THE MEXICAN PESO CRISIS: HOW MUCH DID WE KNOW? WHEN DID WE KNOW IT?

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ABSTRACT

The Mexican crisis of 1994 raised, throughout the world, a number of questions regarding the sustainability -- and even the merits -- of the market oriented reform process in Latin America and other regions. Understanding the way events unfolded in Mexico during the early 1990s continues to be fundamentally important to assess the mechanics of currency crises. More importantly, perhaps, the eruption of the East Asian currency crises in the summer and fall of 1997 has raised the question of whether the lessons from Mexico have indeed been learned by policy makers, private sector analysts and international civil servants. More specifically, as a result of the recent events in South East Asia, many observers have argued that the international financial organizations -- the IMF and the World Bank -- and the governments of the advanced countries have failed to revamp the early warning system that was supposed to prevent a repetition of a Mexico-style crisis. This paper analyzes the causes behind the Mexican crisis, emphasizing the role of capital inflows, inflationary inertia and real exchange rate overvaluation. I also ask a number of questions regarding the predictability of the crisis: Should Wall Street analysts have known that things were getting out of hand? And if they did, why didn't they alert their clients? And, how much did officials at the US Treasury know about the depth of the Mexican problems? And, what was the role of the media? I conclude that although the US Treasury was fully aware of what was going on, most private sector analysts were unaware of the seriousness of the situation.

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I. Introduction

In late October, 1993 Mexico's Trade Minister Jaime Serra Puche addressed the Second Wall Street Journal Conference on the Americas at the Waldorf Astoria Hotel in New York City. The audience was literally captivated by Serra's professorial ways, by his command of the stage and by his charm. The unmistakable sense among the conference participants -- CEOs of large corporations, investment bankers, journalists and pundits of various kinds -- was that, in spite of Ross Perot's anti NAFTA campaign, Mexico was the brightest star in the Latin American firmament. The mood was one of euphoria and complacency; the calls for caution made by some of the speakers were brushed aside as signs of unjustifiable gloom. The future looked brilliant, and virtually everyone expected that after the enactment of NAFTA, Mexico would rapidly join the ranks of the more advanced countries with solid growth, stability and prosperity. That evening, in a surprise visit to the conference, President Bill Clinton delivered a speech that basically supported this optimistic perspective.

Very few of the participants -- if any -- suspected that as this conference was taking place in the venerable Waldorf Astoria, in Mexico's southern state of Chiapas hundreds of indians and left-wing activists were going through the final stages of their military training, in order to stage a major uprising that would shock the Mexican establishment, institutional investors, and the U.S. administration. Thus, a tale of two Mexicos was being forged: on the one hand that of modern Mexico, on the verge of entering the first world; on the other, that of quasi-feudal Mexico, with its sorrow and frustration. Throughout 1994 these two Mexicos coexisted and, while most international investors dismissed the Chiapas events as the result of a handful of adventurers in the style of *El Zorro*, the fragilities of the Mexican road to the free market became more and more apparent to perceptive analysts. In December of 1994 the international financial community had to face what most pundits had deemed impossible: for the third time in 18 years Mexico's currency -- the once strong and proud peso -- collapsed.

The Mexican crisis raised, throughout the world, a number of questions regarding the sustainability -- and even the merits -- of the market oriented reform process in Latin America and other regions. If Mexico was one of the best examples of a successful reformer, some observers asked, what could be expected of other cases? Contrary to some analysts' predictions, however, in the aftermath of the Mexican crisis the Latin American countries did not melt down. After a brief hiatus during 1995, growth returned to the region, at the same time as inflation continues to decline.

Understanding the way events unfolded in Mexico during the early 1990s continues to be fundamentally important to assess the mechanics of currency crises. More importantly, perhaps, the eruption of the East Asian currency crises in the summer and fall of 1997 has raised the question of whether the lessons from Mexico have indeed been learned by policy makers, private sector analysts and international civil servants. More specifically, as a result of the recent events in South East Asia many observers have argued that the international financial organizations -- the IMF and the World Bank -- and the governments of the advanced countries have failed to revamp the early warning system that was supposed to prevent a repetition of a Mexico-style crisis.[1]

In spite of the proliferation of post mortems on the Mexican crisis, there are still a number of unresolved issues.[2] In particular, should Wall Street analysts have known that things were getting out of hand? And if they did, why didn't they alert there clients? And, how much did officials at the US Treasury know about the depth of the Mexican problems? And, what was the role of the media? The purpose of this paper is to address some of these issues. The paper is organized in the following way: section I is the Introduction. In Section II I present a brief overview of the Mexican reform program during 1987-93. I argue that in spite of the rather modest performance of the Mexican economy during this period, the financial media, academic analysts, Wall Street experts and the multilateral institutions "invented" the Mexican "Miracle". In section III I briefly deal with the behavior of capital inflows, the capital account and the real exchange rate in the period leading to the crisis. Section IV is the core of the paper and is devoted to analyzing the developments during 1994, when the external environment faced by

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1. See, for example, the article by Robert Chote in the September 19th, 1997 Financial Times. See also Hale (1997) and Dornbusch (1997).

2. There are by now a number of accounts of the Mexican crisis. See, Lustig (1995), Leiderman and Thorne (1995), Sachs et al (1995), Calvo (1995), Naim (1995), the papers in the December 1996 special issue of the Journal of International Economics, and Calvo and Mendoza (1996). Parts of this paper draw on Edwards, Steiner and Losada (1996). See also Edwards (1995, 1996). A number of authors, however, began to point out as early as 1992 some of the weaknesses of the Mexican economy. See for example Dornbusch and Werner (1994), Calvo (1994). See, also, Edwards (1994).

Mexico suddenly became extremely hostile. I argue in this section that throughout most of that year Mexico had the opportunity to undertake a number of measures that would have allowed a smooth landing. Political considerations and overoptimism, however, stood in the way of corrective actions. In this section I analyze the role of the U.S. government in the unfolding of the Mexican crisis. Section V is the conclusion.

II. The Invention of the Mexican Miracle

By now the main features of the Mexican reform program are well known: (a) a fundamental opening of the economy to international competition; (b) a drastic privatization and deregulation process; (c) a stabilization program based on a predetermined nominal exchange rate anchor, and supported by restrictive fiscal and monetary policies; and (d) a broad social and economic agreement between the government, the private sector and labor unions --known as the *Pacto*-- aimed at guiding price, exchange rate and wage increases, that became an anchor of the program. The reliance on the *Pacto* was a key element of the program, which distinguishes it from those followed, for example, in Argentina and Chile. As time passed by the yearly renewal of the *Pacto* became a major political event, surrounded by anticipation and, at times, by anxiety.[3]

Between 1988 and 1994, and in spite of the reforms, the performance of the economy was rather modest. Real growth averaged 2.8 percent -- significantly lower than Chile (7.1 percent) and Colombia (4.1 percent), for example --; productivity growth was almost flat until 1993; export expansion was not overly impressive; real wages barely reached their 1980 level; the real exchange rate appreciated significantly; private savings experienced a major decline; and poverty and income distribution continued to be a serious problem. On the positive side, fiscal balance had been attained in 1992; inflation was reduced to single digits; and the reforms dismantled layers of protection and regulation.[4] During this period there was a significant contrast between Mexico's achievements in terms of reform ***policies***, and in terms

3. On the Mexican reforms until 1993 see, for example, Loser and Kalter (1992) and Lustig (1992). The book by Pedro Aspe (1993) offers a professional, and highly influential, insider's assessment of the progress made by Mexico in the reform front.

4. The selection of Chile and Colombia as comparators is deliberate: Chile is the earliest Latin American reformer, broadly recognized for its achievements; Colombia, on the other hand, has implemented limited reforms, but has maintained a solid economic record throughout the 1980s and early 1990s.

of economic ***results***. While the former were massive, and in some areas even spectacular, results in terms of growth and social progress continued to be elusive. Although it is possible to argue that this lack of progress was largely the consequence of a normal lagged economic response to the reforms, it came to haunt the Mexican authorities in 1994-95. [5]

In spite of the divergence between policy actions and economic results, the Mexican reforms were consistently praised by the media, financial experts, academics and the multilaterals -- including the World Bank, and the International Monetary Fund -- as a major success. In a way, Mexican "miracle" was "invented" by these institutions. This enthusiastic and optimistic approach towards Mexico was the result of a number of factors. The most important, perhaps, was the tremendous faith that many analysts had in the reforms themselves; if results were not there, many argued, they were around the corner. This generated a type of self-feeding phenomenon that has historically characterized many "bubbles": optimistic beliefs helped generate an asset price boom which, in turn, reassured the believers in the "miracle". Paul Krugman (1995) has argued, that much of this enthusiasm represented a "leap of faith, rather than a conclusion based on hard evidence (p. 33)". The U.S. administration's efforts to persuade the public (and Congress) of the benefits of NAFTA also contributed to the popular notion that there was a Mexican "miracle"in the making. Moreover, after NAFTA was approved a large number of observers argued that the free trade pact would accelerate investment and exports in a massive way.[6]

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5. The selection of Chile and Colombia as comparators is deliberate: Chile is the earliest Latin American reformer, broadly recognized for its achievements; Colombia, on the other hand, has implemented limited reforms, but has maintained a solid economic record throughout the 1980s and early 1990s. A number of things stand out from this comparison -- first, Mexico's GDP growth was significantly lower than that of the two South American countries --; second, in Mexico total factor productivity growth actually declined between 1978-82 and 1987-91, while it grew very quickly in Chile; third, when compared with the pre debt crisis period, real wages were significantly higher in the South American nations; fourth, Mexico experienced the slowest rate of growth of exports among the three countries; and finally, while in the three countries the extent of poverty declined in the early 1990s relative to the mid/late 1980s, in Mexico the number of people in extreme poverty actually increased during this period. (See Edwards 1995).

