier stage would have reduced the costs of the final failure of the *tablitas*. Why do governments find it so difficult to make exchange-rate policy more flexible? Why do they wait for a balance of payments crisis rather than anticipate it? Perhaps because they fear the public will equate flexibility with failure and a loss of credibility.

Kiguel and Liviatan found, however — in the experiences of Israel and Mexico — that inflation does not necessarily go up when the exchange rate is made more flexible. Countries must balance the need to maintain an exchange rate rule (for credibility) with the need to keep external balance.

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Exchange Rate Based Stabilization in Argentina and Chile: A Fresh Look

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I. Using the Exchange Rate to Fight High Inflation

An exchange rate based stabilization is one designed to reduce inflation by using the exchange rate as the main nominal anchor. This does not mean necessarily a fixed exchange rate. A crawling peg with a low rate of depreciation or a preannounced gradual reduction in the rate of devaluation are alternative ways of using the exchange rate as a nominal anchor.

Exchange rate based stabilizations (ERBS) have been widely used in the high inflation economies of Latin America.¹ Argentina, Chile and Uruguay adopted a pre-announced crawling peg in the late seventies (the famous tablitas) to bring down inflation with mixed results. Likewise, Mexico and Israel used the exchange rate as a nominal anchor, but in these two episodes inflation came down significantly. More recently, Argentina relied on a fixed and convertible exchange rate (the convertibility plan), to bring to an end four decades of inflation. The outcomes, so far, have been good.

There are a number of reasons that make the exchange rate an appealing nominal anchor for disinflation in the high inflation economies. First, the fixed exchange rate played an important role historically as a way to maintain price stability. Throughout the period of the gold standard the fixed exchange rate was seen as the cornerstone to avoid inflation. Second, the fixed exchange rate is generally recognized as one of the critical components in those programs that stopped the hyperinflations in Europe after World War I, making it a good candidate for dealing with high inflation as well. Third, the exchange rate, being itself a price to which the prices of

¹ High inflation economies are those with average annual rates of inflation between 60% and 2,000% per year, for at least five years. They are in between moderate and hyperinflation.

tradeable goods are linked, was seen as having a more direct effect than money as an anchor for inflation.² Fourth, as a nominal target, the exchange rate is a more transparent nominal anchor than money. The public can readily monitor the evolution of the exchange rate as it is widely and frequently quoted. In contrast, information on money supply is not readily available and the public can not monitor it as well. In addition, a change in the exchange rate means a change in prices (at least of tradeable goods), while changes in the money supply are generally more difficult to interpret (as they might reflect seasonal patterns, changes in money demand, etc.).

Besides, there is a common perception that money is not an effective anchor to reduce high inflation.³ While there are many cases where monetary targets have been successful in reducing inflation from moderate to low levels (e.g. the U.S. and U.K. in the early eighties) or in blocking hyperinflation (e.g. Chile and Argentina in the mid-seventies, and Peru in early 1990s), there are no examples of countries that have succeeded in reducing inflation from high to low levels relying on tight money. Most high inflation countries that started stabilization programs using tight money quickly abandoned them as they either became too costly (in terms of output and unemployment) or they were ineffective in significantly reducing inflation.

Despite the attractiveness of using the exchange rate for disinflation, theory and practice both show that fixing the exchange rate is not generally sufficient. This is clear in an economy with tradeable and non-tradeable

² Bruno (1990) and Fischer (1986) provide a more extensive discussion of the reasons underlying the choice of the exchange rate as a nominal anchor.

³ Bruno (1993) makes this point in evaluating the stabilization experiences in Eastern Europe.

goods, because the exchange rate can only anchor a subset of prices. In addition, fixing the exchange rate is not enough to change expectations, as agents realize that if the program is not supported by changes in the policy fundamentals success will at best be temporary. For these reasons, fiscal support for the exchange rate based stabilization is essential. Monetary policy is not an effective instrument in this type of programs, because it is endogenous with capital mobility.

This paper will take a new look the Argentine and Chilean Tablitas and compare the results to the more recent convertibility plan in Argentina.⁴ The objective is to illustrate three points: first, exchange rate based stabilization programs are generally more effective in the high inflation economies than those based on money, as they reduced inflation faster without negative effects in the early stages on output and unemployment. In fact, in these three episodes the authorities shifted to exchange rate based stabilizations after some disappointment with money based programs that achieved limited results on the inflation front and were costly in terms of output and unemployment. Despite their relatively larger success, exchange rate based stabilizations rarely stop high inflation in its tracks.

A second objective is to show that a sound fiscal balance is a necessary, but not sufficient condition to bring down inflation in ERBS programs. Programs that failed to put in place the needed fiscal adjustment (such as the Argentine tablita) clearly failed. But the Chilean program of the late 1970s also encountered big difficulties in bringing down inflation in spite of significant fiscal adjustment, suggesting that non-fiscal factors (such as the choice of the exchange rate rule itself) also matter for

⁴ The first two episodes have been thoroughly analyzed in the existing literature. See for example Foxley (1983), Ramos (1986), Barletta, Blejer and Landau (1983), etc.

disinflation. For example, a reduction in the rate of depreciation in is too rapid relative to inflationary expectations would lead to a significant real appreciation and the stabilization effort would quickly become unsustainable because of external problems.

The third, and related point is that ERBS need to overcome two types of credibility problems: one relates to the sustainability of the fiscal balance, an issue that is commonly mentioned in analytical and policy oriented papers. The other, less understood credibility problem relates to the ability of the authorities to adhere to the announced exchange rate rule itself. For example, the authorities might have to abandon the policy if they face adverse external shocks and severe balance of payments problems, or if the public does not believe that the authorities are not willing to maintain the program if it leads to unemployment and a significant loss of external competitiveness.

