

## **Some Hypotheses Related To The Mexican 1994-95 Crisis**

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***Abstract:** A large number of hypotheses have been offered to explain the causes and circumstances of the December 1994 devaluation of the Mexican peso and the economic crisis that ensued. Some of them are based on ideas and data handled loosely and/or with no perspective, and frequently arrive at the exact opposite conclusion as that which would have been supported by the available information. This paper deals with some of the most often repeated of these conjectures and confronts them with what actually happened. It begins by reviewing the situation of the Mexican economy prior to the devaluation and then surveys, as possible causes for the crisis, the following: an overvalued currency, lax central bank credit, misleading and unequal information, politically motivated fiscal stimulus, insufficient domestic savings, and what is known in the literature as the “over-borrowing syndrome”. It concludes that despite possible improvements in the way the Mexican economy was managed before the crisis, the real causes are to be found on the combination of a semi-fixed exchange rate, the explosive availability of international short-term capital, and the cumulative, effect of the repeated political shocks that affected the Mexican scene during 1994.*

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## I. Introduction.

As with the 1982 Chilean crisis, an explosion of scholarly papers, seminars and news articles has sprouted around the 1994-95 Mexican economic crisis. We have the conjecture that it is so because both crisis were quite unexpected: both outcomes were contrary to what the great majority of professional economists<sup>1</sup> and market participants expected. There are other striking similarities and some differences between the two episodes (Gil-Diaz, 1995). but the purpose of this paper is to shed some light on the puzzles raised by the 1994-95 Mexican crisis. The paper presents briefly the main outlines of Mexico's economic performance and policies from 1983 to 1994. Next, the different hypothesis proffered to explain Mexico's crisis are discussed. Finally, the authors will offer their own views enriched by the analysis and insights presented in the literature.

Mexico's economy has changed radically in the past 10 years. The startup of the reforms which propitiated this change can be dated to another crisis, in 1982, the worst at that time since the Great Depression. Budget and current account imbalances, combined with a suspension of the inflow of foreign savings, massive deterioration of the terms of trade and an exchange rate collapse, marked the beginning of a period of high inflation and economic stagnation.

The government reacted to that crisis with substantial spending cuts and increased public sector prices and taxes, that turned out to be insufficient since the initial problems were strongly aggravated by the sharp fall in Mexico's terms of trade throughout President De la Madrid's term of office (1982-88). As a result, nominal financing needs continued to be high, together with a persistent inflation that remained at double-digit levels between 1973 and 1993 and reached its peak in 1987 a: a rate of almost 160%.

Thus, the external accounts became the overwhelming constraint to economic policy making in Mexico after 1982. Net capital inflows virtually disappeared. The country moved from being a net importer of capital of around \$12 bn. in 1981 to a net exporter until the debt

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<sup>1</sup> The only published exception of which we are aware is Calvo (1994).

agreement of 1990 was reached. This situation influenced an exchange rate policy that went through various phases.

From a major devaluation and a two-tiered exchange rate adopted at the end of 1982, the two exchange rates engaged into a gradual convergence path and, eventually, into a crawling peg. The 1986 terms of trade collapse imposed the adoption of new emergency measures that included an inflation-adjusted devaluation (i.e., a temporarily fixed real exchange rate. This period culminated with rapidly rising inflation, a collapse in the stock exchange, more uncertainty and rekindled capital flight, all of which led to a new abrupt devaluation in November of 1987.

At that point an integral set of reforms was introduced which included the acceleration of the trade liberalization and the creation of a Pact by means of which the government agreed with labor, rural and private sector representatives the contents of a new, economic program, and informed of its weekly advances. Key elements of the Pact were the adoption of the exchange rate as a nominal anchor and the added fiscal adjustment required by the still tumbling terms of trade.

This Pact had twelve successful overlapping renewals between December 1987 and November 1994. During this period the exchange rate regime evolved from a brief fixed rate in 1988, to a modestly rising crawling peg and eventually, from January 1991 to December 1994, to the adoption of a band that was widened gradually until it reached almost 15%. The exchange rate would adjust within the confines of this band to market conditions and its fluctuations would not trigger pressures for increased wages or prices since the possibility of such fluctuations had been agreed upon in the context of the Pact. This bellows absorbed strong upward and downward pressures from the foreign exchange market, but collapsed under the speculative attack unleashed by the political events of 1994.

In order to confer permanence to economic reforms, important institutional changes were adopted in several areas of the public administration. Among these were the merger of the Treasury and the Budget and Planning ministries, placing under the same political and technical responsibility spending, taxation and credit policies; the bill to amend the Constitution to grant independence to the country's central bank; and the approval of NAFTA.

The abatement of inflation was complemented with a far-reaching microeconomic reform:

- 1.- Deregulation of more than 3,000 areas of the Mexican economy including foreign investment, truck and bus transportation, intellectual property protection and the financial sector.
- 2.- Privatization of around 1,000 corporations, generating \$25 bn. of revenues that were used to reduce government debt.
- 3.- Reform of the land tenure system opening the possibility of converting the Ejido, a former soviet-style organization, into a modern, efficient and fair mode of land tenure.
- 4.- Authorization for private sector investment in infrastructure projects such as 4,000 miles of toll roads constructed in the 1988-1994 period, seaports, electricity generation facilities and municipal water distribution systems, among others.
- 5.- Unilateral adoption of free trade policies, starting in 1985 and leading to trade agreements such as NAFTA, and with Chile, Colombia, Venezuela and Costa Rica. In 1994 Mexico became the first new member to join the OECD in 25 years. Mexico also joined GATT in 1986. The new cosmopolitan approach included the establishment of a vast network of international treaties to avoid multiple taxation.
- 6.- Tax reform through reduced rates, fewer taxes and increased compliance, that lead to the incorporation of large numbers of underground economic agents into the formal economy and to rapidly growing revenues in real terms. The many taxes that were reduced or eliminated accounted for almost half of all non-oil revenues in 1988, and yet tax revenues increased as a percentage of GDP.
- 7.- An incipient pension and housing fund reform. The pool of resources in these funds represents a potential flow of 15% of the national payroll, part of which is already being deposited into individual accounts.

Throughout this process the government's share of the economy, measured by its overall spending with respect to GDP, went down to around 26% in 1994, a substantially lower share than most other OECD member countries and a notable reduction from the 44% it represented only seven years earlier. The government was no longer running a corporate sector that had required massive transfers of resources. Finally, economic growth had resumed in 1994 at positive per-capita rates after the recession that occurred the previous year as the result of the uncertainty associated with the passage of NAFTA, which had had a postponement effect on some private investment.

The gains accomplished in the productivity of the industrial sector induced a recovery of real wages. Since 1988 the average productivity of labor in the manufacturing sector increased at an annual rate of 5.6%, and in 1994 it reached an even more impressive 8%. These improvements were reflected in average annual wage earnings growth in the sector of 5.9% over the 1988-1994 period.

The proceeds of privatizations were used to permanently improve public finances through debt reductions. The average net debt of the public sector<sup>2</sup>, as a proportion of GDP, fell from 74.4% in 1987 to 22.5% in 1994. Of the latter figure a fourth was domestic debt. Simultaneously, the development of a wider private credit market allowed the gradual conversion of non-marketable public debt (derived mostly of a switch from direct central bank credit to the government, to marketable securities placed among investors)<sup>3</sup>.

In the same line of argumentation, the fiscal adjustment translated into an impressive financial crowding in: in 1987, 65 percent of total financial resources were used to finance the public sector, whereas at the end of 1994 the same concept amounted to just 8 percent.

Throughout this process of reform several important trends in key financial variables became apparent that were to be crucial to set the scene for the crisis that followed. As inflation receded, the process of 'financial deepening', defined as the ratio of M4 to GDP, took off, increasing from

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<sup>2</sup> Consolidated with the Bank of Mexico.

<sup>3</sup> The share of marketable to total debt went from 48.5 percent in 1985 to 100 percent in 1991.



28.2% in 1977 to 34.4% in 1988, to grow by 70% in the following six years when it reached 58.1 % in 1994. Meanwhile, the share of private foreign debt in the country's total more than quadrupled, from 8.5% in 1988 to 37.4% in 1994.<sup>4</sup>

Mexico had become another example of how market-oriented reforms were the passport to overcome economic backwardness. At the end of 1993 all the pieces of the economic jigsaw puzzle seemed to be falling into their proper places, including the recent approval of NAFTA in the US Congress. Lower domestic savings and large and growing deficits in the current account were the opposite sides of the same mirror, namely, that Mexico was perceived as an attractive investment destination for the international financial community which complemented with its funds the country's domestic savings.

Then everything collapsed. The rundown of international reserves brought about by political unease forced a devaluation in December 1994 that triggered the suspension of access to external savings. Under these circumstances any current account deficit for 1995 was impossible to finance. The collapse in production and spending was unavoidable and internal adjustment measures ensued. Output will probably fall by 7% in 1995 and inflation reach 52%. Unemployment, business failures, serious bank portfolio problems and political unrest are natural short run outcomes of the crisis.

What went wrong? How could extensive and well executed fiscal, supply side and trade reforms end up in such a dismal situation? In the search for answers the 1994 political nightmare is sometimes mentioned as an afterthought or merely as the trigger of a foretold conclusion. The different, not necessarily competing, economic hypothesis that have been handled to explain the crisis fall into the following broad categories:

an overvalued currency

central bank credit expansion

opaque information

incomplete and late release of data.

asymmetric information: the nationality of the attackers.

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<sup>4</sup> The share of marketable to total debt went from 48.5 percent in 1985 to 100 percent in 1991.

excessive stimulus to aggregate demand  
insufficient saving  
overborrowing

These hypothesis are analyzed in detail in what follows.

## II. The Overvaluation of the Real Exchange Rate as an Explanation of Mexico's 1994-1995 Crisis.

The crisis of the Mexican economy has heightened the discussion of a popular subject in the current economic literature, specially the literature related to developing economies, that of the proper level and/or tendency for the real exchange rate (RER).

It is somewhat perplexing that economists, journalists and laymen devote so much attention to the public policies supposedly required to maintain the right or at least competitive RER, a real variable which together with other real aggregate economic variables such as the real interest rate, and the real wage rate, are market determined (endogenous) and can not be set by monetary, budget or nominal exchange rate manipulations. The perplexity should be heightened when these notions prevail in the same year when Robert Lucas deservedly earned the Nobel prize in economics.

Movements in the RER have been enthroned as the explanatory concept for all kinds of economic events: balance of payments crisis, lack of impetus to economic growth, the behavior of the current account of the balance of payments, etc. While there may be cause for concern about the real exchange rate when domestic costs are rising faster than in the rest of the world, the attention given to the RER has been excessive and misleading. It will be argued that the conclusions reached by most authors in connection with Mexico's recent policies on this regard, are not sustained by the facts.

Some relevant quotes in the recent literature about the said topic are the following:

"The paper...compares the growth performance of Chile and Mexico. It concludes that Mexican neglect of a competitive exchange rate is an important factor in the poorer performance (of this country)". "The real

appreciation hurts growth and leads to a build-up of a large external deficit." Dornbusch, Goldfajn and Valdes (D, G&V) (1995), p. 3 and 4, respectively.

"This growth slowdown was in a direct sense due to the rise in Mexico's real exchange rate after 1990, which discouraged any rapid growth in exports and caused growing demand to be spent primarily on imports rather than domestic goods." Krugman (1995), p. 41-42.

"The overvaluation hypothesis starts by noting that in the past few years Mexico has built up a huge real appreciation... ""Growth has been negligible. The combined evidence would suggest that demand has shifted to foreign goods and that the growth-reducing impact of real appreciation has been reinforced by a high real cost of credit." Dornbusch and Werner (D&W) (1994), p. 11.

#### a) Measurements of the Real Exchange Rate.

The growth-RER relationship will be dealt with below. At this point the discussion will center on the alleged overvaluation of the RER.

There is no way to pinpoint a critical benchmark for the equilibrium RER. If such a concept exists, it very likely presents a moving target.<sup>5</sup> At any rate, the different criteria commonly utilized in the literature to measure the RER are:

##### 1) A bilateral RER. In Mexico's case it would be represented by

$$e_1 = \eta \frac{P'}{P}$$

where:

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<sup>5</sup> There are other bothersome issues in connection with the comparative price index measurements of the RER used in the articles quoted and in others that will not be dealt with here: different price index weights will produce a change in the RER even if all items in the indices show equal inflation rates and the nominal exchange rate is constant; the appropriate base year; prices do not measure costs; different productivity trends in tradables versus non tradables may cumulate real differences in the RER over time, etc.

P' U.S. price level

P internal price level

$\eta$  peso/dollar nominal exchange rate

## 2) A multilateral RER

$$e_2 = \frac{\eta P_1^{\omega_1} P_2^{\omega_2} P_3^{\omega_3} \dots P_n^{\omega_n}}{P}$$

where  $P_1$  is the price index of country 1 and  $\omega_1$  its trade weight within the overall trade of the country concerned or, in another definition, the country's GDP in relation to World GDP.

## 3) A multilateral (or bilateral but not shown here) labor unit costs RER

$$e_3 = \frac{\eta W_1^{\omega_1} W_2^{\omega_2} W_3^{\omega_3} \dots W_n^{\omega_n}}{W}$$

where  $W_1$  is the unitary labor cost of the  $i$ th country and the  $\omega_1$  can also be trade or GDP weights.

A rise in  $e_1$  makes the country "more competitive" or represents a "depreciation" of the real exchange rate, and viceversa for a fall in  $e_1$ .

One can of course generate even more versions of  $e_t$  by changing the price index utilized. Chart 1 and Table 1 present the bilateral RER based on consumer price indexes.

Instead of discussing about the appropriate base year, we shall concentrate in the recent movements in the RER, specially since the 1987 stabilization plan. Table 1 shows that  $e_1$  rose in Dec. 1987 and then fell almost continuously up to Dec. 1993, but depreciated gradually in 1994 as the nominal exchange rate hit its upper band. The amount of appreciation over the period considered was 39% (105.8 vs. 172.87). Table 2 shows the multilateral or  $e_2$  estimate. It goes from 169.98 in Dec. 1987 to 112.4 in November of 1994, which implies an appreciation of 33.9%.

It will be interesting to compare these numbers with those produced by the most vocal critic of Mexico's former exchange rate policy. D,G &V (1995 ) p.21<sup>6</sup> state: "From the 1987 level, the real appreciation measures as much as 76%". In another paper, D&W (1994) argue that "The overvaluation hypothesis starts by noting that in the past few years Mexico has built up a huge real appreciation." p.11.

Huge compared to what? To Mexico's own history? In any case such a statement ignores the effect of Mexico's vast economic reforms on its competitiveness. But D, G&V's estimate, converted into our units (pesos for foreign exchange), gives an appreciation of 43% up to 1993, exactly the same that Table 1 reports for e1, and 40.3% for e2 (Table 2). Their neglect to use the numbers for 1994-where the level of appreciation is only 33.9%-given a nominal depreciation of the peso/dollar exchange rate of 103% over the Dec. 1987 - Nov. 1994 period, is hard to understand.

An appreciation of 33.9% in such a time frame and given such a large nominal devaluation is not something "unnatural" or excessive. To see this it is useful to look into the effect of a nominal devaluation on the domestic price level. If we assume initially that  $e1 = 100$ , the day after a 100% devaluation  $e1$  will rise to 200 and will fall to 100 when internal prices have fully adjusted to the devaluation. When comparing 100 with 200, there will have been a 50% appreciation in real terms. With these magnitudes present one can interpret the 33.9% appreciation experienced by the peso as measured by e2, or 38.8% as measured by e1, over the Dec. 1987 - Nov. 1994 period. It does not seem "huge", it does not seem to be rapid either if one takes into account that seven years elapsed. But even with the caveats mentioned above, one cannot conclude from the mere inspection of these numbers whether the Mexican economy was more or less competitive in 1994 than in 1988, since its ability to export and to substitute imports is the result of other factors. At this point it will be useful to delve a little deeper into the meaning of the RER and its evolution through time. The competitiveness issue will be dealt with below.

Consider a two sector economy with traded and non-traded goods and let prices adjust instantaneously to the variations in the nominal exchange rate

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<sup>6</sup> Taken by the authors from the IMF (1995a).

in the case of the first and through backward full past-inflation adjustments in the case of the latter. Assume also that contracts are staggered uniformly so that the price adjustments of non-tradables occur in equal monthly turns.

The domestic price level modeled by these assumptions will be

4)

$$P_t = \frac{\alpha_1 P_{NT}^0}{12} \sum_{j=t-12}^{t-1} P_j + \alpha_2 P_t^T \eta$$

In equation 5 above the terms have the same meaning as in equation 1,  $\alpha_1$  stands for the share of non-tradables in the price index while  $\alpha_2$  represents the share of tradables. Its interpretation is the following: the initial pre-devaluation level of non-tradable prices,  $P_{NT}^0$ , will increase every month by a factor equal to  $1/12$  of the increase in the price of those contracts that come up for a monthly revision, such an increase is  $\frac{P_t - P_{t-1}}{P_{t-1}}$  and its effect on  $P_t/P_0$ , is weighted by  $\alpha_1$

The second term captures the full and immediate effect of the devaluation on the prices of tradables.

