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# **The Business Cycle Associated with Exchange-Rate-Based Stabilization**

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Disinflation programs in chronic inflation countries do not normally follow the usual Phillips curve tradeoff in the medium run. Instead of having a sharp recession in the early stage of stabilization, there often is an initial expansion of output followed by a recession and balance of payments difficulties. This pattern is related to programs that use the exchange rate as an instrument of disinflation.

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Kiguel and Liviatan studied the effects of disinflation on economic activity in “chronic inflation” countries based on a sample that includes major Latin American countries and Israel.

Their purpose was to document the main features of the business-cycle phenomenon in countries following an exchange-rate-based stabilization program, to understand its causes, and to analyze their policy implications for future stabilization of this type.

Their main finding was that stabilization processes in chronic inflation countries — most of which use the exchange rate as the main nominal anchor — do not normally follow the usual Phillips curve tradeoff in the medium run.

Exchange-rate-based stabilization programs in these countries are often associated with a

business cycle that begins with a boom and ends with recession. (Stabilization programs that use the money-supply anchor tend to follow the usual Phillips curve relationship.) These programs are associated with real appreciation, an increase in real wages, and a tendency to generate a balance of payment crisis. Most of these features appear not only in failed stabilization processes but also in those which turned out to be eventually successful, as in Chile or Israel.

The authors relate the foregoing phenomena to recent theoretical modeling of stabilization which are perceived, rightly or wrongly, as temporary. This brings in the issue of credibility in the stabilization process. The paper concludes with a discussion of the pros and cons of the exchange-rate-based stabilization and of the desirability of switching nominal anchors in the course of stabilization.

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# THE BUSINESS CYCLE ASSOCIATED WITH EXCHANGE RATE BASED STABILIZATIONS

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## INTRODUCTION

This paper deals with the effects of disinflation on economic activity in "chronic inflation" countries (to use a term coined by Pazos (1972)). By this we mean countries with a long inflationary history above the rates in industrialized countries, where labor and capital markets are adjusted to function in the inflationary environment. Our sample is based on a number of Latin American countries, including the major ones and on Israel.

Our main finding is that stabilization processes in chronic inflation countries do not normally follow the usual Phillips curve trade off in the medium run. Specifically, stabilization programs in these countries are often associated with a business cycle, beginning with a boom and ending with a recession. This finding relates to the programs which used the exchange rate as the main nominal anchor, to which we shall refer as "exchange rate based stabilization" (ERBS). The latter was in fact the dominant type among programs which had any significant impact on inflation in the countries in question. The limited evidence on other types of stabilization points to the usual Phillips curve relationship.

The purpose of the paper is to document the main features of the business cycle phenomenon in ERBSs, to try to understand its causes and to derive some policy implications for future stabilizations of this type.

The paper is organized as follows. We shall first try to obtain a better perspective for our study by referring briefly to relevant features of stabilizations in industrial low-inflation economies and in hyperinflationary episodes. We then turn to chronic inflation countries. After a brief description of our sample of stabilization programs we shall highlight the main stylized facts concerning the business cycles in these experiences. We shall

Then discuss the differences, in theory and practice, between ERBSs and disinflation programs which use money as the nominal anchor (to which we shall refer as "money based stabilizations" - MBS). This will be followed by an attempt to explain the mechanisms which generated the business cycle in our sample of stabilization programs. The analysis will examine the factors which contributed to the booms on one hand and to the severity of the recessions on the other. We conclude with issues related to the countercyclical policies.

### I. Stopping Low Inflation, Hyperinflation and Chronic Inflation

Stabilization programs which are aimed at stopping inflation are usually conceived as involving an initial cost in terms of loss of output because of rigidities in past nominal contracts [as in Fischer (1988) and Taylor (1979)] or because of credibility problems. The costs of disinflation are therefore borne in its early stage, falling later as the link with the past is severed and credibility is restored.

This "classical scenario", of an initial recession preceding resumption of normal activity, is indeed characteristic of stopping low or moderate inflations in industrial countries. The most well known examples of recent years are the stabilization policies in the U.K. and the U.S. in the early 1980's. This pattern is also consistent with the process of disinflation in France and Italy in the first half of the eighties.

In the case of hyperinflations one may expect that stabilization costs should be relatively small for several reasons. First, in this case the rigidities originating from past nominal contracts become negligible because of the drastic shortening of their duration. Secondly, the credibility problems, which usually arise even when the fiscal adjustment is satisfactory, are also

diminished because agents realize that the inflationary process is explosive and after some point, and there is no alternative to immediate stabilization. Thirdly, in hyperinflation it is easy to identify the change of regime, which takes the form of stopping the finance of extremely large deficits by money creation. In view of latter considerations Sargent (1983) suggested, in his influential paper, that in these cases disinflation costs should be much lower than, say, in the U.S.

Recent research suggests that the recessionary effects of stabilization in hyperinflations have been underestimated. Thus Wicker (1986) points out that there was a significant increase in unemployment in Poland, Hungary and Austria after the stabilization of hyperinflations in the early twenties. It took two to three years before unemployment returned to normal. The reasons seem to be related, in part, to the firing of public sector employees (as part of the fiscal adjustment) and to the process of adjustment to a stable-price environment. Even though these recessionary tendencies may have been smaller than in the low-inflation case, the classical scenario - of disinflation being followed by increase in unemployment over a number of years - continues to hold.

For most hyperinflationary episodes no reliable data on output is available. The scanty evidence shows that in some cases output went through a growth cycle following stabilization. However this was associated with extremely low prestabilization levels of output, due to the dislocations caused by wars and their aftermath.

For example, industrial output increased after the stabilization of the German hyperinflation in the end of 1923, but this followed the disruption of output as a result of events associated with the occupation of the Ruhr in the beginning of that year. In fact, German industrial output in 1924 was low not

only relative to the historical level of 1913 but also relative to the prestabilization years of 1921-22 [see data in Garber (1982)]. A similar phenomenon is associated with the Greek stabilization of 1945-47 [Makinen (1987)].

One of the few cases where a full fledged hyperinflation emerged in peacetime was the recent Bolivian experience of 1982-85. In this case GDP per capita fell below the prestabilization level, and remained there at least till 1989 (see Morales 1990), lending some support to the view that even in hyperinflations the stabilization process is associated with a fairly long initial recessionary phase in output.

Examining stabilization programs in chronic inflation countries in Latin America, we found, as noted earlier, in most cases a rather different scenario. After a small initial recessionary effect, or even with no effect of this kind, the reduction of inflation was associated with an initial expansion of output above the historical trend, and with a drop in unemployment. The expansionary phase could go on for a number of years ending in a recession. It should be pointed out, however, that this pattern was characteristic of programs which made use of the exchange rate as anchor for disinflation (this category covers the major programs).

The different patterns of disinflation in chronic inflation countries is probably related in part to the use of the exchange rate as anchor. However this cannot explain the emergence of a demand-driven business cycle unless it comes in conjunction with such factors as lack of credibility, insufficient fiscal support and the like (more on this later). The highly developed technology of living with inflation, which is characteristic of chronic inflation countries,

is one of the factors which make the programs less credible. This is because stabilization is not inevitable (unlike the case of hyperinflations).

Another possible reason for the cyclical pattern is the tendency of governments in chronic inflation countries to use improvements in the external sector in order to pursue simultaneously expansionary and disinflationary policies. This tends to give rise to an unsustainable boom in economic activity.

The emergence of the stabilization cycles raises important issues concerning offsetting policies. The fact that this empirical regularity has not been recognized in the past led to incorrect evaluation of actual development. For example, in the recent Israeli stabilization policy makers interpreted the expansionary phase of the cycle as change in the long term trend. As a result, the recessionary phase caught policy makers by surprise. If our findings have predictive value for future stabilizations then appropriate countercyclical measures can be planned to mitigate the unfavorable effect of excessive variability of output.

## II. EMPIRICAL CHARACTERISTICS OF STABILIZATION CYCLES

### 1. The Sample of Stabilization Programs

The stabilization programs in our analysis refer only to the so-called "chronic inflation countries". The study concentrates on Latin America but includes also Israel whose economy fits the chronic inflation category. In Latin America we deal with stabilization programs undertaken in Argentina, Brazil, Chile, Uruguay and Mexico. In each of these countries there were usually a large number of stabilization programs, but we include only the "major" ones (see characteristics of programs in Table 1). By this we mean programs which the public recognized as drastic new initiatives which constituted a break with



previous policies. A common feature of these programs is that all of them had major effects on the economy (for better or worse) and brought about a significant reduction in inflation for short or long time spans. In most cases the programs failed to stabilize inflation eventually (in which case inflation tended to accelerate) but in other cases the programs were part of a longer term stabilization effort over which inflation was kept at a low level. (See behavior of inflation and devaluation in all programs in Figure 1. Programs are indicated by shaded areas.)

To gain a historic perspective of the stabilization issue we extended our empirical analysis over a period covering the past three decades. In each decade there was a group of stabilization programs which shared some important common elements concerning the diagnosis of inflation and the design of the appropriate policies to deal with it.

This is clearly seen in the stabilization policies of 1980's which include Argentina's Austral plan of 1985-86, the Brazilian Cruzado plan (1986), the Israeli 1985 plan and the Mexican Pact of Economic Solidarity<sup>1</sup> of 1988-89. All these programs were based on a shock treatment which took the form of a drastic stop to inflation supported by initial wage-price freezes. These programs were called Heterodox because of the strong income policy component, but they also used the exchange rate as a nominal anchor. In the successful experiments, those of Israel and Mexico, the exchange rate continued to be used as the stabilizing instrument even when prices were gradually flexibilized (Israel has been using step devaluations while Mexico adopted recently a crawling peg).

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<sup>1</sup> See Heyman (1987), Kiguel (1989), Modiano (1988), Bruno and Piterman (1988), Liviatan (1988), Banco de Mexico 1988.

Contrary to the approach of the eighties, the philosophy of the Southern Cone Stabilization (in Chile, Argentina and Uruguay) in the 1970's was an "orthodox" one, i.e. one that embraced the free market approach, discredited the use of price controls and favored the liberalization of foreign trade and capital flows. These programs shared many common elements with regard to design and phasing, as aptly described by Ramos (1986). From the point of view of the present paper it is especially important to note that these programs evolved in two stages. The stage of stopping the accelerating inflation consisted of a fiscal-monetary package with an adaptable exchange rate (which we called a "money based stabilization" or MBS), while the second stage was an ERBS. The latter stage, which was motivated to some extent by the slow pace of disinflation in the preceding one, began in Chile in the second semester of 1976,<sup>2</sup> in Argentina in the second semester of 1978 and in Uruguay in late 1978. In the advanced stage of the ERBS these policies took the form of a preannounced path of devaluations, commonly referred to as the *Tablita*<sup>3</sup>. As is well known, these policies ended in a severe crisis in the early 1980s and had to be abandoned. Yet in a historical perspective the Chilean experience turned out to be a part of a successful long term disinflationary process.

In our sample we also have a group of three stabilization programs in the 1960's which again share a number of common elements. Here we refer to the Brazilian 1964-67 stabilization<sup>4</sup> under the Costello Branco administration, the

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<sup>2</sup> In Chile, the first phase was a crawling peg with occasional revaluations. In the second (more advanced) stage the exchange rate was fixed in the last two years of the *Tablita* (Corbo (1985), p. 914).

<sup>3</sup> On the Southern Cone stabilizations, see Ramos (1986), Corbo (1985) and Edwards (1987).

<sup>4</sup> See Fishlow (1973), Simonsen ( ), Foxley (1980)

Krieger-Vasena stabilization in Argentina in 1967-70<sup>5</sup> and the Uruguay stabilization of 1968-71<sup>6</sup>. In all of these cases the basic level of inflation was much lower than in the 1980's and so were the fiscal deficits. The programs could also benefit from a growing world economy and trade. The common elements were expressed by the fact that all three programs made use of the exchange rate as nominal anchor and used income-policies in varying degrees of intensity. (Argentina and Brazil relied mainly on voluntary price controls in contrast to Uruguay which adopted a heterodox shock treatment with comprehensive wage-price controls, similar to those of the eighties). While the Argentinean and Uruguayan programs were not sustained beyond 1970 and 1972 respectively, the Brazilian program was the prelude to a long period of high growth with low inflation (known as the "Brazilian Miracle")<sup>7</sup>.

In addition to the ten programs mentioned above, our sample includes two additional Argentinean stabilizations. One is the Frondizi stabilization of 1959-62 which resembles those of the 1970's in two respects, namely being an "orthodox" program and having initially a stage of tight monetary policy (the first semester of 1959) that changed later to a fixed exchange rate policy which lasted until early 1962. We close the list of our sample by the Peronist stabilization of 1973-75 (See DiTella (1979)) which resembles in some ways the Brazilian Cruzado plan. Both programs used comprehensive wage-price-exchange-rate freezes which were not supported by a proper fiscal adjustment and are usually regarded as populist policies.

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<sup>5</sup> De Pablo (1974)

<sup>6</sup> Finch (1974), Viana (1989)

<sup>7</sup> See detailed analysis of these programs in Kiguel and Liviatan (1989).

We turn now to the characterization of the programs in terms of the policy instruments, the targets, and the real effects with which they were associated.