6. Interestingly enough, the Mexican experience was often cited as an example that it was possible to undertake *successful* structural reforms within a democratic regime. Mexico, in fact, was often contrasted to the Chilean case, where the bulk of the (truly) successful reforms had been undertaken by an authoritarian military regime. It is possible to speculate, then, that the desire -- especially among U.S. officials -- to find an example of successful market-reforms under a democratic regime contributed to the creation of the notion that Mexico was a super performer.

The multilateral institutions were important players in the creation of this great success story. Interestingly enough, however, on this issue, as in so many others, the World Bank spoke with two -- if not three or four -- voices. At times it praised Mexico and at others it recorded its concerns. For instance, in the abstract of the 1994 *Country Economic Memorandum* -- one of the first documents the Bank made available to the public at large through the Internet -- it is strongly suggested that Mexico had made great progress, and that after the ratification of NAFTA it was ready for a major take off. Along similar lines, the 1993 *World Bank Annual Report* states that "[a]lmost all countries in the region... are implementing adjustment programs. Chile and Mexico, which have established a trend of positive per capita income growth with modest inflation, represent the clearest cases of **success**" (p. 133, emphasis added). And in a document released at the 1993 Annual Meetings the Bank expressed that " [i]n Mexico ...the reform process is mature and appears consolidated" (page 9). And in November of 1994, barely a month before the collapse, in a publication issued by the research complex the World Bank publicly argued that the election of the PRI presidential candidate would result in a rapid improvement in the country's prospects: "Economic growth is expected to surge, reaching the highest level in five years, as a period of post election stability is anticipated (*Global Economic Prospects and the Developing Countries,* November 1994) ".

In other public documents, however, the World Bank staff clearly stated that the record had fell short of expectations, and that many challenges remained. For example, in the 1993 *Trend in Developing Economies*, the staff said: "Growth recovery has, however, been modest...[T]he recent slowdown in growth can be traced to a combination of slow productivity growth, a weak US economy , tight fiscal and monetary policies, and **real exchange rate appreciation**" (p. 325-30, emphasis added). In the 1993 annual meetings publication mentioned above the World Bank pointed out that there had been a "*decline* in aggregate total factor productivity growth for Mexico after the reforms", and associated this phenomenon to the fact that the Mexican reforms had been incomplete and had proceeded at an uneven pace, and to the stiff real appreciation of the peso (pages 61-66). An analysis of the causes behind the Mexican crisis by an independent task force sponsored by the Council on Foreign Relations acknowledged that the World Bank had indeed warned of the non sustianability of the Mexican policies.[7]

The IMF was also quick to praise Mexico's reform policies. For example, a publicly released paper co-authored by the current Director of Western Hemisphere, Claudio Loser, titled "Mexico: The Strategy to Achieve Sustained Economic Growth", approvingly reviewed the country's policies. According to the authors "The success of Mexico's economic strategy since 1989 has led to its gradually regaining access to voluntary international capital market financing after having been virtually excluded for much of the decade. This private sector access to capital, in combination with Mexico's broad economic reform, augurs well for the achievement of sustainable economic growth in the medium term" (Loser and Kalter 1992 page 12). In October 1994, only a few weeks before the crisis, the IMF's ***World Economic Outlook*** commented that although growth had been somewhat sluggish, it would recover rapidly. More specifically, it said: "[l]arger output increases are projected for 1995 as aggregate demand -- in particular private investment -- expands (page 24)". Along similar lines, the IMF's International Capital Markets report issued in September 1994, suggested that the premium paid by Mexican bonds was too high, and was not fully justified by market fundamentals. And quite remarkably, in a March 24, 1994 letter to U.S. Secretary of the Treasury Lloyd Bensten, IMF Managing Director Michael Camdessus said: "[O]ur view is that the Mexican authorities are pursuing fundamentally sound economic policies...[T]he economic program for 1994 envisages that inflation will fall further to close to international levels and that there will be a recovery in economic growth. The government is committed to fiscal balance, the maintenance of firm credit policies, and to the consolidation of structural reforms through the granting of autonomy to the Central Bank, the approval of NAFTA, and the

7. Council on Foreign Relations (1996). In page 26 the report says: "In 1994, the World Bank warned that financial flows to Mexico were unsustainable."

adoption of new foreign investment law."[8] Not a word on exchange rate overvaluation. Not one.[9]

Of course, the World Bank and the IMF were not the only, and not even the most vocal, institutions promoting the image of a super successful Mexican experiment. Investment bankers, mutual fund managers and financial reporters were even more enthusiastic. Some even urged, as late as November 1994, a credit rating upgrade for Mexico.[10] A forceful example of the private sector enthusiasm was Bear, Stearns who in early November 1994 argued: "[W]e expect a *strengthening* of the peso in the coming months, creating very high dollar returns on *Cetes*" (emphasis added). A few weeks earlier J.P. Morgan stated: "[W]e view Mexico as investment-grade risk. We do not regard Mexican debt to have predominantly speculative characteristics" (JP Morgan, 1994, pp. 7).[11]

A compilation of major investment banks views on Mexico during November and December, 1994 indicates that the majority continued to be optimistic.[12] Out of twenty written analyses released by major institutions during that period, twelve dismissed the possibility of a devaluation. Of these, two predicted an appreciation of the peso, two urged an upgrade of Mexico's investment rating, and eight argued that although the current account deficit was very high there would be no devaluation.

This enthusiasm for Mexico was captured by a rapid improvement in the country risk tables. For example, in ***Euromoney***'s country risk ratings -- where a lower ranking reflects a

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8. Quoted on senator Alfonse D'Amato's report on the Mexican crisis. D'Amato (1995).

9. A report on capital inflows that dealt with six countries -- including Mexico -- did mention that very large inflows could create some serious economic vulnerabilities. See Schadler et al (1993). Also the Fund's 1994 Annual Report mentioned the need for corrective fiscal and monetary policies. Again, however, there was no discussion of the exchange rate policy. See, for example, the collection of essays on the Mexican reforms by the IMF staff collected in Loser and Kalter (1992).

10. Chemical Bank (November 1994), JP Morgan (October 1994) and the Swiss Bank Corporation (December 1994/January 1995) argued that Mexico's rating should be upgraded. See Kerry Fraser's suggestively titled article *"Who Lost Mexico"* for an analysis of Wall Street's views on Mexico in the months preceding the crisis. See also Debbie Galant's "Why Wall Street Missed Mexico".

11. David Malpass and David Chon *"Mexican Pesos and Cetes are Attractive"*, Bears, Stearn, November 7, 1994. Other private analysts, however, did argue in their newsletters that things were now quite well south of the boarder. See the article by Kerry (1995).

12. See "Who Lost Mexico", Emerging Markets Investor, February 1995.

lower degree of country risk --, Mexico moved from position 77 in 1985 to 44 in 1994. Astonishingly, Mexico's ***Euromoney*** country risk ranking improved between March and September, 1994! As a result of this perception, and of the sharp decline in interest rates in the U.S., Mexico received massive amounts of foreign funds. Between 1990 and 1993 it received more than half of all the monies that moved into Latin America -- US$ 91 billion.

Figure 1 shows the surge in capital inflows that started in 1990, as well as the real exchange rate appreciation observed since the adoption of the Pacto in late 1987.[13] Throughout most of this period there was a close relationship between these two variables: capital inflows tended to go together with the strengthening of the real value of the currency. Two key and interrelated questions emerge: first, to what extent did this continuous appreciation represent a situation of overvaluation that required corrective policy actions?; and second, was the surge in capital inflows observed after 1989 sustainable? The answers given to these questions are key in interpreting the forces behind the Mexican crisis and in evaluating the appropriateness of Mexican policies after 1990 and, especially, during 1994. Moreover, these questions have acquired considerable relevance in light of the East Asian currency crises of the summer and fall of 1997.

III. Nominal Exchange Rate Anchors, Capital Flows and Real Exchange Rates

III.1 The Pacto and the Nominal Exchange Rate

In early 1988 the nominal exchange rate was fixed, becoming the fundamental anchor of the anti-inflationary effort.[14] Between 1988 and 1994 Mexico modified its exchange rate system several times, moving first from a completely fixed rate to a system based on a preannounced rate of devaluation -- with the actual devaluation set below the ongoing rate of inflation --, and then to an exchange rate band with a sliding ceiling. This policy was justified on two grounds: (a) it was supposed to discourage short term capital inflows; and (b) it would

13. The real exchange rate has been defined as the bilateral rate relative to the United States, which alone accounts for over 70 percent of Mexico's trade flows. Other indices, however, result in similar patterns. See Dornbusch and Werner (1994).

14. During the first months of the Pacto nominal wages provided the anchor to the system. According to Vela (1993), the move to an exchange rate anchor in February 1988 was, in part, the result of pressure from the labor unions.

deal with real exchange rate corrections, in case these were needed (Banco de Mexico, 1993). Until October 1993 -- when the NAFTA controversy heated up in the United States -- the actual peso/dollar rate was extremely stable, remaining in the lower half of the band. At least until 1993, this exchange rate policy was supplemented by prudent fiscal and monetary policies.[15]

According to Finance Minister Pedro Aspe, once barriers to international trade had been eliminated, it was expected that the exchange rate policy would reduce the degree of "inertial inflation", and would "place an upward boundary on the prices of tradables" (Aspe, 1993, 23-24). The Mexican stabilization program succeeded in reducing inertia, but not in eliminating it. As a result, the decline in the rate of inflation was painfully slow. As many had feared, then, and as it had been the case a decade earlier in Chile, the process of attempting to reduce inflation while using the exchange rate as nominal anchor was indeed accompanied by a substantial real appreciation (see Figure 1 and Edwards 1996). In 1989 a number of observers argued that this trend would become unsustainable, as the country lacked sufficient foreign exchange reserves to finance the rapidly growing trade gap. In early 1990, however, it seemed that the economic situation was about to turn around. The Brady debt reduction agreement was signed, and Mexico began to open its financial sector and to privatize banks. Partially as a result of this and of the perception that an economic miracle was taking place, the international capital market rediscovered Mexico. The resulting surge in capital inflows allowed the country to finance very large current account deficits-- averaging almost 7% of GDP -- in 1992-94. The fact that these funds were of a private nature persuaded a number of analysts, and especially senior Mexican officials, that this was a positive development, and that it was not a cause for concern. Other observers, however, remained skeptical and pointed out, with increasing alarm, that the accumulated appreciation of the peso was mining the foundations of the Mexican economy and was bound to generate, sooner rather than later, a major crisis (see the discussion below for details).