The rest of the paper will be organized as follows. Section II describes the monetarist phase preceding the tablitas in Argentina and Chile. It shows that tight money was useful to block incipient hyperinflations and improve the balance of payments, but that it was less effective in stopping high inflation. Section III takes one more look at the tablitas in these two countries, and discusses alternative explanations for the sluggish response of inflation and the resulting real appreciation. Based on these episodes it provides a more positive evaluation of the usefulness of ERBS than earlier assessments. Section IV presents the stabilization efforts of Argentina in the 1990s, which started with a money based stabilization and ended with the convertibility plan. We conclude in section V with a summary of the findings.

ii. Tight Money to Deal With Near Hyperinflations

The tablitas in Argentina and Chile were preceded by money based stabilization programs. In this section we highlight two contrasting features of these programs: first, the success of orthodox money based stabilization programs in bringing down inflation from the heights of a hyperinflation outburst to high levels; second, their inability to bring down inflation from high to moderate or low levels.

i. The Chilean Experiment

The Chilean Stabilization of 1974-75, following the overthrow of the Allende regime, is one of the few episodes in which a government applied a fairly persistent monetary crunch in the face of accelerating inflation (exceeding 400 percent per year). The program was a comprehensive effort that also attempted to correct large external imbalances, raise public sector prices to historical levels and establish a market economy following a period of marked government intervention. The stabilization package included a drastic cut in the budget deficit -- from 30% of GDP in 1973 to 5% in 1974 and 2% in 1975-- large adjustments in public sector prices and a maxi-devaluation (see Table 1).

The results of the fiscal-monetary phase in Chile (where the exchange rate policy was basically to maintain purchasing power parity) were quite disappointing regarding inflation. During this phase, which lasted from September 1973 to June 1976, the danger of hyperinflation was averted. However, inflation which exceeded 500% per year in 1973 did not fall below 200% till the end of this period. This sluggish reduction in inflation was

Table 1: CHILE

Indicator	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Percentages													
GDP growth rate	9.0	-1.2	-5.8	1.0	-12.9	3.5	9.9	8.2	8.3	7.8	5.5	-14.1	-0.7
Unemployment (*)	5.7	3.7	4.8	9.2	16.8	19.4	18.6	17.9	17.7	17.4	15.6	28.2	24.5
Inflation rate a/	20.0	74.9	361.5	504.7	374.7	211.8	91.9	40.1	33.4	35.1	19.7	9.9	27.3
M2 growth rate	85.1	101.3	255.4	322.3	328.1	477.7	NA	NA	NA	62.1	47.9	25.7	27.8
Nominal devalu (*)			455.0	649.5	490.3	165.8	64.9	47.0	17.7	4.7	0.0	30.5	54.9
M2/GDP	17.3	18.9	13.7	7.2	8.0	12.8	NA	NA	17.3	20.1	25.1	32.4	32.9
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/GDP	-1.9	-3.9	-2.7	-2.6	-6.8	1.5	-4.1	-7.1	-5.7	-7.1	-14.5	-9.5	-5.7
Indexes													
Real wage inde (*)	119.3	108.2	80 c	64.8	62.1	63.0	71.1	75.7	82.0	89.4	97.5	97.1	86.8
Real effective exchange rat (*)	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/ Based on CPI

b/ Exchange rate variations deflated by the difference between external and internal WPI.

c/ January - August.

Sources:

IFS , World Bank and (*) Ramos (1986)

accompanied by a dramatic rise in unemployment (from 4.6% in 1973 to 16.8% in 1975) and negative growth, including a fall in GDP of 12.9% in 1975.

These disappointing results generated intense debates as to whether money was indeed tight in this otherwise orthodox program. Harberger (1981) questions whether it is possible to talk about tight money when nominal money supply continues to grow at high rates (exceeding 300% per year). In our view, however, the relevant question is not if money is expanding rapidly in nominal terms, but whether monetary growth is contractionary relative to the underlying rate of inflation. In other words, the key issue is whether monetary growth accommodated or fought inflation.

The data on the ratio of M_2 to GNP can throw some light on this question. Table 1 shows that this ratio fell dramatically, from 14% of GDP in 1973 to 8% of GDP in 1975. This constitutes indirect evidence of a monetary crunch. In addition, Corbo and Solimano (1991) found more direct evidence of the existence of tight money during the period. They estimate a money demand function for Chile and show that during this period there was indeed an excess demand for money.

Thus, there can be little doubt that monetary policy was highly non-accommodative from the start relative to the sluggish inflation. This is also the evaluation of Foxley (1983), who attributes the recession which developed in 1974 towards the beginning of 1975 to the foregoing monetary crunch (Foxley, op. cit., p. 53), and of Edwards and Edwards, (op. cit., pp. 31-33).

In spite of the monetary crunch and the reduction in the budget deficit, inflation stabilized in 1974 at around 45% per quarter which is an indication of considerable rigidity. The continued rigidity of inflation in 1975 is often attributed to the consequences of the sharp fall in the price

of copper in the end of 1974 which induced large devaluations in the beginning of 1975. But the devaluations were supported by a significant fiscal adjustment (a reduction in the primary fiscal balance of around 30 percent of GDP). This unusually large fiscal adjustment indicates that in principle there was no reason for the devaluations to slow down the reduction of inflation.⁵

ii. Argentina 1976-78

Argentina had a brief experience with money based stabilization in the mid-seventies, following the overthrow of the Peronist government. This was the first phase of what was going to become a longer term stabilization effort under economic minister Martinez de Hoz. The monetarist-fiscal stage lasted for approximately two years, starting in April 1976.

As in Chile, the stabilization program was initiated by an authoritarian military regime and stabilization was part of a broader objective of reducing government intervention in the economy. In addition to restoring price stability and improving the balance of payments, the policies were intended to undo much of the damage on efficiency introduced during the Peronist regime with intervention in the financial markets, trade and other areas of the economy.

The stabilization program started on a strong foot and was aimed at controlling a near hyperinflation in the country. The major fiscal imbalance was addressed early on as the government reduced the budget deficit from around 15% of GDP in 1975 to 5% of GDP by 1977, a cut that was mainly

⁵ The results of this case stand out in sharp contrast with the Bolivian orthodox program that stopped hyperinflation, where in spite of the severe external shock during the stabilization (a collapse in tin prices), control over inflation was reestablished very rapidly.

effected through lower government expenditures (which fell from 42% of GDP in 1975 to 33% in 1977). This was accompanied by a tightening in monetary policy as measured by the contraction in monetary aggregates as a share of GDP. M2 fell from 15% of GDP in 1975, to 11% in 1976, while domestic credit to the private sector fell from 12% to 8% during the same period.

The fiscal-monetary stage of the Martinez de Hoz policies was quite successful in reducing the rate of inflation early on from 500% to around 175% (annual) with a relatively small cost in terms of loss in GDP growth and unemployment (see Table 2). This looks much more favorable than the Chilean experience, which put in place a more severe fiscal adjustment and similarly corrective price increases for public sector prices to undo the effects of price controls. The more successful outcome in Argentina is in part attributable to a better use of the nominal anchors (including wage controls) applied during the early stage, that succeeded in reducing real wages from the unsustainable high levels of the end of the Peronist period, a less distorted economy at the outset, and to a more favorable external environment.