## 2. Exchange Rate and Money Based Stabilizations.

One of the basic features of stabilization-business-cycles is that they were associated with programs which used the exchange rate, rather than the money supply as the nominal anchor. While it is easy to identify the former empirically, the latter case is more elusive.

One piece of evidence which we used for the comparison of the alternative disinflation strategies is related to the stabilization programs initiated in the Southern Cone by the military governments in the 1970s. As we noted earlier, the first stage of disinflation relied mainly on monetary and fiscal measures which were then switched to the exchange rate-fiscal package [see Ramos (1986) and Edwards (1987)].

The result of the first phase was recessionary for Chile and Argentina both in comparison with past trends and in relation with other Latin American countries (Table 1). In Uruguay this phase was expansionary; this seems to be related to the fact that here the main priority in stage I was not to stop inflation but rather to encourage exports by fiscal and financial means (Ramos *op. cit.*, p. 29) which may have stimulated output. Stage II was expansionary in all three countries by the above criteria. The recessionary phase of this policy (stage III in the table) coincided with a recession in other Latin American countries as a result of worsening external conditions. It is apparent however that the failure of the Tablita policies in Chile and Uruguay, where these were applied more rigorously, caused a distinctly excessive recession.

In the course of stage I the three countries managed to get their external balance under control, but the situation deteriorated severely in stage II (as can be seen in table 1). Stage III represents the recession which accompanied the balance of payments crisis at the termination of the Tablita policies.<sup>8</sup>

The effects of the nominal policies on economic activity in the two stages are not fully comparable because of two reasons. First, the major fiscal adjustments took place in stage I and their recessionary effects cannot be separated from the monetary effects. Secondly, in stage I the economies in question had to deal with severe balance of payments problems (especially Chile, which had to adjust to a sharp fall in the price of copper in late 1974). These developments may have biased the comparison between the stages in the direction of showing a too large recessionary effect in MBS. However, we do not believe that this changes the main conclusion, namely that MBS tended to be recessionary while the ERBS tended to be expansionary.

A similar distinction between stages of monetary and exchange rate based policies emerged also in the Frondizi stabilization, where tight monetary policy was applied in the first half of 1959 leading to a recession and an improvement in the current account (see figure 2). In the ERBS, which took place from the second semester of 1959, output expanded above the historical trend, following the pattern of the seventies.

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<sup>8</sup> We must note that there was no close resemblance between stage I of the foregoing stabilizations and the classical monetary stabilization based on a fixed (low) money supply rule with a floating exchange rate. In practice, the rates of monetary growth were reduced in a very gradual manner without a preannounced rule (unlike the exchange rate stabilization phase). While there were some identifiable instances of tightening monetary policy, there was certainly no rigid use of money as an anchor.

### 3. The Main Feature of ERBS's

#### a. Real activity

In general, economic expansion started quite soon after the initiation of the stabilization programs (see Figures 2). In Argentina the growth of output is evident in all five stabilizations. In Chile, where the use of the exchange rate for stabilization purchases began as early as the second semester of 1976 (see Corbo (1985)) we find that the whole period of ERBS till 1982 was one of uninterrupted GDP growth. The upsurge of growth is also apparent in Uruguay after the stabilization of the exchange rate in 1979. The experience of the eighties is generally quite similar in this respect. Israel enjoyed high rates of growth in the business sector in the first three years of the programs and similar, though shorter, growth spans were observed in the Austral and Cruzado plans. Usually the behavior of the unemployment was compatible with GDP growth, i.e., unemployment fell in the growth phase of the cycle (we do not record here this evidence for the sake of brevity).

We should note a certain difference between orthodox and heterodox program in the initial stage of the ERBS. In the orthodox program the exchange rate policy was introduced when inflation was already on the decline, having been stopped initially by a monetary-fiscal package as in the Frondizi and Southern Cone stabilizations of the 70s. In these cases we do not observe any recessionary effects with the shift to a policy of reducing the rate of devaluation. On the other hand, in the heterodox stabilizations the introduction of the ERBS was in the context of stopping the inflationary acceleration. In a way, the income policies of the heterodox programs were the counterpart of the monetary measures which preceded the ERBS in the orthodox programs of the Southern Cone. This brought about an initial recessionary effect into the

heterodox programs. However, as can be seen in Figure 2, the recessionary effects were both small and short-lived.

When the period of exchange rate stabilization extended over a considerable span we observe that the recessionary phase started before the large maxi-devaluations set in. This was the case in the Southern Cone stabilizations of the 70s, as well as in Uruguay 1969 and in Israel.

In order to obtain a better understanding of the cycle it is useful to relate it to the long term trend. Accordingly, we present in figure 3 the cycles in terms of deviations from the long term evolution of GDP per capita.<sup>9</sup> These diagrams confirm that almost all of the cycles can be characterized as such even with respect to the long term trend. In this respect the expansions in chronic inflation countries differ from those which are sometimes observed in post-hyperinflations, as in the case of Germany where industrial output remained well below trend (see Garber op. cit.). It may be pointed out that while the cycles may have influenced the trend, as calculated in our study, this interaction was minimized by taking relatively long time intervals.

Note also that most of the ERBS's were preceded by a recessionary period relative to trend. This indicates the existence of excess capacity which may have provided suitable conditions, from the supply side, for the upswing. One exception deserves special attention. The Brazilian stabilization in 1964-67 was characterized by a continuous recession relative to trend. This may be a significant fact in explaining the sustained low level of inflation in the following ("miracle") years. We may also note that the Krieger Vasena

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<sup>9</sup> To compute the trend we fitted a linear or quadratic equation for log GDP per capita in a piecewise manner and appropriate intervals. In the case of Argentina there is overlapping in the periods used to calculate the trend. We then averaged the residuals from the overlapping parts.

stabilization, which was one of the more successful Argentinean attempts, maintained GDP below trend for the first two years and only the last two years gave way to the boom.

b. The Balance of payments

It is characteristic of all ERBSs that they were associated with a deterioration of the trade balance in the course of the program. Therefore the expansionary feature of these programs, from the point of view of domestic uses, was even more pronounced than with the output growth criterion. The normal case (see figure 2) is that in the expansionary phase the current account goes into the red. The capital inflows which financed these deficits were, as a rule, reversed at some advanced stage of the boom where the recessionary phase began

It was the inability to finance the growing current account deficits which was, in most cases, the immediate reason for halting the boom. There are two important exceptions, in different directions, to this statement. In the case of Brazil 1964-67 the capital inflows continued to finance the current account deficit and made growth sustainable for many years to come. On the other hand, in the case of Israel the boom was halted without a deterioration of the current account.

c. Relative prices

As a rule, real wages increased with the upswing of economic activity (see figure 4), but sometimes we observe a lag which is due to two reasons. The real wage may have been raised up front in order to take account of the anticipated erosion by the sluggish reduction in inflation. We then observe a temporary reduction in the real wage in the early phase of stabilization (as was the case



in the Krieger Vasena stabilization). Or it may be the case that the real wage was kept deliberately, for some time, below its equilibrium level by income policies (as was the case in Israel).

The normal behavior of the real exchange rate during the boom was (as expected) in the opposite direction to that of the real wage. It is especially during the periods of the full peg that the real exchange rate fell quickly.

d. Consumption and investment

Most of the expansions of output were accompanied by a "consumption boom". Clearly, when GDP grows faster we also expect consumption to follow suit. The latter is expected to lag behind output if the stimulus to growth does not originate from the consumption side. By a "consumption boom" we mean that consumption grows faster than GDP when the latter accelerates (or is above normal). The most conspicuous episodes of the consumption boom took place in the Peronist and Martinez de Hoz stabilizations in Argentina, Uruguay 1969 and the Israeli program (figure 5).

Investment played a dominant role in the Argentinean program of the sixties, much of it being directly induced by government policies. In the programs of the seventies it was the Chilean ERBS which was driven by a continuous investment boom. The role of investment was not significant in the eighties. This was partly related to the reduction in capital inflows following the debt crisis. In Israel we observe a short-lived upsurge in investment, but on the whole the investment-GDP ratio was lower after the stabilization.

e. The fiscal deficit

Normally the stabilization cycle appears in spite of a sharp reduction in the fiscal deficit (see figures 1). This is perhaps most clearly evident in the case of Israel where the elimination of the fiscal deficit in 1986 coincided with a sharp consumption boom. This may seem rather surprising since the increase in taxation clearly outweighed any possible reduction in the inflation tax. A similar phenomenon was observed in Chile where the fiscal deficit was turned into a surplus in the course of the ERBS. The cut in the fiscal deficit prior to, or along with, the expansion in aggregate demand during the early phase of stabilization is also characteristic of all Argentine programs (except for the Peronist one where the deficit increased from the start). Although the recessionary phase of the cycle involved typically an increase in the fiscal deficit yet if this increase was perceived as being endogenous to the recession it did not entail the rekindling of inflationary expectations (see Figures 9 and 12 for Chile and Israel).

### III. THEORETICAL ASPECTS OF THE EXPANSIONARY PHASE

The questions which are raised by the foregoing stylized facts are the following: What is the explanation of the clear tendency of the ERBSs to be expansionary? What explains the contrast between these stabilizations and those based on money as the anchor, which turned out to be recessionary? Is ERBS expansionary because it is correlated with other policies which are expansionary? Or is it because ERBSs are correlated with external conditions which are conducive to expansion? We shall first deal with these questions before turning to the issues which relate the recessionary phase with the balance of payments crises. Let us begin with some theoretical considerations.

### 1. Disinflation Under Alternative Regimes With Flexible Prices

In the theoretical models of ERBSs we assume that the central bank stabilizes the exchange rate by intervening in the foreign exchange market, i.e. by manipulating its international reserves. This is not allowed in the MBS, where the exchange is floating. Now is there any reason to expect that in theory an ERBS will have initial expansionary effects on consumption? Let us first consider this question in the context of flexible prices. In addition, in order to focus solely on the exchange rate policy let us abstract from the fiscal aspect, assuming that taxes are lump sum and fully accommodative to the disinflation policy<sup>10</sup>. This is in line with the approach taken by Obstfeld (1985) and Calvo (1986) who analyze disinflation by means of exchange rate policy in a Ricardian model. This analysis assumes that the central bank's operations are fully internalized by the private sector.

Obstfeld shows that in this framework a reduction in the rate of devaluation from one constant level to another is neutral with respect to consumption and the current account. Real money balances will increase immediately through a sale of foreign assets to the central bank, but the increase in central bank's reserves will not affect consumption possibilities since the real asset position of the economy as a whole did not change.

It may be noted that if we use this model to perform a similar disinflation by means of reducing the rate of growth of the money supply we will obtain the same kind of result. The economy can jump immediately from a high inflation to

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<sup>10</sup> In a Ricardian model it is only the discounted value of the stream of taxes that matters.

a low inflation steady state in a neutral fashion with real balances increasing through our initial drop in prices.

In non-Ricardian models of finite horizon (unlike the foregoing models of infinite horizon) the results may be quite different. Thus, Helpman and Razin (1987) show that in the context of an overlapping generations model of the Blanchard (1985) type, the consequences of exchange rate management are likely to be different as compared with a pure float. In their model, variation in taxation will be neutral (as in the Ricardian model) under a pure float, while under exchange rate management this will not necessarily be the case. In particular, an unexpected freeze of the exchange rate combined with a tax cut may be expansionary. This will happen if the freeze creates a windfall for the currently living generation, which is not fully taxed away. While this model is based on very special assumptions (e.g. money is not a store of value, so that portfolio considerations are ruled out) it does suggest that the disinflation under the two types of regimes may indeed be basically different. It should be pointed out, however, that this model does not provide a convincing explanation for the experiences of Israel where the consumption boom arose in conjunction with a fiscal surplus. It may provide however a possible explanation for consumption booms which appeared in programs where the fiscal adjustment was not sufficient to sustain the devaluation policy on a long term basis.

## 2. Inertial Wage and Price Rigidities

Wage or price rigidities may provide another setting in which disinflation under alternative regimes may yield differences in the direction suggested by the stylized facts. For example, we can see intuitively that when prices exhibit downward rigidity the increase in real money balances in the MBS cannot take

place through a fall in prices and therefore it is output that will tend to fall.<sup>11</sup> This factor does not exist in an ERBS where the downward rigidity constraint is not binding. Although this argument does not explain why there is a tendency for ERBS to be expansionary, it shows that the MBS is more recessionary.

In pursuing this approach we can make use of recent theoretical studies by Fischer [(1986) and (1988)] who analyzed the effects of disinflation in alternative exchange rate regimes under wage rigidities which result from long term nominal contracts. Fischer formulates a fairly standard macro model of the open economy with rational expectations and full capital mobility (the interest rate parity holds), a downward sloping demand curve for exports and a "small economy" assumption with regard to imports. The longest wage contract is for two periods in the course of which a successful disinflation assumed to be completed.

Disinflation by means of the money supply tends to generate recessionary influences through an increase in real wages due to nominal wage rigidity (which reduces supply) and through the creation of excess demand for money which pushes up the real interest rate and thus reduces aggregate demand. An increase in the real interest rate above the international level, under perfect capital mobility, is possible only if a real devaluation is expected, which in turn requires an initial real appreciation, since the real exchange rate has to return eventually to its original level (as in Dornbusch's overshooting theory). This real appreciation exerts an additional recessionary effect through the demand for

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<sup>11</sup>This is in fact confirmed in a recent model by Calvo and Vegh (1990) where (symmetrical) nominal rigidity is introduced through a model of staggered prices.

domestic output. The effect on the trade balance is ambiguous because of the conflicting influences of the reduction in output and the real appreciation.