15. During the early years of the program, monetary policy was guided by the dual purpose of reducing interest rates while attaining consistency with the predetermined exchange rate (Aspe, 1993).

III.2 Capital Inflows, Real Exchange Rates and the Sustainable Current Account

For a long time economists have argued about the appropriate sequencing of economic reform. An important component of this debate has referred to the right timing for relaxing capital controls and opening the capital account. The central issue is that liberalizing the capital account would, under some conditions, result in an overshooting of capital inflows and in an over-appreciation of the real exchange rate. This would send the "wrong" signal to the real sector, thus frustrating a rapid expansion of exports (see McKinnon, 1982, 1991 and Edwards, 1984). The conventional wisdom in this debate is that the opening of the capital account should be done gradually, and in a way that avoids “unnecessary” real exchange rate appreciation.

Contrary to this conventional wisdom, Mexico opted for opening the capital account very early on in the reforms process, as capital controls were almost completely eliminated in late 1989.[16] The adoption of this sequence of reform responded to a series of factors, including Mexico’s long tradition with capital mobility and the country’s desire to join the OECD. This strategy contrasted with that followed by other Latin reformers, including Colombia and Chile, which maintained some form of capital impediments in an effort to have some ability to manage the money supply. In the absence of capital controls, international financial managers were free to move very large volumes of funds in and out of Mexico. In 1993 alone net capital inflows surpassed 8 percent of GDP. Most of the capital flowing into Mexico was short-term in nature, and was invested in the stock market, in private sector instruments, and in government securities (see Edwards, Seiner and Losada, 1996). The composition of these flows added to the vulnerability of the Mexican macroeconomy. This surge in capital inflows that started in 1990 allowed Mexican nationals to increase their expenditure greatly, putting additional pressure on an already appreciated real exchange rate, and contributing to the creation

16. Some controls were maintained, however. In particular, it was not possible for nationals to shorten the peso.

of a large current account deficit. A disturbing development associated with these large inflow of capital was a steep decline in private savings experienced after 1990.[17]

Starting in 1992 a debate began to take place on the consequences of the real appreciation that had occurred since 1988. In early 1992 Dornbusch claimed that "[t]he current problem of the Mexican economy is the overvalued exchange rate" (Dornbusch, 1993, 369), and in November 1992 he argued that the daily rate of devaluation should be ***tripled*** in 1993 to 120 cents per day (*Excelsior*, November 23, 1992, p.1). In late 1992 Edwards pointed out that "the rapid real appreciation of the peso in the last few months has contributed to [a]...widening trade imbalance, affecting overall credibility" (Edwards, 1994, 39). In a public document issued in November of 1992 the World Bank noted, with a tragic sense of premonition, that "[o]pening its capital account also exposes Mexico to the volatility of short-term capital movements that can transmit destabilizing external shocks to the economy even if domestic policies are right" (World Bank, 1992, 359). This report went on to say that Mexico could "adjust to these risks [of volatile capital movements] through higher interest rates and, possibly, depreciating the peso" (p. 359).

The Mexican authorities responded to these apprehensions by arguing that, since flows were largely private and the fiscal accounts were in surplus, there was nothing to be concerned about. This position was based on a three part argument: first, it was pointed out that the system had enough built-in flexibility -- in the form of flexible interest rates and the exchange rate band -- to deal with eventual disequilibria. Second, it was argued that a rapid increase in productivity was about to take place, generating a major export expansion that would help close the current account gap; and third, it was claimed that the long term fundamentals remained healthy, especially in light of NAFTA's ratification.[18] As evidence of having matters under control, the authorities argued that non-traditional exports were doing fine, although of course lagging considerably with respect to the growth in imports. In 1994 Guillermo Ortiz, then Under Secretary of Finance, argued that whether there was a situation of overvaluation "depend[ed] on

17. It could be argued that the decline in savings (which is in part the counterpart to the increase in consumption) is quite misleading in situations in which the consumption of durable goods increases significantly. After all, the case can be made that the purchase of certain consumer durables is, to a certain extent, a similar decision to the purchase of, say, a financial asset. In the recent Mexican experience this classification problems do not seem to have played an important role, as the expenditure on consumer durables as a proportion of GDP *declined* from 7.2 percent in 1987 to 6.3 percent in 1993.

18. See Banco de Mexico (1993, 1994) and Aspe (1993).

the equilibrium real exchange rate...[T]he appreciation process is a natural, and not necessarily a negative, consequence of the reform process in Mexico" (Ortiz, 1994, 306). And Miguel Mancera, the Governor of the Banco de Mexico, told *The Economist* in January 1994 that the current account deficit was not a problem because it was associated with the inflow of foreign funds, rather than expansionary fiscal or monetary policy. [19]

The surge in capital inflows led to the idea that Mexico was experiencing an "equilibrium" real exchange rate appreciation, and that the strengthening of the peso was fully justified by fundamentals. The view that an increase in capital flows will lead to an appreciation of the real exchange rate is correct from a simple theoretical perspective. Indeed, in order for the transfer of resources implied by a higher capital inflows to become effective, a real appreciation is *required.* A limitation of this interpretation, however, is that it fails to recognize that the rate at which capital was flowing into Mexico in 1991-93 -- at levels exceeding 7 percent of GDP -- was clearly ***not*** sustainable in the long run. This means that at some point the magnitude of this flow had to decline, requiring a reversal in the real exchange rate movement. Although there are no mechanical rules for determining the volume of capital inflows that can be maintained in the long run, there are some helpful guidelines that analysts can follow in order to detect departures from capital account sustainability.[20] In general, there will be an "equilibrium" level of a country's liabilities that foreigners will be willing to hold in their portfolios. Naturally, this "equilibrium portfolio share" will not be constant, and will depend, among other variables, on interest rate differentials, the perceived degrees of country and exchange risk, and the degree of openness of the economy. Moreover, when countries embark in (what is perceived to be) a successful reform program, the "equilibrium" level of the country's liabilities that will be willingly held by international investors is likely to increase, as they will be eager to take part in the country's "take-off". In a recent paper Calvo and Mendoza (1996) have argued that in a world with costly information it is even possible for very large volumes of capital to move across

19. Although Mexico's remarkable fiscal adjustment following the debt crisis cannot be overemphasized, it is important to acknowledge that, upon closer scrutiny, the stance in terms of fiscal policy started to shift as early as 1989. This can only be appreciated when the traditional fiscal accounts are corrected in order to exclude from public expenditure the inflationary component of interest payments. In any event, it is still the case that a significant shift in the fiscal stance only took place beginning in the second semester of 1993. See Leiderman and Thorne (1995).

20. On the issue of current account sustainability see, among others, Reisen (1995).

countries on the bases of rumors. They estimate that, in the case of Mexico, the belief of a change in domestic returns by one half could result in capital movements of approximately US$14 billion.

The following framework provides a useful way for approaching the current account sustainability issue: assume that in equilibrium international investors are willing to hold in their portfolios a ratio k^* of the home country's (Mexico) liabilities relative to its GDP.[21] This ratio will depend on a number of variables, including the country risk premium and interest rate differentials. If, for example, the perceived degree of country risk declines, and the country is seen as more stable, k^* will increase. This approach has two important implications. The first one has to do with the long run the sustainable level of the current account deficit. This will depend on two factors: (a) the stock international demand for the country's securities; and (b) the real rate of growth of the economy. If, for example, foreign investors are willing to hold national securities amounting to 50 percent of the country's GDP and the rate of growth is 4 percent per year, the long run sustainable current account deficit will be 2 percent of GDP. If, however, the demand for the country's securities is 75 percent of GDP, the sustainable current account deficit will be 3 percent of GDP. More specifically, the long run equilibrium current account deficit will be given by the following equation:[22]

$$C/y = g\,k^*,$$

where C is the current account deficit, y is GDP, g is the real rate of growth of the country and k^* is the ratio of the country's liabilities to GDP that are willingly held by international investors. The counterpart of this current account deficit is, under most circumstances, an inflow of foreign capital. In this sense, then, the expression presented above also measure the long term sustainable volume of capital inflows. This framework also suggests that in steady state equilibrium the transfer of resources to the country in question will be equal to $(g-r)k^*$, where r is "the" international rate of interest.

21. Ideally this should be a forward-looking measure of GDP. See the appendix for details on this framework.

22. This assumes that no international reserves are being accumulated. See Edwards, Seiner and Losada (1996) for details on the model.

At their peak foreigners holdings of Mexican securities reached about 50 percent of the country's GDP. Growth, however, averaged less than 4 percent during the first four years of the 1990s. These figures indicate that Mexico's long run sustainable current account deficit was in the neighborhood of 2 to 3 percent of GDP, significantly below the 7 to 8 percent levels actually attained during this period.