The Argentine experience suggests that fiscal-money based programs can be effective in arresting a near hyperinflation. On the other hand, the success was limited in the sense that inflation came down only to around 175% per year, and remained entrenched at those levels. This is certainly much less than the authorities hoped at the time they launched the program. So why did we observe only partial success?

One possible interpretation is that the authorities were not strong enough in pursuing orthodox policies. While the deficit was reduced from the unsustainable levels of the Peronist period, the reduction fell short from what was needed to restore price stability. Budget deficits indeed persisted

Table 2: ARGENTINA

Indicator	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Percentages													
GDP growth rate	3.8	2.1	3.7	5.4	-0.6	-0.0	6.4	-3.2	7.0	1.5	-6.7	-5.0	2.9
Unemployment rate (*)	6.0	6.6	5.3	3.4	2.6	4.5	2.8	2.8	2.0	2.3	4.5	4.8	4.0
Inflation rate a/	34.5	56.4	62.3	23.2	182.0	444.2	176.0	175.5	159.5	100.8	104.5	164.8	343.8
M2 growth rate	-0.6	25.1	109.3	74.2	73.8	297.2	251.5	211.4	181.6	127.8	93.4	140.5	297.1
Nominal devaluation (**)			14.6	-5.3	311.2	282.5	191.1	95.2	65.5	39.5	175.0	360.3	350.2
M2/GDP	22.4	16.7	20.3	25.9	15.2	11.4	14.5	18.1	18.7	21.5	21.5	19.2	16.5
Public sector surplus/GNP (*)	-3.1	-3.3	-4.7	-5.3	-10.3	-7.2	-2.8	-3.2	-2.7	-3.6	-8.1	-7.2	-11.0
Current Account surplus/GDP	-1.6	-0.6	1.0	0.1	-3.6	1.2	2.2	2.8	-0.5	-3.1	-3.8	-4.1	-3.8
Indexes													
Real wage index (*)	103.4	98.3	104.4	117.9	111.1	74.7	73.6	72.3	83.0	92.8	83.0	74.1	90.8
Real effective exchange rate b/ (**)	94.9	107.3	102.7	87.8	134.2	88.5	114.0	102.9	77.2	69.2	87.0	112.9	104.1
Terms of trade (**)	108.1	117.3	141.8	128.7	97.1	93.1	88.9	89.9	97.6	110.3	100.2	89.1	86.8

a/ Based on CPI

b/ Exchange rate variations deflated by the difference between external and internal WPI.

Sources:

IFS, World Bank and (*) Ramos (1986)

at around 4 to 5 percent per year till the end of the decade (this contrasts with Chile where the authorities balanced the budget very quickly). The problem with this explanation is that deficits of this size were not unusual in the past and they were associated with much lower rates of inflation. This indicates that an additional force was keeping inflation alive.

A second possibility is that the costs of persisting with tight money were perceived by the government as being prohibitively high. The public, as a result, became convinced that the government would not continue along those lines, and that instead it would start to accommodate inflation. Once these beliefs became widespread, it was difficult for the government to continue with the monetarist strategy. Basic data supports the view that there was a relaxation in monetary policy in 1977, as money and credit increased as a share to GDP. By 1978, for example, credit to the private sector was 14% of GDP compared with just 8% in 1976. Thus, it is very possible that once expectations of high inflation became entrenched, they were an unsurmountable obstacle for the authorities, which found it easier to accommodate rather than to fight them.

III. Tablitas in Argentina and Chile

The dissatisfaction with the slow pace of disinflation under the fiscal-monetary package in the Southern Cone countries led the authorities to switch in the later part of the 1970s to an exchange rate based stabilization strategy. We start with the Argentine tablita, where the causes for its eventual failure are relatively clear, and we then shift to the Chilean

experience with the tablita, where there is still controversy regarding its short and long term impact on inflation.

i. Argentina

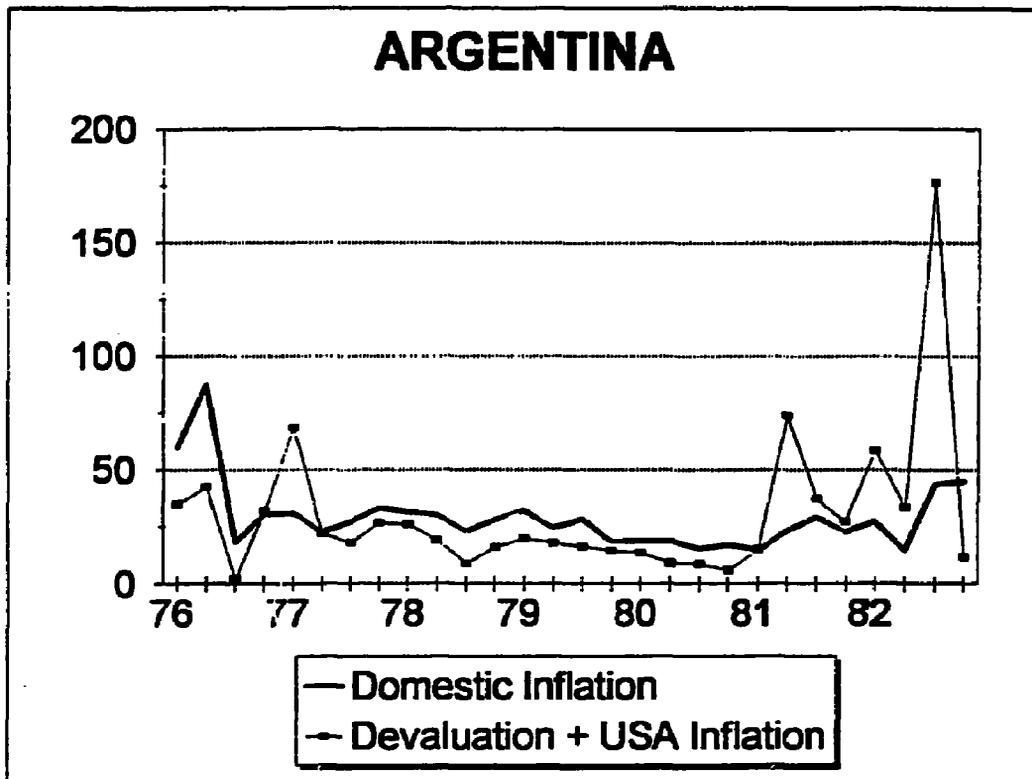
On December 20, 1978 the government announced an exchange rate based stabilization, the tablita, showing future daily exchange rates. The Tablita embodied a decreasing rate of devaluation that was below the ongoing rate of inflation. The objective was to influence forward looking inflation expectations by removing uncertainty about future exchange rate policy.