In comparing these conclusions with the "monetary phase" of the Southern Cone stabilizations (as well as with other monetary-fiscal stabilizations in Latin America) we find indeed that the overall effect is recessionary, but we do not find the tendency for real appreciation.<sup>12</sup> We also find that the effect of the MBS on the trade balance was favorable. A possible explanation for these contradictions is that the periods in which this type of stabilization was undertaken in the Southern Cone were ones of much political and economic instability which prevented effective capital inflows. In the absence of capital flows (such that the current account is a residual accommodated by changes in reserves) a tight money policy can be consistent with a real depreciation and an improvement in the current account if the exchange rate policy is of the form of a passive crawling peg (with lags).

For the case of an EkBS in Fischer's type of analysis, the recessionary effect through excess demand for money is essentially inoperative since money is endogenous. However the real appreciation is still there because domestic prices are stickier than the exchange rate at the starting point. Real wages for domestic producers can also be expected to go up because nominal wages are stickier than prices. In contrast to these recessionary tendencies there is an initial expansionary effect through the possible reduction in the real interest rate in the first period. This is due to the real appreciation in the second period, which is foreseen correctly in the first one. Given the interest rate parity this implies a reduction in the real interest rate. In spite of the

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<sup>12</sup> In the case of Argentina the economy started with an undervalued currency, which may explain lack of further real depreciation in 1976.

theoretical possibility of a boom in the first period, Fischer dismisses this outcome as unlikely on the basis of some numerical examples. The effect of ERBS on the trade balance is again ambiguous because of opposing forces.

Fischer's results concerning the real appreciation and the implied rise in real wages in an ERBS are certainly consistent with the stylized facts presented earlier. However, in the real-world ERBSs, there is clearly no ambiguity about the deterioration of the trade account in the course of the stabilizations. More importantly, the early part of these stabilizations is almost always expansionary, contrary to Fischer's examples. If we remain in the context of his model<sup>13</sup> we have to conclude that the initial expansionary effect of the real interest rate outweighs the recessionary effect of the real appreciation.

### 3. More on the Expansionary Effect of the Real Interest Rate

The possibility that the real interest rate may create a boom in the ERBS comes out more clearly in the model developed by Rodriguez (1982). This model is based directly on rigidities in inflationary expectations in the sector of non-tradables. With full capital mobility the formula for the real interest (r) rate is given by

$$r = i - \pi^e = i^* + \beta(\epsilon^e - \pi_N^e) + k \quad (1)$$

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<sup>13</sup> We should also note that the actual programs are not directly comparable with the model because the latter assumes that stabilization is successful, which is usually not the case in practice.

where  $i$  is the nominal domestic interest rate,  $\pi^e$  is the expected rate of inflation,  $i^*$  the foreign interest rate,  $\beta$  the weight of non-tradables in the price index,  $\epsilon^e$  the expected rate of devaluation,  $\pi_N^e$  the expected rate of inflation in non-tradables and  $k$  is a constant risk factor.

Rodriguez assumes that actual devaluation  $\epsilon$  equals  $\epsilon^e$  and that  $\pi_N^e$  exhibits rigidity. It then follows that a reduction in  $\epsilon$  will reduce  $r$  and thus cause an expansion of aggregate demand. In the framework of continuous time the level of the real exchange will not change on impact while  $r$  will. Therefore the initial effect of an ERBS is expansionary. The recessionary effect of the real appreciation on the demand for non-tradables gathers strength gradually and eventually outweighs the expansionary effect of the real interest rate. Eventually the real exchange and interest rates return to their long-run equilibrium levels.

While in the Rodriguez model aggregate output is assumed to be constant we may, in principle, think that domestic output depends negatively on the real interest rate and positively on the real exchange rate. In this modified version there will be an output cycle, with an initial boom, and a real exchange rate cycle with an initial appreciation.

The foregoing model can be criticized on several grounds. First, it can be claimed that this model, as well as Fischer's, assumes full credibility in the government's devaluation policy, which is unrealistic. We must distinguish, however, between credibility in the early and later stages. The fact is that the announcement of a reduction of the rate of devaluation is usually credible in the short run, and this is strengthened by capital inflows which augment the



central bank's reserves. This is sufficient to create an expenditure boom. The issue of credibility in the announced devaluation rate appears later, and we shall deal with it subsequently.

Another criticism is that the model is based on adaptive expectations which are not very fashionable recently. However, one can show that the insight provided by Rodriguez concerning the boom can be preserved in rational expectations models of similar kind.

What is the empirical evidence on the behavior of real interest rates in ERBSs? It seems that in the case of the Southern Cone stabilizations in the late 70s the reduction in the real interest rates was quite evident. Thus, Corbo (1985) reports that the *Tablita* policy in Chile, and the increased capital mobility with which it was associated, led to a downward pressure on domestic interest rates which stimulated a rise in aggregate demand. Similar findings for the early stage of the *Tablita* policies are reported in Ramos (1986) for lending rates<sup>14</sup> in all Southern Cone experiments (see table 3). However, this property was not shared by the stabilization programs in the 1980s partly because of limited capital flows as a result of the debt crisis. Real interest rates in Israel and Mexico rose to extremely high levels in the course of stabilization. This may be related to the lower degree of credibility in these programs due to the sharp reduction of inflation with the aid of controls. The rise in the ex-ante real rates was smaller but apparently still significant. It seems therefore that in these cases we need something more than the Rodriguez mechanism to explain the expansion. The next section explores one of the possibilities.

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<sup>14</sup> The picture for deposit rates is less clear, see Ramos op.cit., p. 154.

#### 4. Temporariness

The foregoing models of Fischer and Rodríguez assume that the program is eventually successful. However, the fact that so many stabilization programs failed must lead to pessimistic views about the chances of a new program to succeed. This is equally true for a program which turns out eventually to be part of a successful disinflation, as in the case of Chile or Israel. However, the very expectation that the stabilization is only temporary may give rise, in the early stages, to an expansion of aggregate demand.

The issue of expectations that stabilization is temporary has been investigated in various recent papers by Calvo (1986, 1987, 1989). In these models, which are based on a cash in advance setting, it is shown that when agents expect stabilization to be temporary they will shift part of their future consumption expenditures to the present. The reason is that in the present, when the rates of devaluation and inflation are low, the cost of holding money (which is necessary to carry out expenditures) is also low, while the opposite is true for the future periods when inflation is expected to be resumed. This will give rise to increased expenditures in the stabilization period, accompanied by current account deficits and real appreciation. All these features are clearly consistent with the phenomenon of the consumption boom and the related developments which we described earlier.

It is interesting to note that this model is a Ricardian one, with the property that a permanent reduction in the (constant) rate of devaluation is neutral. This underscores the fact that the consumption boom is related entirely to expectations of temporariness. It may also be noted that unlike the Rodríguez

and Fischer models, where the boom is the result of an initial reduction in the real interest rate, the rise in consumption in Calvo's model is caused by a temporary reduction in the nominal interest rate. This helps to explain the emergence of the consumption boom in programs where the real interest was very high (as in the case of Israel).

We may also point out that with fully flexible prices, the Calvo (1986) model of temporary stabilization will lead to an early consumption boom even under a MBS.<sup>15</sup> However this requires an initial drop in prices. Consequently, with downward price rigidity the expansionary effect may not be possible. This problem does not arise with an ERBS since nominal money is endogenous. Consequently the expansionary effect remains.<sup>16</sup>

Somewhat paradoxically, one can arrive at similar conclusions with regard to the consumption boom if one assumes that (a) consumers view the stabilization as permanent, and (b) that the reduced uncertainty about relative prices and about government policies will enhance productivity. This sort of expectations may raise the perceived permanent income and thus raise consumption. (Note, however, that on this interpretation the increase in consumption is not cyclical.)

A partial test for the competing hypotheses is by looking at the behavior of durable goods purchases. If agents expect the stabilization to fail then they may consider the possibility that the failure will involve a balance of payments crisis which will be accompanied by quantitative restrictions on imports and a

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<sup>15</sup> This is shown by Calvo (1989) in the framework of a more general model.

<sup>16</sup>In a more recent paper Calvo and Vegh (op. cit.) show that with staggered prices an ERBS is expansionary while a MBS is recessionary in the context of temporary stabilization.

general tightening of credit conditions. They would therefore shift the purchase date of durables to the present. A perceived increase in permanent income may also give rise to a more-than-proportionate increase in durables purchases, because of the accelerator effect, but this can be expected to be lower than the intertemporal substitution effect.

An examination of the data for Israel reveals that durable purchases increased tremendously in 1986, following the stabilization of July 1985 (Table 4) which lends some support to the temporariness hypothesis. It is interesting to note that a similar behavior was recorded in Israel in 1981-83 when the prices of durables were reduced temporarily through cuts in sales taxes and through a reduction in the rate of devaluation (in the Tablita fashion).

## 5. Consumption Booms and Self Fulfilling Balance of Payments

### Crises

The foregoing discussion can be related to the theory of rational and self-fulfilling balance of payments crisis, as in Obstfeld (1986). Pessimistic views about the government's policy in the event of a crisis may actually bring it about even if it is completely unrelated to the behavior of the fundamentals under full credibility. In particular, if the public's perception is that an exchange rate collapse will set off an inflationary domestic credit policy (which is not unrealistic) then the crisis may become self-fulfilling.

If agents expect that a balance of payments crisis will involve restrictions on expenditures, in the fashion described above, then the anticipated self-fulfilling crisis may be preceded by a consumption boom. This consideration provides another possible link between confidence in the government's commitment to disinflate and preemptive increases in expenditures.

## 6. Real Wages as a Cause for Expansion

Since real wages tend to rise with the expenditure cycle it is conceivable that the former may actually cause the latter. This is because of the higher propensity to spend out of wage income. However, this theory has to deal with two questions. First, it has to show that real wages affect demand more strongly than supply. Secondly, it has to explain what is it that causes wages to rise in ERBS more than otherwise.

The answer to the first question is certainly unclear from the theoretical point of view.<sup>17</sup> As for the second one, it is often mentioned (especially in the case of the Chilean Tablita) that lagged wage indexation will cause a rise in real wages when inflation is falling. It should be noted however, that this explanation does not work in the case of the heterodox programs where the foregoing type of inertia is eliminated at the outset.

It can also be the case that in various stages of the cycle the role of wages may change. Thus for example, Bruno and Piterman (1988) point out that in the early stage of the Israeli expansionary phase real wages rose (after being initially suppressed) when unemployment was still relatively high, which supports the theory of an expansionary wage effect. However, quite soon the rise in real wages became endogenous to the expansionary consumption-pull forces.

## 7. Supply Side Effects

Apart from the effects of disinflation on demand there may be expansionary effects originating from the supply side. The strong effect of exchange rate

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<sup>17</sup> This is closely related to the question of whether a real appreciation is expansionary [see Krugman and Taylor (1978) and Lizondo and Montiel (1989)].

stabilization on prices, which we often find in ERBSs, may increase efficiency through the reduction of excessive variation in relative prices and through a shifting of resources out of excessive financial and speculative activities. However, the latter effect operates only in the longer run. In the medium run, the effect of restructuring the economy toward a low-inflation environment may well be recessionary [see Garber (1982) for an example from the German stabilization].

#### IV. SPECIFIC EXPANSIONARY FACTORS

The forgoing analysis dealt with some general considerations which may explain expansionary tendencies in ERBSs. However in practice one may usually find specific factors which contributed to the expansion of output in individual cycles. It is conceivable that these factors were no less important (or even more important) in generating the booms than the exchange rate policy itself. In some other cases it was the interaction of the exchange rate stabilization strategy with other factors which created a mechanism for unsustainable expansion. Since this study involves a concrete set of programs we have to take into account these additional considerations.

##### 1. Favorable External Conditions

A common feature of many ERBSs is that they started from a relatively favorable external position. This could be due to an improvement in terms of trade (as in the Peronist stabilization), to a favorable change in external financing (as in the case of Israel), but mostly it was a result of prior efforts to deal with balance of payments stresses (usually through recessionary policies). The latter type of development is evident in the 1980s in the cases

of Brazil and Mexico following the debt crisis, but it also took place in Israel. In the 1970s the use of the exchange rate for stabilization in the Southern Cone began only after the preceding external crises were brought under control (Chile had a current account surplus in 1976 and Argentina had surpluses in 1976-78). The Frondizi stabilization provides yet another example of this kind. On the other hand, we never observe that an ERBS began at a state where the balance of payments was facing severe difficulties. The fact that ERBSs often take place under relatively favorable external conditions, following a recessionary period, suggest the possibility that the governments would have tended, under these circumstances, to follow expansionary policies even in the absence of the ERBSs. It is also conceivable that in some cases, the ERBS was chosen because it was thought to be conducive to economic expansion. It is for this reason that we cannot say that the cyclical developments are due entirely to the choice of the nominal anchor. However, the emergence of consumption booms in most episodes provides indirect evidence on the significance of the expectational mechanism of the Calvo-type theories.