A full presentation of the model and of the underlying assumptions as well as of the methodology, is contained in Appendix A.

The exercise performed with this model involves raising the nominal exchange rate by 100% and a follow-through of the subsequent path of inflation. The first numerical conclusion is that inflation eventually peters out until it stops, when the real exchange rate stops falling. The mechanics of the model guarantee this result, so there is nothing remarkable about it. What is noteworthy is that under the assumptions outlined above of full and immediate adjustment of contractual wages and/or prices of non-tradables to past inflation, it takes 5 years for the effect of a 100% devaluation to wash itself out.

This simple exercise contains some lessons. In the hypothetical economy described in this exercise, RER watchers would probably start screaming

around the middle of the first year, some sooner, that the currency is again appreciating or losing competitiveness. These individuals would probably insist on further depreciations to either halt the fall in the RER at some level judged by them to be the "equilibrium" level, possibly acquired soon after the devaluation occurred, or even more, to restore the instantaneous competitiveness acquired the very day of the devaluation. Others might argue that costs are rising or, that the other equivalent measure of the RER, the ratio of NT prices to T, is increasing. Danger signals to the competitiveness of the Economy! The dynamic paths inflation would follow if such voices were heeded, are not difficult to fathom.

Groundless as they seem, these arguments were voiced before Mexico's 1994 crisis and resurfaced again, less than twelve months after a devaluation in excess of 100% and a domestic price increase of 52% for the year. The huge 1994 nominal devaluation was paired with a substantial budget surplus, a tight monetary policy and collapsing real wages, so the only interpretation price rises can have is that the price level is reacting naturally to the devaluation. To buttress these and other conclusions, it will be interesting to follow the results of another experiment. The purely theoretical exercise in Appendix A is followed by another in which some of the variables adjust to their observed path in Mexico over a relatively long period.

This latter exercise is more realistic and does not assume that inflation starts in Dec. 1987. It would be artificial to do so since the real exchange rate had been depreciating rather rapidly in the years immediately prior to that date. The backward simulation is adapted to incorporate contract revisions which reflect the inflationary experience of the twelve months prior to the starting date of the exercise. To do this we take the actual increases in the prices of non tradables for the starting year. Table A-2 contains such an exercise. 1980 is the base year, which has the advantage of being somewhat distant from the Sep. 1976 devaluation. The exercise is constructed letting the exchange rate index follow Mexico's actual nominal exchange rate experience up to Nov. 1994. The other key assumptions are that the index of government prices follows the path actually set for it, and that international inflation is equal to U.S. inflation.

Simulated inflation as can be observed on Table A-2 and on Chart A-2, behaves remarkably like actual inflation. There is a cumulative difference

of only 6 percent between the two paths over a period of fourteen years. The immediate-adjustment assumption regarding the simulation for the prices of non-tradables churns out a higher short run inflation than the actual one when there are sudden jumps in the nominal exchange rate, such as in the 1982, mid 1985 and end 1987 discrete devaluations of the peso. Furthermore, the lower (28,440 versus 30,297) actual inflation index for October 1994 indicates that despite the lowering of inflation towards the 7-8% annual range in 1994, there might have been some latent pressure from non-tradables for inflation to continue above international inflation for perhaps a couple of years more.

But the evidence is not confined to Mexico. To quote from Gil-Diaz and Ramos-Tercero (1988) who "examine the relationship between the real and the nominal exchange rates in four groups of countries that during 1975-1985 experienced various degrees of inflation", they found: "for all four groups the relation between the rates of growth of the nominal and the real exchange rates diminishes as one considers longer time horizons. Second, except for the shortest time horizons the relation is generally smaller for more inflationary groups". "Third, the coefficients for more inflationary groups fall more rapidly". It seems that exploitable Phillips curve patterns cannot be found nor used to stimulate growth no matter how one tries to disguise the devil, whether it acquires the form of a trade-off between inflation and growth, between inflation and unemployment, or even between nominal exchange rate manipulation and its effects on the RER.

But the discussion has drifted somewhat beyond the scope of this section, which is to expand on the empirical content and interpretation of the three general definitions of the RER. The one remaining definition,  $e_3$ , is the only one that deserves some serious consideration, since it is the one related to the competitiveness of the economy and the only one left out of most (all?) recent discussions of the viability of Mexico's exchange rate policy up to 1994.

In an open economy, the one factor of production whose cost may become misaligned with the rest of the world is labor. Credit may be costlier in a developing country but its higher cost cannot be compensated by moving the RER. Technology can be readily assimilated from whatever source, specially embodied as foreign investment. The same can be said of



entrepreneurial and organizational talent. But the domestic cost of labor can get out of line. It can do so because of any of an array of several possibilities, such as increased unionization, increased union aggressiveness, false business-labor-wage-contracting which anticipated higher than realized inflation, or backward wage-price indexation, etc. Therefore, in an open economy environment in which firms can hire or purchase the best capital equipment, technology and inputs available worldwide, the relevant cost to compare is the cost of labor. It does not make sense to consider the relative cost of house rents, or more generally the ratio of non-tradable prices to the prices of tradables, or the trend of several possible measurements of general price indices. Firms do not pay tuitions, nor household rents, nor buy hamburgers in order to compete. They pay for labor and other inputs and the use of other measurements of the trend in relative competitiveness is warranted (but misleading) only when information is unavailable to compare unitary labor costs. The data used here are readily available in Banco de Mexico's annual publication: *The Mexican Economy*.

Table 3 and Chart 2 show the numbers for the multilateral labor unit cost comparison. It is worth inspecting the numbers for the whole series. The index depreciates from 88 in 1975-76 to 91 in 1977, after the devaluation of almost 100% of Sep. 1976, from where it appreciates steadily until it reaches 63 in 1981. The 1982 devaluations bring it up to 94 and to 153 in 1983. Given the levels attained by the series, we do not believe anyone could interpret an index of 153 in 1983 as anything but an extremely competitive number. As the series shows, the number for 1992 is 143, only 6 percent below the 1983 number, where it remains in 1993 and then depreciates even more, to 158., a very competitive historical level, in the third quarter of 1994. Far removed from what one would portray as an appreciating trend or an uncompetitive level.

It is baffling that the writers surveyed in this paper fail even to mention, much less to analyze, this RER index. Is it a case of conventional ignorance dominating an *apriori* conclusion?

Before ending this section, the reader might be interested to know the Mexican private sector's opinion regarding their competitive position at the time vis a vis the rest of the world. It will be evident that, not having

read Dornbusch, they were not aware of not being internationally competitive.

The Center for Private Sector Economic Studies, CEESP, published its first semester survey for the year in November of 1994. A questionnaire asked firms to rank the main export limitations they faced. Of seven factors, the exchange rate ranked in sixth place in the first semester, and last in the second semester, mentioned only by 10% of the firms. What is more revealing than the percentages of the survey are the opinions regarding exchange rate policy. We shall quote directly from the CEESP document: "Another interesting aspect was the perception of exchange rate policy this past November. For four fifths (80.0%) of the firms this policy should either stay the same, or the slippage of the peso should be ;-duced or the nominal exchange rate fixed. Only 20% suggested that the exchange rate slippage should be increased (not single firm mentioned a devaluation as warranted)".

#### b) The Effect of the Real Exchange Rate on Growth.

Some analysts have attributed the alleged lackluster growth performance of the Mexican economy in the 1988-1994 period to the supposedly overvalued RER. To quote D&W again.: "The combined evidence would suggest that demand has shifted to foreign goods and that the growth-reducing impact of real appreciation has been reinforced by a high real cost of credit." p. 11. And in D, G&V: "Mexican neglect of a competitive real exchange rate is an important factor in the poorer performance." p. 3. Or in Krugman, p.40, "...in spite of huge inflows of foreign capital, the real growth in the recipient economies was generally disappointing. Mexico was the biggest disappointment: although capital flows into Mexico reached more than \$30 billion in 1993, the country's rate of growth over the 1990-94 period averaged only 2.5 percent, less than population growth".

Aside from the required examination of the facts, some theoretical considerations are warranted: in most economies an appreciation of the RER should stimulate, not suffocate, the economy, unless of course internal costs had gotten out of line. An appreciation of the RER means that the prices of non-tradables are increasing relative to those of tradables. Since the first group of goods have a larger contribution to GDP

than the second, one would expect a fall in the RER to be an economic stimulant. Conversely, a depreciation of the nominal exchange rate depresses the relative prices of non-tradables. Tradables being important inputs, specially capital inputs, the rise in their costs induced by a depreciation should have a net depressant effect on the economy. How do the facts square with this theory?

In table 4 some numbers presented by D, G&V are reproduced (from Tables 1, 6, 9, 17 and 18 in their paper). A minor point in order to interpret these figures correctly, not pointed out by D, G&V, is that the RER shown for Mexico is expressed in terms of foreign per local currency, while the other tables show its reciprocal. In Table 4, Mexico's RER going up means an appreciation while an appreciation is manifested as falling numbers for the other countries.

Currency appreciation in these tables does not appear to be a hindrance to growth. Argentina's appreciation coincided with a remarkable growth performance. The same is true for Chile until a depreciation of its real exchange rate coincides with a *fall* in output in 1982 and with another fall, not shown, in 1983. Brazil and Finland are also definitely within the growth-appreciation pattern, the expected one according to economic theory. The only apparent exception is Mexico, where D, G&V attribute 1994's growth to government induced increases in aggregate demand, due to electoral impulses, although following their preconceptions, applicable seemingly only to Mexico's data, they might have preferred to explain the growth of 1994 as the result of the real depreciation that occurred in that year.

Another piece of evidence is a study by Alejandro Pérez López (1995) based on Cointegration Analysis in which the RER is the single most important factor explaining GDP fluctuations in Mexico. Its sign confirms the appreciation-growth relationship mentioned in this paper.

We shall deal below with the arguments and data pertaining to the alleged stimuli to aggregate demand in 1994. Here, however, it is pertinent to inspect the no-growth argument with some care, since all of the fly-by-night Mexican experts have not had the delicacy to at least question the data concerning the alleged failure of the Mexican economy to grow, specially after an outcome that seems counter to what one would expect as

a result of the economic reforms undertaken and of the appreciation of the exchange rate.

Before going into the data, there is at least one hypothesis worth exploring to see why some growth inducing behavior, namely private investment, was partially postponed probably as a result of some of the reforms of the 1988-1994 administration.

It is well known that the Mexican government announced it was going to negotiate a free trade agreement with the U.S. Later Canada agreed to sit at the table and a North American Agreement came about. When NAFTA negotiations were concluded the 12 of August 1992, the perception among investors was that its formalization was going to be a speedy process. In those circumstances, a Treaty involving a substantial reduction in tariffs on U.S. and Canadian capital and input imports was going to be approved soon, it paid to postpone investment decision. But the expected date of completion kept being pushed back in time as unforeseen technical and political difficulties were encountered: The voting date in the U.S. Congress was sufficiently delayed so the responsibility of finalizing and signing the agreement fell on the lap of the incoming Clinton administration. As time went by, fears of a possible failure to gain ratification started to grow, specially as some vocal oppositionists appeared to be gaining support.

The import of all this process for economic growth is that private investment, which shows a clear upward growing trend up to the third quarter of 1992 (Chart 1 ), falls abruptly in the last quarter of that year and even shows some negative growth rates in 1993. It resumes its upward trend only after NAFTA's approval vote in the U.S. Congress in November 1993.

The other element to consider here is the measurement problem. Mexican GDP weights date from 1980 and give a disproportionate importance to sectors which stagnated or had negative output falls since then, at the same time that they underweigh sectors that turned out to be star performers. One must keep in mind that the structural reform that started in 1983 and that has continued until the present, had a strong impact on the relative growth of different economic sectors. Of course, one cannot hold other writers responsible for not taking into account a series that has not been

published. But one should not make bold statements without caring to inspect, even superficially, the assumptions underlying series with outdated weights in the midst of a thorough economic transformation.

Table 5 contains a simple exercise. It uses 1993 weights to recalculate annual GDP growth. While these estimates are unofficial and will surely be modified by the figures that Mexico's Statistical Institute (INEGI) will publish next year, one cannot fail to note that while the revised growth figures are not radically larger, they present a far better performance of the Mexican economy.

Of all the years within the 1989-1994 period, growth in output was somewhat below Mexico's population growth only in 1993, 1.2% versus 1.8%. The cumulative growth of the revised GDP series over the 1988-1994 period is 25%, compared to 21 % with the original 1980 weights.

#### c) Slow Export Growth.

Presumably a slow growth in exports is related to the overvaluation hypothesis. As in the direct arguments presented above, in this case the numbers also speak for themselves. Mexico's exports reached 60.9 billion dollars in 1994, continuing a growth trend without parallel even among the legendary Asian Tigers (Chart 4). Total export growth that year was 17.3%, while non-oil exports grew 20.2%. Manufacturing, non-maquiladora exports, grew 21.7%. These rates are not the statistical result of being based on a tiny export foundation, since a fairly high export platform had already been achieved. Non oil exports, for example, multiplied by a factor of 32 from 1983 to 1994. Other indicators of a possible overvaluation are traditionally found in the behavior of incoming and outgoing foreign tourism. In 1994 the outlays of Mexican tourists decreased 4%, and the income from foreign tourists increased 3.2%.

### III. Did Central Bank Credit Expand and Set the Stage for the December 1994 Devaluation?

One of the first reactions of institutional investors, fund managers, bank economists and others present at the conferences organized in New York on Dec. 21-22 in order to explain, first the reason for the 15% devaluation

of the peso, and immediately after, its collapse, was to blame it on an excessive expansion of the domestic credit of the central bank.

After those comments came writings by economists presenting more formally the same arguments. Some, like Robert Barro's (1995) or Atkinson and Rios-Rull (1995), p.24, correctly interpreting the facts as an ex-post outcome, that is, as an increase in internal central bank credit caused by the fall in international reserves, and not the opposite as argued by Sachs (1995) and others, who simply ignore the sequence of events. There is a revised version of a paper by Sachs, Tornell and Velasco (1995b) in which they repeat some of the factual mistakes now common in part of the literature which are cleared up in this paper and, therefore, we shall not take it up in this discussion. Although Barro, incredibly, states that after November a central bank credit contraction could have averted the devaluation.

In another vein D, G&V also depart from the near consensus on this matter: "A different monetary policy could have avoided the collapse. We differ on this issue. True, credit creation helped promote reserve losses. But imagine, sterilization had not happened and the development banks had contained their lending. Mexican interest rates would have been far higher, growth would have stalled or there would even have been a recession. Bankruptcies would have been pervasive, loan losses would have been larger, politics would have been more in doubt. It is difficult to believe that the level of wages and prices would have declined rapidly to yield competitiveness. The exchange rate might have lasted longer, maybe even a whole year. But there is no indication whatsoever that what did not work in Europe could have worked in Mexico." p. 35. It is interesting that aside from Dornbusch's et. al. continuing obsession concerning the RER and their also questionable attribution of international reserve losses to credit creation, the rest of their text fits perfectly with the arguments espoused by Banco de Mexico concerning the possibility of neutralizing a speculative attack through credit restrictions.

Everything worthwhile stating on the subject of the allegedly excessive central bank credit expansion is contained in Mancera's (1995) Wall Street Journal piece and in Banco de Mexico's 1994 Annual Report (See Chart 5). The central idea that has already been outlined above has three essential tenets: 1 ) All the foreign exchange losses that occurred in 1994

coincide with a distinctly identifiable negative political shock and not with an ex-ante expansion of the central bank's credit and/or of the money supply. 2) A massive speculative attack on a currency whose authorities are committed to maintain a band can not be resisted, certainly not in the present environment where the speed and amount of resources that move everyday in world financial markets quite simply overwhelm authorities. When it is realized that intervention in the 1994 Mexican case involved 25 billion dollars in reserves plus 30 billion in the issuance of dollar-linked Tesobonos, one understands the orders of magnitude involved. 3) The foreign exchange market was in equilibrium, i.e., the current account deficit was being financed by a surplus in the capital account and the exchange rate remained below the top of the band through November of 1994, except for the brief interludes when speculative attacks were taking place.

Other accusations relate to monetary expansion: "...while short term interest rates were raised after the Colosio assassination in March, and the interest rate differential vis a vis the U.S. reached 12 percentage points in April... this differential showed a declining trend, which reflected mainly rises in U.S. interest rates. Thus, in spite of a marked fall in foreign exchange reserves and in spite of the substantial exchange rate pressure, monetary aggregates were growing quite rapidly in 1994, and there was no active reliance on interest rates hikes to defend international reserves and the exchange rate band". Leiderman and Thorne (1995) p.20. In contrast, Kamin and Rogers (1995) in an econometric estimate of the demand for money find evidence that Mexican monetary authorities during 1994 merely accommodated shifts in the demand for money.

Another indicator of the stance of monetary policy is the evolution of interest rates throughout 1994. Chart 6 compares the Mexican interbank borrowing rate, not what was then a segmented Cetes market because of its privileged status as bank collateral and, therefore, carried an artificially high price, with the LIBOR rate. While it is true that after rising almost 20 percentage points, not 12, above LIBOR, the differential fell somewhat after the Colosio assassination, the excess of Mexican over LIBOR rates remained at 10 percentage points or higher throughout a period when the exchange rate fluctuated *within* the confines of its predetermined band and not at its top. This cannot be characterized as monetary looseness.