The December 20 plan did not include important additional measures to supplement the new exchange rate policy. There was no deepening of the fiscal adjustment; in fact, the fiscal situation slightly deteriorated during those years as the budget deficit increased from 6.5% of GDP in 1978 to 7.6% of GDP in 1980. On the other hand, the central bank pursued a policy of tight domestic credit which meant that most of the expansion in money supply was driven by changes in international reserves.

The outcomes of this experiment are widely documented in the existing literature.⁶ Inflation fell gradually (see figure 1), from 175% in 1978 to 100% in 1980. However, it did not converge fast enough to the rate of devaluation (65% in 1979 and 40% in 1980), and as a result there was a significant real appreciation during this period. The current account balance, which was in surplus in 1978, reached a deficit of around 3% of GDP in 1979 and 1980 (as shown in table 2). For a while this was not a problem, because large capital inflows more than compensated the deficits in the current account, and as a result the central bank accumulated international reserves. In the end, however, these deficits became unsustainable and the

⁶ See for example Ramos (1986).

FIGURE 1



program ended in a severe balance of payments crisis which was associated with a resurgence of inflation.

Does this failure provide strong evidence against the use of the exchange rate as nominal anchor? Probably not, because in Argentina the tablita was not accompanied by strong fiscal discipline. As shown in table 2, the primary fiscal balance deteriorated during the period, and the total deficit increased to more than 7% of GDP. These large fiscal imbalances impaired the long term sustainability of the program. At the minimum, they were inconsistent with the stated objective of rates of inflation at international levels. More importantly, they provided ammunition to the skeptics regarding the government's commitment to disinflation, which argued that a government that cannot eliminate the budget deficit cannot be serious about disinflation.

The Argentine experience thus left an open question: can exchange rate based stabilizations worked in cases where there are no fiscal imbalances? We now turn to the Chilean program of 1978 to address this question.

ii. Chile

While the Tablita was announced in Chile in early 1978, some authors (e.g. Ramos (1986)) date the beginning of the exchange rate based stabilization period to mid-1976, coinciding with the first revaluation. The appreciation marks the time when the authorities started to view the exchange rate management as an important component of the stabilization strategy. However, only once the tablita was announced it became clear the precise role that the exchange rate played in the stabilization effort. The decreasing crawl ended in mid-1979 when the exchange rate was fixed at 39 pesos per U.S. dollar.

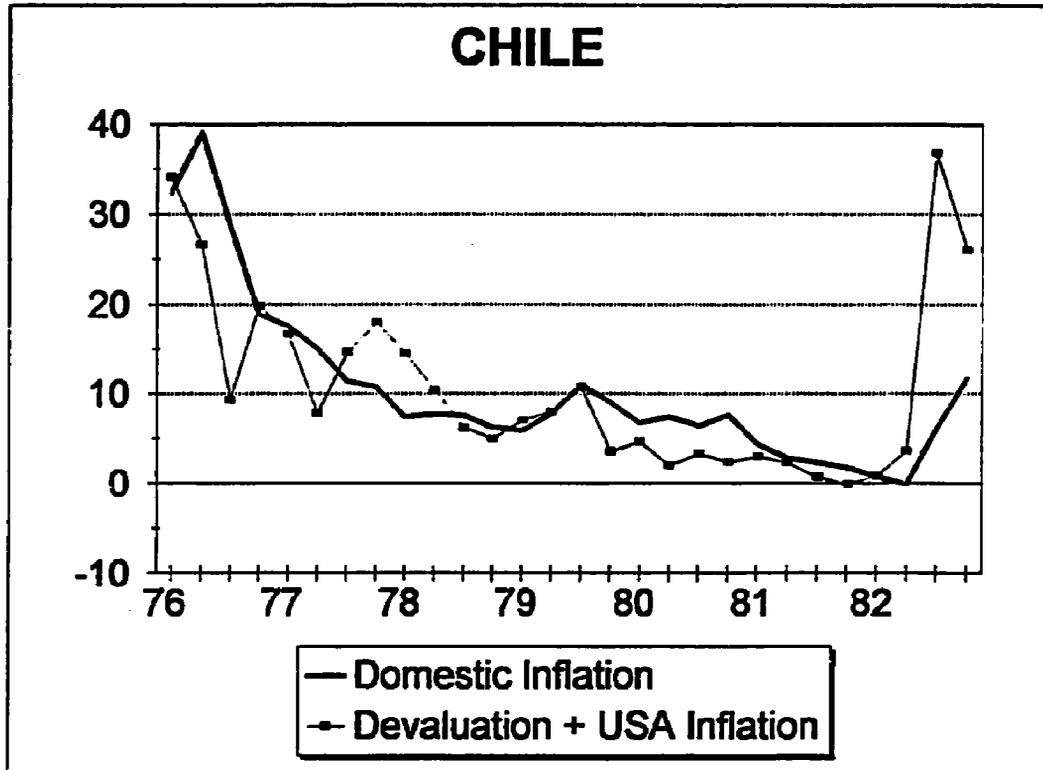
While quarterly data show that the policy was eventually successful in bringing down inflation to international levels (see figure 2) it is noteworthy that this took five years, with the decisive period (of pegging the exchange rate) lasting two years. Inflation fell from 91% in 1977 to 33% in 1980 and, 9.9% in 1982. The pace of the reduction of inflation, however, was disappointing. In 1979 and 1980 it got stuck at around 35% percent per year, well above international levels. The stubbornness of inflation during the exchange rate stabilization period in Chile was comparable with Argentina.