The second implication of this framework is related to the dynamics of transition. Transitional issues are particularly important when there are large shifts (positive or negative) in the international portfolio demand for the country's securities. If, for example, there is a reduction in the country's degree of country risk, foreigners will increase their demand for the country's securities, and in the short run -- while the new securities are accumulated -- the current account deficit will overshoot the levels predicted by the preceding long run analysis. Once portfolio equilibrium is regained, however, the current account balance will revert to its long run equilibrium level. One of the most important dynamic effects of this transition is on the real exchange rate. As capital flows in, there will be an increase in expenditure and an appreciation in the real exchange rate. Once the rate at which capital flows into the country slows down, the real exchange rate will be "overly" appreciated and, in order to maintain equilibrium, an adjustment may be required.

The dynamics of capital inflows and current account adjustment -- and more specifically, their overshooting during the transition -- will require, then, that the equilibrium real exchange rate first appreciates and then depreciates. And while during the surge in inflows the real exchange rate appreciates without any impediment, when the availability of foreign capital declines nominal wage and price rigidity will make the required real depreciation difficult under a pegged exchange rate.[23] Mexico's clinging to the rigid exchange rate system and a succession of negative shocks made the possibility of a smooth landing increasingly unlikely as capital flows declined during 1994.

Naturally, the situation will become even more serious if, as a result of external or internal developments, there is a *decline* in the portfolio demand for the country's securities --

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23. This type of analysis has been made in relationship to the sequencing of reform debate. See, for example, Edwards (1984).

as was the case in Mexico after December 20, 1994. Under these circumstances, the capital account balance will suffer a very severe contraction -- and the current account may even have to become positive -- during the transitional period towards the new equilibrium.

The effects of changing capital flows on the equilibrium real exchange rate, the current account and reserves accumulation can be analyzed using simple numerical simulations. Figures 2 and 3 contain the results from simulations based on the model presented in the appendix to this paper.[24] In all cases it is assumed that k^* -- the demand of national securities by foreigners -- increases from 0.4 to 0.6 of the country's GDP, that it takes 6 years to reach the new long run equilibrium, and that the economy grows at a constant rate of 4 percent. The latter implies that the "sustainable" capital account surplus will increase from 1.6 to 2.4 percent of GDP, with "transitional" surpluses that roughly approximate those recently observed in Mexico. As can be seen, this analysis suggests that an increase in the international demand for a small country's securities equivalent to 20 percent of the country's GDP, will generate an inflow of capitals that will peak at approximately 8 percent of GDP, a figure in line with what actually happened in Mexico in 1993-94. In turn, this inflow of capital will generate (under the assumed elasticities) a real exchange rate appreciation of almost 10 percent. Perhaps the most important aspect of this analysis is that it clearly shows that after capital inflows have reached their peak and begin to decline to their new level, the real exchange rate **has** to depreciate until it achieves its new equilibrium level -- see the appendix for a presentation of the model. In a fixed exchange rate regime, this real depreciation can only be achieved by means of reducing domestic inflation to a rate below foreign inflation, or, in terms of framework presented here, by actually reducing the price of nontradable goods.

The above analysis suggests that the relevant question regarding events in Mexico was not, as some analysts incorrectly thought during 1994, whether the inflows observed during 1991-93 were sustainable, but how and when was Mexico going to adjust towards a lower

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24. This assumes a demand elasticity on nontradables with respect to the real exchange rate of 1.1; an income demand elasticity of nontradables of 1; and a supply elasticity of nontradables equal to 0.5. See Edwards, Seiner and Losada (1996) for details. See also the appendix to this paper.

availability of foreign resources.[25] Mexico's clinging to the rigid exchange rate system made the possibility of a smooth landing increasingly unlikely as 1994 unfolded.

IV.- 1994: A Recurrent Nightmare

Although the accumulated disequilibria and the slow growth in productivity had created a vulnerable situation, the market was increasingly enthusiastic about Mexico at the end of 1993. The approval of NAFTA had been key in creating this positive view. The year 1994, however, did not begin well. On January 1st the *Zapatistas* "army" staged an uprising in the southern state of Chiapas, reminding the world that, in spite of the modernization reforms and of the highly acclaimed *Solidaridad* program, Mexico continued to be a country with pressing social problems and tremendous inequalities.[26] Six weeks after the eruption of the Chiapas uprising, on February 17th 1994, the ***Financial Times*** commented on Mexico's social conditions, pointing out that "[l]ow growth has meant that many Mexicans have yet to benefit significantly from economic initiatives that brought inflation down..., and privatised hundreds of state-owned businesses."

As a result of increased political uncertainty, in late February the exchange rate moved to the upper limit of the band. Surprisingly, perhaps, interest rates on peso denominated government securities (28 days *Cetes*, for example) did not increase substantially, and international reserves did not fall. In fact, from January to mid-February there was a record inflow of direct foreign investment. Moreover, and contrary to what has been intimated by some analysts, neither reserves nor domestic interest rates were affected by the Fed's decision to tighten U.S. monetary policy in February.[27] By mid March it seemed that things were, at least partially, under control. In fact, after the initial scare generated by Chiapas, the financial

25. In 1993 Oks and van Wijnbergen recognized the temporary nature of the expansion of capital inflows and argued that the key question was "once capital stops flowing, should we expect the current account to improve or is Mexico heading for a major [balance of payments] crisis?" (Oks and van Wijnbergen, 1995, 174). It is worthwhile noting that Oks was at the time the World Bank's country economist for Mexico, and van Wijnbergen had been the Bank's lead economist for Mexico until early 1992.

26. The *Solidaridad* program was President Salinas' flagship social program aimed at targeting social expenditure to the poorest segment of society in a direct way that eschewed the bureaucracy (see Aspe 1993). This program was strongly endorsed by the multilateral institutions, including The World Bank.

27. In fact, interest rates on CETES declined for almost eight weeks following the Feds actions of early February.

community was, once again, betting on Mexico. On January 28th 1994, JP Morgan stated in its newsletter, that "[w]hile in the short term, directional moves in Mexican Bradys...will continue to be influenced by exogenous factors such as the rise and fall of global markets, we expect spreads to tighten substantially by year end, as investors begin to price Mexico risk expecting an investment-grade rating".

An then, on March 23rd fate struck again. The presidential candidate of the ruling party -- the *Partido Revolucionario Institucional*, PRI -- Luis Donaldo Colosio was assassinated while greeting the crowd at a political rally in *Lomas Taurinas, Tijuana (Baja California)*. This time the financial community reacted in panic. Investors, foreign and domestic, reduced their demand for Mexican securities. Under the impression that this was a shock of a temporary nature, the authorities strongly intervened to shore up the peso, spending around US$10 billion in international reserves. Additionally, there was a rapid increase in peso denominated interest rates -- rates on 28 day Cetes increased from around 10 percent in February to more than 16 percent in April. With the peso already at the top of the band, further devaluation was not an option within the prevailing exchange rate system. The U.S. authorities reacted to these events with alarm, and on March 24th Secretary Bensten and Federal Reserve Board Chairman Alan Greenspan announced that the U.S. was extending a US$6 billion swap facility to Mexico.

In spite of the recurrence of negative shocks the financial community still appeared to be confident on Mexico's future. This view was neatly reflected in a front page article in London's ***Financial Times (FT)*** on March 25th, 1994: "[E]ven with Mexico's dependence on foreign capital to cover a current account deficit of over Dollars 20bn, a crisis is eminently avoidable." And according to a March 28 front page story in the ***FT*** "[a] sense of calm [had] return[ed] to Mexico." A week after the assassination of Colosio, Ernesto Zedillo was named the new PRI's presidential candidate and pledged to continue the Mexican reforms path to economic development.

In spite of the positive prognosis, Mexico had difficulties rolling over its rapidly maturing peso denominated debt. The authorities faced a dilemma: whether to allow interest rates to increase further, at the risk of engineering a recession in an election year and weakening an already badly battered banking system, or substituting dollar linked securities that paid a significantly lower rate -- *Tesobonos* -- for the maturing Cetes. In April JP Morgan commented that "[i]n the near term, the greatest pressure may come from foreign investors, who decide to sell their investments in domestic securities. If the peso were to come under severe pressure, the final decision by the Mexican government will involve weighting the trade-off between allowing interest rates to rise to whatever level is required, and abandoning a key component of its economic program [the exchange rate system]." In late April the Mexican authorities decided to (informally) impose a cap on Cetes peso denominated interest rates, a policy that came to be known as "drawing the line" -- *tirar la rayita*, in Spanish -- and to issue increasing amounts of dollar-linked *Tesobonos*. Evidently, if market participants had expectations of a devaluation, the risk would now be shouldered by the government, much in the same way that an increase in the interest rate on Cetes would have increased the cost of servicing domestic debt.

At the same time that the government resisted increasing interest rates on peso-denominated public debt, the central bank sterilized the decline in reserves. The decision to maintain the money supply target unaltered implied that the decline in reserves had to be compensated with an expansion in central bank credit. This allowed for important increases in credit by the financial system. Particularly active in lending were the official development banks, whose credit outstanding had increased by 35 percent in the 12 months ending in June. On top of all these developments, fiscal policy, if anything, was being relaxed in response to a political campaign that turned out to be unexpectedly difficult for the long time governing party.

During the first half of 1994 concerns on the sustainability of Mexico's external situation grew among international analysts. This preoccupation became particularly serious after Colosio's assassination. In the spring meetings of the Brookings Institution Economics Panel, Dornbusch and Werner (1994) argued that the Mexican peso was overvalued by at least 30 percent, and that the authorities should rapidly find a way to solve the problem. In their view, whether the realignment should have taken the form of an accelerated rate of crawl or a floating rate depended on the support the government could get from labor unions. In that same meeting Calvo (1994) argued that because of lack of credibility, any exchange rate adjustment was likely to generate a financial panic and that the solution lay in regaining credibility by obtaining massive support from the U.S. Treasury -- which in his view should have announced that it was ready to buy the outstanding stock of Cetes. Stanley Fischer, soon to become the IMF's First Deputy Managing Director, also expressed his concerns regarding the external sustainability of the Mexican experiment (Fischer, 1994). Internal U.S. government communications released to the U.S. Senate Banking Committee during 1995 also reflect a mounting concern among some U.S. officials. Several staff members of the Federal Reserve Bank of New York, for example, argued that a devaluation of the peso could not ruled out. On May 2, 1994, however, Under Secretary of the Treasury Larry Summers stated in a memorandum to Secretary Bensten that "[i]n our view, Mexico's current exchange rate policy is sustainable."[28] As time passed, the U.S. authorities became increasingly concerned concerned about the evolution of Mexico's international reserves. A mid May 1994 memo from Assistant Secretary Shafer points out that the Bank of Mexico had, reportedly, spent US$10 billion since the Colosio assassination to defend the peso.