## 2. Development Strategy

It is usually the case that disinflation is part of a broader strategy which may involve expansionary elements. In some cases these may dominate the contractionary policies, leading to an expansionary stage in the disinflation program. Examples of this kind are the Frondizi and Krieger Vasena stabilizations in Argentina. In both cases the government considered the modernization of the economy through investment as a dominant objective. Thus Petrecolla (1989) writes that the Frondizi policy of reducing inflation was part of a strategy to accelerate growth through a substantial increase in investment.

The reduction of inflation and the exchange rate policy were considered as necessary in creating a favorable atmosphere for attracting foreign investors which were also granted special incentives. The direct and indirect encouragement of investment jointly with exchange rate stabilization were also part of the Vasena program. These considerations go a long way in explaining the joint occurrence of disinflation and expansion in these two programs.

However, the liberalization of the exchange rate and the reduced cost of borrowing abroad was an additional factor which encouraged investment (Petrecolla op.cit., p. 118). Thus the Rodriguez effect seemed to work simultaneously with more direct expansionary forces in a way which is difficult to disentangle empirically.

### 3. Opening The Capital Market

The opening of the economy to foreign capital was an integral part of the reforms in the Southern Cone stabilizations. This was not only by the need to attract foreign capital but was also part of the free market philosophy which dominated these programs. The removal of barriers to capital flows can be considered as a relaxation of liquidity constraints which may stimulate expenditures directly, or as an implicit reduction in foreign interest rates (see discussion in Edwards (1987) and Corbo (1985)). If we adopt the latter interpretations and incorporate it in a Rodriguez (1982) type model we find again that it leads to a reduction in the domestic real interest rate and therefore to an overall expansionary tendency. While the reduction in the foreign interest rate is not equivalent to a reduction in the rate of devaluation, yet it generates a similar cyclical tendency. Again, it is difficult to separate



empirically the expansionary initial effect of these two aspects of the Southern Cone stabilizations.

#### 4. Commercial Policies

The Tablita policies in the Southern Cone were accompanied by policies of trade liberalization [Ramos (1986), Ch. 7]. Although this was in line with the overall strategy of reforms, the timing of the tariff reductions was intended to support the disinflationary exchange rate policy. It is quite clear that this trade policy contributed to the increase in imports and to the increase in the external deficit. But could it have also contributed to the upswing of the business cycle? Normally a reduction in tariffs will have a recessionary effect on output in the short run because of substitution effects. However, if the resulting worsening of the trade balance creates pessimistic expectations about the fate of the stabilization program as a whole then the result may well be a temporary rise in aggregate demand (in anticipation of a tighter financial regime in the future).

### V. THE DOWNSWING

If we think of the business cycle in terms of the above models of Rodriguez or Calvo, then the downswing is just the counterpart of the upswing and therefore does not require any special analysis. We shall argue, however, that there are important asymmetries between these two phases. In particular, while the downward pressure on the real exchange rate during the upswing can be easily accommodated by an excess of inflation over announced devaluation, the reverse process may be hampered by inflationary rigidities which result from credibility

considerations. The latter may render the downswing to be much more severe than otherwise.

The foregoing approach to the cycle refers to the expectational aspect assuming the "fundamentals" are in order. We need, however, to examine to what extent was the downswing influenced by a retreat from the announced fiscal policies which may involve a loss of credibility. We should also recall that some expansions were influenced by policies designed to encourage investment. The downturn may then be explained in part by the unsustainability of these policies. We also have to take into account adverse external shocks.

#### 1. Inflationary Rigidities in the Downswing

The Rodriguez model describes the variation in the real exchange rate and in the real interest rate as a cycle in which the reduction in the nominal rate of devaluation is permanent and fully credible whereas the expected rate of inflation (of nontradables) is gradual, as a result of rigidities. Since the early stage of the process involves a real appreciation, the later stage requires a real devaluation (given the long run neutrality of the real exchange rate). However, this scenario is quite problematic.

Consider for example a complete freeze of the nominal exchange rate. Then the real devaluation will require an actual deflation. However, since we are dealing with economies that have experienced inflation for many years this path will be viewed with much skepticism. As the real exchange rate continues to appreciate the public will attach an increasing probability that the overvaluation will be corrected by a change in exchange rate policy rather than by a domestic deflation (or a sharp cut in inflation).

With long term nominal contracts the expectation of future devaluations will introduce a downward rigidity in domestic inflation which may prevent the convergence to a low inflation equilibrium within the framework of the announced policy. This will be accompanied by a continued real appreciation and rise in real interest rates which may lead to a crisis, as we observed in the Tablita policies in the Southern Cone.

## 2. Reversal of the Fiscal Adjustment

It is often the case that the main reason for the abandonment of the low devaluation regime in ERBS is the reversal of the initial fiscal policies which were supposed to support the exchange rate regime. Thus in all Argentinean programs we find that the abandonment of the exchange rate stabilization is associated with a retreat from the fiscal objectives (in the Peronist regime there was even no initial fiscal adjustment). In these cases there is often a lag between the fiscal reversal and the change in the exchange rate policy, since there is a natural tendency to postpone the admission of the failure of stabilization (the lag is evident for example in the Argentinean Tablita, as can be seen in Figure 8b). Clearly, the longer this lag the more severe will the recession tend to be.

## 3. External Shocks

In some stabilizations the downswing was aggravated by adverse external shock. For example, in the Southern Cone stabilizations, the downturn coincided with an increase in oil prices, rising world interest rates and a tightening of the world credit markets. This may explain why these stabilizations ended in

such explosive crises in the early 1980s. However, the difficulties in pursuing the Tablita policies became evident much before the external shocks.

#### 4. Unsustainable Development Policies

The implication of the Rodriguez model is that the investment boom is reversed because in the expansionary phase the real interest rate is below normal, a divergence which must be corrected later. However, there might have also been some basic difficulties, at least in Argentina, with the investment induced growth spans.

In reviewing the stop-go policies in Argentina in the post war era, including the Krieger Vasena program Schydowski writes: "Rapid internal expansion typically overwhelmed the slow process of import substitution and thus the demand for imports shot ahead of the availability of foreign exchange from the more slowly growing exports.... Short term borrowing could cover the gap for a limited period of time, but ultimately proved unsustainable. At that point, expansion would not continue, devaluation took place and the economy entered into recession in order to ... build up foreign exchange reserves once more". (op. cit., p. 176). Thus the internally inconsistent growth pattern may have interacted with the exchange rate policy in bringing about the recession.

## VI. POLICY ISSUES

The phenomenon of the business cycle associated with ERBSs does not in itself imply that the long term disinflation policy cannot persist. This has been shown in the cases of Chile and Israel. However, even in these cases the variation in economic activity and in consumption over time is undesirable for several reasons.

First, it is generally preferable to have a stable path of consumption [see Calvo (1986)]. Secondly, the excessive purchases of capital goods which take place during the expansionary phase (in anticipation of a failure of the exchange rate policy) lead to an inefficient allocation of investment. Thirdly, the difficulty in correcting the overvaluation and redressing the excessive real wages exacerbates the recessionary phase and leads to an unnecessary loss of output.

In the case of programs which turn out to be temporary (this is the majority) there are additional considerations. In these cases the failure can also be reflected in a destabilization of the inflationary process, as was clearly the case in the aftermath of the Austral and Cruzado plans. The loss of credibility which results from failure to stabilize requires much more recessionary policies in future stabilizations and corresponding losses of output.

This raises two questions: Is the stabilization cycle unavoidable in practice? If not, what can be done (and what was done) to mitigate its effect? As for the first question, the evidence from the stabilizations of Brazil 1964-67 and Mexico 1988-89 show that the excessive expansion can be avoided. One possible explanation for the Mexican case is that the fiscal adjustment was carried out long before 1988. In fact, the fiscal deficit was cut very drastically as early as 1983 and the budget even showed an operational surplus in 1987. This may indicate that it is advisable to start with the fiscal adjustment before the stabilization of the exchange rate in order to enhance credibility in the program. It must be recognized, however, that this may not be feasible politically (in the case of Mexico this step-wise procedure was

facilitated by the need to use recessionary fiscal measures to deal with the balance of payments crisis).<sup>18</sup>

Thus far we focused on policies which may prevent excessive expansion in stabilization programs. However assuming that normally some form of overvaluation will tend to arise in the ERBS one should look for ways of overcoming this obstacle which causes so much difficulties. An obvious question is whether one should not switch nominal anchors - shifting at some stage from ERBS to MBS - thus benefitting from the advantages of both strategies.

The ERBS is useful in the early stage of stopping inflation (in the framework of a heterodox package) because it enables to clear the inflationary confusion and provides a simple instrument by which the nominal policy can be monitored by the public. The initial fixed exchange rate regime provides also a simple framework for a stock adjustment of money without raising credibility problems. Switching to the monetary anchor some time after the completion of the stock adjustment may seem to be a reasonable way to avoid the subsequent problems arising from exchange rate rigidities.

Indeed, Chile did quite well after abandoning the fixed exchange rate regime in 1982 - economic growth was resumed jointly with a real devaluation and a stable level of low inflation. Israel, on the other hand, continues with a policy of infrequent step devaluations, relying on the exchange rate as nominal anchor, and going through a recession.

There are however two difficulties with the proposed switch of anchors. If the excessive real appreciation in the ERBS is due to lack of credibility in

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<sup>18</sup>It should be pointed out, however, that the Mexican experiment is still very young and we have to wait a few more years before reaching more definite conclusions.

the adherence to the nominal anchor then these credibility issues will reappear in connection with the money supply rule as well.

Secondly, the adoption of the money supply policy is problematic in disinflation if the economy remains highly indexed, as in the case in Israel. In this regime, monetary shocks are translated very easily to price shocks which may undermine the credibility in price stability (given incomplete information about the causes of the shocks). Chile overcame this difficulty by abolishing formal wage indexation, a decision which was facilitated by the balance of payments crisis of 1982. By contrast, in Israel, the comfortable external position continues to support the reliance on the exchange rate as anchor.

Table 1. Characteristics of Stabilization Programs Included in Study

| Program Term or Quarter | When did it finish? | Exchange Rate Fixed vs. Crawl       | Income Policies   | Multiple or Unified                   | Fiscal                                   | Initial Reserves (Months of Imports) | Reduction in Inflation From | To  | Commercial Policy                      | Preceded by Monetary Fiscal Measures | Termination Shock or Gradual | Initial Inflation (Average 12 Months prior to program) | Preceded by Monetary Devaluation |
|-------------------------|---------------------|-------------------------------------|-------------------|---------------------------------------|--|--------------------------------------|-----------------------------|-----|--|--------------------------------------|------------------------------|--|----------------------------------|
| <b>80s</b>              |                     |                                     |                   |                                       |  |                                      |                             |     |  |                                      |                              |  |                                  |
| Israel 3rd Q. 85        | Not yet             | Fixed w/ infrequent adjustments     | Yes (shock)       | Official and parallel                 | Big adjustment                           | 3.2                                  | 21.2                        | 8.1 | No Special                             | No                                   |                              | 327.7  | Yes                              |
| Austral 3rd Q. 85       | 3rd Q. 85           | Fixed                               | Yes (shock)       | Official and parallel                 | large transitory adjustment              | 5.3                                  | 24.9                        | 2.6 | No                                     | No                                   | Gradual                      | 1082.4   | Yes                              |
| Cruzeiro 1st Q. 86      | 4th Q. 86           | Fixed                               | Yes (shock)       | official and parallel (large premium) | no adjustment                            | 10.4                                 | 11.1                        | 1.7 | No                                     | No                                   | Shock                        | 237.2  | No                               |
| Mexico 1st Q. 86        | Not yet             | Fixed (1st year) then Crawl         | Yes (Small Shock) | No                                    | Yes, Main Adjustment Prior to Program    | 12.4                                 | 8.2                         | 2.8 | Trade & Capital Account Liberalization | Fiscal Adjustment                    | Not yet                      | 131.8  | Yes                              |
| <b>70s Tabletop</b>     |                     |                                     |                   |                                       |  |                                      |                             |     |  |                                      |                              |  |                                  |
| Chile 3rd Q. 78         | 3rd Q. 82           | Crawl, then Preannounced then Fixed | No                | Unified                               | Yes                                      | 2.6                                  | 11.2                        | 6.5 | Trade Capital Account Liberalized      | Yes                                  | Shock                        | 249.37   | Yes                              |
| Uruguay 4th Q. 78       | 4th Q. 82           | Preannounced                        | No                | Unified                               | Yes                                      | 5.9                                  | 3.4                         | 4.6 | Liberalized Trade and Capital Accounts | Preceded by Small Fiscal Adjustment  | Shock                        | 42.3   | No                               |
| Argentina 4th Q. 78     | 1st Q. 81           | Preannounced                        | No                | Unified                               | Moderate Stable Budget Deficit           | 16.7                                 | 8.1                         | 8.6 | Yes                                    | Yes                                  | Shock                        | 180.7  | No                               |
| Argentina 3rd Q. 73     | 2nd Q. 75           | Fixed                               | Yes               | Three Exchange Rates                  | Expansionary                             | 3.5                                  | 5.7                         | 0.8 | No                                     | No                                   | Shock                        | 75.4   | No                               |
| <b>60s</b>              |                     |                                     |                   |                                       |  |                                      |                             |     |  |                                      |                              |  |                                  |
| Argentina 2nd Q. 67     | 3rd Q. 70           | Fixed                               | Yes (Gradual)     | Unified Exchange Rate                 | Fiscal Adjustment                        | 1.9                                  | 2.5                         | 2.7 | Incentives for capital inflow          | No                                   | Gradual                      | 27.4   | Yes                              |
| Brazil 2nd Q. 64        | 3rd Q. 68           | Fixed w/ Step Devaluation           | Yes (Gradual)     | Official and Parallel                 | Fiscal Adjustment                        | 0.9                                  | 6.4                         | 4.2 | No                                     | No                                   | Gradual and successful       | 95.3   | Yes                              |
| Uruguay 2nd Q. 68       | 1st Q. 72           | Fixed                               | Yes (Shock)       | Official and Parallel                 | Fiscal preceded deterioration later on   | 4.9                                  | 9.5                         | 1.9 | No                                     | Yes, 6 months earlier                | Shock                        | 163.0  | Yes                              |
| <b>50s</b>              |                     |                                     |                   |                                       |  |                                      |                             |     |  |                                      |                              |  |                                  |
| Argentina 3rd Q. 59     | 2nd Q. 62           | Fixed                               | No                | Unified Exchange Rate                 | Initial adjustment deteriorated later on | 5.7                                  | 9.5                         | 1.9 | Incentives for Foreign Investment      | Yes (IMF Program 6 months before)    | Gradual                      | 136.1  | Yes                              |

\* A shock usually includes a simultaneous freeze of wages, prices and the exchange rate.