The conclusions above hold independently of institutional arrangements designed to manage monetary policy, but people fail to point out that Mexico's were not designed to fight off a speculative attack through sudden quantitative adjustments in credit, nor could they have been adapted overnight. Therefore, beyond allowing interest rates to rise, the country was not prepared to conduct even a modest mop-up of liquidity, much less to perform a Currency Board type of non-sterilization. It is well known that central bank credit increases in tune with international reserve losses, and a currency board mechanism (i.e. no central bank sterilization) will simply allow the equivalent fall in the money supply to happen, but this requires, a) a large amount of commercial bank (foreign currency) reserves to draw upon at the central bank, b) a history of non-sterilization practices by the central bank, otherwise commercial banks will not know how to react, specially to wide and abrupt foreign exchange movements, and c) if not ample reserves at the central bank, at least large foreign credit lines to the commercial banks are indispensable. Either a, b or b, c are necessary to allow commercial banks to cushion the day to day currency movements and other fluctuations in the payments mechanism. None of the three conditions listed above was present when the speculative attacks took place in 1994. Thus, there was nothing else for the central bank to do but to allow substantial rises in interest rates, as it did.

No matter how strongly some people may feel about the advisability of contracting the monetary base, Mexico was under a payments mechanism in which it had no alternative but to sterilize movements in its foreign exchange reserves and raise interest rates. Anybody who cared to read the central bank's annual reports could have easily discovered such a fact. Besides, as Sheldon (1995) aptly describes for the 1992 European currency debacle, the world financial market has become a lightning and massive environment, where speculators and arbitrageurs can, at the flick of a switch, vanquish any central bank that attempts to hold onto a floor or a ceiling, even the central banks of industrialized countries acting in coordination.

#### IV. Information Was Late and Incomplete, or Favored Nationals.

##### a) Incompleteness and Timeliness.



The quotes here are also numerous. Take a typical damning sentence<sup>7</sup>: “Mexico's foreign reserves fell with each new shock. At the start of the year they stood at \$25 billion, by the end they had dwindled to 6 billion; worse, deliberately slow publication of the figures hid the extent of the problem until it was too late”. (“Mexico Survey”, *The Economist*, October 28th, 1995). That is what *The Economist* and many, others say. Let us inspect the facts:

Ever since the 1940's and up to 1994, the international reserves of the central bank were released on only three occasions within any given year: the Annual Report of the Central Bank in the Spring, the Address of the Central Bank's Governor at the Mexican Bankers Convention usually in the Summer, and the President's Report to Congress, in the Autumn.

As one may surmise, such a policy, unaltered for more than fifty years, was well known within and outside Mexico. Nobody can claim to have been cheated or lied to. In 1994, and according to schedule, the central bank's reserves were informed through Banco de Mexico's Annual Report delivered to Congress in March, in Governor Mancera's speech at the Bankers Convention in October, and again by President Salinas' in his Address to Congress on November 1. Thus, by this latter dates, the trajectory of reserves could have been easily followed, including their considerable fall, with ample time before the devaluation: almost two months.

Other relevant information, such as the monthly balance of trade figures, were released earlier than is customary in most developed countries. The quarterly balance of payments, which contains changes in international reserves, was published with its customary- seven week lag. Appendix C contains the different publications and their approximate release-delay.

As a matter of fact a profession flint surged early in the nineties was that of “Banco de Mexico watcher”-analysts in domestic and foreign commercial and investment banks which, out of Banco de Mexico's day to day open market operations, the central bank's sterilization policies, and

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<sup>7</sup> Here *The Economist* seems to contradict itself since in the same article it had already stated: “the ministers and their friends in the supposedly independent Bank of Mexico were more inclined to ease fiscal and monetary policies than to tighten them”. Did reserves fall because of political shocks or because of expansionary policies?

with the help of the seasonal behavior of the demand for money, were able to figure out on a daily basis the amount of international reserves with an amazing accuracy. Banco de Mexico provided all the elements needed for this exercise, so that even critics as the IMF could have derived the information.

All this information, plus data known and analyzed by the markets, contributed to present a clear and continuous picture throughout the year of the level and trend of Mexico's international reserves and other relevant data. Appendix B contains press and/or expert statements from various sources concerning the level or movements in international reserves, 1st. column, and the actual value or movement, 2nd column. Column 3 shows the percent differences between columns 1 & 2.

In line I AFIN correctly reports the level of reserves in October '93, but it vastly underestimated their December 93 value. The previous day, recorded in line II, Invermexico has good approximations to the October and November values. Then there are three gross overestimates in July (V, VI and VII), but El Financiero in the same month quotes Banco de Mexico with a figure that is right on the dot. The same is true of Vector (line IX).

Other close approximations were published by IX, XIII, XIV, XV (underestimations) and XVI.

As we go into November, closer to the critical period, XXI was very close, as were XXII and XXIII.

Finally, before the ultimate speculative attack, Bear and Stearns (XXXI) reported very close to actual figures on December 5.

On this subject as well as in different topics, it seems that many people have simply adopted the statements made by others without a critical examination.

b) Information Favored Nationals.

An argument contained in an IMF publication<sup>8</sup> had a great echo in the world press: presumably Mexican nationals and not foreigners attacked the Mexican currency in the critical first three weeks of December 1994. The IMF of course was not interested in the provincial, empty and politically charged issue of who was to fault, but in what they considered asymmetric information opportunities regarding local emerging-market investors versus foreign investors, with the first supposedly having a better first-hand knowledge of events.

Whatever value this argument may have for other so called emerging markets, it certainly does not fit Mexican facts: a) Mexico to an extent comparable to developed economies, has no restrictions on capital flows, and market makers, arbitrageurs, investment-fund managers, bank treasurers, etc., from all over the world continuously exchange information on Mexican market events. It is difficult to imagine how Mexico could attract such an important share of total net capital flows to developing countries from 1989 to 1994, if such investors-most of them with substantial experience in international markets-did not consider the information they had available as sufficient. b) The IMF report, two pages before the one quoted, describes the large purchases of Tesobonos, most of them by foreigners. Evidently, besides the already large drops in international reserves that had taken place from March to November, a large amount purchased by foreigners, the latter had already hedged their peso exposure precisely because of their large increases in tesobono (dollar linked government paper) holdings and their also large purchases of "coberturas" (forwards) at Mexican banks. Therefore, the December currency purchases, even if they had been made mostly by Mexican residents would have been a late response by them and not opportunistic purchases carried out by people favored with asymmetric information opportunities, c) some of the peso sales in the days of the devaluation were conducted by Mexican banks as a consequence of their hedging of short positions in dollars that they had contracted in the past to offer foreign residents a hedge against a peso devaluation, and last and not least, d) the IMF

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<sup>8</sup> "In the run-up to the devaluation, that is, from November 30 to December 19, foreign investors had net sales of about \$326 million in Mexican government debt securities, and there were net purchases of equity, while reserves fell by \$2.8 billion. For the entire month of December 1994, foreign investors were net sellers of about \$370 million of debt and equity, while Mexican foreign exchange reserves fell by \$6.7 billion, only \$1.7 billion of which was accounted for by the trade deficit. Indeed, foreign investors did not start to sell their Mexican equity holdings in any sizable quantity until February 1995." IMF (1995c) p. 7-8.

conjectures on the residency of investors are based on the nationality of the custodian institutions of an incomplete sample of financial instruments. It takes a lot of market naiveté to identify the nationality of the custodians with the residency of the investors.

#### V. Excessive Stimulus to Aggregate Demand.

The quotes on this subject are also rich and varied. They go from the ubiquitous Dornbusch in D, G&V, p. 22: "For the election year fiscal spending was turned up, concentrated on the third quarter. But other than for the fiscal stimulus growth clearly was low", to The Economist 's quote already referenced above, to Krugman (1995), p.42: "The approach of the presidential election seems to have led the Mexicans neither to devalue nor to accept slow growth, but rather to reflate the economy by loosening up government spending".

There are numerous other quotes on this subject, but Dornbusch's is clearly a gem. If his facts are correct, and we shall analyze the data below, he must have in mind the date of Mexican elections, the 21st. of August of 1994. I have not perused the most recent edition of his Macroeconomics textbook, but does he really believe that a GDP expansion is brought about by fiscal spending on a contemporaneous quarter?

Table 6 shows a rather large contribution to final demand from the private sector in 1994 and a very small one from public expenditures, certainly not the stuff that would lead one to associate 1994 with a pump-priming year. More-over, the balance of the public sector presented in the Public Accounts (Cuenta Pública) (1995) shows a surplus for 1994, not exactly what one would characterize as deficit spending for election purposes.

Another set of comments revolves around the alleged expansion of credit from the development banks: "...various budget and public finance indicators suggest that in 1993 and 1994 there was a marked shift toward relaxation of the fiscal stance of Mexico. In addition to the inflation-corrected budget, there was a sharp rise of about 3 percent of GDP in net credit creation by public sector development banks, cumulative over 1993-94". Leiderman and Thorne (1995 ), p.6.

Our comments above apply to the first part of this paragraph. Regarding the second part let us look again at the figures. As NAFIN and other development banks were cleansed of a static portfolio that contained mostly loans to money-losing paraestatal firms, they were able to turn their portfolio to private sector loans. They were also put under capitalization rules and became able to raise funds in the internal market and abroad. Although some of the portfolio of NAFIN later became suspect, there is no reason to believe that as a whole, considering that they underwent a thorough overhaul, that the Foreign Trade Bank, the Rural Credit Bank, and the Trust Funds such as FOVI ( for housing) and FIRA (for Agriculture), had performing loans worse than the average banking system. Furthermore; these banks did not add to net demand, to the extent that they crowded out other fund users by openly marketing their notes, and, they utilize commercial banks to have them evaluate individual credit requests.

Table 7 shows that the amounts channeled by development banks were not extraordinary, neither with respect to GDP nor to the size of the private banking system, and there was certainly not "a sharp rise of about 3% of GDP...". The rise was only of 0.6% of GDP.

## VI. Insufficient Saving.

The figures for savings in Mexico refer to gross domestic savings (GDS). The data are contained in Table 8.

The information on this subject quoted by the press and analysts refers to the GDS series. From it, people infer that there was a substantial fall of 4.15 percentage points of GDP in the country's savings during President Salinas' administration. It is also asserted that the savings ratio became abnormally low: "Mexican domestic savings are currently at very low levels, reaching only 13.7% of GDP in 1994, having fallen from above 20% of GDP in 1987". Baring Securities, (1995), p.1. Another illustrative quote is: "Private saving, on the other hand, dropped from a peak in 1988 of 19% to a low of 9% of GDP in 1994". Atkinson and Ríos-Rull (1995), p.18. But GDS does not fully measure the internal saving effort, it is a measure of savings available after net payments to factors abroad. The

GNS concept does measure the saving effort, and it fell only 2.83 percentage points of GDP from 1989 to 1994, a substantially lesser reduction and to a level that cannot be considered abnormally low. A drop of this magnitude can hardly be considered the cause of a balance of payments crisis.

The other side of this story is the breakdown of GNS into public and private that can be appreciated on Table 9. The breakdown presented between private and public sector savings is far from conventional. Private savings are a residual but public savings are obtained directly and merit a brief definition, because they result from taking the operational financial balance of the public sector and adding to it public investment from the national accounts.<sup>9</sup> For completeness, real interest expenses from the off-budget amounts was subtracted. There are two distinct periods involved in these series. From 1983 to 1989, with a sharp fall in savings correlated with the collapse in Mexico's terms of trade. Before the oil boom, in the 1950-1960, 1960-1970, or 1970-1980 periods, gross national savings had averaged 16.1%, 19.8%, and 22.3%, of GDP, respectively. Chart 3 depicts the strong fall in the savings ratio as terms of trade collapsed in 1983. To interpret the chart, it must be remembered that just as adjustment year 1995 will show an atypical sharp increase in domestic savings, so does adjustment year 1983.

The stable private savings ratio derived in this manner is consistent with the direct non-residual calculation in the national accounts shown in Table 10. The broad picture seems to be that the lower aggregate savings ratio by 1989 is a reflection of the drastic fall in Mexico's terms of trade and not of a profligate government or population, and that its more recent levels reflect the pre-oil boom observations.

On the other hand, private savings do not contribute much to the recent fall in savings: one percentage point versus 1.81 percentage points for the public sector. But this latter fall is more than compensated by the substantial public debt reductions that took place during this period, so

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<sup>9</sup> Therefore Public Sector Savings ( $S_p$ ) would be equal to  $S_p = OFB + I_p$ , where OFB, the Operational Financial Balance of the Public Sector, is defined as the fiscal surplus/deficit of the consolidated public sector minus the sum of the inflationary amortization of the public debt and  $I_p$ =Public Sector Investment. The latter is added because the objective is to obtain a savings concept equal to current income minus current expenditure, but the  $S_p$  number is defined as income minus total expenditures.

that part of the dissaving is simply correlated with a substantial improvement in the government's financial position, as the average net consolidated public debt diminished from 74.4% of GDP in 1987 to 22.5% of GDP in 1994.

There is considerable discussion in the economic literature on whether savings can be influenced through public policy. A Barro-Ricardian economist would argue that individual behavior will offset government saving increases. A growth theorist might question the ethics of forcing lower consumption today in order to increase the consumption of future generations. But aside from positions which imply a wise-benevolent but manipulating government who knows best, the one unmistakable lesson that can be derived from theory is that savings and their allocation are negatively influenced by interest rate controls and economic instability. The first did not happen and the latter was in the process of being successfully brought under control.

Had government savings stayed at 1.7% of GDP the current account deficit would have been lower and both the accumulated foreign debt and the vulnerability implied by the apparent low economic growth and high current account deficit, would have been lower. Whether these adjustments would have made the difference is left for the discussion of the final chapter, but the numbers handled do not suggest a dramatically different outcome.

## VII. Financial Disequilibrium or Overborrowing.

Calvo and Mendoza (1995), (C&M), and Mckinnon and Pill (1995), (M&P), have interesting contributions that center on financial disequilibria. Let us consider first C&M.

### a) The Calvo-Mendoza Disequilibrium Hypothesis

They start by setting the pre-crisis stage: President Salinas "... implemented far reaching programs of stabilization and structural reform that swiftly transformed the country into an export oriented, open market economy. Fiscal and monetary discipline were restored. Large distortions caused by excessive government intervention in all areas of economic activity were

eliminated or sharply reduced." (p.2, *ibid*). But "Politically, Mexico in 1994 was also a very different country. The same reforms that so transformed the economy caused profound political changes. Economic reforms undermined key pillars that constituted the power base of the political system..." and "Several instances of political violence and disagreement among members of the PRI developed during De la Madrid and Salinas terms. This tense political climate worsened considerably when in the Fall of 1993, in an unprecedented challenge to presidential authority, Mexico City's mayor (Manuel Camacho) openly criticized President Salinas' nomination of Donald Colosio as the PRI's presidential candidate. The situation turned critical in 1994 with the Chiapas uprising and the assassinations of Mr. Colosio and Francisco Ruiz Massieu, PRI secretary general..." (p.2, *ibid*) and "...such a high degree of political uncertainty may play a key role in the generation and propagation of a balance-of-payments crisis in an economy where financial capital is highly mobile." (p.3, *ibid*).

The next element of their argument is: "The vulnerability of the currency resulted from large imbalances that emerged within the private financial system which, from the perspective of maintaining the currency peg, were mishandled by policy-makers"... "Second, a 'bonds-led-speculative attack' near the time of the collapse, reflected in the fact that Mexico was abruptly denied access to private international capital markets, on which Mexican policy-makers relied consistently during most of 1994 and despite the country's sound 'fundamentals'." (p.3, *ibid*).

The other key ingredients of their line of reasoning are the following:

a) "During 1985-1993 Mexico experienced rapid money demand growth and a substantial deterioration in the financial position of commercial banks, induced by a surge in foreign capital inflows, booming private expenditures, and financial liberalization. Under a nearly-fixed exchange rate, near-perfect capital mobility, and a growing maturity mismatch between commercial bank's assets and liabilities, the vulnerability of the currency to a large and persistent money demand shock increased as the quantity of money far exceeded foreign reserves." (p.4, *ibid*). b) The 1994 rise in U.S. interest rates "...and the perception of a systemic political crisis hit money demand. The central bank, acting out of concern for the need of stability in times of political crisis and the fragility of the financial



system, or on the belief that an exogenous, transitory shock to reserves had occurred and would eventually self-adjust according to basic principles, chose to expand domestic credit and sterilize the effect on the monetary base." (p.4, *ibid*).

C&M give little credit to the overvaluation hypothesis but dismiss also what they label equilibrium theories which "...view the gradual widening of the external deficit and the real appreciation as natural outcomes of transitional dynamics induced by structural reforms. These phenomena are temporary and reflect the economy's improved long-run growth prospects. The large inflows of private foreign capital and the gradual convergence of inflation to single-digit levels, in an environment of sound fiscal and monetary policies, are used as evidence in favor of this approach. In this setting, the crisis follows from recurrent shocks--either domestic political shocks or foreign investors' confidence shocks. Once again, a key criticism of this view is that the December crash seems to refute it. Despite the resolution of the political uncertainty regarding the presidential elections, large inflows of foreign capital did not return, and the investor's decision to attack the peso and not to roll-over public debt, conflicts with the views of temporary and domestic shocks to a fundamentally sound economy" (p.9, *ibid*).