Between April and October the **official** stock of international reserves -- that is the level of reserves released to the public every quarter -- held by the Bank of Mexico remained stable, and so did interest rates on Cetes. The exchange rate, on the other hand, rose with the ceiling of the band. After May, interest rates on Cetes actually declined somewhat, though they never reached the levels observed during the first quarter. The deceiving stability that these developments implied has to be confronted with the fact that, increasingly, the government was replacing peso-denominated debt with *Tesobonos*, rapidly changing the currency composition of broad money. This strategy was quite transparent, and was even commented on, matter of factly, in financial circles. According to JP Morgan's Emerging markets Outlook, July 22 1994, [h]alf of the 28-day and 91-day Cetes offered were issued; the central bank would not accept the high yields required by the market to auction the full amount...In the *Tesobonos* auction, yields ...trended down modestly..." (Page 22). And on July 23d 1994, an article in

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28. See the D'Amato (1995) papers.

The Economist pointed out that "[t]he central bank has also had to issue plenty of *tesobonos* -- dollar-linked bonds that are popular with investors that worried about currency risk"[29]

As of October, the broadly defined monetary aggregate M3 was increasing at an annual rate of over 20 percent;[30] however, its domestic currency component was only increasing 6.7 percent. The share of M3 held in dollar-linked assets, which stood at 9.2 percent at the end of 1993, had reached 21 percent by the end of the third quarter. Moreover, according to Calvo and Mendoza (1996) after March 1994, the demand for Mexican pesos experienced a major decline. Even though foreign reserves had ceased to decline in April, they were becoming insufficient backing for the short-term liabilities of the government. By August the amount of *Tesobonos* outstanding was roughly equivalent to the stock of international reserves (around $16-17 billion).[31] In what in retrospect proved to be a serious mistake that greatly eroded credibility, the authorities decided against the general disclosure of information. Instead, they decided to release oficially information partially, and only at certain times of the year -- see the discussion below, however. This lack of transparency was increasingly becoming a source of concern among some perceptive analysts of the Mexican situation, and was even commented in some articles in the specialized press.[32] In January 1994, for example, *Institutional Investor* ran an article on the subject titled "Transition to Transparency", where several investors commented on the lack of ready available data.

The ex post analysis of indicators of exchange rate and country risks -- calculated as the spreads between *Tesobonos* and Cetes, and *Tesobonos* and U.S. T-bills respectively -- suggest with some clarity that, after early reactions as a result of the Chiapas uprising and the assassination of Colosio, the market's perception of the Mexican situation remained stable until

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29. "Pounding the peso", The Economist, July 23d, 1994, page 76.

30. M3 = M1 + short term (financial and non financial sector) liabilities.

31. Between the end of March and the end of October the amount of *Tesobonos* increased by the same amount as the decline in Cetes, around M$35 billion (or $10 billion).

32. After two weeks in the field, the IMF mission returned to Washington in early June without having obtained data from the Banco de Mexico authorities on the recent evolution of international reserves. The World Bank was also kept in the dark on the behavior of some of the variables. Gil-Diaz (1995) argues that the level of international reserves was "timely revealed for the third occasion of the year on November 1st., 1994" (p. 19).

quite late in the game -- risk measures based on interest rates differentials only shot up in the first week of December (see Figures 4 and 5).[33]

In August Dr. Ernesto Zedillo Ponce de León was elected President with one of the smallest margins of Mexico's modern history. In September the *Pacto* was once again renewed and, after an active debate within the government, no major policy changes were introduced. In particular, exchange rate, monetary and fiscal policies were maintained, and the policy of substituting *Tesobonos* for maturing Cetes was continued. These decisions -- maintaining the exchange rate system instead of engineering a gradual adjustment under a floating rate regime, and the massive issues of *Tesobonos* --, mystified many analysts, and in particular Mexico watchers in the U.S. government. In fact, the staff of the Federal Reserve Board had argued that the renewal of the Pacto provided an excellent opportunity for altering the exchange rate regime, and gradually eliminating the accumulated overvaluation. In a briefing note to Secretary Bensten, dated October 27th 1994, the Treasury staff commented that it was concerned that "exchange rate policy under the new PACTO could inhibit attainment of a sustainable external position" (D'Amato, 1995, pages 308 and 338).

The decision to maintain the policy course unaltered was the result of a combination of factors. First, in Mexico there was still a sense of optimism and a belief that the situation was basically under control.[34] It was thought that with time investors would understand that the heightened turbulence was temporary and, consequently, that additional funds would once again flow into the country. Second, and as pointed out above, there was great reluctance to allow peso interest rates to increase further. At this point, with the presidential elections already won by the PRI, the overriding concern was that higher interest rates would adversely affect the banking system. The preoccupation for the financial health of banks had begun in late 1992, when a significant increase in the past due loans ratio became evident. In 1990,

33. According to Obstfeld and Rogoff (1995), interest rate differentials indicate that after March 1994 credibility on the sustainability of exchange rate policy was consistently lower than before the events of March. Our risk premia suggest that there was no *additional* deterioration in credibility *after* the sharp drop in March.

34. Many senior government officials believed, as did the "unidentified guest" in T.S. Eliot's ***"The Cocktail Party"***, that waiting was the best option. Edward, the play's main character asks the "unidentified guest" what should he do about his personal problems. The answer is: "The one thing to do is do nothing. Wait" To which Edward replies: "Wait!. But waiting is the one thing impossible."

non-performing loans were estimated to be only 2 percent of total loans; that ratio increased to 4.7 percent in 1992, to 7.3 percent in 1993, and to 8.3 percent at the end of the first quarter of 1994.[35] With the fourth largest bank -- Banca Cremi -- in serious trouble, the authorities tried to buy additional time as they worked out an emergency plan to strengthen those banks considered to be in a particularly weak position. By the end of the first semester the State Development Banks had developed a relief program based on some write-offs of commercial banks past due interests, and government issued loan guarantees.

The policy stance remained firm even in late September, when José Francisco Ruiz Massieu --Secretary General of PRI-- was assassinated. As the circle of assassinations, violence and uncertainty grew, investors became even more nervous, and the authorities intensified the substitution of *Tesobonos* for Cetes. On October 21st Governor Miguel Mancera announced that the Banco de Mexico reserves holdings were US$17.12 billion. Many analysts -- including some analysts in the U.S. government --, however, believed that the Bank had borrowed to bolster the reserves level. In mid October the U.S. Treasury debated how the U.S. should react if the Mexican government requested drawing on the US$6 billion swap. In a note to Secretary Bensten, Under Secretary Summers said that he "[w]ould be very uncomfortable agreeing to a drawing...and would like to discourage consideration of any request". And in a memo to Chairman Greenspan dated October 18 1994, the Fed's staff suggested that he communicated Mexicans that "they should not count on financial support via the Federal reserve and Treasury lines to sustain an inappropriate exchange rate. The swap lines are intended to deal what are viewed as transitory market disturbances, not to buttress an unsustainable exchange rate regime" (D'Amato, 1995 pages 381 and 383-84). In mid October major Mexican corporations -- including telecommunications giant TELMEX -- announced disappointing third quarter earnings. The stock market tumbled and the peso weakened further, moving ever closer to the top of the band. Later in the month, and in an effort to attract new foreign capital, Mexico agreed to grant operating licenses to 52 foreign banks and

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35. It is important to mention that in these calculations, past due loans only include unpaid installments of principal plus interest. Additionally, past due loans do not include those that have been restructured without having paid interest. These accounting procedures are, to a certain extent, compensated by the fact that installments are considered past due after a relatively short period of time (15 days in general).

brokerage houses. It was expected that this policy would result in the short to medium run into a flow of, at least US$ 5 billion. It did not happen, however.

In November some investors opted to reduce their exposure in Mexico, largely as a result of uncertainties linked to the inauguration of a new administration in December. Ironically, ATT's announcement that it would enter the Mexican market also contributed to the sell off of pesos, as a number of Wall Street firms removed TELMEX from its recommended list. International reserves declined by around $5 billion and, as had been the case at the end of the first quarter, the central bank opted to sterilize. Net domestic credit from the central bank, which had been negligible following the events of late March, increased by close to M$20 billion in November alone, its dollar equivalent being roughly equal to the decline in reserves. [36]

By the end of the month reserves stood at $12.5 billion, with short-term public debt in excess of $27 billion, around 70 percent of it in dollar-denominated *Tesobonos*. The situation had surpassed the current account and overvaluation sphere, and had all the characteristics of a major financial crisis. Reserves at the central bank had become clearly insufficient backing for short-term domestic public debt. Needless to say, they were even much more inadequate when measured against all short-term financial liabilities. According to a *Wall Street Journal* story, on the night November 20th president Salinas met with president-elect Zedillo and a group of advisors. After a long discussion the majority of those present concurred that a devaluation was necessary to calm the markets.[37] According to the story, however, finance secretary Pedro Aspe threatened to resign if the parity was abandoned, and the idea of a correction had to be shelved. The new administration took over on December 1st, and Pedro Aspe was replaced by Jaime Serra Puche as minister of finance. Although the new team had broad international experience -- after all, Serra had successfully negotiated NAFTA --, it had not worked closely with the financial community. Moreover, declassified Treasury documents suggest that when the decision to devalue was made the new Mexican authorities had not established an official

36. According to the Wall Street Journal (July 6, 1995, p. A4), at this point in time the incoming administration favored a devaluation, which the outgoing Finance Minister opposed.