Table 2. Stages in Southern Cone Disinflation

| (1)               | (2)     | (3)                      | (4)                                | (5)          | (6)       | (7)         |
|-------------------|---------|--------------------------|------------------------------------|--------------|-----------|-------------|
| Stage             | Dates   | GDP Growth<br>per Capita | Current<br>Account<br>Export ratio | M1<br>Growth | Inflation | Devaluation |
| <u>Chile</u>      |         |                          |                                    |              |           |             |
| Historic          | 1950-73 | 1.5                      |                                    |              |           |             |
| I                 | 74-76   | -4.6                     | -.12                               | 257          | 370       | 435         |
| II                | 77-81   | 6.2                      | -.43                               | 71           | 50        | 27          |
| III               | 82-83   | -9.0                     | -.38                               | 18           | 19        | 43          |
| <u>Uruguay</u>    |         |                          |                                    |              |           |             |
| Historic          | 1950-74 | 0.6                      |                                    |              |           |             |
| I                 | 75-78   | 3.6                      | -.21                               | 54           | 59        | 51          |
| II                | 79-80   | 5.3                      | -.39                               | 67           | 65        | 23          |
| III               | 81-83   | -4.8                     | -.16                               | 13           | 35        | 68          |
| <u>Argentina</u>  |         |                          |                                    |              |           |             |
| Historic          | 1950-75 | 1.7                      |                                    |              |           |             |
| I                 | 75-78   | -0.9                     | .19                                | 239          | 265       | 190         |
| II                | 79-80   | 2.4                      | -.27                               | 124          | 148       | 53          |
| III               | 81-83   | -4.3                     | -.33                               | 204          | 204       | 295         |
| <u>Rest of LA</u> |         |                          |                                    |              |           |             |
| Historic          | 1950-74 | 3.4                      |                                    |              |           |             |
| I                 | 75-78   | 2.9                      |                                    |              |           |             |
| II                | 79-80   | 3.8                      |                                    |              |           |             |
| III               | 81-83   | -2.7                     |                                    |              |           |             |

Stage I is the monetary-fiscal stabilization, stage II is the first (and main) part of the exchange rate based stabilization, and stage III is the collapse. Dates are annual and therefore not precise.

Columns (3), (5), (6), and (7) are annual percentages.

Source: Ramos (1986), from various tables.

**Table 3. Real Lending Rates<sup>a</sup> in Southern Cone Stabilizations**

| <u>Year</u> | <u>Chile</u>     | <u>Uruguay</u> | <u>Argentina</u> |
|-------------|------------------|----------------|------------------|
| 1975        | 127 <sup>b</sup> |                |                  |
| 1976        | 18               |                |                  |
| 1977        | 39               | 5              | 16 <sup>b</sup>  |
| 1978        | 35               | 19             | 1                |
| 1979        | 17               | -10            | -2               |
| 1980        | 12               | 17             | 6                |
| 1981        | 39               | 24             | 19               |
| 1982        | 35               | 34             | 11               |
| 1983        | 16               | 28             |                  |

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a/ Percent, annual.

b/ Second Semester (after liberalization of interest rates).

Source: Ramos (1986), P. 154.

## ISRAEL

Table 4. Durables and Non-Durables Consumption

|  | 1980  | 1981  | 1982  | 1983  | 1984  | 1985  | 1986 | 1987 | 1988 |
|--|-------|-------|-------|-------|-------|-------|------|------|------|
| Annual Increase in Percentage terms (at constant prices) |       |       |       |       |       |       |      |      |      |
| 1. Durables Purchases                                    | -8.4  | 37.6  | 17.9  | 8.1   | -32.0 | -1.4  | 47.1 | 12.6 | 2.3  |
| 2. Non-Durable Consumption                               | -2.0  | 7.8   | 5.9   | 6.2   | -2.6  | -0.3  | 10.2 | 7.6  | 3.7  |
| 3. Real Disposable Income                                | 1.7   | 14.2  | -2.6  | 2.8   | 8.7   | -10.7 | 3.4  | 7.1  | 5.4  |
| Annual Increase in Prices (Percent)                      |       |       |       |       |       |       |      |      |      |
| 1. Durables Purchases                                    | 89.3  | 98.1  | 102.1 | 135.5 | 409.2 | 297.6 | 41.1 | 18.9 | 9.4  |
| 2. Non-Durable Consumption                               | 133.7 | 121.8 | 117.8 | 146.6 | 381.4 | 294.0 | 47.8 | 20.2 | 16.0 |

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Source: Bank of Israel Annual Reports

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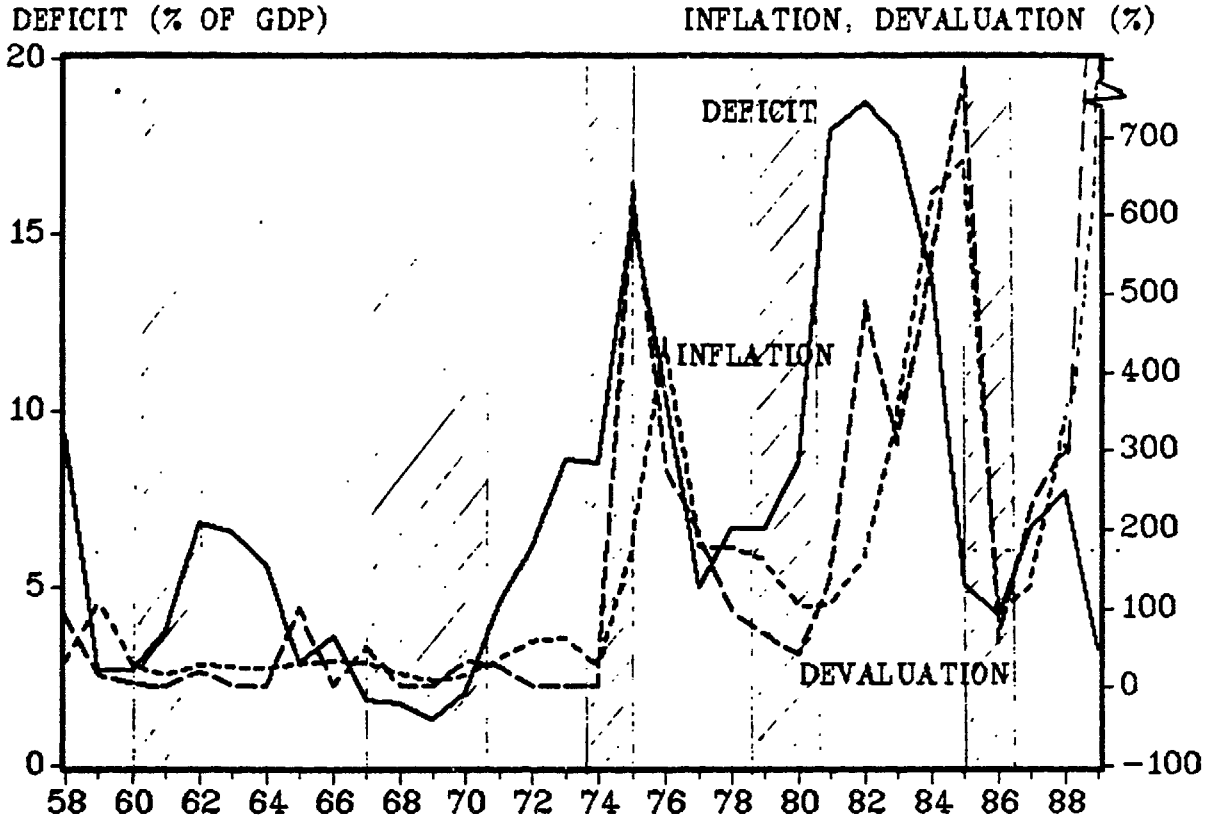
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FIGURE 1

FISCAL DEFICIT, CPI INFLATION, AND OFFICIAL DEVALUATION

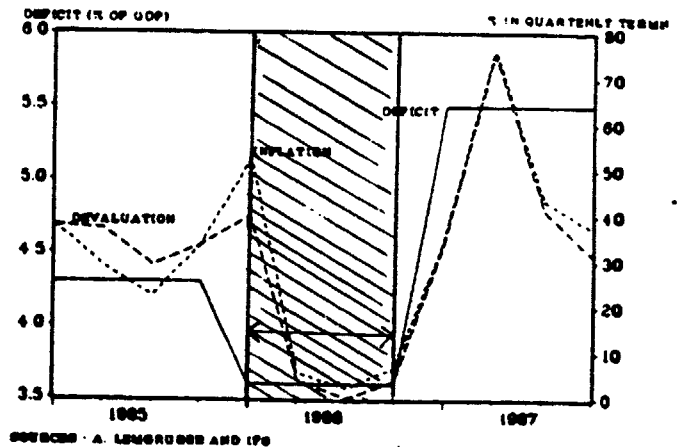
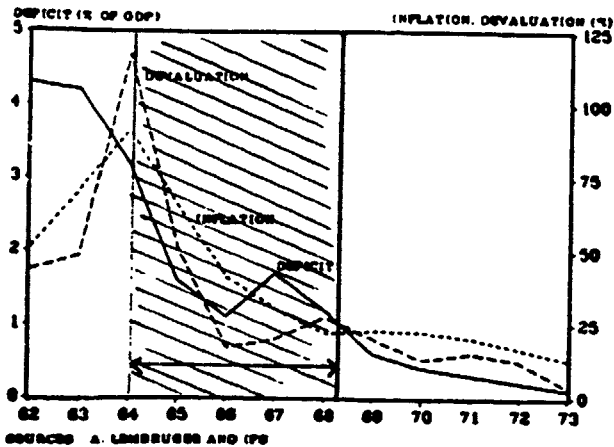
1. ARGENTINA



SOURCES: DE PABLO AND INDICADORES DE COYUNTURA

Note. Inflation rate for 1989 is 3080% and the devaluation rate is 4412 %

2. BRAZIL

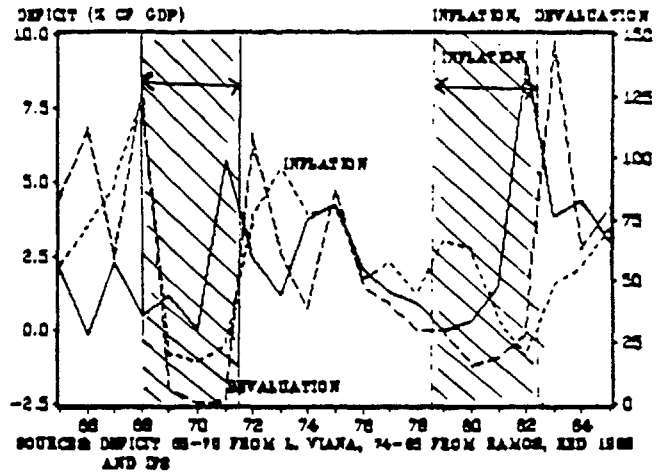
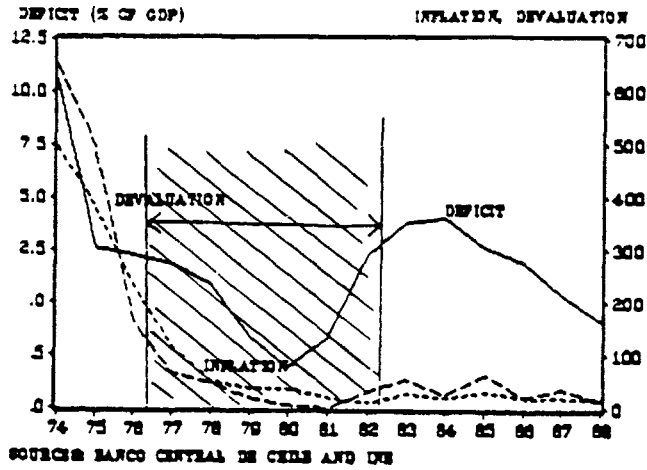