The asynchronization between inflation and devaluation over the adjustment period led to a real appreciation of over 30% with respect to 1975 and 20% with respect to 1976. Towards the end of the stabilization period the external position deteriorated significantly. The current account deficit --which averaged 7.5% of GDP during 1978-80-- reached 14% of GDP in 1981. In the end, as it became clear that the policy was unsustainable capital started to flow out and the economy faced a balance of payments crisis which resulted in an astounding drop of 14.2% in real GDP in 1982.⁷

Table 1 clearly shows that this policy was accompanied by a systematic fiscal support. Recent studies indicate that between 1975 and 1981 the consolidated public sector ran surpluses in the primary, operational and overall balances, and that these were remarkably large in 1979 and 1980 (the overall surplus in 1980 was 6% of GDP). Thus, the eventual failure to maintain the exchange rate stabilization cannot be explained by the standard fiscal argument along the lines of the Krugman (1979) model. We shall therefore look for alternative explanations.

⁷ See Edwards and Edwards (1987) and Ramos (1986) for a complete account of this episode.

FIGURE 2



As most exchange rate based stabilizations, the Chilean program ended in a balance of payments crisis, compounded with a financial debacle that had serious fiscal repercussions. The external environment became hostile (both because of the debt crisis and the fall in copper prices) and the economy faced a severe recession in 1982 (when GDP fell by 14%). Prices did not fall even under this extreme circumstances, and in the end the government was forced to devalue.

iii. Are Exchange Rate Based Stabilizations Expansionary?

Before discussing the reasons for the difficulties encountered in these programs it is worth pointing out some of the outcomes that are common to other exchange rate based stabilizations. As discussed in more detailed in Kiguel and Liviatan (1992), ERBS programs tend to display the following features:

* There is generally a business cycle which starts with an expansion in output in the early stages and ends in a recession. The boom in Argentina was short lived, and occurred during the first year of the program (1979) and ended in a sharp recession in 1981. The expansion in Chile lasted longer and was stronger, with GDP growth exceeding 8% per year on average between 1978 and 1980, and the recession (in 1982-83) was short but severe.

* There is a real appreciation as inflation responds sluggishly to the new exchange rate rule. The real exchange rate appreciated quickly (in just two years) and significantly by around 45% in Argentina during the program, and by 25% in Chile over a 4 year period.

* There is a deterioration in the current account of the balance of payments associated with the expansion in output and the real appreciation. In Argentina, the current account deteriorated by 5 percent of GDP between

1978 and 1981, while in Chile it worsened by 10 percentage points, culminating with a huge current account deficit amounting to 14 percent of GDP in 1982.

The most striking feature of these programs is that, in contrast to the money based stabilizations, they were not recessionary and they were associated with a deterioration of the current account of the balance of payments. Kiguel and Liviatan (1992) discuss alternative explanations for these outcomes, attaching particular importance to the one presented by Calvo and Vegh (1991) who argue that in a non-credible exchange rate based stabilization program agents anticipate consumption leading to an expansion early on followed by a recession at a later stage that coincides with the collapse of the program.

iv. Why the Sluggish Response of Inflation?

The causes for the slow convergence of inflation to the rate of devaluation was and continues to be a source of debate. The Argentine case is not very controversial because there was never a serious and sustained reduction of the budget deficit. But Chile enjoyed a fiscal surplus during most of the period. Several explanations exist, and in what follows we examine three of them.

One explanation offered for the sluggish reaction of domestic prices to the exchange rate stabilization in Chile was the existence of *backward looking wage indexation* [Dornbusch (1985) and Edwards and Edwards (1987)]. It is easy to explain using this type of model that indexation introduces sluggishness in domestic inflation, and hence slow convergence to the rate of devaluation. Along the way the real exchange rate appreciates, and that can explain the deterioration in the current account.

While this is an appealing explanation for the real appreciation in Chile, the rise in real wages during the period casts doubt about its significance for the real appreciation. The data on real wages shown in table 1 implies that nominal wage increases stayed ahead of consumer prices. Full indexation implies that real wages remain essentially constant, as nominal wage increases accompanied inflation.⁸ So indexation could not have been a major force for the real appreciation.

An alternative explanation for the sluggishness of inflation in Chile is associated with the liberalization of the capital markets which was part of the stabilization policies in the Southern Cone. According to this view, the opening of capital markets to foreign inflows constituted an exogenous stimulus to investment which led to a domestic boom. This exerted pressures on domestic prices which slowed down their convergence to the rate of devaluation [Corbo (1983) and Edwards and Edwards (1987)].

However why should this cause an overvaluation of the currency? Edwards and Edwards (1987) suggests that the reason is that the flow of foreign investment takes place at a diminishing rate (as in stock adjustment models). Therefore the initial increase in domestic prices represents an overshooting. This leaves, however, the question of why do not domestic prices adjust to the declining rate of foreign investment? The answer must rely on the downward rigidity of domestic prices.

It should be noted that in principle, as in the Argentine case, part of the capital inflows themselves can be explained endogenously. The central bank adopted a policy of tight domestic credit which put upward pressures on

⁸ There is a subtlety in this argument, as a falling rate of inflation results in increasing real wages with full indexation. However, this effect cannot explain the rise in wages in Chile between 1978 and 1980, as the rate of inflation remained relatively constant in these years.

domestic interest rates. Because inflation persisted money demand increased pari-passu with the rise in nominal GDP. Capital inflows, induced by high interest rates, became a mechanism to accommodate the increase in money demand.

Edwards and Edwards (1987) seems to rule out this kind of explanation because the Chilean government did not permit short term capital inflows. However, it is questionable whether the controls were in fact effective given the sophistication of the financial markets and the great difficulties that are generally observe in enforcing regulations in this area. The considerable difference between domestic interest rate over Libor plus devaluation provided enough incentives to find ways to sidestep the regulations.

A third explanation is that the persistence of inflation was driven by *lack of credibility* about the ability or willingness of the authorities to adhere to the exchange rate rule in the event of adverse shocks. These credibility problems are different from those resulting from the perceived unsustainability of fiscal policies, a notion that is much more familiar to economists.

The non-fiscal credibility arises because under discretion a government can deviate from the announced rule.⁹ The basic framework is one where the government announces an exchange rate rule, but it maintains the option (or discretion) of reneging from it if the "optimal" rate of inflation is different from the announced one. The government has two objectives, reducing inflation and keeping external balance. Deviating from the announced exchange rate rule involves costs (i.e. loss of reputation). The

⁹ For a more detailed and formal presentation of a model analyzing a similar issue see Cukierman, Kiguel and Liviatan (1992), and Devarajan and Rodrik (1992) among others.

main benefit of adhering to the rule is that inflation comes down and their reputation remains intact. But when the announcements are not fully credible, the reduction in inflation will be smaller than the reduction in the rate of devaluation and hence there is likely to be some real appreciation. Under good states of the world (i.e. the external environment is favorable) the government will adhere to the rule (as the benefits outweigh the costs). But under bad scenarios (e.g. an adverse external shock) the cost of the deterioration in the balance of payments could well exceed the benefits of continuing to adhere to the rule, and hence the authorities will renege and devalue.