37. "Peso Surprise", The Wall Street Journal, July 6, 1995.

contact with their U.S. counterparts. In a remarkable Memo to Assistant Secretary Tim Geithner, presumably dated December 19th, and unidentified OASIA staff says: "Sidaoui [then a deputy secretary of finance] is our contact, but not contact has not been made."[38] Then she goes on to suggest that it would be advisable for Under Secretary Summers "to establish contact with Sidaoui and at least let the Mexican know we are concerned..." (D'Amato, 1995 page 428).

The decline in reserves that started in November continued into December. In the aftermath of the crisis Wall Street analysts and operators have argued that the lack of current information on Mexico's reserves position played an important role in magnifying the crisis. The fact that the level of international reserves was disclosed only three times a year by the Banco de Mexico had for some time been particularly disturbing to a number of Wall Street analysts.[39] A post mortem of the crisis sponsored by the Council of Foreign Relations and undertaken by an independent task force chaired by John Whitehead concluded that "[f]ull financial information was not forthcoming to all investors" (page 27). A round table organized by the Group of Thirty reached a similar conclusion.[40]

The Senate Banking Committee documents quite clearly indicate, however, that the U.S. Treasury was well aware of the speed at which reserves were being depleted. On November 18th Assistant Secretary Shafer informed the Secretary of the Treasury that "reserves have now fallen below $14 million", and a December 5th memo to Summers and Shafer said that "reserves are now only slightly above the critical $10 billion threshold...[T]hey seem to have used up all the easy ways to boost reserves." The private sector, however, was largely unaware of how fast reserves were falling during November and December. In retrospect, however, it appears that diligent analysts had enough raw information -- on *Tesobonos* sales, maturing Cetes, trade flows and so on -- as to have been able to estimate roughly the country's international reserve position. Why so many of them

38. The Memo's date has been cut off in the D'Amato papers. Its date can be approximately established by the following statement: "I estimate their reserves were $11.8 at cob Friday, December 16". D'Amato (1995, page 428).

39. See, for example, "Transition to Transparency", *Institutional Investor*, January 1994 p. 111-113.

40. "Mexico: Why Didn't Wall Street Sound the Alarm?", Group of Thirty, New York 1995.

they did not do it, and why they did not react to the deteriorating figures is still an open question. What is clear, however, is that many analysts were seduced by Mexican policy makers and by the idea that, with NAFTA, the miracle was indeed about to happen.

With reserves reaching dangerously low levels, on December 20th the authorities opted for a change in policy. The exchange rate band was widened, to allow for a 15 percent devaluation. Surprisingly, the announcement of the new band was not accompanied by a supporting program, nor did it specify how the authorities planned to handle a possible massive withdrawal of deposits. In disbelief, investors -- both foreign and domestic -- fled, rendering the change in policy ineffective; in one day the Banco de Mexico lost US$ 4 billion. At that time the authorities realized that they had no alternative but to float the peso.

V. Conclusions

Many analysts were surprised by how rapidly Mexican economic conditions deteriorated after the devaluation. Maturing *Tesobonos* and Cetes were not rolled over, the once abundant foreign funds disappeared overnight, and what was supposed to be a run-of-the-mill devaluation became a major crisis. Many analysts have asked why was Mexico hit so hard by these developments? After all a few years earlier a number of countries -- Spain and Canada just to name two -- had experienced major exchange rate adjustments in an orderly way. What made Mexico so special? The answer resides on the almost complete loss in confidence in Mexico, its institutions and its leaders in the aftermath of the crisis. Financial operators and market observers felt that they had been misled in a grand way and, suddenly, were unsure on how to assess Mexico's true payments capacity and economic potential. This sense of perplexity and massive loss in confidence, in turn, generated a gigantic decline in the portfolio demand for Mexican securities and in the need for an adjustment of the peso-dollar exchange rate that exceeded almost every analyst expectation. Given Mexico's lack of international reserves, investors were particularly concerned that it would be unable to pay the rapidly maturing *Tesobonos*. On December 30th 1994, Salomon Brothers opined that the "possibility of a forced rescheduling of *tesobonos* cannot be rule out." On February 2, 1995 alone US$5.2 billions in *tesobonos* were due, and between June and August a further US$8.4 billion were maturing. The rapid reaction by the U.S. government, the International Monetary Fund the World Bank and the Bank of International Settlements, that jointly made available close to US$40 billion in credit lines to Mexico helped avoid a liquidity problem that would have resulted in a systemic global financial debacle.[41] By the third quarter of 1995 the specter of a major default had disappeared, as virtually all *Tesobonos* had been paid off.

Only slowly, and through a combination of policies aimed at correcting macroeconomic disequilibria and supporting those affected by the crisis -- especially debtors and local banks -- was Mexico able to regain some of its reputation. Overall, 1995 was a terrible year. During 1996, however, there were important improvements. Towards mid year there were clear signs of economic recovery, and monthly inflation reached the lowest level since the eruption of the crisis. The year ended with a rate of growth of 4.5%, a rate of unemployment of 4.1% and inflation of 28%. In early 1997 the international analysts were, once again, bullish about Mexico and capital was flowing at increasing rates into the country. Between late October 1994 and mid January 1997 public sector debt in the hands of foreigners increased from NP17 billion to NP27 billion. This abundance of foreign funds has allowed the authorities to maintain a stable peso at the same time as relaxing monetary policy and, thus, reducing domestic interest rates. Whether the recovery of growth and employment will be sustained, or whether it will only be a statistical blip is still an open question.

41. For details of the early economic program and of the U.S.-IMF rescue program see, for example, IDB (1996), Burki and Edwards (1996) and Edwards (1995).

APPENDIX

The Simple Dynamics of Capital Inflows and Real Exchange Rates

In this appendix I sketch a very simple stocks-flows model of capital inflows to analyze the way in which perceived changes in a country's degree of credit worthiness affects capital inflows, the real exchange rate and international reserves. Assume that in equilibrium international investors are willing to hold in their portfolios a ratio k^* of the home country's liabilities relative to its GDP.[42] Denoting liabilities by L and GDP by y:[43]

$$k^* = L/y = f(i, i^*, \delta, \ldots) \tag{1}$$

where i is the domestic interest rate, i^* is the foreign interest rate, and δ is the perceived degree of country risk. Equation (1) implies that in steady-state the net accumulation of this country's liabilities will be equal to:

$$\Delta L = g.L \tag{2}$$

where g is the "long run" rate of growth of real GDP. ΔL in equation (2) is this country's capital account surplus, and is equal to the current account deficit, plus the net accumulation of international reserves. The current account, in turn, is equal to the trade account deficit T, plus the service account. The latter can be approximated by the product of the rate of return on liabilities r, times the stock of liabilities. Denoting the current account deficit by C, it is possible to write:

$$\Delta L = \Delta R + C \tag{3}$$

$$C = T + rL \tag{4}$$

$$T = (M - X) \tag{5}$$

Where M is total imports and X is exports. Assuming, as a first approximation, that the accumulation of reserves is equal to zero, the "sustainable level" of the capital account in the long run is equal to the sustainable current account. From equations (1) - (5) these "sustainable" magnitudes will be given by:

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42. Ideally this should be a forward-looking measure of GDP.

43. Naturally, there is a problem of valuation. Assume, for purposes of the exposition, that L and y are measured in the same currency.

$$(\Delta L)/y = C/y = g.k^* \tag{6}$$

Moreover, from (5) and (6), it follows that:

$$T/y = (g - r).k^* \tag{7}$$

This is the well known transversality condition that states that in long run steady-state equilibrium the trade deficit (or resource transfer) can at most be equal to the difference between the real rate of growth in the economy and the real rate of interest on the country's liabilities, times k^*. In rigor, equations (6) and (7) establish upper limits for capital inflows and trade account balances in the steady state. Even in the steady state it is very difficult to measure the desired ratio of the county's liabilities to GDP. However, some insight can be gained by looking at different hypothetical values of the equilibrium capital inflows to GDP ratio under alternative assumptions for k^* and of the rate of growth of GDP g. This exercise can be very revealing and indicates, for instance, that if in long run equilibrium foreigners are willing to hold liabilities equal to one half of the country's GDP -- that is $L/y = 0.5$ --, and the rate of real GDP growth is 5 percent, the long run steady-state equilibrium level of capital inflows is 2.5 percent of GDP.[44][45]

This analysis has concentrated on long run equilibrium conditions, and has ignored transitional issues. These dynamic effects of changing capital flows on the equilibrium real exchange rate, the current account and reserves accumulation can be analyzed using simple numerical simulations. In order to do this it is necessary to add some minimal additional structure to the model. Equation (8) specifies the nontradable (N) market-clearing conditions; (9) is the economy's budget constrain according to which the current account (C) is the difference between aggregate demand and aggregate supply; and (10) presents the balance sheet of the central bank -- where, as before, R are international reserves and D is domestic credit. The real exchange rate e is the relative price of tradables to non tradables (Pt/Pn). It is assumed that the demand for base money (B) -- which has not been explicitly written -- is a function of income, with income elasticity equal to one.

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44. In the particular case of Mexico, in 1994 foreigners held Mexican securities --in the form of stocks and private and public bonds-- in the equivalent of slightly more than 50 percent of Mexico's GDP.