Finally "...the large mismatch between short-term debt and reserves ended with the collapse of the currency" (p.10. *ibid*) and "When the crisis erupted, privately-held short-term public debt -was nearly 3 times larger than gross international reserves."" (p.11, *ibid*).

We find the C&M account fascinating. They care to relate the political instability to the economic outcome. They recognize Mexico's economic reforms and attempt to solve the contradiction between these achievements and the subsequent economic collapse. Furthermore, they dedicate a substantial effort to economic modeling, to statistical research and to econometric testing. However we believe there are some fundamental flaws in their argumentation:

a) A distinction such as  $M_0, M_1, M_2, \dots, M_n$  in Mexico's financial liabilities is useful only to isolate currency ( $M_0$ ) from the rest and perhaps to separate the small percentage of liabilities which are longer term. The majority of domestic liabilities of commercial banks, more than 50 percent, are the

equivalent of demand deposits, a situation that has remained unaltered for several decades. Even longer term liabilities are highly liquid because of the possibility to use them for repos (including repurchase agreements of government paper between commercial banks and the central bank). Furthermore, the ratio of liquid financial assets to international reserves is a very large number in almost any country in the world.

b) Commercial bank liabilities have full government backing. Thus there is no meaningful ultimate economic distinction between public and private debt, nor of their respective maturities, since the percentage that is liquid has always been large and its relationship to international reserves several times over.

c) Commercial bank's liabilities abroad, most of them of a very short term nature, grew from \$8.6 bn. to \$24.8 bn. in the 1988-1994 period, thus combining b and c, one can not make a strong case for the growth in Tesobonos and their relationship to international reserves as the ultimate exposure or financial risk index of the Mexican economy.

d) C&M and the rest neglect to analyze the telling NAFTA episode of November 1993. At that time the public perceived the increasing likelihood of a negative vote in the U.S. Congress. As the date approached, a speculative attack followed and was dealt with by a combination of an exchange rate adjustment inside the band, intra-band forex intervention by Banco de Mexico, increases in domestic interest rates, and allowing for a massive swapping from Cetes to Tesobonos. The central bank held on and sterilized the attack. After NAFTA was approved, not only normality ensued but international reserves increased to reach unprecedented levels in February 1994. Was central bank credit expansion and subsequent contraction the cause or the effect of these movements? We believe it is clear that the origin lies in external political events and not in central bank credit policies. Nobody questioned or criticized the central bank at the time.

Having been successful to neutralize the NAFTA related attack, it was natural to use again the strategy mentioned above in the face of renewed uneasiness in the forex market at the time of the Colosio assassination. Although C&M allege, as quoted above, that "Despite the resolution of the political uncertainty regarding the presidential elections, large inflows of

foreign capital did not return, and the investor's decision to attack the peso and not to roll-over public debt, conflicts with the view of temporary and domestic shocks to a fundamentally sound economy" (p.9, *ibid*), they fail to notice that the political situation was far from resolved: the Chiapas problem smoldered. Another illuminating episode is that simple threats and accusations by the now discredited former Assistant Attorney General, Mario Ruiz Massieu, were enough to create another substantial run on international reserves on Nov. 23 1994. The December 1994 devaluation provides more evidence on this regard. The new speculative attack that took place on Monday Dec. 19 1994 on by then fragile reserves, unchained by Chiapas rebels' renewed activities, forced the government to announce the next day that the ceiling of the peso/dollar band would be raised 15%. Even though the change was performed within such a short notice, it worked, albeit ephemerally. During the first hours of Tuesday Dec. 20 1994, the stock market boomed and the exchange rate floated below its new upper limit. Then. at around 1 P.M., the wire services informed, what would later be confirmed to be wildly exaggerated misinformation, that hostilities in Chiapas had resumed. With that the peso/dollar ratio hit its new roof, the stock market and international reserves started to plunge. All this happened in the last minutes of market activity.<sup>10</sup> The outcome of the following day is history.

As these and 1995 events have confirmed, the political situation was far from "resolved" by the presidential election nor can one therefore dismiss "...the view of temporary and domestic shocks to a fundamentally sound economy".

C&M raise fundamental issues, such as the mismatch maturity problem between assets and liabilities in commercial banks, the highly liquid nature of Financial liabilities, governmental or otherwise and the danger inherent to emerging markets from the herd-like behavior of foreign institutional investors. These elements, combined with the moral-hazard introduced into private banking by the full backing of deposits, and the characteristic that virtually all financial debt is public debt, constitute an agenda for research and reform. The implicit dangers in this arrangement increased as financial intermediation deepened in conjunction with greater foreign participation, but these developments were not necessary nor

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<sup>10</sup> Excerpts from the Foreign Exchange Desk Logbook of Banco de Mexico are provided in Appendix E.

sufficient for a speculative attack to succeed or to get under way. The vulnerability originated in large fully backed financial liabilities in excess of foreign reserves, that have existed in Mexico and other countries for many years, and which made it eventually impossible to successfully respond to sequential speculative attacks triggered by political shocks.

b) The McKinnon-Pill Overborrowing Hypothesis.

Although their analysis departs from a false premise, that: "Financial stabilization and real economic reform with NAFTA membership in prospect stimulated vast inflows of short term capital -- the proverbial "hot money"--into Mexico in the late 1980 and early 1990s. Such inflows caused a dramatic collapse in domestic private saving...", which we believe is unnecessary for their argumentation, the M&P paper, p.1, offers valuable insights. Their concern is with the moral hazard that results from the unlimited backing of deposits at commercial banks, which, in an euphoric liberalized environment, may induce "excessive" amounts of borrowing. The excess is the outcome of having a financial system overwhelmed with fresh funds and its supervisors, having their universe expanding beyond their capabilities, fail to ensure an adequate quality level for the banks' portfolios. Under an open and liberalized banking system, banks will overreach and lend amounts considerably in excess of what is prudent. Ultimate lenders from abroad, and the banks themselves, will feel protected by explicit. or implicit deposit guarantees.

This clinical history coincides with many features of the Mexican reform process, where financial changes included the removal of restrictions on foreign resident holdings of Mexican government paper, the elimination of reserve requirements on bank deposits and the repeal of the withholding tax on foreign borrowings through treaties to avoid the double taxation of income between Mexico and its main creditor countries. In addition, recently privatized banks suddenly found themselves with large quantities of loanable resources as the outcome of the government's withdrawal of internal debt which previously absorbed the lion's share of their portfolio. Bank executives accustomed for many years to simply redirect private savings to the government, now found themselves flush with funds to lend to a great number of borrowers whose creditworthiness they had to evaluate. The amount of commercial bank loans to the private sector went from \$17.6 bn. in 1988, to \$102.2 bn. in 1994.

M&P suggest that establishing reserve requirements on domestic, as well as on foreign bank borrowings, possibly combined with other policies to encourage domestic savings, direct foreign investment, and limits to consumer borrowing, might work directly as a brake on the excessive foreign flows that would otherwise result from successful liberalization and economic growth (p.24-25, *ibid*).

## VIII. Some Conclusions.

Economic activity is everywhere distorted by diverse policy disturbances, but the task of the analyst is to try to identify fundamental causes or weaknesses that led to the 1994 crisis. It is not very useful to make an inventory of the economic ills that afflict Mexico. A sadder conclusion as one scrolls the literature is that, with few exceptions, some analysts do not even bother to inspect the data. Or, following the current "stylized facts" fashion, they arrange a few numbers, often recent ones, with no longer term perspective, to make them look consistent with some hypotheses. Most of the conventional ignorance that has been brandied about in the past year concerning Mexico's crisis, falls of its own weight when confronted with reality. This is true whether one looks at the alleged overvaluation of the real exchange rate, or at the supposed expansion of central bank credit, or at the fall in private savings, among the many possible explanations that have been offered.

We believe that analysis and the data are clear in pointing out that Mexico experienced a politically triggered speculative attack, not a crisis based on the misalignment of real phenomena. The contributions mentioned in the previous chapter and others are helpful to understand it, and to think about the policy instruments needed to avoid or mitigate a similar problem:

We feel that the two papers reviewed in this chapter contain many valuable lessons:

- The need to reduce vulnerability to short term capital movements.
- The advisability of issuing a larger proportion of long term government debt.

- The need to reinforce the regulation of commercial banks.
- The role of political changes during the Salinas' administration and of 1994's political shocks in bringing about the crisis.

But none emphasizes sufficiently the vulnerability, although M&P mention it, of fixed exchange rates under fast moving and potentially huge movements of capital. The implicit or explicit policy recommendations of these authors would have surely mitigated the depth and violence of the 1995 Mexican economic crisis, but none would have avoided it. We believe this conclusion holds even if longer term government debt had been issued and if other remedial actions had been taken. The sale of pesos during 1994 was several times the monetary base and, as D, G&V assert, if European currencies collapsed during the 1992 attacks, there is no reason to believe that Mexico could have avoided a currency collapse.

The two papers we have quoted extensively immediately above do not mention either the recent role of securitized capital flows, which perform outside the usual banking channels. Hale (1995), p.2. These funds were available partly because of market developments, partly because of Mexico's enticing reforms. Firms were able to draw upon them because Mexico eliminated a stiff withholding tax on all kinds of private foreign borrowings through the celebration of treaties designed to avoid the double taxation of income. As Hale states about Mexico: "During the early 1990's, it had been able to finance its current account deficit nearly two thirds through sales of securities to U.S. investors..." (Ibid, p.2).

- Hale also points out the recent large growth in the U.S. mutual fund industry from "...barely 10% of bank deposits in the early 1980's to nearly 90% by 1994". In the pre-First World War period, "...when securities markets were also major channels for capital transfers between rich and poor countries...", "...most of the great upheavals in both the U.S. and Latin American stock markets during that period resulted either from financial shocks in Europe which reduced demand for all foreign securities or political events here which undermined foreign investor confidence in western hemisphere currencies. The best analogy to the recent Mexican crisis is the U.S. dollar crisis oh 1893. Grover Cleveland had just become president and investors begun to sell the dollar because of concern about his commitment to maintaining its link to the gold standard" (Ibid, p.3).

- Aside from the customary unsupported references to central bank credit expansion during 1994, Hale also refers to “the inadequacy of the monetary regimes...” (Ibid, p.4). Here Hale points out the failure to “...appreciate the differences between importing capital from U.S. banks during the 1970's and U.S. mutual funds during the early 1990's”.

The final relevant quote is also from Hale: "The magnitude of the recent Mexican crisis suggests that developing countries will have to re-examine their assumptions about monetary policy..." "Some countries will be able to establish investor confidence simply by establishing independent central banks, while others should consider converting their central banks into currency boards similar to those which now exist in Hong-Kong or Argentina" (Ibid, p.5).

Those authors that concentrated on financial disequilibria point out aspects that should undeniably be improved: better bank supervision to try to improve on moral hazard, lower reliance on short term foreign and domestic funds, a more balanced-longer-term structure for government debt and for commercial banks' liabilities, as well as other explicit or implicit recommendations that are right on the mark. But Mexico and other countries usually go about their daily economic business under these imperfections without great trauma. Cole and Kehoe (1995) develop a suggestive model to deal with the possibility of government debt default, which we believe deals with this problem: "While the multiplicity of equilibria of the model means that it is completely silent as to why some countries might experience a crisis while others do not, events in Mexico suggest that the ongoing political turmoil within the country might have played an important role." (p.27).

Higher growth and greater stability would be achieved these financial imperfections were corrected, but they do not explain the crisis. At most, they have contributed to the depth of the depression. As an explanation we believe the origin of the crisis was the dangerous combination of a fixed exchange rate -sans currency board- in the middle of the recent explosive growth in the international availability of short term capital, in a society mercilessly pounded again and again by political shocks which propitiated runs on its international reserves.

There is a need to choose the appropriate monetary institutions. Hale and others favor a currency board because it presents several advantages: the money supply is demand determined, foreign reserves are hostage to money, demand movements, which reassures investors, and the public sector is constrained to budgetary equilibrium. One of the outcomes of this arrangement is that interest rates and inflation mirror those prevailing in the country chosen for the currency peg, achieving thus a lower cost of capital and greater price stability. Speculative activities are reduced to their bare essentials, economic growth is higher, and a longer term horizon allows exporters to plan for permanent investments. An independent central bank on the other hand is an improvement over a dependent one, because it focuses the public's attention on central bank actions and improves accountability.

We feel that the monetary arrangement presently within our reach is an independent central bank under a floating exchange rate, preferably a freely floating one, to prevent or diminish the size and ultimate success of speculative attacks.



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## APPENDIX A

### ON THE DYNAMICS OF THE REAL EXCHANGE RATE

The purpose of this exercise is to explore the time it takes for a devaluation to work itself out through the domestic price level. The method followed is fairly simple: it will be assumed that the prices of traded goods (T) adjust instantly and that contract staggering will provoke a protracted adjustment in the prices of other goods and services. It will also be assumed that government sector prices follow some preset arbitrary path.

Predominantly wage based services and house rentals are in the staggered adjustment category.

It will be assumed that past inflation will be fully incorporated into the price adjustments of non traded (NT) goods and services. Since most of NT are services, their prices will presumably reflect labor costs. It can alternately be interpreted that contractual wages are revised monthly, fully reflecting inflation experienced since the last contractual revision, and that the cost effect on prices is thus scattered through time.

A numerical example giving equal weights to T and to NT will illustrate the argument. Let the prices of NT and T be equal prior to a devaluation of 100%, and let the devaluation take place in the first day of a month. Assume also that international prices are not increasing and that there are no other internal inflationary forces. Full instantaneous adjustment of T prices will imply a price level (P) 50% higher in the month immediately after the devaluation, or month  $t$ . In month  $t+1$  for example, NT prices will rise 4.17% ( $1/12$  of 1.5 plus  $11/12$ ) and the general price level (P), 1.39% with respect to  $t$ .

In general, let

$\alpha_i$ : The share of the good or service in P

$P'$  : The external price level

$\eta$  : The nominal exchange rate

$$\begin{aligned} \text{then } P_0 &= \alpha c_1 P^{\circ NT} + \alpha c_2 P_T \\ &= \alpha c_1 P^{\circ NT} + \alpha c_2 P' \eta_0 \\ P_1 &= \alpha c_1 P^{\circ NT} + \alpha c_2 P' \eta_1 \end{aligned}$$

From here it will be assumed that  $P^{\circ NT}$  is broken up into 12 annual contracts revised monthly, with equal weights each month. Each contract will be revised upward by the full impact of inflation since the last revision. The equation is generalized below, but since no inflation is assumed for the year prior to the devaluation, the inflation history of the first year has to be built up.

$$P_2 = \alpha c_1 \left[ \frac{P_1}{P_0} \frac{1}{12} P^{\circ NT} + \frac{11}{12} P^{\circ NT} \right] + \alpha c_2 P' \eta_1$$

$$P_3 = \alpha c_1 \left[ \frac{P_1}{P_0} \frac{1}{12} P^{\circ NT} + \frac{P_2}{P_0} \frac{1}{12} P^{\circ NT} + \frac{10}{12} P^{\circ NT} \right] + \alpha c_2 P' \eta_1$$

$$P_{13} = \frac{\alpha c_1}{12} \frac{P^{\circ NT}}{P_0} [P_1 + P_2 + \dots + P_{12}] + \alpha c_2 P' \eta_1$$

in the 14th month the first contract comes up again for revision and

$$P_{14} = \frac{\alpha c_1}{12} \frac{P^{\circ NT}}{P_0} [P_2 + P_3 + \dots + P_{13}] + \alpha c_2 P' \eta_1$$

$$P_t = \frac{\alpha c_1}{12} \frac{P^{\circ NT}}{P_0} \sum_{j=t-12}^{t-1} P_j + \alpha c_2 P' \eta_1$$

$$t \geq 14$$

The weights used in the numerical exercise are taken from the Mexican price index, and are the following:

House rents	0.157
Tuition	0.035
Hotels, air transportation and intl. long distance	0.009
Other services	0.2
Government prices	0.139
Tradeables	0.46

According to the discussion above this table can be collapsed into

Non-tradeables	0.366
Tuition	0.035
Government prices	0.139
Tradeables	0.46

Government prices will be assumed to adjust to the devaluation in a continuous process that takes 36 months. Tuitions will follow inflation in the same fashion as other non-traded prices, but will be adjusted every 12 months. Table A1 and Chart A1 show the results.

The outcome is a petering out of inflation until it stops when the real exchange rate stops falling. The mechanics of the model guarantee this result so there is nothing special about it. What is remarkable is that under the assumption of a full adjustment of contractual wages and/or prices of non-tradables to past inflation, it takes 5 years for the effect of a 100% devaluation to wash itself out of the internal price level. Even if government prices took only one year to recover from the devaluation, the full adjustment of internal prices (not presented) would take 49 months.

Because of the instantaneous adjustment assumed for tradables and the staggered but full backward looking adjustment of non-tradables, inflation

will be 77% in the first 12 months (Table A1), 7.2% in the second year and only 4.3% in the third, etc. A more gradual adjustment, because of a fall in real wages, will induce a more distributed rate of inflation over time. A smoother catch-up of traded goods' prices would have a similar influence on the outcome.