FISCAL DEFICIT, CPI INFLATION, AND OFFICIAL DEVALUATION

3. CHILE

4. URUGUAY



5. MEXICO

6. ISRAEL

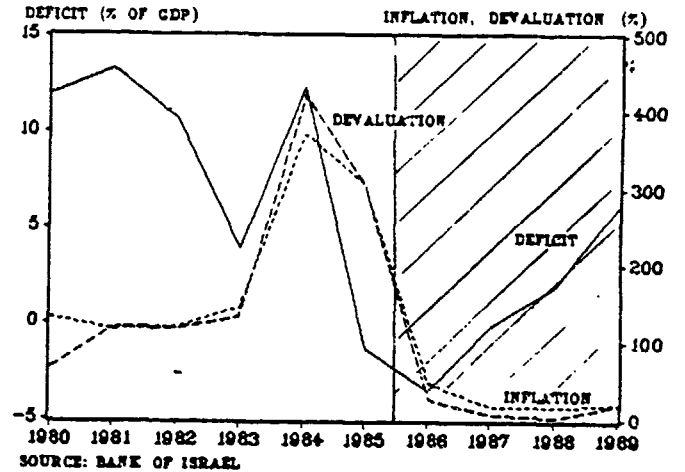
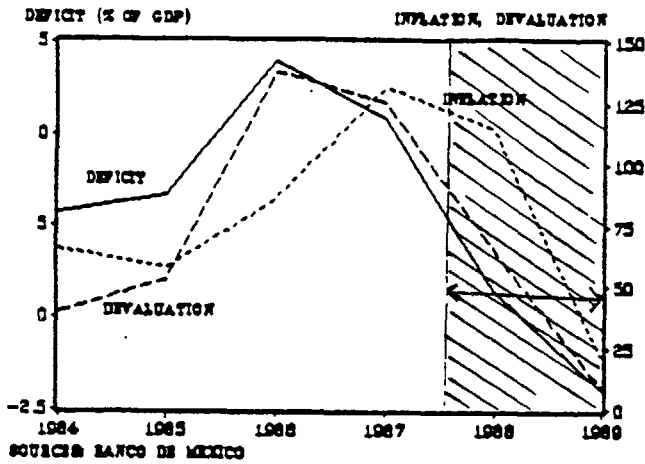
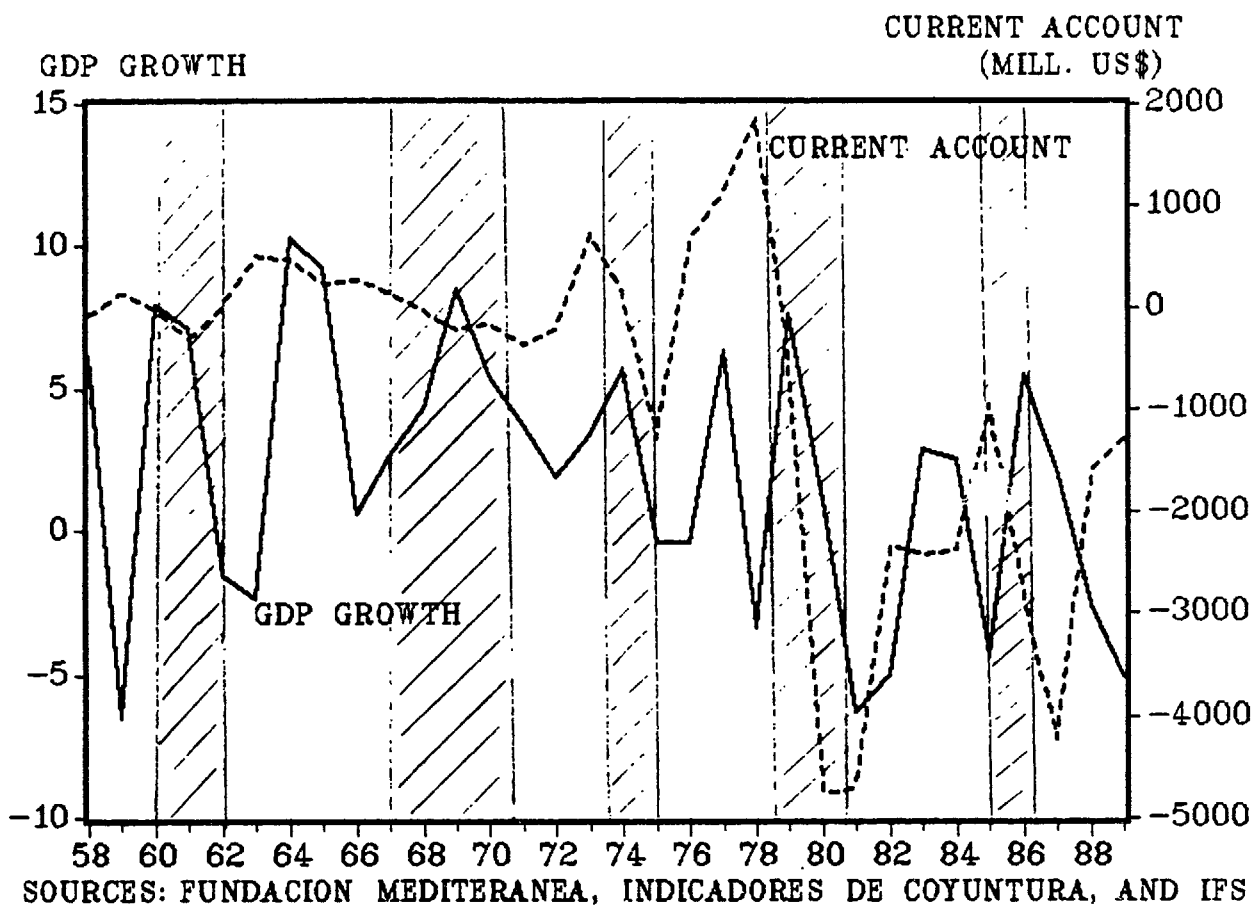


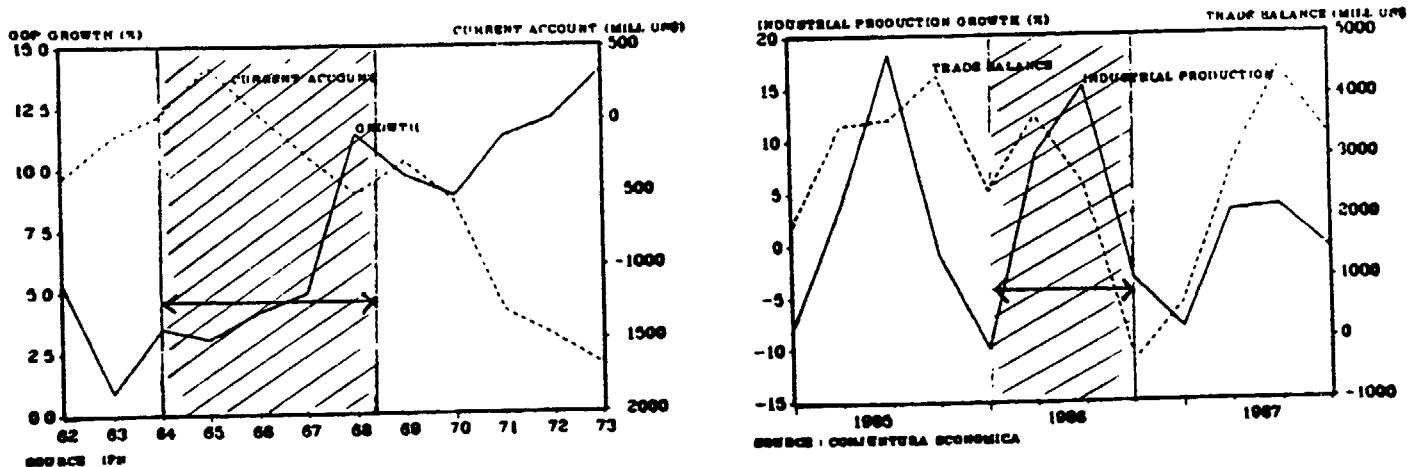
FIGURE 1

GDP GROWTH AND CURRENT ACCOUNT

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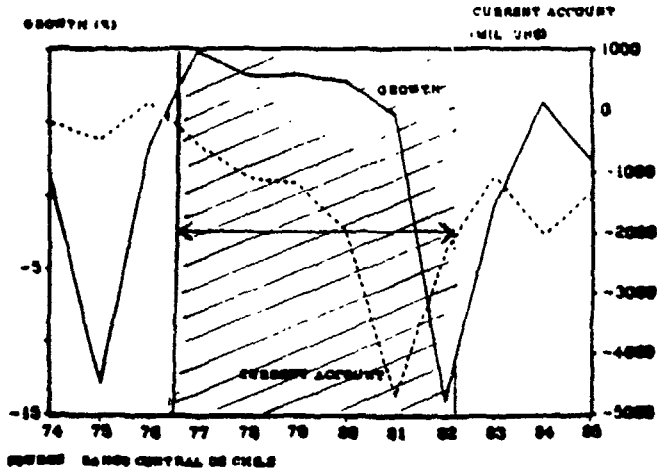


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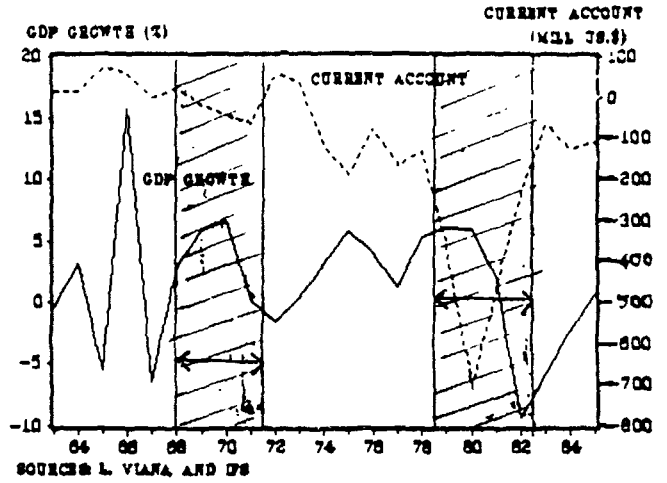


GDP GROWTH AND CURRENT ACCOUNT

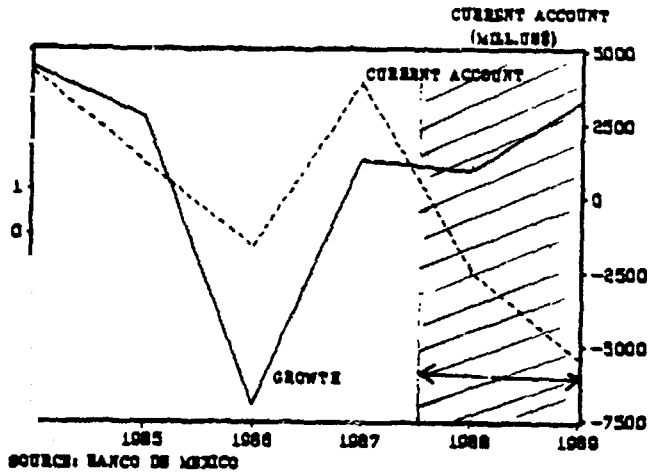
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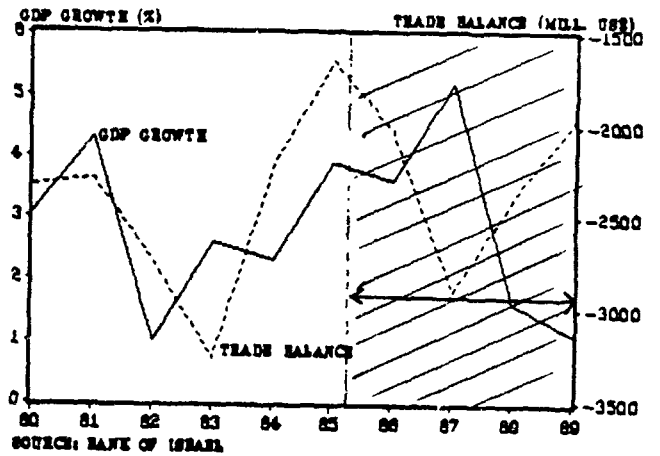
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5. MEXICO