45. This analysis has ignored the demand for international reserves. See, however, Edwards (1995).

$$Nd(Pt/Pn,B) = Ns(Pt/Pn) \tag{8}$$

$$Td + (Pn/Pt).Nd = Ts + (Pn/Pt).Ns + C \tag{9}$$

$$\Delta B = \Delta D + \Delta R \tag{10}$$

Under the simplifying assumptions that $\Delta D=0$, equations (8) - (10) imply the following dynamics for the real exchange rate:

$$(de/e) = \alpha.(y/R).[g.k^* - C(e)/y] \tag{11}$$

where $\alpha = \eta/(\gamma-\beta) < 0$, with η the expenditure elasticity of Nd, and γ and β the relative price elasticity of Ns and Nd respectively. Equation (11) shows that the real exchange rate should appreciate as a result of an exogenous increase in capital inflows and should depreciate with an (exogenous) increase in the Central Bank's demand for reserves.[46]

An increase in capital inflows allows residents of this country to increase expenditure on both types of goods. The effect that this will have on the equilibrium real exchange rate and on the current account balance will depend on the price and expenditure elasticities of demand and supply of nontradables. Figures 2 and 3 in the text were obtained from simulating this model. In both cases it is assumed that k^* increases from 0.4 to 0.6, that it takes 6 periods (years) to go from one steady state to the other, and that the economy grows at a constant rate of 4 percent. The latter implies that the "sustainable" capital account surplus will increase from 1.6 to 2.4 percent of GDP, with "transitional" surpluses that grossly approximate those recently observed in Mexico. An interesting aspect of these simulations that is important to highlight refers to the fact that during the transition from one equilibrium to the other, there is a period of real exchange rate depreciation, regardless of the fact that the final equilibrium real exchange rate is slightly lower than the original one.[47]

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46. Note that if the capacity to produce nontradable goods (J) were modeled as a function of the rate of growth of GDP (g), the relationship between the dynamics of the real exchange rate and g would be, in principle, ambiguous.

47. Needless to say, the required depreciation will be much larger if upon reaching the new equilibrium, there is a capital outflow --say, one that reduces k^* to its original level of 0.4 --, as was the case in Mexico during 1994.

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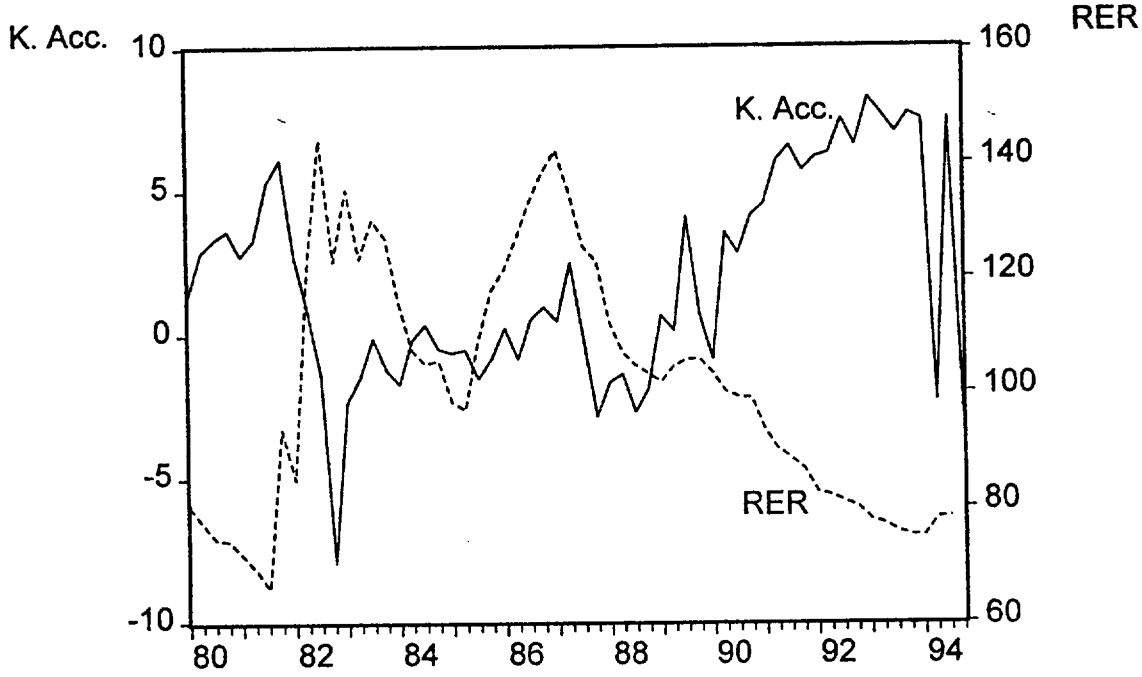
FIGURE 1. CAPITAL ACCOUNT AND REAL EXCHANGE RATE