**APPENDIX B**  
**DATES OF PUBLIC AWARENESS OF BANCO DE MEXICO'S**  
**FOREIGN RESERVES**

	<b>1</b>	<b>2</b>	<b>3</b>
	<b>Opinions recorded in the Mexican press (US Dollars)</b>	<b>Actual figures of net international reserves (US Dollars)</b>	<b>Differenc es btn. 1&amp;2%</b>
<b>I</b>	<b>Afin Brokerage House</b> (Jan. 25, 1994): "International reserves decreased from 23,017 mn in October, 1993 to 18,554 mn in December of 1993. By the end of 1994 they will reach 23 bn"	Oct. 93 = 23,017.4 mn Dec. 93 = 24,951.7 " Dec. 94 = 6,148.2 "	-0.0017% -25.6 % 274.1%
<b>II</b>	<b>Invermexico Brockerage House</b> (Jan. 26, 1994): "International reserves fell from 23 bn in October of 1993 to 19.4 bn in November of 1993"	Oct. 93 = 23,017.4 mn Nov. 93 = 18,689.9 "	-0.076% 3.8%
<b>III</b>	<b>Vector Brockerage House</b> (June 14, 1994): "There will be a loss of reserves of 5 bn throughout 1994"	Loss of reserves btn. Dec. 93 and Dec. 94 = 18,803.5 mn	- 73.4%
<b>IV</b>	<b>Mexico City Chamber of Commerce, Canaco</b> (July, 1994): "Foreign reserves have increased throughout (President Salinas') six year term from 6,859 mn in 1989 to 26,135 mn in March of 1994"	In 1989 = 6,620.3 mn March 94 =24,425.3 mn	3.6% 7.0%
<b>V</b>	<b>'Financial analysts'</b> (July 25, 1994): "Foreign reserves currently are 18 bn"	222 July 94= 14,168.3 mn	27.0%
<b>VI</b>	<b>Banorte</b> (July 25, 1994): "(International) reserves are above 20 bn"	22 July 94 = 14,168.3 mn	41.2%
<b>VII</b>	<b>O'Farril (?)</b> (July 25, 1994): "International reserves are above 22 bn"	22 July 94 = 14,168.3 mn	55.3%
<b>VIII</b>	<b>El Financiero</b> (July 26, 1994): "According to Banco de México, international reserves were 17,064.3 mn at the end of April"	April 94 = 17,296.8 mn	-1.3%
<b>IX</b>	<b>Vector Brockerage House</b> (July 26, 1994): "Foreign reserves, 17,959 mn in April"	April 94 = 17,296.8 mn	3.8 %
<b>X</b>	<b>Foreign Trade National Council, Conacex</b> (July 27, 1994): "Reserves are 21 bn"	26 July 94 = 14,381.5 mn	46%
<b>XI</b>	<b>La Jornada</b> (Aug. 29, 1994): "(Reserves) were 18,175 mn at the end of May, compared to 29,585.8 mn in February"	Feb. 94 = 29,155.4 mn May 94 = 17,142.3 "	1.5% 6 %
<b>XII</b>	<b>Vector Brockerage House</b> (Sept. 1994): "Reserves are 19 bn"	21 Sept. 94 = 16,891.9 mn	12.5 %
<b>XIII</b>	<b>Enrique Quintana</b> , financial analyst (Sept. 28, 1994): "... (reserves were 15,900 mn at the end of June"	June 94 = 15,997.7mn	-0.61%
<b>XIV</b>	<b>Banorte Financial Group</b> (Oct. 9, 1994): " are 15,884 mn in June"	June 94 = 15,997.7 mn	-0.71%
<b>XV</b>	<b>Senator Carlos Sales</b> , Chairman of the Foreign Trade Commission (Oct. 1994): "... (reserves were) 15 bn in June"	June 94 = 15,997.7 mn	-6.2%
<b>XVI</b>	<b>Victor González (?)</b> (Oct. 10, 1994): "(Reserves were 15,880 mn in June)"	June 94 = 15,997.7 mn	-0.74%
<b>XVII</b>	<b>Zuñiga y González Amador (?)</b> (Oct. 1994): " 16,620 mn at the end of the first semester of the year"	June 94 = 15,997.7 mn	3.9 %
<b>XVIII</b>	<b>'Specialists' of the private sector</b> (Oct. 11, 1994): "...16 bn until September"	Sept. 94 = 16,139.7 mn	-0.86%
<b>XIX</b>	<b>Jose Madariaga</b> , President of the Mexican Bankers Association (October 12, 1994): "International reserves fluctuate between 17 bn and 20 bn"	11 Oct. 94 = 16,166.4 mn	btn. 5.2 % & 23.7%



<b>XX</b>	<b>Vector Brokerage House</b> (Oct. 12, 1994): "International reserves oscillate between 18 bn and 19 bn"	11 Oct. 94 = 16,166.4 mn	btn. 11.3% & 17.5%
<b>XXI</b>	<b>Arturo Damm</b> , financial analyst (Nov. 4, 1994): "...17bn"	3 Nov. 94 = 16,320.6 mn	4.2%
<b>XXII</b>	<b>Agustín Rodríguez Trejo (?)</b> (Nov. 17, 1994): "...reserves are) 17,240mn. In March they were 26,100mn"	Mar. 94 = 24,425.3 mn 16 Nov. 94 = 15,166.3 mn	6.9% 13.7%
<b>XXII I</b>	<b>El Financiero</b> (Nov. 18, 1994): "International reserves fell by more than 11 bn between February and October. In February they were 28.7bn"	Feb. 94 = 29,155 mn Oct. 94 = 17,242.2 mn Difference = 13,485.8 mn	-1.6% 2.7% -7.6%
<b>XXIV</b>	<b>El Economista</b> (Nov. 18, 1994): "International reserves fell by 8 bn so far this year"	Jan. 94 = 26,274.5 mn 18 Nov. 94 = 12,790.7 mn Diff. = 13,483.8 mn	-40.7%
<b>XXV</b>	<b>Macroaseosoria</b> , Economics think-tank (Nov. 30, 1994): "International reserves will be 16 bn by the end 1994"	Dec. 94 = 6,148.2 mn	160.2%
<b>XXVI</b>	<b>El Economista</b> (Dec. 1, 1994): "In March (reserves) were 24 bn. By the time of the 6 <sup>th</sup> . State of the Union Address of President Salinas) they were 17.2 bn"	March 94 = 24,425 mn 31 Oct. 94 = 17,242.2 mn	-1.7% -0.24%
<b>XXVI I</b>	<b>Economic Research Institute</b> , National University of Mexico (Dec. 5, 1994): "In December, 1993 (reserves) were 24,537.1mn. At the end of 1994 they will be 16,850 mn"	Dec. 93 = 24,951.7 mn Dec. 94 = 6,148.2 mn	-1.6% 174%
<b>XXVI II</b>	<b>Financial analysts and experts</b> (Dec. 5, 1994): "At the beginning of November, 1994, international reserves equaled 17.2 bn plus credit lines for another 17 bn to face speculative attacks"	31 Oct. 94 = 17,242 mn	98.4%
<b>XXIX</b>	<b>Various analysts</b> (Dec. 5, 1994): "In the previous week to the ratification of the Pact (between businessmen, workers and the government) reserves fell around 2 bn"	19 Sep. 94 = 16,821 mn 23 Sep. 94 = 16,645 mn Diff. = 176 mn	10,363%
<b>XXX</b>	<b>Probursa Financial Group</b> (Dec. 5, 1994): "There are 30 Bn between international reserves and credit lines"	31 Oct. 94 = 17,242 mn	74%
<b>XXXI</b>	<b>Bear Stearns</b> (Dec. 5, 1994): "In February of 1994, R= 29,329mn and in September, R = 17,220. Variation = 12,120 mn.	Feb. 94 = 29,155.4 mn Sep. 94 = 16,139.7 mn Diff. = 13,015.7 mn	0.56% 6.7% -6.9%
<b>XXXI I</b>	<b>Currency traders</b> (Dec. 5, 1994). "...estimated that capital flight was 2.4 bn between November 14 and 18"	14 Nov. 94 = 15,941.5 mn 18 Nov. 94 = 12,790.7 mn Diff. = 3,150.8 mn	-23.8%
<b>XXXI II</b>	<b>High ranking financial executives</b> (Dec. 21, 1994): "(international) reserves are between 10 bn and 15 bn"	20 Dec. 94 = 10,359 mn 21 Dec. 94 = 5,853.5 mn	btn. -3.5% & 44.8% btn. 70.8% & 156%
<b>XXXI V</b>	<b>El Universal</b> (Dec. 21, 1994): "... (foreign) reserves of Approximately 17 bn"	20 Dec. 94 = 10,359 mn 21 Dec. 94 = 5,853.5 mn	64.1% 190.4%
<b>XXX V</b>	<b>Reforma</b> (Dec. 21, 1994): "...probably they (reserves) were yesterday around 11 bn or 12 bn"	20 Dec. 94 = 10,359 mn	6.2% 15.8%
<b>XXX VI</b>	<b>Excelsior</b> (Dec. 21, 1994): "Quoting the Fed and the State Department, (Mexico's) reserves fell in the year from 24.1 bn to 17.2 bn"	Dec. 93 = 24,951.7 mn 20 Dec. 94 = 10,359 mn Diff. 14,592.7 mn	-3.4% 66.2% -52.7%

**APPENDIX C**  
**TIMETABLE FOR THE PUBLICATION OF INFORMATION BY**  
**BANCO DE MEXICO IN 1994**

Information	Frequency	Deadlines
1.- Monetary, Financial and public Finance Statistics:		
a) Monetary and Financial Figures	monthly	60 days after the end of the month
b) Public Finance Figures	Quartely with monthly information	8 days after sending the report to Congress
c) International Reserves (according to the definition in the Banco de México Law)	3 times a year	Annual Report, Banking Convention and State of the Union Address
2.- Productive Sector Statistics		
a) Industrial Production, Manufacturing and Employment in the Manufacturing Sector Index	Monthly	60 days after the end of the month
b) Monthly Survey of Businessmen, Industrial and Manufacturing Sectors	Monthly	26 days after the end of the month
c) Biannual Survey of Businessmen and the Manufacturing Sector	Every six months	60 days after the end of the Semester
3.- Price and Wage Indexes:		
a) Fortnightly Consumer Price Index	Bimonthly	Days 11 and 26 of the following month
b) Monthly Consumer Price Index	Monthly	Day 11 of the following month
c) Producer Price Index	Monthly	Day 11 of the following month
d) Special Indexes	Monthly	Day 11 of the following month
e) Wage Indexes for the Manufacturing Sector	Monthly	8 days after receiving the Survey of the
		Manufacturing Industry by INEGI
4.- Foreign Trade Indicators		
a) Foreign Trade	Monthly	45 days after the end of the month
b) Current Account and Balance of Payments	Quartely	50 days after the end of the quarter

**APPENDIX D**  
**GROSS NATIONAL SAVING (OR GROSS GEOGRAPHICAL SAVING)**

YEARS	FOREIGN SAVING	GROSS NATIONAL SAVING (GROSS GEOGRAPHICAL SAVING)	PUBLIC SECTOR SAVING	PRIVATE SECTOR SAVING	GROSS DOMESTIC PRODUCT (GDP)
(In millions of New Pesos)					
1983	(1,713.1)	5,423.3	623.7	4,799.6	17,878.7
1984	(2,307.1)	8,160.0	1,432.7	6,727.3	29,471.6
1985	(2,408.0)	12,442.8	2,313.1	10,129.7	47,391.7
1986	(3,093.6)	17,774.8	(1,048.3)	18,858.6	79,191.3
1987	(11,815.7)	49,048.5	13,333.4	35,715.1	193,311.5
1988	(6,012.3)	85,712.7	1,545.3	84,167.5	390,451.3
1989	(896.6)	107,803.0	8,515.7	98,987.3	507,618.0
1990	8,019.0	142,252.8	32,090.8	110,162.0	686,405.7
1991	27,827.6	165,986.0	44,681.3	121,304.6	865,165.7
1992	56,646.5	180,540.7	44,649.8	135,890.9	1,019,155.9
1993	47,882.2	199,948.1	20,543.1	179,404.9	1,127,584.1
1994	64,301.4	234,286.2	(913.8)	235,200.1	1,272,799.4
1994 First Semester	58,864.6	274,621.6	(19,849.1)	294,470.7	1,243,568.4
1994 Second Semester	69,738.2	193,950.9	18,021.4	175,929.5	1,302,030.4
1995 First Semester	(42,606.5)	319,243.5	96,657.3	222,586.2	1,475,133.6
In Percent of GDP					
1983	-9.58	30.33	3.49	26.85	100
1984	-7.83	27.69	4.86	22.83	100
1985	-5.08	26.26	4.88	21.37	100
1986	-3.91	22.44	-1.37	23.81	100
1987	-6.11	25.37	6.90	18.48	100
1988	-1.54	21.95	0.40	21.56	100
1989	0.18	21.94	1.74	19.50	100
1990	1.17	20.72	4.68	16.05	100
1991	3.22	19.19	5.16	14.02	100
1992	5.56	17.71	4.38	13.33	100
1993	4.25	17.73	1.82	15.91	100
1994	5.05	18.41	-0.07	18.48	100

GROSS NATIONAL SAVING OR GROSS GEOGRAPHICAL SAVING is defined as Gross Fixed Capital Formation (including change in Inventories) minus Foreign Saving.

FOREIGN SAVING is the Net Balance of the Merchandise and Non-Factor Services accounts of the Balance of Payments.

PUBLIC SECTOR SAVING is the financial operational balance plus public sector investment (public investment is added because the operational balance is calculated including all income and expenditure concepts) minus interest payments on the public debt related to non-budgetary expenditures, plus the inflationary amortization of such debt.

PRIVATE SECTOR SAVING is gross national or geographical saving minus public sector saving.

**NON-BUDGETARY EXPENDITURE** is private sector investment carried out on behalf of the public sector. It includes private sector investment on highways, electricity generation, etc.

**FINANCIAL OPERATIONAL BALANCE** is the PSBR (Public Sector Borrowing Requirements), net of the amount that the domestic public debt loses in value due to inflation (inflationary amortization).

**APPENDIX E****EXCERPT FROM THE LOGBOOK OF THE FOREIGN EXCHANGE  
DESK AT BANCO DE MEXICO.**

December 20, 1994.

When the interbank foreign exchange market opened in Mexico City on December 20, market participants set a buying price (b.p.) of 3.9040 and a selling price (s.p.) of 3.9240. From the opening and until 9:45 A..M. the exchange rate fluctuated around the lowest level it would reach for the day of 3.8600 (s.p.).

Between 10:00 and 10:30 the exchange rate depreciated 90/1000 to reach a level of 3.9500 (s.p.). Later that morning, the exchange rate fluctuated within a range of 3.9400 (s.p.) and 3.9600 (s.p.), until the wire services began spreading news, that turned out to be false, of the alleged movilization of troops of the Mexican Army in Chiapas. Also, at 12:40 P.M. the wires carried a bulletin stating that the investment bank Interacciones had published an analysis in which it questioned the political competence of the government to resolve the Chiapas conflict.

From that time on the exchange rate depreciated, until it hit the upper limit of its fluctuation band and at 13.15 P.M. Banco de México intervened in the market with the sale of \$90 million in order to avoid closing operations for the day with the exchange rate pegged to the upper limit of the band, implying an unsatisfied excess demand for foreign exchange. Despite this intervention, the demand was so strong that the exchange rate closed at only 6.6/1000 from the upper limit of the band.