The basic framework can be illustrated with the help of figure 3. There are four stages in the decision. In stage 1, the government announces an exchange rate rule, which balances its desire to reduce inflation with other objectives (such as a target for external balance or unemployment). In stage 2 the shock realizes. In stage 3 agents form expectations about inflation based on the government's announcement, and on the realization of the shock. But the public does not know how committed the government is to the disinflation program, and hence a source of uncertainty remains. Finally, in stage 4, the government sets the policy in order to maximize welfare.

Figure 3



The ability of the government to adhere to the rule depends on how credible its announcement is (i.e. whether the public believes that it is serious about stabilization) and on its luck regarding the realization of the external shock. A more credible government is more likely to be successful in reducing inflation. What does this interpretation mean about these two programs?

An important implication of the above discussion is that even programs that succeed in providing fiscal support for disinflation might fail because the public does not believe that the authorities can maintain external balance. Some real appreciation will occur if the program is not fully credible, and the program can be maintained only if the real appreciation is not strong enough or if the external environment is sufficiently good.

In the case of Chile the program was not fully credible at the outset and that led to some real appreciation. Once the government fixed the exchange rate in 1979 the program got trapped, because prices were inflexible downwards. The public realized that under the fixed exchange rate regime there was not an automatic mechanism to generate the real depreciation to address the increasingly larger current account deficits. According to this view, agents were not questioning the government's ability to maintain the fiscal balance, they were questioning its ability to adhere to the exchange rate rule in view of the large external deficits. This was a non-fiscal credibility problem. In the end, there was a severe external shock (the debt crisis) that forced the abandonment of the regime.

v. A quick Reassessment of the Tablitas

Early assessments of the tablitas were fairly negative, as they emphasized the limited benefits on inflation and the large costs of the programs.¹⁰ The early facts certainly gave room for skepticism as both programs ended in a balance of payments crisis, and severe recessions.

¹⁰ Diaz Alejandro (1981) and Foxley (1983) were among the first ones to question the viability of the strategy to bring down inflation.

Besides, the pronounced real appreciations that the countries experienced during this period had damaging, long term effects on the export sector. The real appreciation was considered an unwise cost to pay for disinflation, and meant that exchange rate stabilizations were a bad idea.

A new look at these episodes, with the benefit of hindsight, provides a more positive view. The Chilean experience is the critical one to derive lessons from ERBS, because in Argentina the tablita was never supported by adequate fiscal policies. Such a view can argue that while there were problems with the implementation of the ERBS program in Chile at least the period of the ERBS brought down inflation on a long term basis.

While most Latin American countries, and all the high inflation ones, experienced a protracted increase in the rate of inflation in the debt crisis of the early eighties, Chile maintained inflation in the moderate levels. While inflation went up in Chile at the time of the maxi-devaluations of 1982 and 1983, the increase was only temporary as it is typically the case in low inflation economies. The maintenance of the fixed exchange rate in the late 1970s under extremely adverse circumstances certainly signaled the commitment of the authorities to low inflation. Thus, when the crisis erupted in 1982-83 the public anticipated that the government that had invested so heavily in achieving price stability would not tolerate a rekindle of inflation.

Of course the Chilean program could have been carried out better, especially with the benefit of hindsight. The output losses would have certainly been smaller if the exchange rate rule had been flexibilized earlier. There is little debate today about this. And most agree that automatic wage indexation was a policy mistake. But in the end, and despite all the costs, Chile did manage to bring down inflation and it had a remarkable growth performance in the last decade.

An interesting feature is that in spite of widespread skepticism about ERBS, Mexico adopted an exchange rate based stabilization in the 1988 and has essentially maintained it -with some variations till the present- and

Argentina once again adopted an ERBS program, this time relying on a fully fixed exchange rate. The Argentine episode, the convertibility plan, is probably more insightful, because the memories of the Martinez de Hoz tablita were still fresh. We now turn to review the why's and what's of the convertibility plan.

IV. Is History Repeating Itself? Argentina in the 1990s.

Argentina in the 1990s adopted a major program to stop inflation. This program confronted worse initial conditions than previous stabilization attempts, as it was fighting the first ever full blown hyperinflation. As in the previously discussed ERBS episodes, the disinflation had two phases. It started with a money based program, which blocked hyperinflation but failed to bring about price stability and then shifted to an exchange rate based stabilization, the convertibility plan. The Convertibility Program of March 1991, launched by Minister Domingo Cavallo, was the final phase of the stabilization process under the Menem administration to bring down inflation from hyperinflation to low or moderate levels.