K. Acc. in US$billion; RER index 1990=100
Source: Banco de Mexico and IMF

FIGURE 2

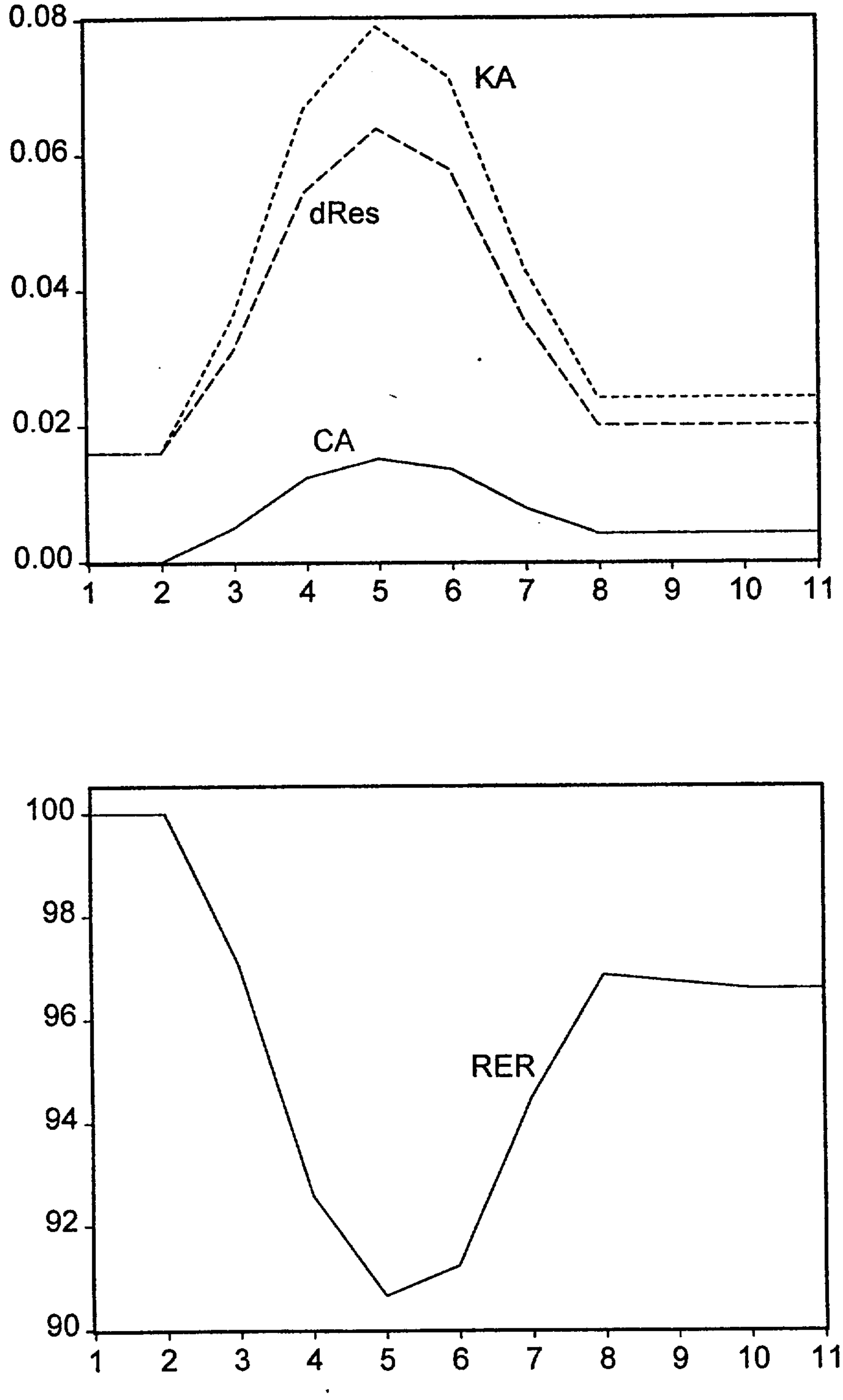


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FIGURE 3

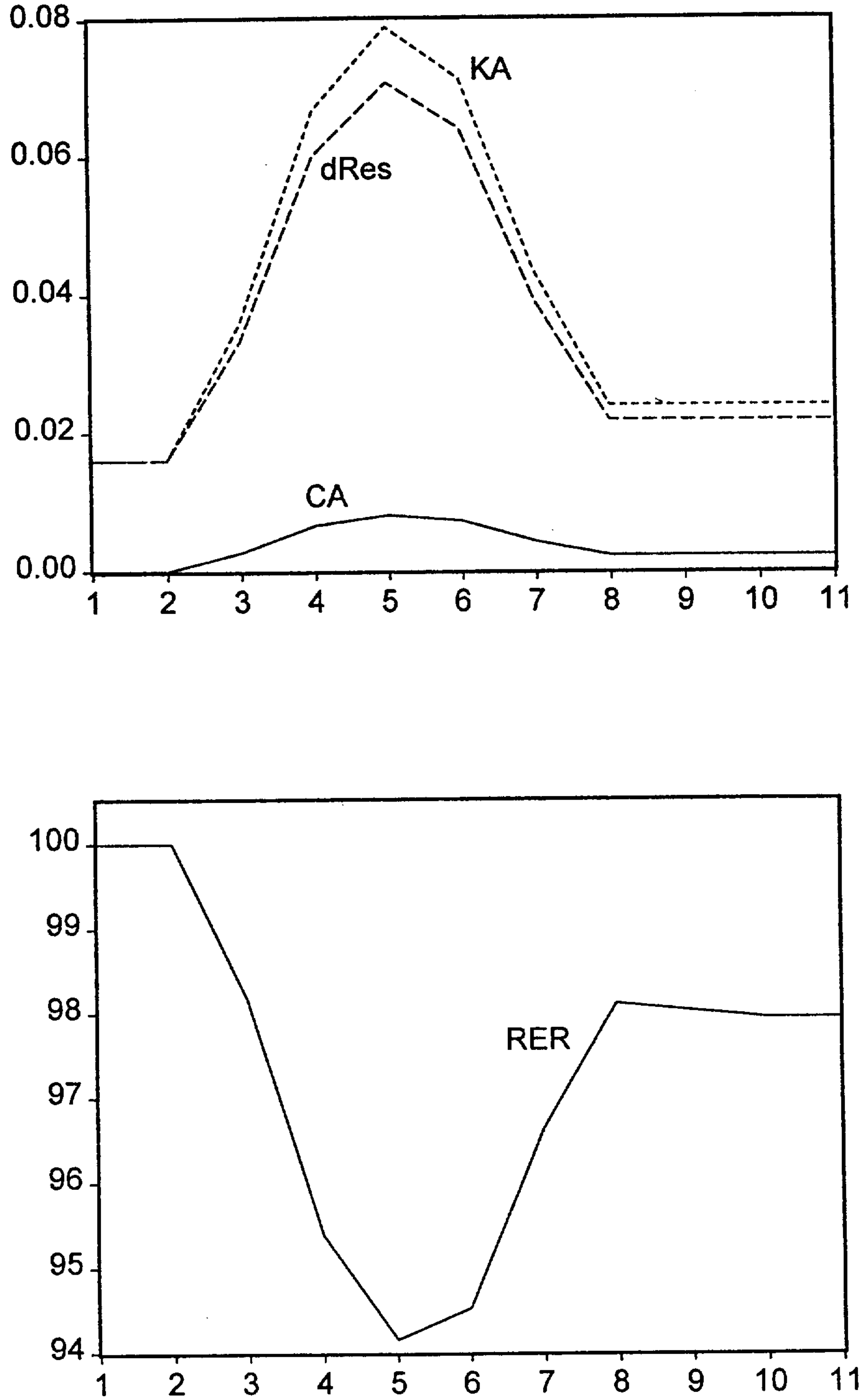

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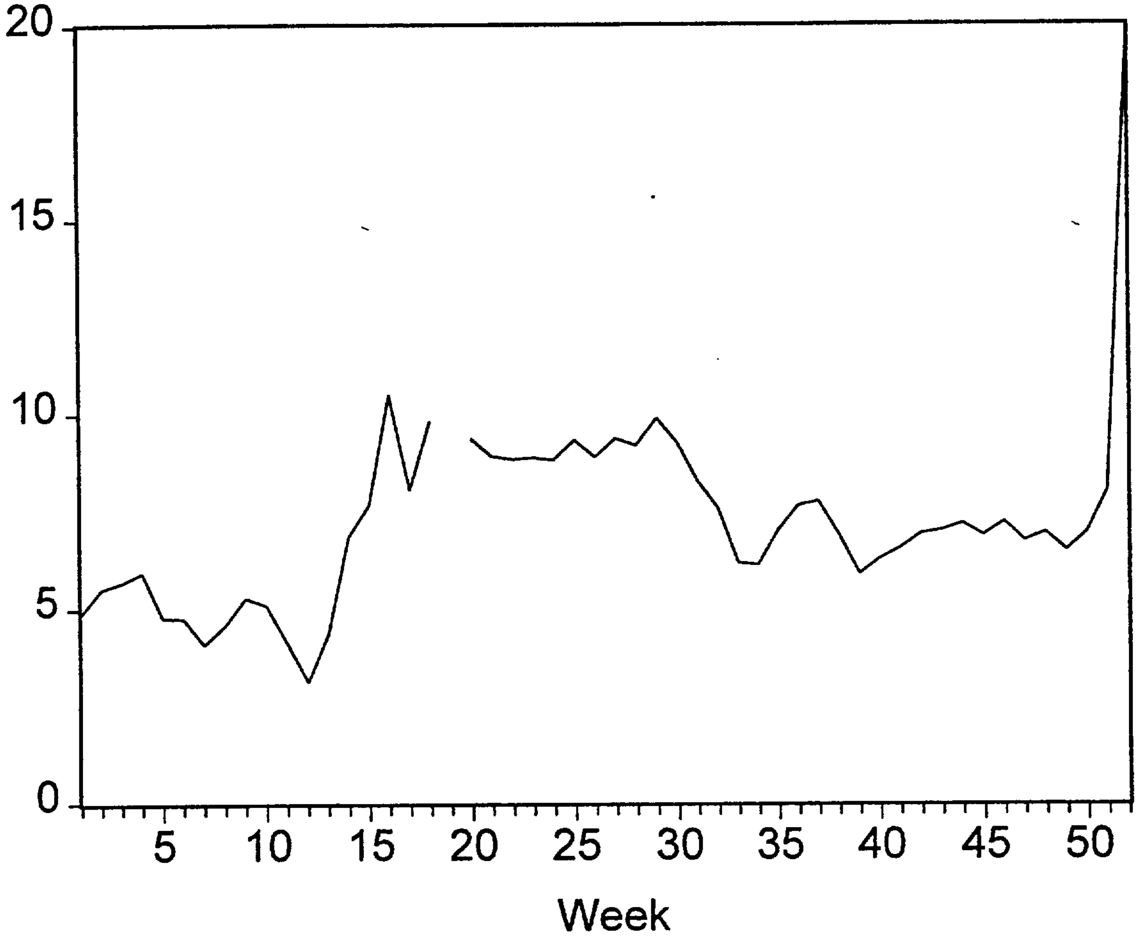
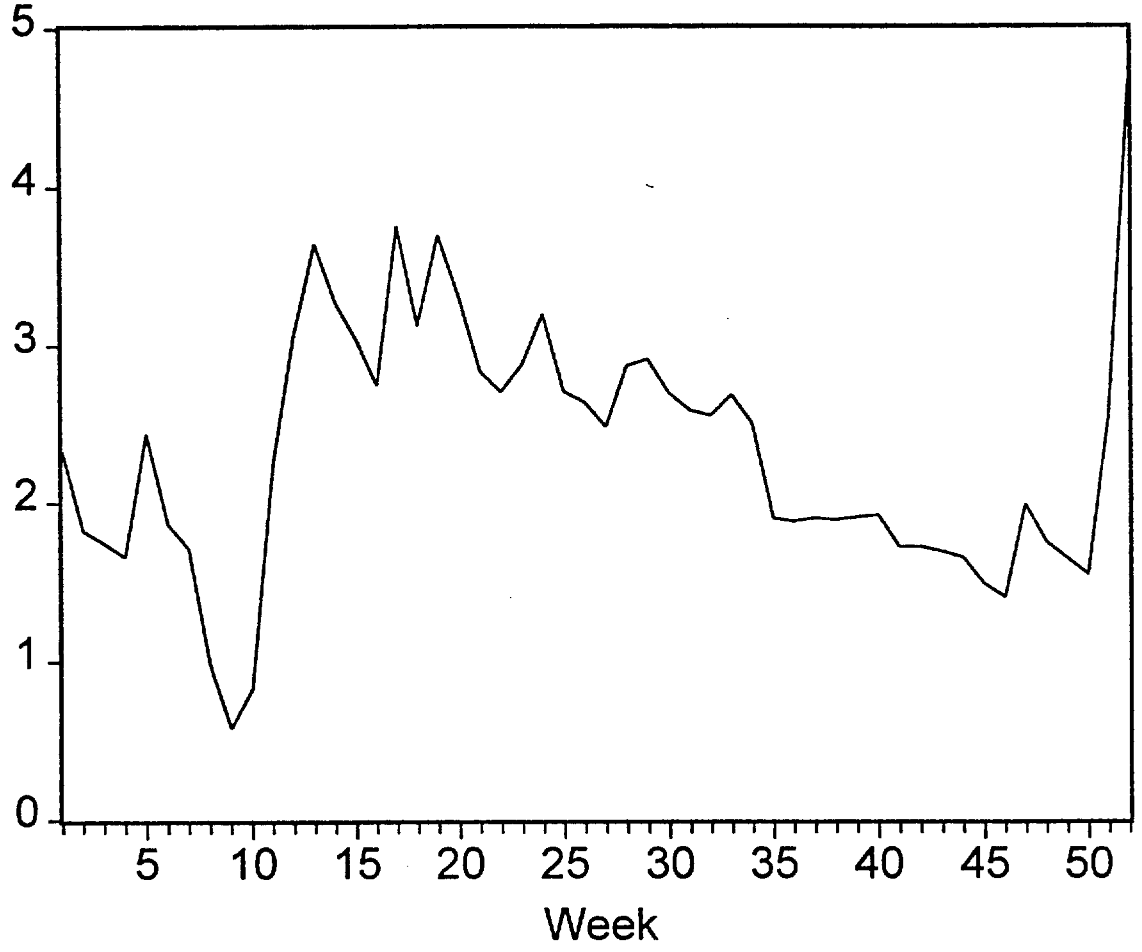
FIGURE 4. "EXPECTED DEVALUATION" IN 1994*



* Return on Cetes vs. return on Tesobonos

FIGURE5. COUNTRY "RISK PREMIUM" IN 1994*



* Return on Tesobonos vs. return on US T-Bills