Table A-1

	Nominal Exchange Rate	Real Exchange Rate	General Price Level	Price Level of Non-Traded	Price Level of Education	Government Prices
	100.0	100.0	100.0	100.0	100.0	100.0
1	200.0	134.4	148.8	104.1	100.0	102.8
2	200.0	132.7	150.7	108.3	100.0	105.6
3	200.0	131.0	152.6	112.7	100.0	108.3
4	200.0	129.3	154.6	117.2	100.0	111.1
5	200.0	127.6	156.7	122.0	100.0	113.9
6	200.0	125.9	158.9	126.9	100.0	116.7
7	200.0	124.2	161.1	131.9	100.0	119.4
8	200.0	122.5	163.3	137.2	100.0	122.2
9	200.0	119.0	168.1	142.9	168.1	125.0
10	200.0	117.2	170.6	148.8	168.1	127.8
11	200.0	115.5	173.2	154.9	168.1	130.6
12	200.0	113.8	175.8	161.2	168.1	133.3
13	200.0	113.0	177.0	163.5	168.1	136.9
14	200.0	112.2	176.2	165.8	168.1	138.9
15	200.0	111.5	179.4	168.1	168.1	141.7
16	200.0	110.8	180.6	170.2	168.1	144.4
17	200.0	110.1	181.7	172.3	168.1	147.2
18	200.0	109.4	182.8	174.3	168.1	150.0
19	200.0	108.8	183.9	176.2	168.1	152.8
20	200.0	108.2	184.9	178.0	168.1	155.6
21	200.0	107.3	186.5	179.5	186.5	158.3
22	200.0	106.8	187.3	180.9	186.5	161.1
23	200.0	106.3	188.2	182.2	186.5	163.9
24	200.0	105.8	189.0	183.3	186.5	166.7
25	200.0	105.4	189.7	184.3	186.5	169.4
26	200.0	105.0	190.5	185.4	186.5	172.2
27	200.0	104.6	191.2	186.3	186.5	175.0
28	200.0	104.2	191.9	187.3	186.5	177.8
29	200.0	103.8	192.6	188.2	186.5	180.6
30	200.0	103.4	193.3	189.1	186.5	183.3
31	200.0	103.1	194.0	189.9	186.5	186.1
32	200.0	102.7	194.7	190.7	186.5	188.9
33	200.0	102.2	195.7	191.5	195.7	191.7
34	200.0	101.9	196.3	192.3	195.7	194.4
35	200.0	101.5	197.0	193.0	195.7	197.2
36	200.0	101.2	197.6	193.7	195.7	200.0
37	200.0	101.1	197.9	194.4	195.7	200.0
38	200.0	101.0	198.1	195.0	195.7	200.0
39	200.0	100.9	198.3	195.6	195.7	200.0
40	200.0	100.8	198.5	196.2	195.7	200.0
41	200.0	100.7	198.7	196.7	195.7	200.0
42	200.0	100.6	198.8	197.1	195.7	200.0
43	200.0	100.5	199.0	197.6	195.7	200.0
44	200.0	100.4	199.1	197.9	195.7	200.0
45	200.0	100.3	199.4	198.2	199.4	200.0
46	200.0	100.3	199.5	198.5	199.4	200.0
47	200.0	100.2	199.5	198.7	199.4	200.0
48	200.0	100.2	199.6	198.9	199.4	200.0
49	200.0	100.2	199.6	199.0	199.4	200.0
50	200.0	100.2	199.7	199.1	199.4	200.0
51	200.0	100.1	199.7	199.3	199.4	200.0
52	200.0	100.1	199.8	199.4	199.4	200.0
53	200.0	100.1	199.8	199.5	199.4	200.0
54	200.0	100.1	199.8	199.5	199.4	200.0
55	200.0	100.1	199.9	199.6	199.4	200.0
56	200.0	100.1	199.9	199.7	199.4	200.0
57	200.0	100.0	199.9	199.7	199.9	200.0
58	200.0	100.0	199.9	199.8	199.9	200.0
59	200.0	100.0	199.9	199.8	199.9	200.0
60	200.0	100.0	200.0	199.8	199.9	200.0
61	200.0	100.0	200.0	199.9	199.9	200.0
62	200.0	100.0	200.0	199.9	199.9	200.0
63	200.0	100.0	200.0	199.9	199.9	200.0
64	200.0	100.0	200.0	199.9	199.9	200.0
65	200.0	100.0	200.0	199.9	199.9	200.0
66	200.0	100.0	200.0	200.0	199.9	200.0
67	200.0	100.0	200.0	200.0	199.9	200.0
68	200.0	100.0	200.0	200.0	200.0	200.0
69	200.0	100.0	200.0	200.0	200.0	200.0
70	200.0	100.0	200.0	200.0	200.0	200.0
71	200.0	100.0	200.0	200.0	200.0	200.0
72	200.0	100.0	200.0	200.0	200.0	200.0
73	200.0	100.0	200.0	200.0	200.0	200.0
74	200.0	100.0	200.0	200.0	200.0	200.0
75	200.0	100.0	200.0	200.0	200.0	200.0

Table A-2

	Nominal Exchange Rate	Real Exchange Rate	Simulated General Price Index	Observed CPI
1980	100.0	100.0	100.0	100.0
feb	100.0	98.3	102.0	102.0
mar	100.2	96.9	103.9	104.5
abr	100.1	95.6	105.5	106.1
may	100.1	94.8	106.7	107.8
jun	100.3	93.6	108.5	110.1
jul	100.7	92.0	111.1	113.1
ago	100.9	91.1	112.7	115.4
sep	100.8	90.1	114.1	116.8
Oct	101.1	89.0	116.2	118.4
nov	101.5	88.0	118.2	120.7
dic	101.7	86.4	120.9	123.7
1981	102.3	83.6	126.0	127.7
feb	102.9	83.0	128.1	130.7
mar	103.7	82.6	130.0	133.5
abr	104.6	82.2	131.9	136.6
may	105.6	82.5	133.1	138.8
jun	106.7	82.4	135.0	140.8
jul	107.7	82.3	136.8	143.0
ago	108.6	82.0	138.7	146.1
sep	109.8	81.8	141.0	148.9
Oct	111.2	81.5	143.7	152.2
nov	112.6	81.3	146.1	155.0
dic	114.0	80.8	149.5	159.2
1982	115.9	80.0	153.7	167.0
feb	137.8	87.8	166.9	173.7
mar	198.5	105.4	200.8	180.2
abr	201.5	104.3	206.4	189.7
may	205.1	103.8	211.7	200.6
jun	208.8	102.4	219.0	210.1
jul	212.6	101.5	225.5	220.9
ago	367.2	123.0	322.1	245.8
sep	306.9	110.7	299.9	258.9
Oct	306.9	108.1	308.0	272.3
nov	306.9	105.4	316.7	286.0
dic	440.1	117.4	408.5	316.5
1983	652.6	132.3	538.9	351.1
feb	651.7	127.8	558.4	369.8
mar	651.7	124.1	576.6	387.7
abr	651.7	119.9	598.4	412.3
may	651.7	116.4	617.6	430.2
jun	651.4	113.0	637.8	446.4

jul	650.4	109.0	661.5	468.4
ago	650.4	106.4	679.7	486.9
sep	650.9	103.5	700.7	501.7
oct	663.5	101.7	728.6	518.4
nov	680.9	99.8	764.0	548.9
dic	698.2	99.0	792.0	572.3
1984	716.5	98.3	820.6	608.7
feb	733.6	97.4	850.1	640.8
mar	750.7	97.0	875.4	668.2
abr	768.1	96.1	906.2	697.2
may	785.4	95.6	933.4	720.1
jun	802.8	95.1	961.6	746.4
jul	820.2	94.9	987.2	770.7
ago	837.9	94.7	1013.0	792.7
sep	855.3	94.4	1039.6	816.2
oct	872.6	94.1	1067.4	844.7
nov	890.0	93.8	1094.2	873.7
dic	909.4	93.4	1125.9	910.9
1985	932.4	92.0	1175.0	978.5
feb	954.4	91.9	1207.3	1019.0
mar	978.4	92.0	1239.1	1058.7
abr	1006.4	92.3	1273.7	1091.1
may	1034.5	92.5	1308.7	1117.0
jun	1062.6	92.8	1344.3	1145.0
jul	1365.1	104.4	1538.5	1184.9
ago	1461.5	106.2	1623.7	1236.6
sep	1595.2	108.5	1737.5	1286.0
oct	1764.9	111.6	1873.7	1334.9
nov	2136.1	119.0	2132.0	1396.4
dic	2031.8	112.5	2151.8	1491.6
1986	1954.1	106.4	2193.5	1623.5
feb	2059.0	106.6	2311.2	1695.5
mar	2084.9	104.5	2393.8	1774.3
abr	2201.8	104.4°	2536.5	1867.0
may	2347.7	105.0	2696.7	1970.7
jun	2741.2	109.8	3016.8	2097.2
jul	2780.7	107.8	2125.6	2202.0
ago	2990.2	107.2	3387.6	2377.4
sep	3261.9	108.7	3653.2	2520.1
oct	3501.8	109.6	3902.0	2664.2
nov	3718.6	109.6	4151.7	2844.1
dic	3915.8	108.8	4413.7	3068.7
1987	4176.2	108.9	4716.7	3317.3
feb	4463.3	109.7	5018.4	3556.7
mar	4764.8	110.2	5345.2	3791.6
abr	5062.1	109.2	5744.2	4123.5



may	5404.4	109.3	6140.9	4434.4
jun	5741.5	109.4	6532.8	4755.0
jul	6060.4	109.0	6939.1	5140.2
ago	6366.5	107.4	7415.8	5560.3
sep	6699.8	107.3	7828.9	5926.5
Oct	7025.9	107.1	8248.4	6420.7
nov	8368.7	113.3	9314.5	6929.9
dic	9823.9	115.6	10743.1	7953.4
1988	9779.4	109.4	11326.3	9183.2
feb	9948.8	107.4	11765.0	9949.2
mar	10072.3	105.4	12161.6	10458.7
abr	10072.3	103.1	12473.1	10780.4
may	10072.3	100.8	12777.2	10989.1
jun	10072.3	98.7	13086.0	11213.1
jul	10072.3	96.7	13390.6	11400.3
ago	10072.3	94.8	13686.9	11505.3
sep	10072.3	93.1	13977.6	11570.9
Oct	10072.3	91.4	14272.9	11659.2
nov	10072.3	90.0	14529.6	11815.4
dic	10072.3	89.0	14723.2	12061.7
1989	10147.9	88.2	15009.5	12357.0
feb	10270.9	88.0	15259.5	12524.9
mar	10398.5	87.9	15508.3	12660.6
abr	10534.9	87.9	15758.8	12850.0
may	10672.3	87.9	15996.5	13026.8
jun	10804.7	87.9	16237.4	13184.9
jul	10937.0	87.9	16476.2	13316.8
ago	11069.4	87.9	16717.4	13443.9
sep	11206.8	87.9	16973.5	13572.3
Oct	11340.0	87.6	17278.5	13772.9
nov	11567.6	87.9	17605.7	13966.5
dic	11694.3	87.3	17952.4	14437.7
1990	11837.2	86.1	18466.0	15134.6
feb	11965.2	86.0	18733.9	15477.1
mar	12093.6	86.0	18994.9	15750.0
abr	12228.3	86.0	19243.8	15989.7
may	12364.3	86.0	19517.6	16268.7
jun	12479.4	85.5	19850.1	16627.1
jul	12576.8	85.1	20160.8	16930.4
ago	12642.2	84.6	20441.8	17218.7
sep	12707.6	84.2	20682.2	17464.2
Oct	12737.7	83.7	20921.0	17715.4
nov	12830.7	83.0	21281.2	18185.8
dic	12880.4	82.4	21596.2	18758.9
1991	12937.4	81.6	21938.8	19236.9
feb	12989.9	81.1	22231.3	19572.9

mar	13040.6	80.5	22257.7	19852.0
abr	13092.2	80.3	22722.6	20059.8
may	13148.5	80.2	22921.3	20256.1
jun	13200.1	80.0	23129.1	20468.4
jul	13253.0	79.8	23328.1	20649.4
ago	13308.1	79.6	23352.1	20793.0
sep	13360.9	79.5	23374.2	21000.3
Oct	13414.9	79.2	23981.0	21244.4
nov	13460.2	78.0	24485.6	21772.1
dic	13474.1	77.1	24850.1	22284.6
1992	13488.6	76.7	25062.3	22689.7
feb	13501.8	76.5	25218.9	22958.4
mar	13514.4	76.3	25384.6	23191.9
abr	13527.9	76.1	25517.1	23398.9
may	13541.7	76.0	25665.8	23553.1
jun	13554.4	75.7	25836.2	23712.6
jul	13568.2	75.5	26003.1	23862.3
ago	13581.8	75.3	26168.3	24008.7
sep	13594.9	75.1	26324.6	24217.6
Oct	13609.4	74.8	26510.3	24391.9
nov	13633.5	74.6	26692.1	24594.7
dic	13658.9	74.5	26858.8	24945.0
1993	13687.9	74.2	27073.8	25257.8
feb	13712.8	74.1	27230.4	25464.2
mar	13738.7	74.0	273890	25612.6
abr	13767.2	74.0	27515.2	25760.3
may	13793.5	74.0	27643.4	25907.5
jun	13818.9	73.9	27796.5	26052.8
jul	13846.1	73.8	27959.9	26177.9
ago	13873.3	73.7	28113.0	26318.2
sep	13900.0	73.7	28261.7	26513.1
Oct	13926.8	73.5	28441.2	26621.5
nov	13953.5	73.4	28626.4	26738.8
dic	13979.8	73.3	28780.8	26942.7
1994	14007.5	73.2	28944.0	27151.7
feb	14032.9	73.1	29114.2	27291.3
mar	14057.9	72.9	29296.0	27431.6
abr	14086.8	73.0	29422.4	27565.9
may	14113.1	73.0	29574.2	27699.2
jun	14139.4	72.9	29964.4	27837.7
jul	14166.2	72.9	29832.2	27961.2
ago	14192.9	72.9	29973.6	28091.6
sep	14220.5	72.9	30112.8	28291.3
Oct	14246.8	72.7	30297.1	28439.9

Table 1  
CONSUMER PRICES BILATERAL ( MEX - U.S.) REAL EXCHANGE RATE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1970	117.29	118.02	118.15	118.83	119.07	118.83	118.73	118.41	118.71	119.38	118.98	118.79
1971	117.62	117.37	117.15	117.01	117.22	117.47	118.02	117.17	116.79	116.89	116.92	116.93
1972	116.41	116.71	116.07	115.78	115.77	115.13	115.45	114.69	114.60	114.94	114.40	114.54
1973	113.11	112.99	113.12	112.16	111.67	111.35	108.95	109.01	106.94	106.31	106.01	102.56
1974	99.93	98.86	99.32	98.54	98.96	98.77	98.21	98.33	98.51	97.34	95.50	95.47
1975	94.62	94.80	94.49	94.32	93.35	92.66	92.92	92.39	92.11	92.23	92.11	91.81
1976	90.20	88.79	88.17	87.98	87.85	87.93	87.67	87.36	135.54	132.05	150.79	122.19
1977	123.17	131.78	130.86	129.35	129.54	129.94	129.06	126.39	124.66	123.56	122.69	121.47
1978	119.08	118.61	118.26	118.03	117.95	118.06	116.99	116.38	116.09	115.57	114.92	114.04
1979	111.08	111.30	110.86	111.16	111.11	111.15	110.99	110.45	110.20	109.26	109.41	108.19
1980	104.62	103.63	103.05	102.40	101.68	101.28	99.05	97.73	97.51	97.32	96.49	95.25
1981	93.46	92.87	92.39	91.33	91.86	92.09	92.72	92.24	92.25	91.88	91.44	90.38
1982	87.75	100.35	140.01	135.18	131.72	129.37	126.11	182.64	193.70	148.70	141.26	145.29
1983	160.40	159.40	157.81	155.33	155.05	155.11	153.34	152.98	153.94	153.88	149.80	148.04
1984	143.94	141.16	139.02	137.40	137.02	135.63	134.90	134.89	134.53	133.28	131.77	129.33
1985	124.03	122.62	121.87	122.35	123.62	124.49	129.51	146.99	147.90	150.14	151.74	154.17
1986	154.40	159.91	165.86	167.73	169.27	171.04	176.56	180.84	186.59	190.19	190.78	189.50
1987	187.30	187.48	188.83	185.40	184.17	184.04	179.76	175.54	174.11	169.04	165.97	172.87
1988	163.39	153.18	148.05	144.35	142.08	139.86	138.10	137.52	137.64	136.97	135.38	132.83
1989	131.33	132.06	132.87	133.67	134.47	134.95	135.59	136.00	136.64	136.98	137.26	134.89
1990	131.56	130.19	130.62	131.77	130.52	128.90	128.22	128.34	128.66	128.74	126.53	123.21
1991	121.43	120.02	118.99	118.43	118.04	117.66	117.30	117.33	117.10	116.40	114.39	111.92
1992	109.77	108.77	108.49	107.64	108.25	108.52	107.93	106.55	105.98	106.83	105.86	104.28
1993	103.18	102.42	102.51	101.81	102.31	101.76	101.40	100.77	100.26	100.29	101.01	98.98
1994	98.41	98.70	103.97	105.43	103.77	105.22	106.20	105.40	105.38	105.57	105.79	123.47

Table 2

MEX - WORLD CONSUMER PRICES MULTILARERAL (REAL EXCHANGE RATE)<sup>1</sup>

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1970	99.02	99.49	99.89	100.49	100.30	100.22	100.21	99.70	99.82	100.48	100.40	99.97
1971	99.61	99.45	99.45	99.60	99.90	100.49	100.91	100.69	101.56	102.38	102.22	103.08
1972	104.23	104.95	105.20	104.70	104.99	104.41	104.25	104.00	104.27	104.34	104.06	104.17
1973	103.38	106.15	108.72	107.96	108.28	109.58	109.62	107.64	106.15	105.79	103.72	99.92
1974	95.54	95.93	97.76	98.52	99.59	98.80	97.73	96.62	96.40	96.07	94.78	95.29
1975	96.42	97.47	97.48	97.10	96.94	95.92	94.13	92.13	91.13	91.35	91.17	90.34
1976	89.56	88.51	87.34	87.40	87.23	86.93	86.80	86.61	134.94	131.67	150.34	122.09
1977	123.64	131.68	131.44	131.02	131.60	132.14	132.11	129.20	127.26	127.50	127.33	127.81
1978	124.41	123.76	124.46	124.40	122.74	123.65	124.52	125.84	125.06	127.06	124.26	123.36
1979	122.95	122.23	121.70	121.02	119.89	120.18	121.95	120.83	120.53	119.03	117.96	117.44
1980	114.04	111.88	108.69	107.40	109.79	109.94	108.47	106.22	106.50	105.83	103.52	100.87
1981	99.65	96.02	95.23	93.24	91.10	88.94	87.76	86.01	87.69	87.94	88.54	87.34
1982	84.06	94.39	129.79	124.67	122.87	116.54	111.11	159.33	168.43	128.75	122.11	128.95
1983	148.31	144.47	141.52	138.04	137.46	135.56	132.77	130.35	131.06	132.05	126.71	123.83
1984	119.15	117.92	117.85	115.85	113.75	112.26	109.17	108.40	106.25	104.50	104.26	100.87
1985	95.69	92.85	91.95	94.86	95.41	96.56	102.56	117.52	117.15	123.01	125.73	128.49
1986	129.99	138.33	145.65	148.05	151.17	151.60	158.42	164.09	169.24	172.15	171.37	170.62
1987	173.66	174.65	176.12	176.25	175.61	173.49	167.44	163.38	163.76	159.00	159.93	169.98
1988	162.10	150.50	146.68	144.26	141.60	137.18	132.30	130.62	130.43	131.85	132.03	130.59
1989	128.08	128.30	128.42	128.51	126.62	125.94	128.56	128.86	129.09	131.64	132.23	130.74
1990	129.52	128.29	127.83	129.24	129.45	127.48	127.95	130.07	131.49	133.90	132.16	127.67
1991	125.51	124.95	120.32	118.12	117.44	115.36	114.87	115.83	117.32	117.09	116.64	115.27
1992	113.95	111.70	109.71	109.56	111.35	113.08	114.03	113.54	112.84	111.91	108.07	105.96
1993	105.03	104.42	105.16	105.52	106.53	105.70	104.06	103.89	104.46	103.76	103.68	101.30
1994	100.41	101.18	106.80	107.92	106.98	108.73	111.37	109.51	110.12	111.80	112.38	130.67

<sup>1</sup> GDP weights of 133 countries.