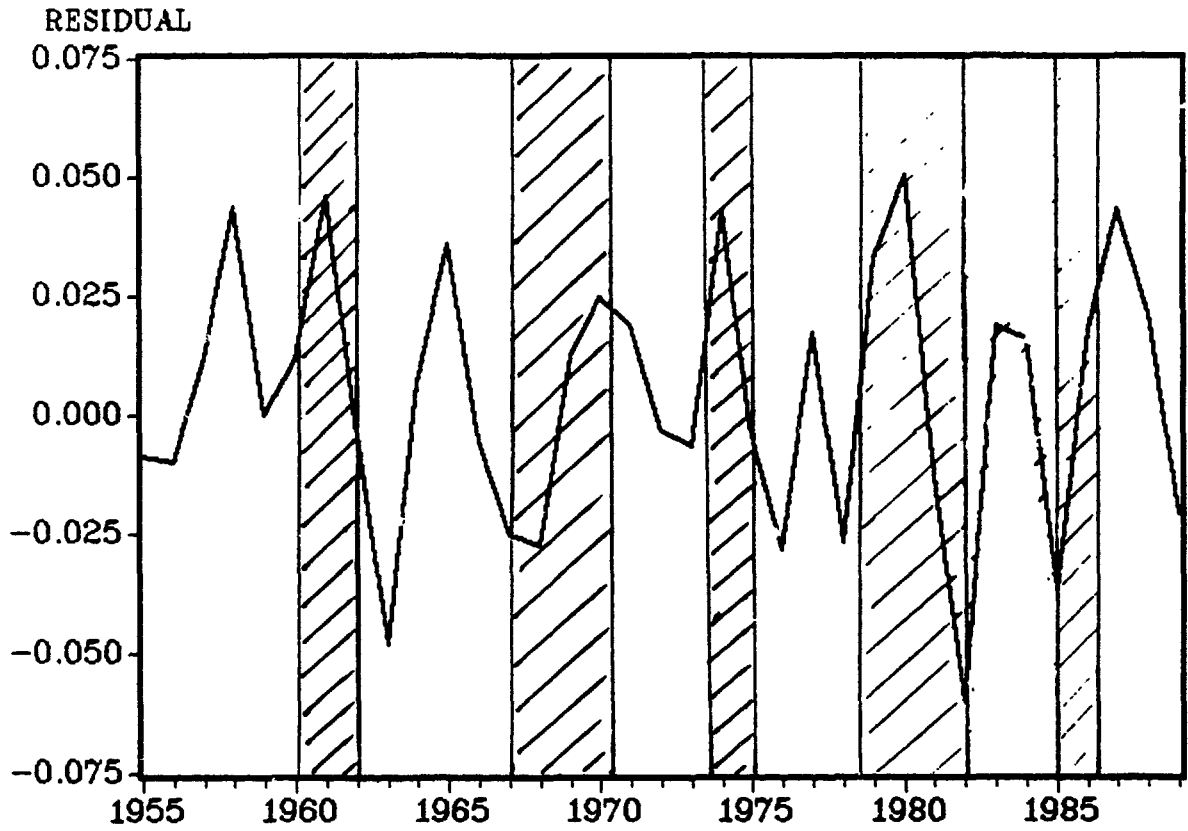


6. ISRAEL

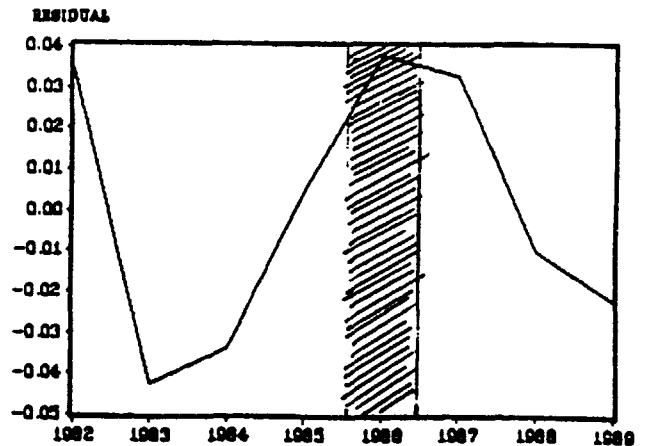
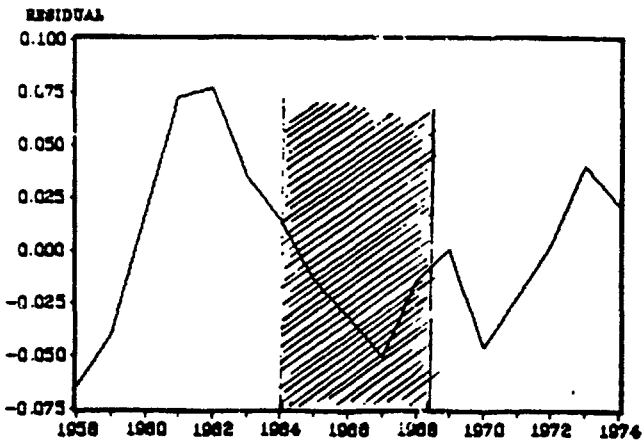


DEVIATIONS OF LOG GDP PER CAPITA FROM TRENDS

A. ARGENTINA

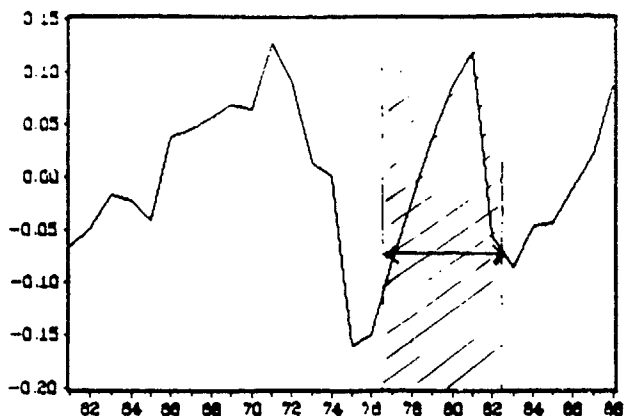


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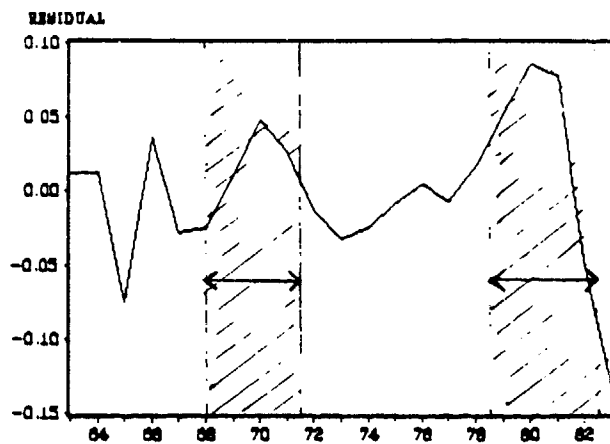


DEVIATION OF LOG GDP PER CAPITA FROM TREND

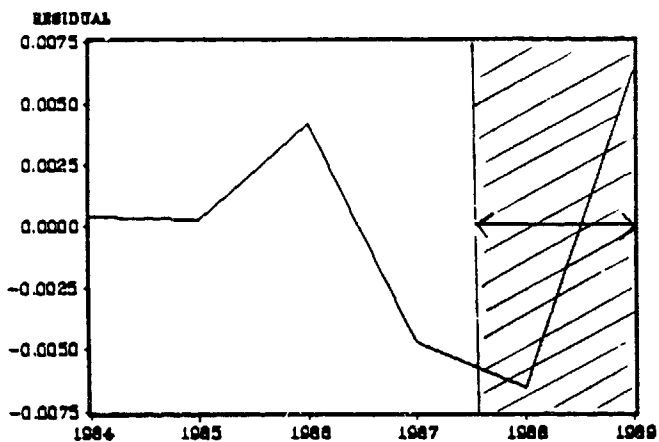
3. CHILE



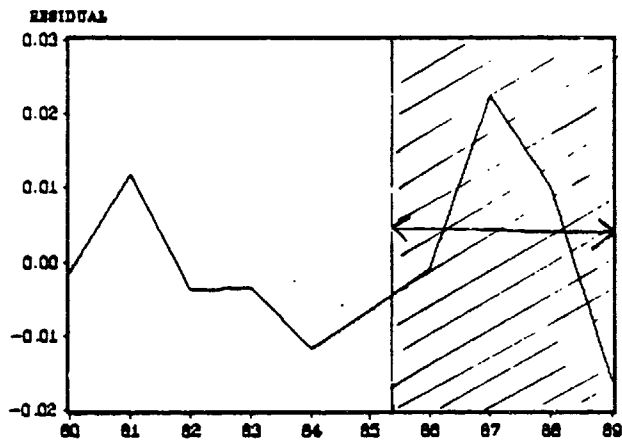
4. URUGUAY



5. MEXICO

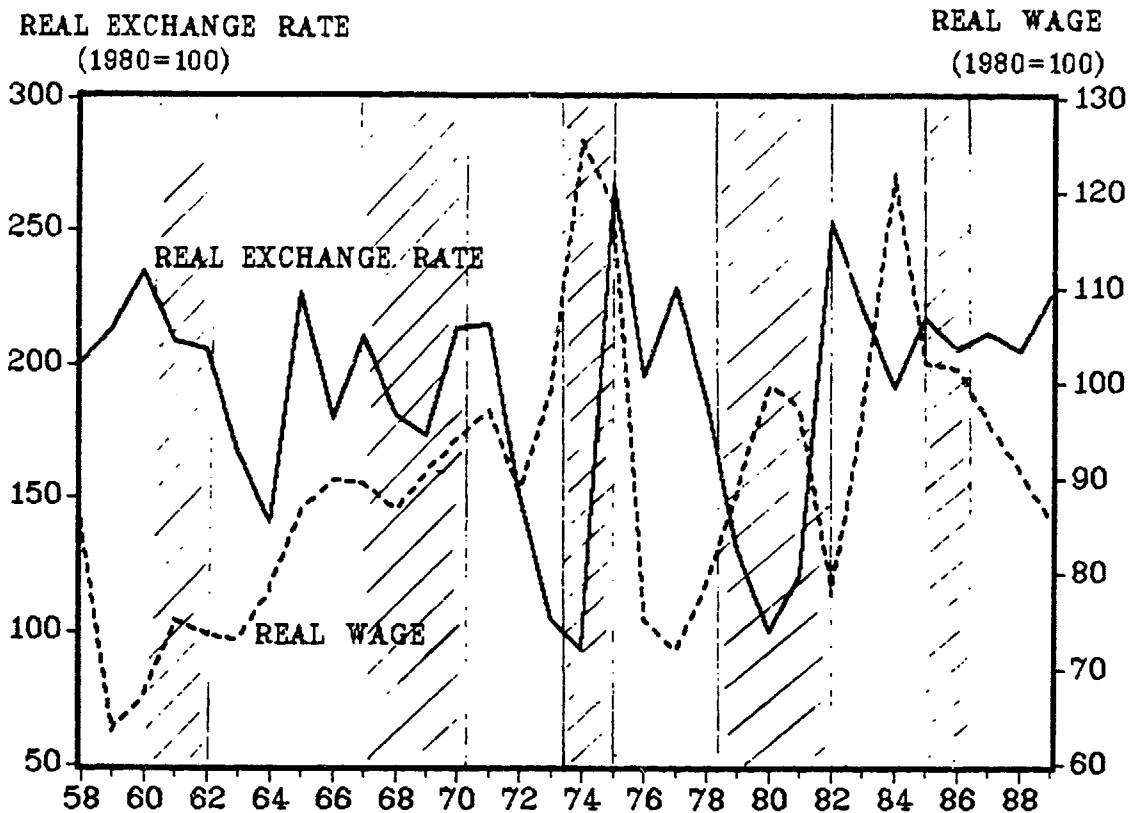


6. ISRAEL



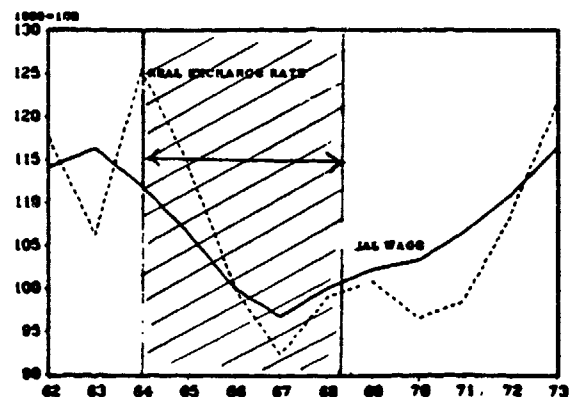
REAL EXCHANGE RATE AND REAL WAGE

1. ARGENTINA

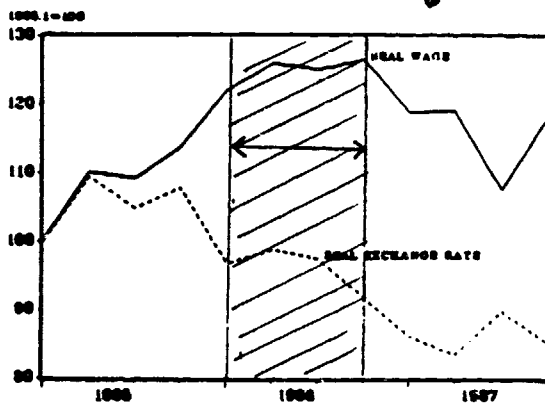


SOURCE: COTTANI, DE PABLO, AND INDICADORES DE COYUNTURA

2. BRAZIL

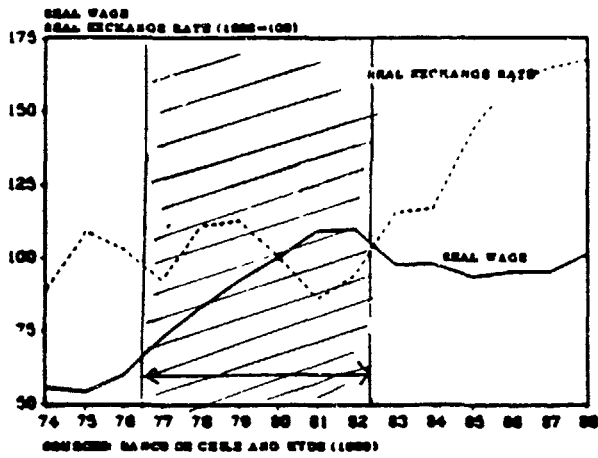


SOURCE: COTTANI (1967) AND L. BACIA AND L. TAYLOR (BRAZILIAN ECONOMIC DISTRIBUTION IN THE 1960s)