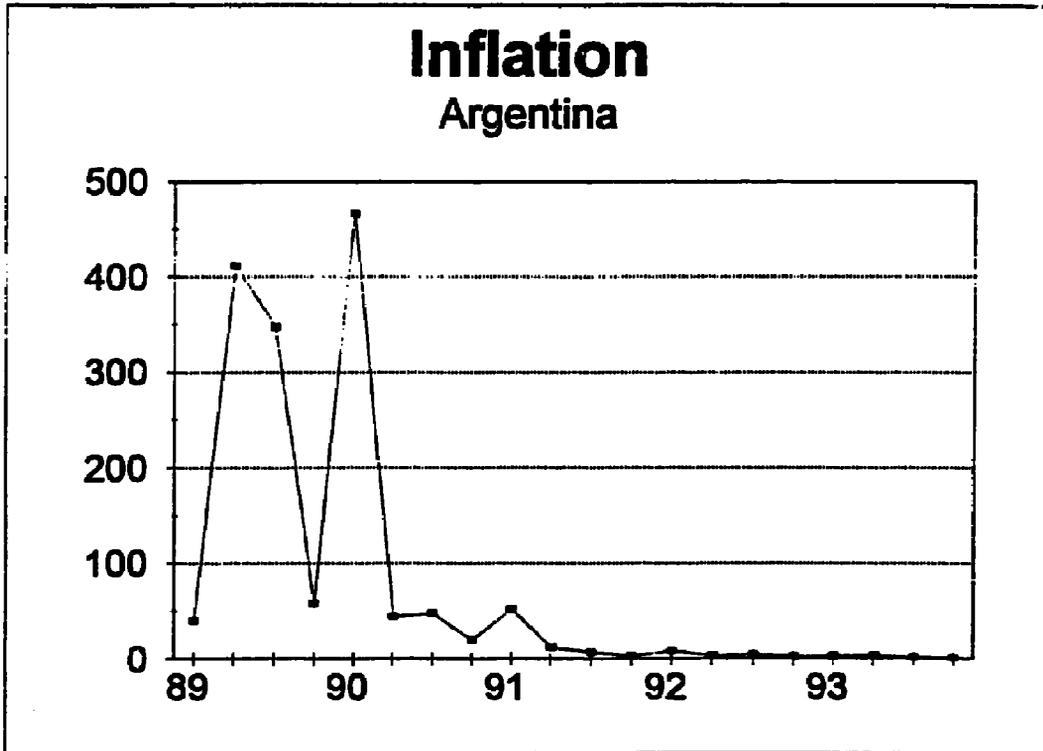
i. Monetarism in the 1990s

The monetarist phase in Argentina started in March, 1990. This program followed two policy failures: the first one was the collapse of a short lived, exchange rate based Bunge & Born plan. The second was the outbreak of the second hyperinflation in December 1989, as the government rescheduled the domestic debt and prompted a flight from domestic currency.

The March 1990 program (also known as Decree 435) brought the hyperinflation to an end (figure 4). The program maintained the floating exchange rate that had been in effect since December, and relied on tight money and a deeper fiscal adjustment (through cuts in subsidies and public employment as well as some revenue enhancing measures) to control inflation.

The effectiveness of the tight money-fiscal combination in blocking hyperinflation was remarkable. Inflation came down from 95% in March 1990,

FIGURE 4



to just 11% in April. In the short run, the money-fiscal combination brought about an important reduction in inflation, but it failed to reduce it below a basic rate of around 10 percent per month.

During the tight money period inflation came down from the heights of hyperinflation, but this result was associated with poor growth performance. As shown in figure 5.a, Argentina did not grow in 1990 .

As in other money based stabilizations there was a sharp appreciation in the real exchange rate. The real exchange rate appreciated by over 30 percent in Argentina during the monetarist phase (figure 5.b). But the country ran a large and continuous surplus in the trade balance in spite of the real appreciation (figure 5.c). The deep recession in economic activity (which started at the time of the hyperinflation) can partly explain the comfortable trade balance position.

ii. The Convertibility Program: The New Twist in Exchange Rate Based Stabilizations

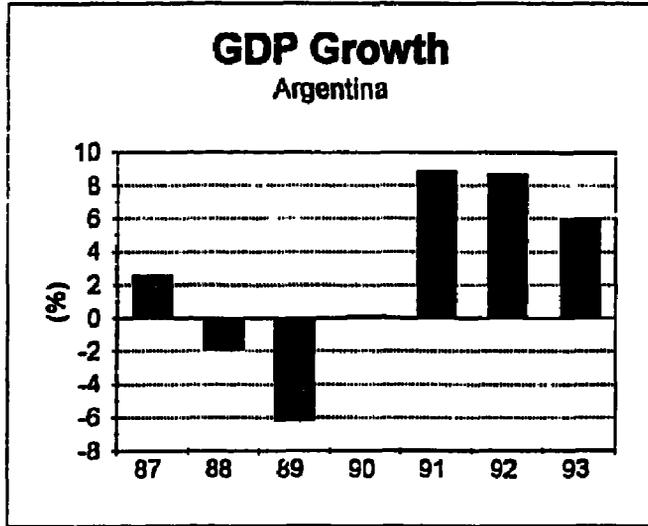
In March 1991, Minister Cavallo announced the Convertibility Program a far reaching attempt to bring down inflation. The Executive sent to Congress and got approved the Convertibility law which fixed the exchange at 10,000 Australes per U.S. dollar, included a provision that any change in the exchange rate had to be authorized by law, and legislated that the central bank could only issue domestic money to buy foreign exchange (credit to the government was precluded in the law).¹¹ This last component was particularly important since it eliminated, at least in principle, the option of the central government, provinces and public sector enterprises to use the central bank as the lender of last resort.

The circumstances in which the program was launched provided a fertile ground for positive outcomes. The fiscal situation was probably the best Argentina had enjoyed since the late sixties, when Krieger Vassena managed to

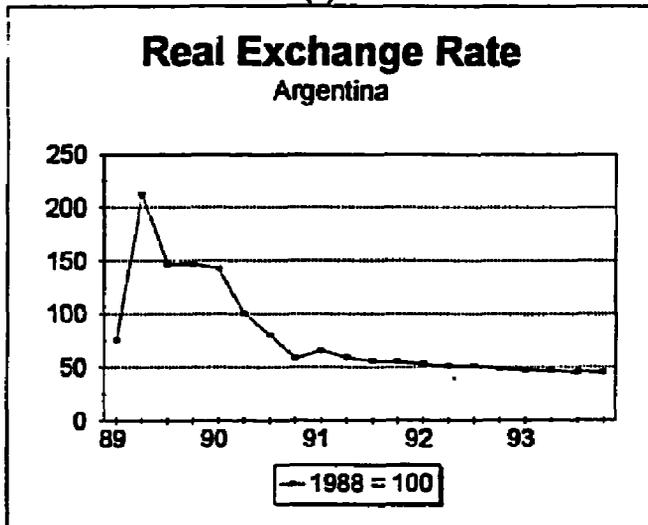
¹¹ There was a loophole in the law, since government dollar denominated bonds --valuated at market prices-- could be counted as part of the reserves. However, the government announced that this could only amount to 10% (?) of total holdings