Table 3  
**UNIT LABOR COSTS MULTILATERAL REAL EXCHANGE RATE**  
 Based on Manufacturing Unitary Labor Costs in 8 countries 1/  
 (1978- 1979) = 100

1975	88.24
1976	88.14
1977	109.58
1978	104.33
1979	96.02
1980	78.57
1981	62.76
1982	94.24
1983	153.25
1984	150.20
1985	148.27
1986	227.39
1987	245.86
1988	202.19
1989	174.49
1990	167.69
1991	154.82
1992	142.76
1993	143.21
1994 p/	
I	143.72
II	155.04
III	158.05
IV	162.63
1995 p/	
I	266.21
II	257.69

p/ Preliminary.

1/ It is measured taking into account unit wage-cost data for Canada, France, Germany, Italy, Japan, United kingdom, United States and Spain. Timely monthly data for more countries is unavailable.

Table 4

## Argentina

	1990	1991	1992	1993	1994	1995
Growth	1.0	8.9	8.7	6	7.1	2.6
RER	100.0	83.1	84.6	83.4	86.1	88.5

## Brazil

	1992		1993		1994	1995
Growth	-0.8		4.3		5.7	10.5
RER	135.4		120.4		105.8	92.5

## Chile

	1978	1979	1980	1981	1982
Growth	8.2	8.3	7.8	5.5	-14.1
RER	88.7	79.7	64.1	56.8	63.9

## Finland

	1984-87	1988	1989	1990	1991	1992
Growth	3.2	4.9	5.7	0	-7.1	-3.8
RER	115.6	109.8	103.8	100	105.6	120.6

## Mexico

	1990	1991	1992	1993	1994
Growth	4.4	3.6	2.8	0.6	3.5
RER	77.4	85.9	93.3	99.3	90.6

Table 5  
GROSS DOMESTIC PRODUCT  
Annual Rates of Growth

	1988	1989	1990	1991	1992	1993	1994	Average Annual Rate of Growth 1988-1994
<b>1993 Weights</b>								
<b>TOTAL</b>	1.2	3.7	4.7	4.1	3.5	1.2	3.9	3.5
Primary	-4.1	-2.1	6.7	0.8	-1.3	1.4	2.2	1.2
Industry	2.4	6.2	6.0	3.9	3.6	0.6	4.2	4.1
Services	1.3	3.2	4.1	4.6	4.0	1.9	4.2	3.7
<b>1980 Weights</b>								
<b>TOTAL</b>	1.2	3.3	4.4	3.6	2.8	0.6	3.5	3.0
Primary	-3.8	-2.3	5.9	1.0	-1.0	1.4	2.0	1.1
Industry	2.4	5.5	5.7	3.4	3.1	0.2	4.1	3.6
Services	1.4	3.0	3.6	4.2	3.2	1.0	3.6	3.1

Source: National Accounts Sistem, INEGI and Banco de México Economic Reserach Department.

Table 6  
CONTRIBUTION OF AGGREGATE DEMAND TO GROWTH OF  
GDP

	1992				1993				1994				1995	
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
<b>CONTRIBUTION TO GROWTH OF:</b>														
<b>PUBLIC EXPENDITURES</b>	0.26	-0.51	-0.83	1.09	-0.17	0.43	0.33	-0.36	0.87	1.00	1.22	-0.47	-0.99	-1.84
<b>PRIVATE EXPENDITURES</b>	6.51	5.09	7.89	3.15	3.87	-1.20	-2.66	-1.01	0.11	4.80	4.10	5.86	-9.34	-19.54
<b>NET EXPORTS</b>	<u>-2.85</u>	<u>-3.27</u>	<u>-3.16</u>	<u>-2.14</u>	<u>-1.31</u>	<u>1.01</u>	<u>1.48</u>	<u>2.34</u>	<u>-0.30</u>	<u>-0.99</u>	<u>-0.79</u>	<u>-1.39</u>	<u>9.54</u>	<u>10.87</u>
<b>SUM=GROWTH OF GDP</b>	3.93	1.31	3.90	2.10	2.40	0.24	-0.85	0.97	0.68	4.81	4.54	4.01	-0.79	10.51

SOURCE: BANCO DE MEXICO, FROM THE NATIONAL ACCOUNTS.

Table 7  
LOAN FLOW (INCLUDING EARNED INTEREST) FROM  
DEVELOPING BANKS AS % OF GDP

Year	1989	1990	1991	1992	1993	1994
<b>Financing</b>	<b>0.3</b>	<b>1</b>	<b>2.2</b>	<b>2.1</b>	<b>3</b>	<b>3.6</b>

Source: Dirección General de Investigación Económica. Banco de México.

Table 8  
DOMESTIC SAVING AS A PERCENTAGE OF GDP

Year	1983	1989	1993
Gross National Saving (GNS)	30.33	21.24	18.41
Gross Domestic Saving (GDS)	26.68	20.92	16.77
Private (GDS)	21.78	15.69	12.14



Table 9

Year	1983	1989	1994
Gross National Saving (Public Sector)	3.49	1.74	-0.07
Gross National Saving (Private Sector)	26.85	19.50	18.48

Source: National Income accounts, INEGI.

Table 10

	1990	1991	1992	1993
Share of Private Consumption/GDP (%)	70.8	71.8	72.2	71.5
Share of Private Consumption/Disposable Income (%)	79.7	80.6	81.4	81.2

Source: National Income Accounts. INEGI.

CHART A-1  
Price and Real Exchange Rate Dynamics

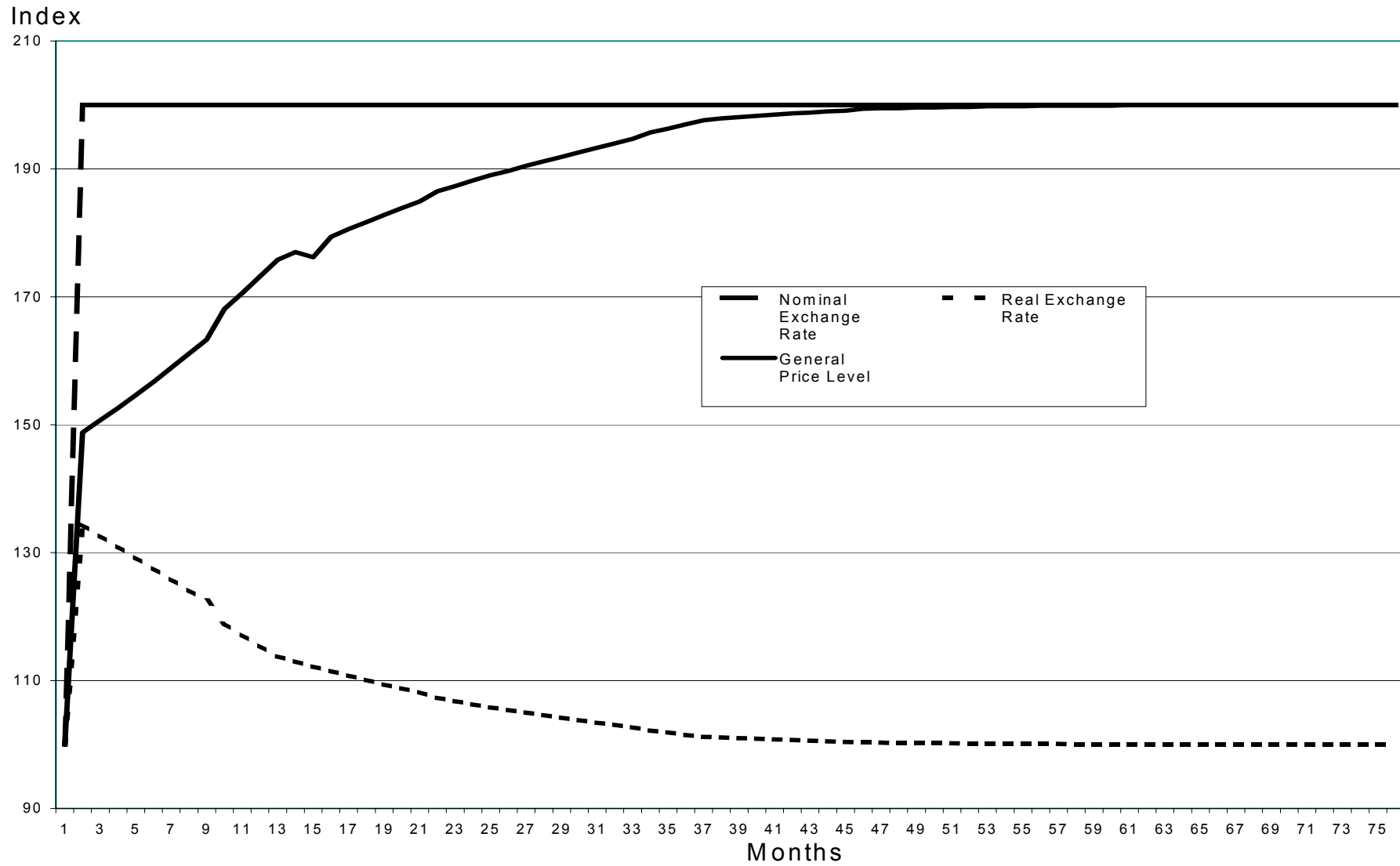


CHART A-2  
Inflation (compared to previous year)

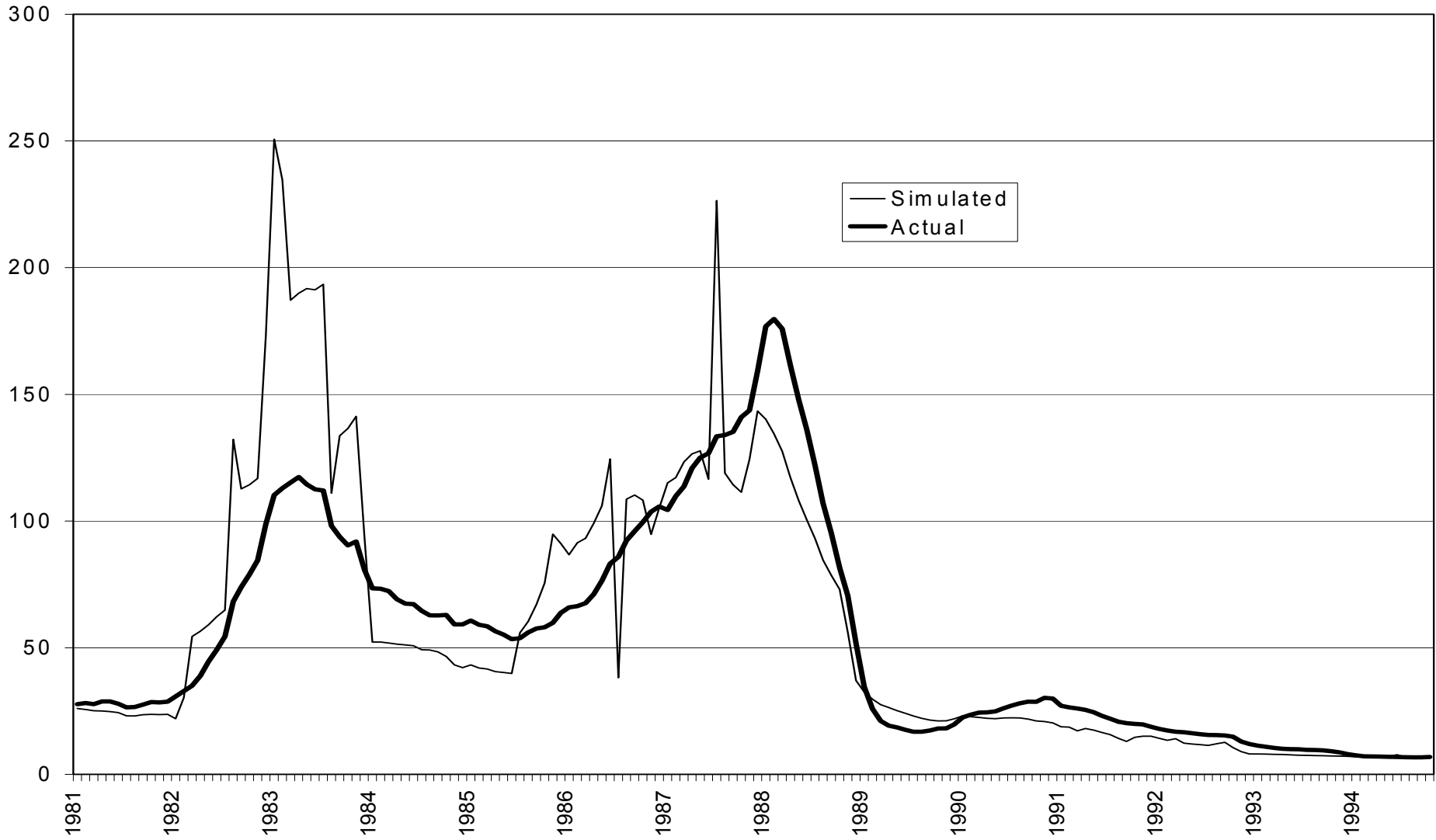
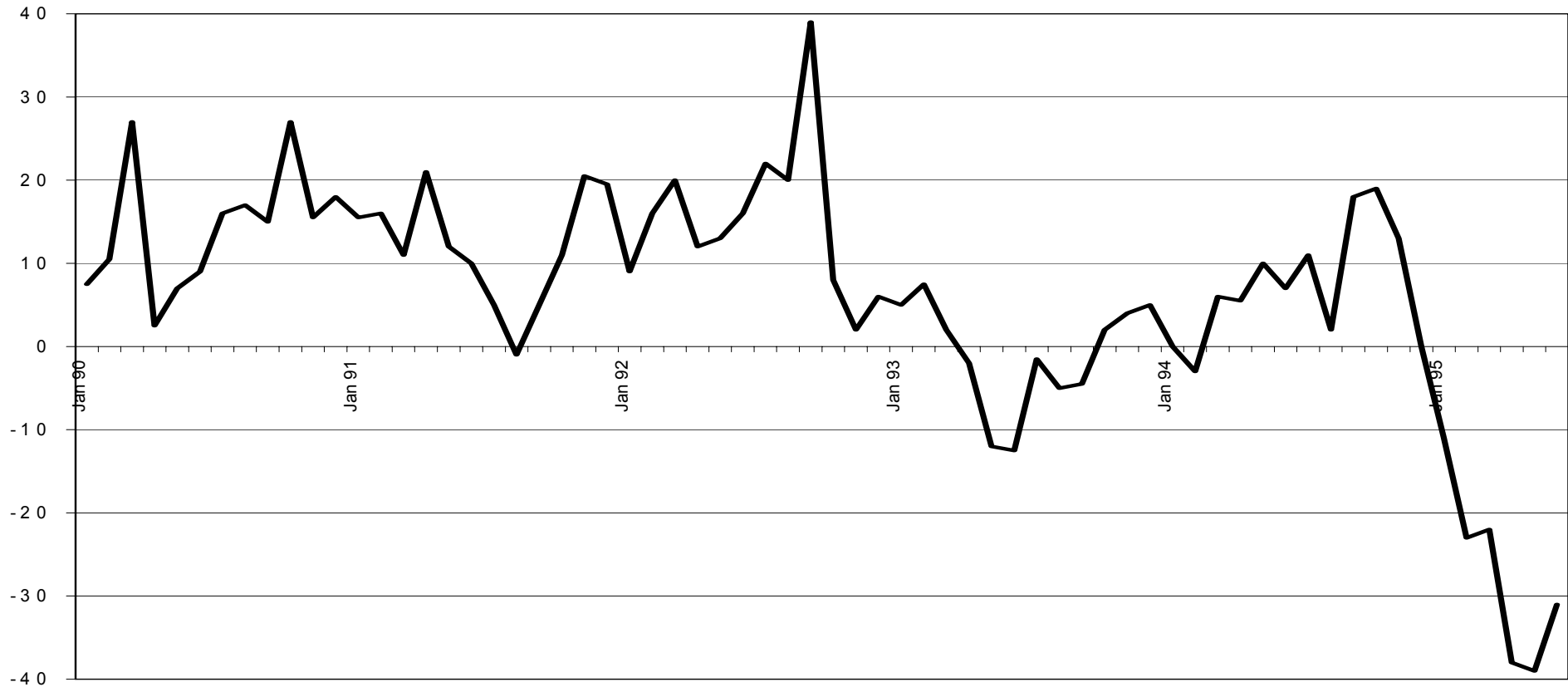


CHART 1  
Fixed Gross Real Private Investment (\*)  
Annual Percentage Changes



\*The series portrayed here excludes private investment whose amount and timing was decided by the government, such as toll speed highways, prisons water treatment plants, thermal electric generating plants and some water projects. However, the unadjusted private investment series does not differ markedly from this one

SOURCE: Banco de México.