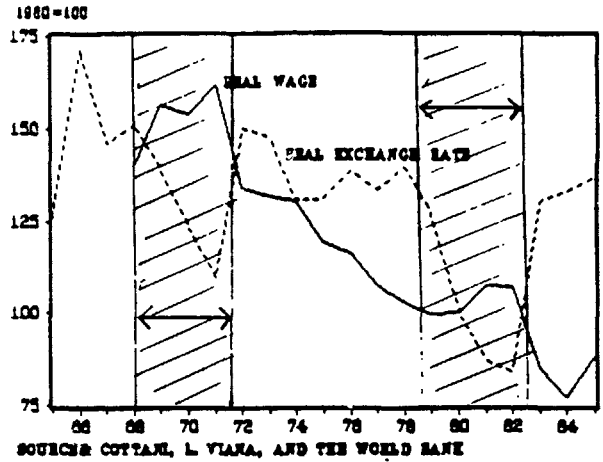


SOURCE: COMISSÃO DE ECONOMIA DO IUPERJ (1966)

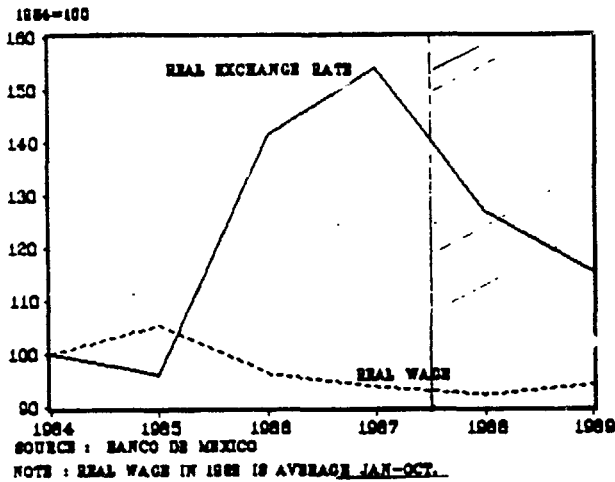
3. CHILE



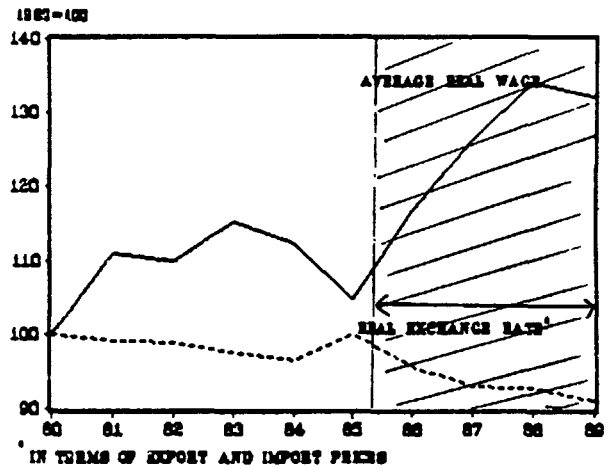
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5. MEXICO

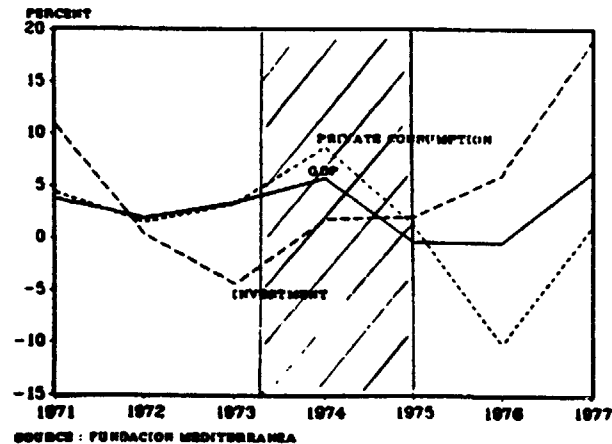
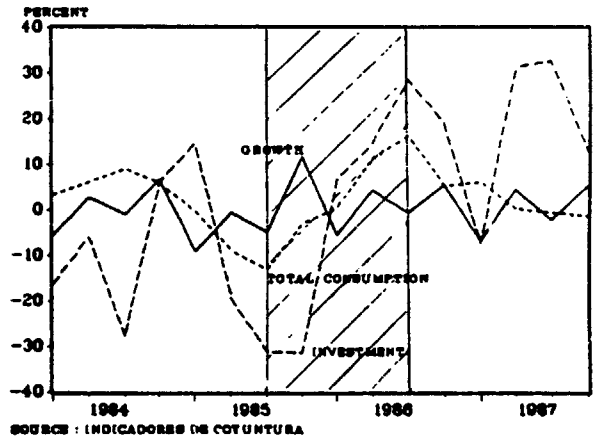
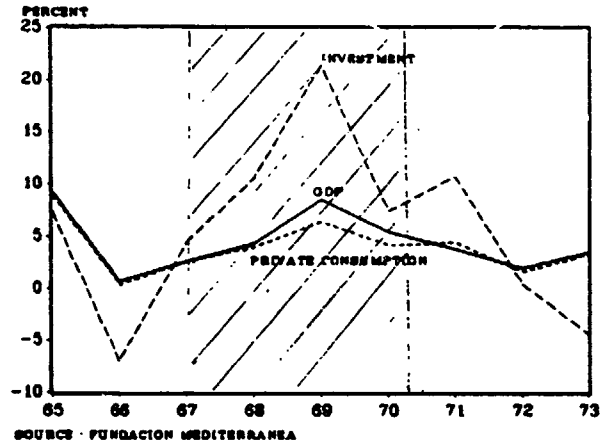
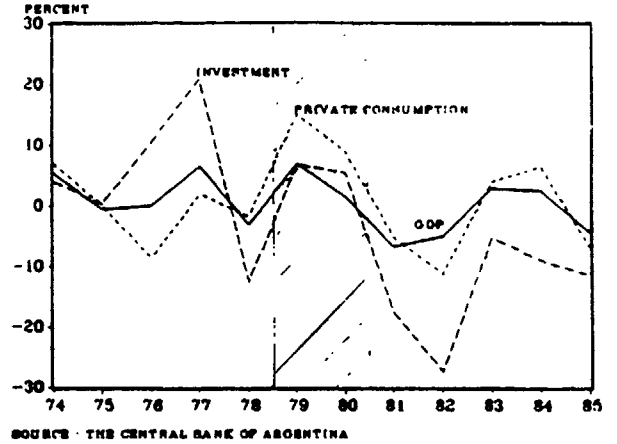
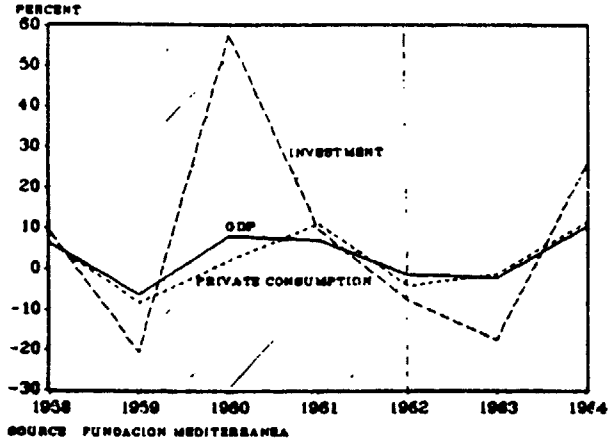


6. ISRAEL



REAL GROWTH RATES OF GDP, PRIVATE CONSUMPTION, AND INVESTMENT

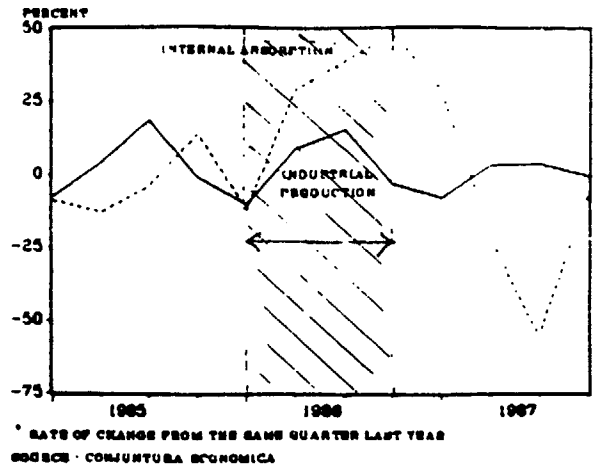
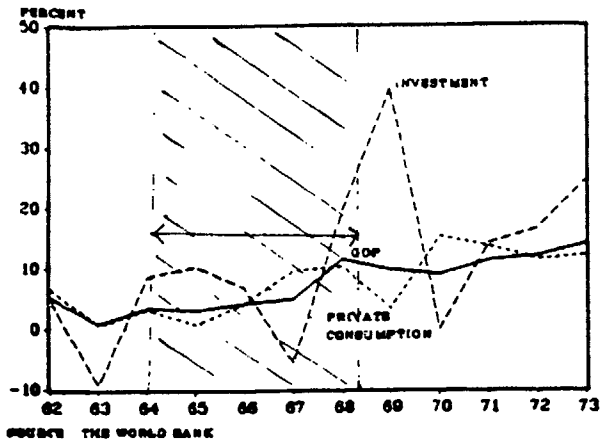
I. ARGENTINA



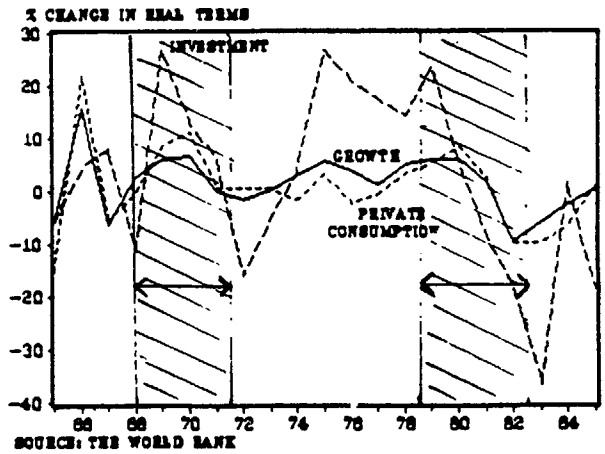
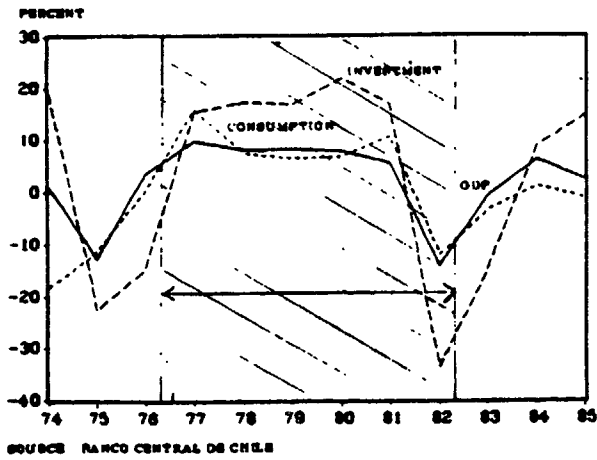


REAL GROWTH RATES OF GDP, PRIVATE CONSUMPTION, AND INVESTMENT

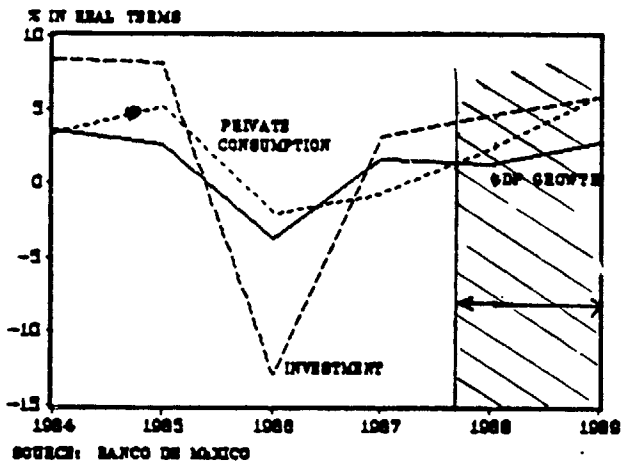
2. BRAZIL



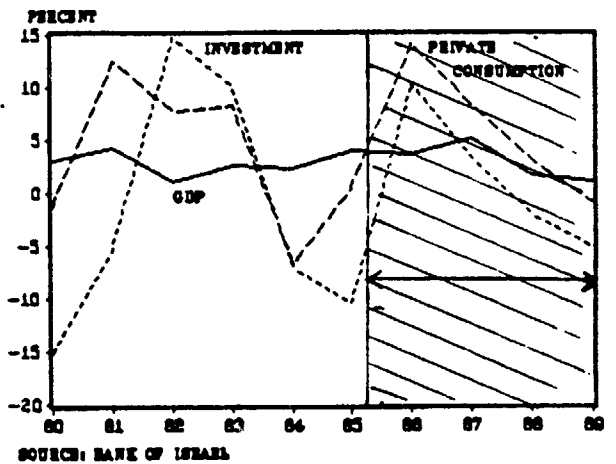
3. CHILE



5. MEXICO



6. ISRAEL



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