FIGURE 5

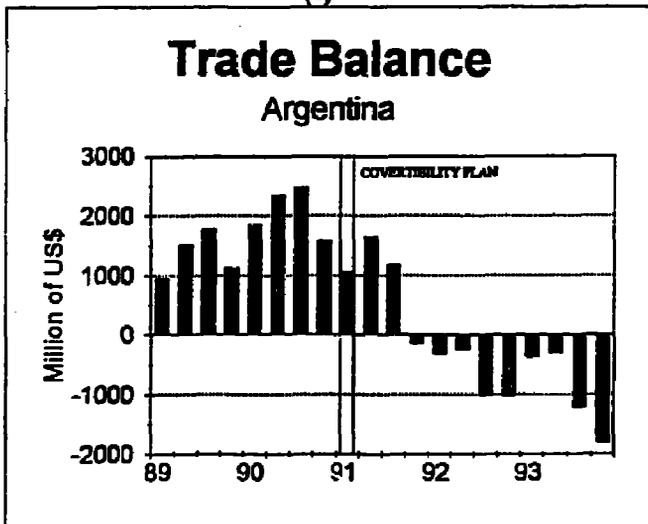
(a)



(b)



(c)



reduce inflation to one digit. Despite many stops and goes regarding fiscal policy since the Austral plan, much had been learned about the sources of fiscal and quasi-fiscal imbalances, and policy makers and the public became convinced of the need to eliminate the budget deficit. Significant improvements in the fiscal situation occurred under Minister Erman Gonzalez, including privatizations and other measures to reduce the size of the public sector. Much progress was also achieved in tax administration and in raising tax revenues. While these efforts were not enough to achieve full price stability, they laid the ground for the more far reaching reforms that were undertaken in 1991.

In terms of outcomes the convertibility program has been quite successful. The strong adherence to the convertibility law (both in terms of maintaining the fixed exchange rate and in not printing money to finance the deficit) was a powerful policy instrument to reverse inflationary expectations. Inflation came down one step, falling from 11% in March, to around 1.5% per month from mid 1991 onwards. In 1993 inflation was only 8%, the lowest in the last four decades.

Once again we observed that inflation displayed significant persistence, and that the convergence process to the rate of devaluation (in this case zero) was slow (it took 2 years to reduce it to one digit). Along the way the real exchange rate has appreciated significantly, raising questions about the long run sustainability of the program.

But there are some indications that this program is enjoying more credibility than previous ones. In contrast to most other exchange rate based stabilizations, interest rates have been remarkably low in Argentina. Interest rates on 7 day deposits fell to 1.5% per month in April, and by September they were less than 1%.¹² Credibility, however, was not enough to bring inflation quickly to international levels.

As in most other ERBS, we observe a strong expansion of output from the outset and a deterioration in the trade balance and in the current account.

¹² Interest rates on 30 day deposits were higher, around 1.5% per month.

This was accompanied by an increase in economic activity (as measured by industrial production), and an appreciation in the real exchange rate. In contrast to the other episodes discussed in this chapter, the real appreciation was not accompanied by a rise in real wages, which in fact remained quite depressed.

The experience with the fixed exchange rate during the convertibility plan confirmed that the exchange rate can be a powerful nominal anchor to bring inflation down. However, it also highlighted that inflation could still display significant persistence, though at much reduced levels, and hence that the economy is likely to experience a real appreciation along the way.

V. Final Remarks

The evidence on exchange rate based stabilizations presented in this paper indicates that they were generally more effective than money based programs in bringing down inflation. But the reductions in inflation were usually gradual, and hence the process resulted in a continuous (and in some case significant) real appreciation. Even the fixing of the exchange rate in Chile in 1979 did not succeed in achieving a discrete reduction in the underlying rate of inflation.

The recent Argentine Convertibility plan that fixed the exchange rate was more successful in bringing down inflation significantly (from monthly rates of around 10% to just 1.5% in just few months). One could argue that this is a especial case, however, because Argentina was coming from a full blown hyperinflation. The comparison of the fixed exchange rate period in Argentina and Chile shows useful insights.

Argentina's relatively more successful experience can not be explained on fiscal arguments. When Chile fixed the exchange rate in 1979 it was already enjoying a budget surplus. When Argentina fixed the exchange rate in March 1991, on the other hand, the government was running a small budget

deficit (of around 2% of GDP). While this represented a significant improvement over previous years (when budget deficits were as large as 8% of GDP), it certainly did not go as far as Chile.

Perhaps a better explanation is the perceived government commitment to the fixed exchange rate and the potential costs of reneging on it. Argentina went farther on the accompanying non-fiscal measures to support the fixed exchange rate. The convertibility law made devaluation much more difficult, as it required congress approval, and reduced the chances of discretionary devaluations. Besides, the government tied its own hands further by legalizing the use of the dollar as unit of account and means of exchange. As a result many prices of non-tradeable goods were denominated in dollars, hence reducing the potential effectiveness of devaluations to change relative prices. In this respect the commitment to the exchange rate rule in Argentina was stronger than in Chile

The costs of abandoning the fixed exchange rate were also perceived to be larger in Argentina. The fixed exchange rate quickly became the pillar of a program that neither the government nor the public at large were willing to let it fail. A devaluation was (and still is) perceived as opening the door for a renewal of hyperinflation, a dreadful scenario. The situation in Chile was different, as the country did not face the threat of hyperinflation. As a result it took much longer to convince the public that the government was fully determined to maintain the parity, even if inflation continued for a while.

A typical feature of exchange rate based stabilizations is that the authorities tend to stick to the fixed exchange rate for longer than it might be prudent. In the tablitas it is now apparent that some flexibilization in exchange rate policy at an earlier stage would have reduced the costs of the final failure. Why do governments find it so difficult to flexibilize exchange rate policy? Why do they wait for the balance of payments crisis rather than anticipate it? One plausible answer is that they fear that the public will identify the flexibilization with the failure of the program.

Once the exchange rate moves, inflation will rekindle and the authorities will lose credibility about announcements. So they don't devalue. In the end, however, a balance of payments crisis occurs and this forces the devaluation.

The interesting finding is that inflation does not necessarily go up when the exchange rate is flexibilized. In Chile, for instance, the maxi-devaluations of the early eighties only had a temporary effect on inflation, which then fell back to the moderate range. Likewise, the successful recent ERBS programs launched in Israel (1985) and Mexico (1987-88) started with a fixed exchange rate but later the governments adopted a crawling peg and then an exchange rate band without facing increases in inflation. These two recent episodes clearly learned from the experiences of the Southern cone, as they balance the need to maintain an exchange rate rule (for credibility) with the one to keep external balance (for external balance).¹³ The key to the success of an exchange rate based stabilization program is the ability to combine credibility and flexibility, and on this issue the lesson was learned.

¹³ See Cukierman, Kiguel and Liviatan (1992) for a more detailed discussion on this topic.

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