CHART 2  
Unit Labor Costs  
Real Exchange Rate  
(1978 – 1979 = 100 )

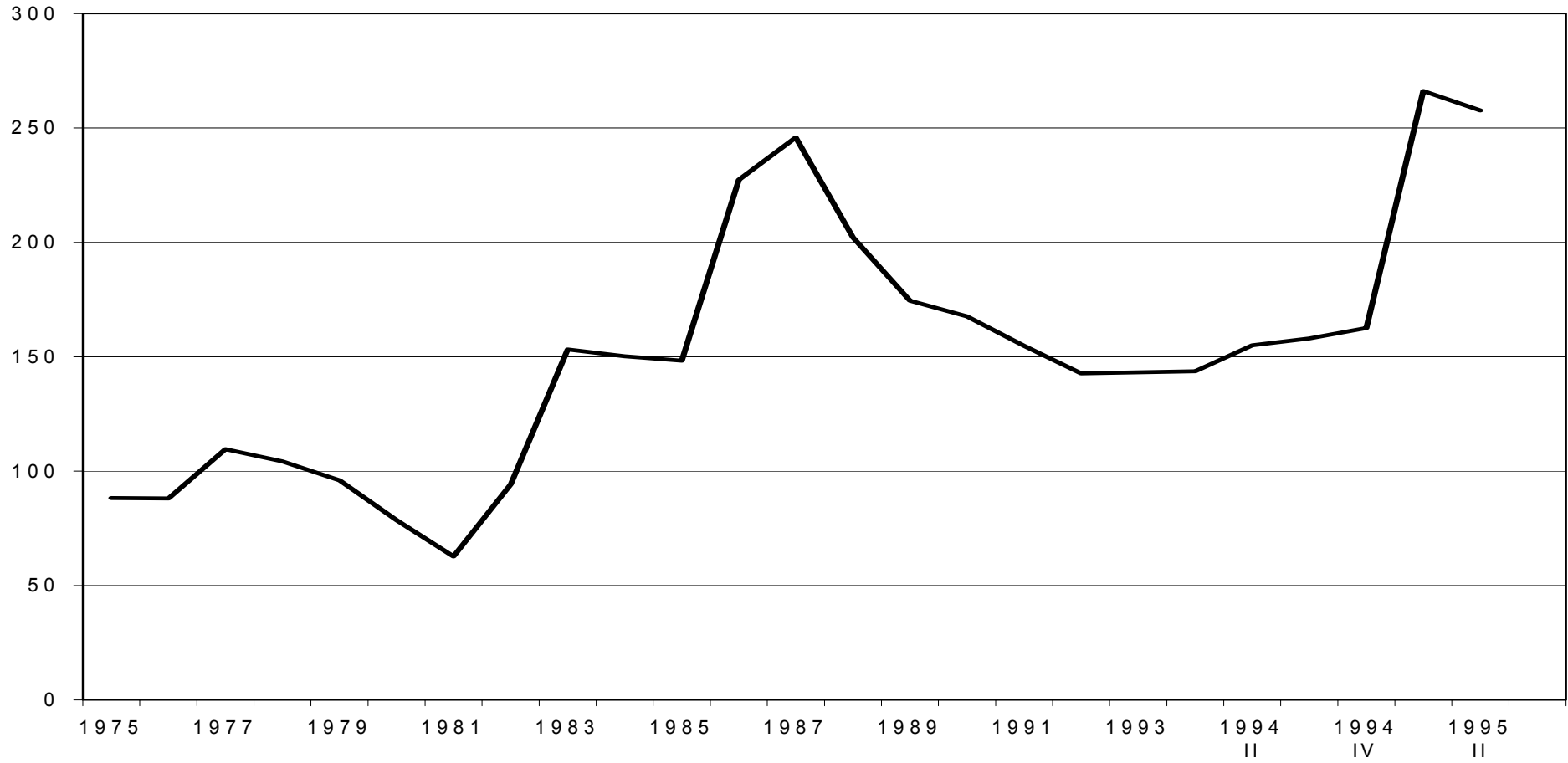


CHART 3  
Gross Domestic Saving and Gross National Saving\*  
(In percent of GDP)

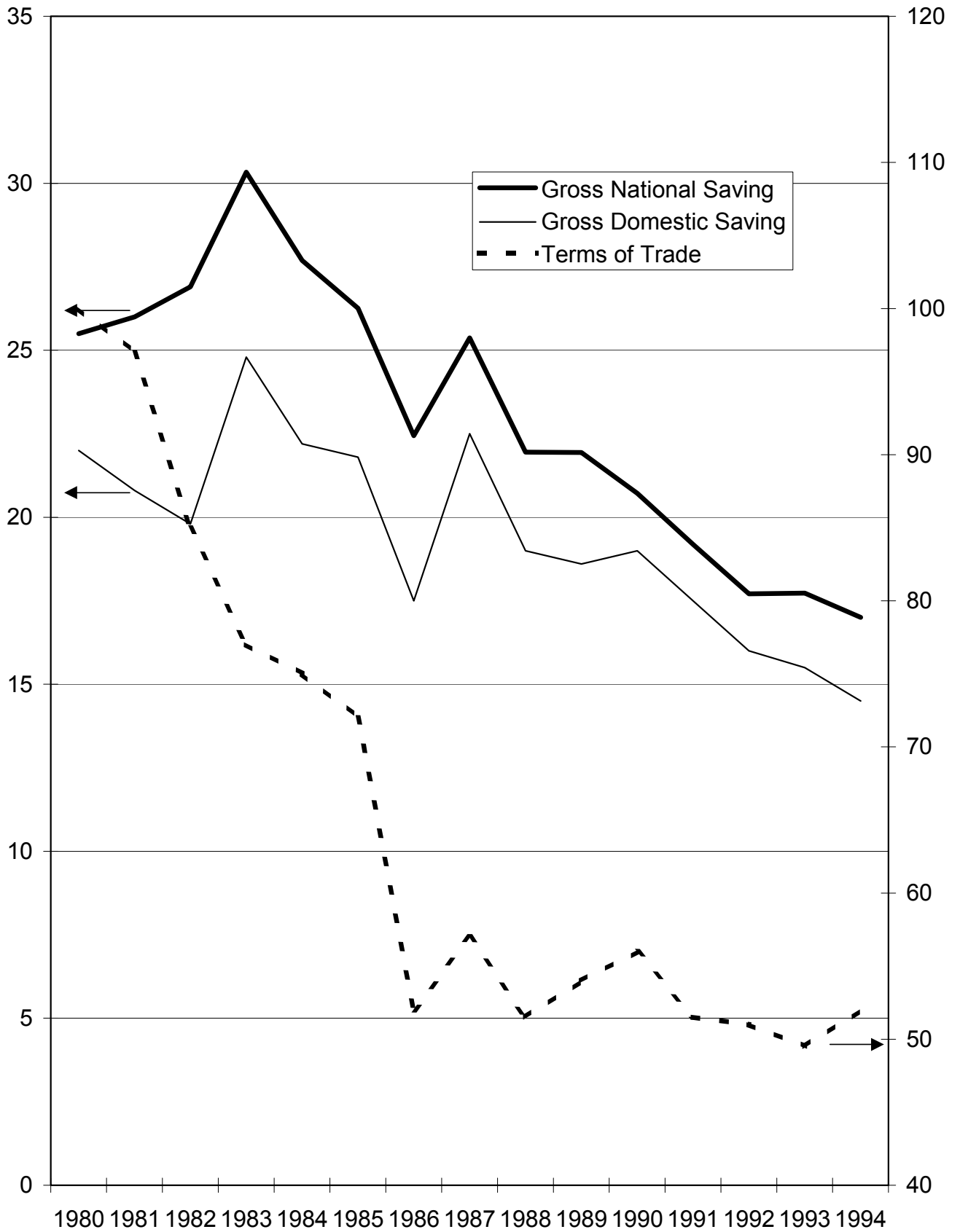


CHART 4  
 Non – Oil Export Volume Indexes  
 1985 = 100

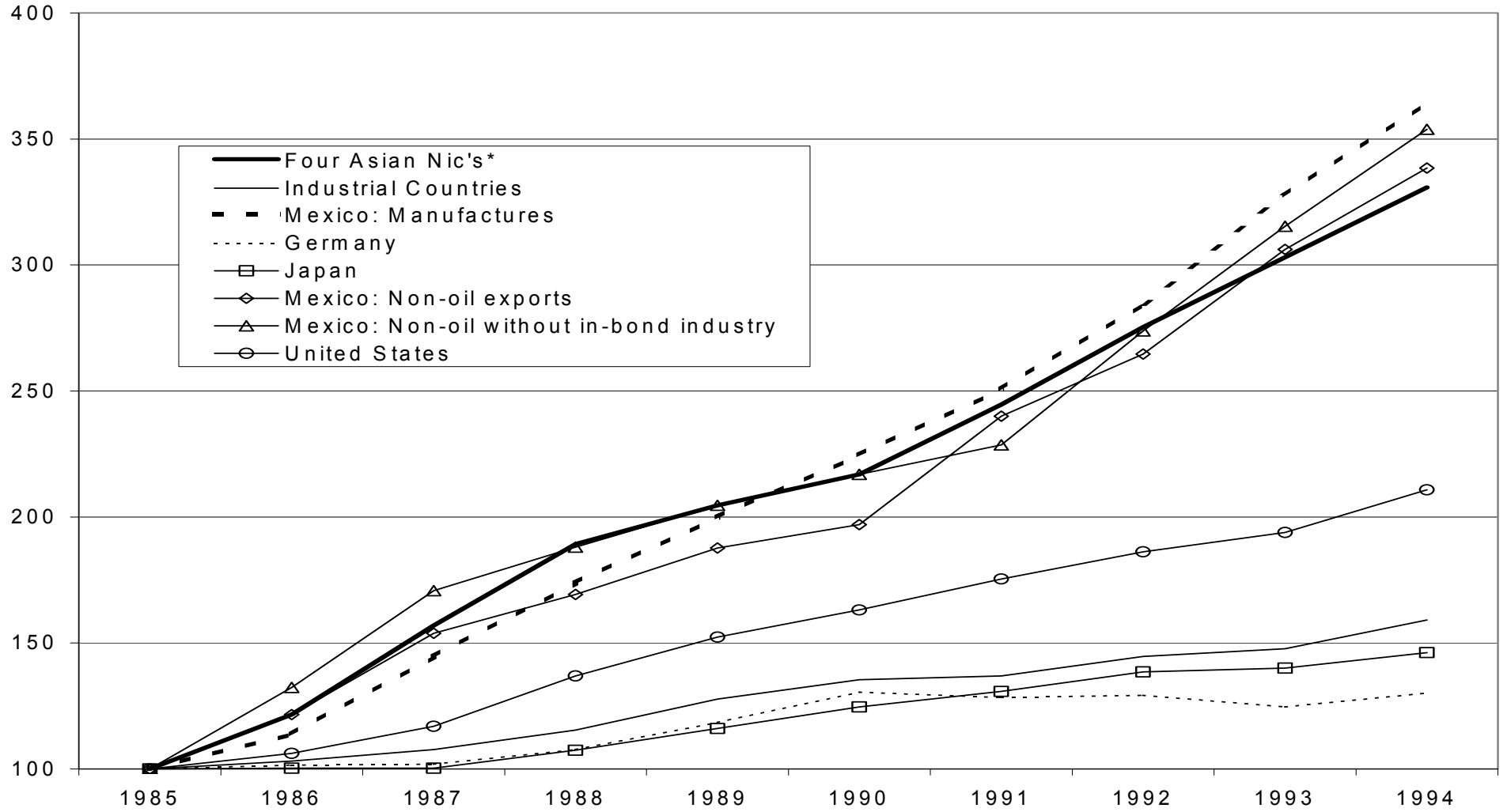
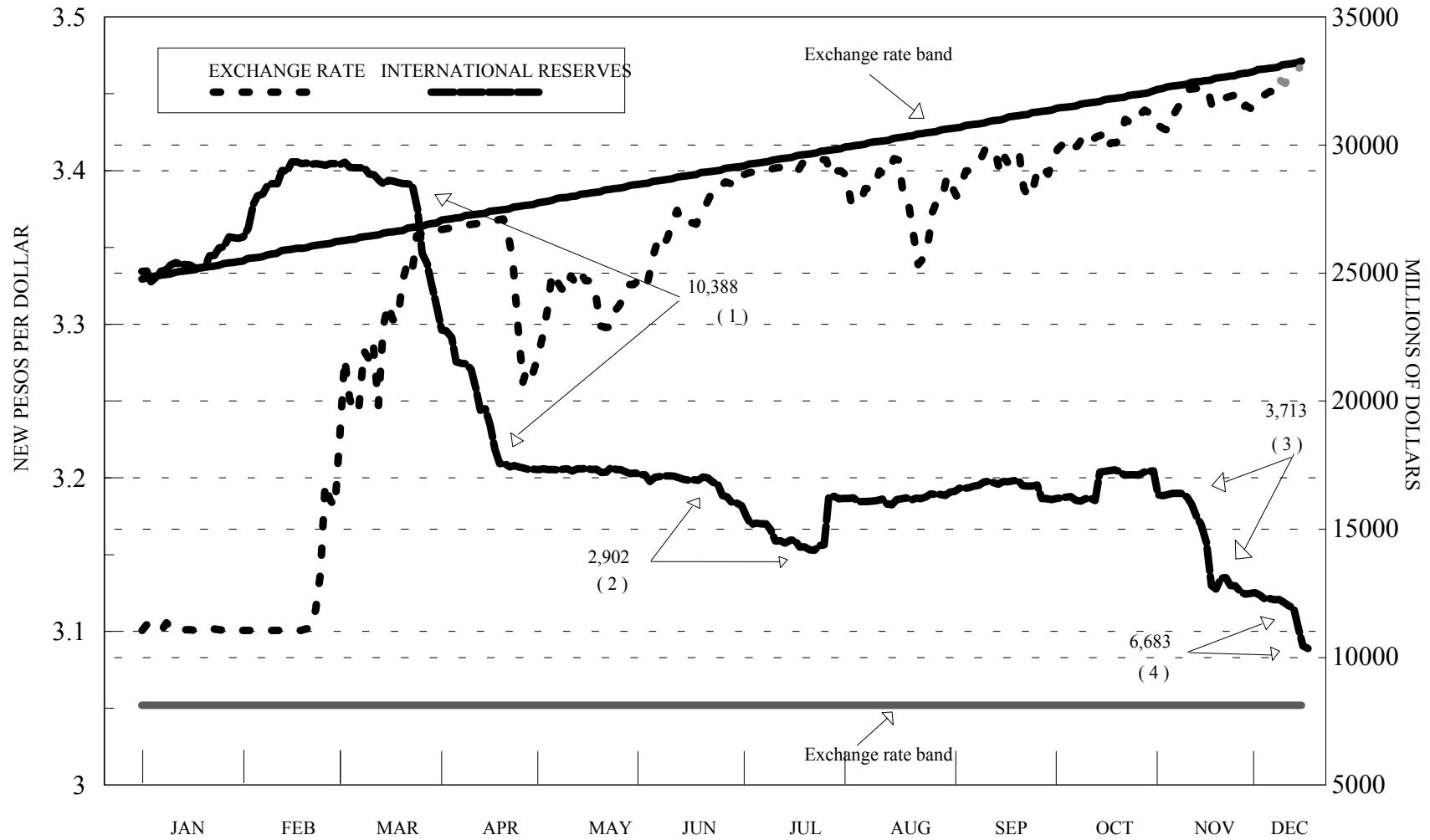


CHART 5  
Exchange Rate & International Reserves ( 1994 )



( 1 ) Murder of the PRI's candidate for President.  
( 2 ) Resignation of the Secretary of the Interior.

( 3 ) Deputy Attorney General's claims.  
( 4 ) Intensified hostility of the EZLN.



CHART 6  
Interbank Average Interest Rate (TIIP) – LIBOR  
(Weekly Observations)

