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THE MEXICAN PESO CRISIS

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ABSTRACT

This paper analyses in depth the causes of the Mexican peso crisis, so as to draw out relevant lessons for similar crises occurring in other developing or transitional economies. The study follows a chronological order, examining first the apparently golden period, when Mexico was acclaimed worldwide as a successful reformer. The next section analyses the period when "clouds emerge and darken", examining policy options that economic authorities could have followed. The last section focuses on the devaluation of 20 December 1994 and the resulting crisis.

Consensus is emerging around some of the causes of the grave Mexican peso crisis. These include the large scale of the current account deficit, a large part of which was funded by relatively short-term capital inflows. A somewhat overvalued exchange rate was welcomed by a government strongly committed to rapid inflation reduction. Additionally, a high proportion of government debt paper was very short term, a high proportion of it was in the hands of non-residents and during 1994 the government allowed the transformation of a large part of it into dollar-denominated paper.

This study concludes that two other sets of factors were also important, but they have been either neglected or insufficiently emphasized in the literature. First, the process of liberalization in Mexico, both of the financial sector and of the capital account, was perhaps too rapid and too many changes were made simultaneously. Second, the severity of the Mexican peso crisis can partly be explained by imperfections in international capital markets, which can lead to huge overreactions to relatively small changes in countries' economic fundamentals. The paper analyses, both from a theoretical and an empirical perspective, the nature of imperfections in international capital markets.

THE MEXICAN PESO CRISIS

1. Introduction

The speed and the massive scale of the financial crisis that followed the fairly small, initial devaluation of the Mexican peso in December 1994 started an important debate on the causes of this crisis, the scale and the international consequences. To what extent was the Mexican peso crisis different from previous crises, and why should it be characterized, by the Managing Director of the International Monetary Fund (IMF), as "the first major crisis of the 21st century"? (Camdessus 1995a) What are the main elements which make this crisis different? What are the elements of continuity with previous crises, suffered both by Mexico and by other countries?

A precise answer to these questions is crucial to help avoid Mexico-style crises occurring again and also to improve the management of such crises so as to reduce the tremendous costs which the Mexican crisis has implied. This analysis is based on the assumption that although the Mexican peso crisis had special features, it was not unique, and that there is therefore a risk that a similar crisis could be repeated.

In the analysis of the causes and depth of the Mexican peso crisis, consensus is emerging around a variety of factors. These include the large scale of the current account deficit, which had reached almost 8% of gross domestic product (GDP) in 1993 and 1994, as well as the fact that an important part of this deficit was funded by relatively short-term capital inflows. Mexican authorities were committed to a relatively fixed exchange rate (in nominal terms), and a somewhat over-valued exchange rate was welcomed by a government strongly committed to rapidly reducing inflation. The government pursued a rather lax monetary policy in 1994 as reserves fell sharply. A high proportion of government debt paper was very short term, a high proportion of it was in the hands of non-residents and during 1994 the government allowed the transformation of a large part of its government debt into dollar-denominated paper. Finally, Mexican economists in particular stress the mishandling of the devaluation, the so-called errors of December.

Though all these causes clearly provide a very important part of the explanation of the peso crisis and its severity, another set of factors has been either neglected or not sufficiently emphasized in the growing literature on the Mexican crisis. First, the process of liberalization which occurred in Mexico in the early 1990s in the financial sector and in the capital account was perhaps too rapid. Too many changes occurred at the same time for the economic system to adjust appropriately to them simultaneously, as well as cope with a large surge of capital inflows. The Mexican capital account should have been liberalized more slowly and more controls or taxes introduced to discourage short-term capital inflows when these surged. Both the IMF (1995a) and the Bank for International Settlements (BIS) (1995) have recently explicitly recognized that measures taken by recipient governments to discourage short-term capital flows, when combined with other policies that lead to sound macroeconomic fundamentals, may play a positive role in managing capital flows effectively and thus reducing the likelihood of a costly financial crisis. Calvo and Goldstein (1995) even imply that measures such as controls or taxes on short-term capital inflows should become part of a revised Washington consensus.

One particularly problematic aspect of the rapid liberalization of the capital account was that in late 1990 non-residents were allowed to buy Mexican government paper without any restrictions, whereas previously they were not allowed to do so.[1] This was part of a broader liberalization, whereby foreigners were allowed to purchase bonds and money market instruments, as well as shares.

The process of rapid liberalization of the capital account coincided with a process of reprivatization of the banks. It also coincided with a change in the conduct of monetary policy, which implied that reserve requirements were eliminated very quickly as a tool of monetary policy.[2] As a result, an important constraint on credit expansion by the banks was lifted, at the same time that the banking system was reprivatized (which implied that many bankers were not experienced in evaluating credit and market risks). The changes in the conduct of monetary and credit policy and the reprivatization of banks were not accompanied by sufficient efforts to improve bank supervision and regulation; in any case, improving bank supervision tends to be a slow process. Rojas-Suarez and Weisbrod (1995) argue that in general, effective supervision of banks is a better instrument for restraining banks' credit expansion than reserve requirements, as the former can restrict more expansion of credit of risky segments of the banking system. However, this requires sophisticated supervisory skills, which take a fairly long time to develop. In Mexico, in a context of relatively weak bank supervision and regulation, rapid reduction of reserve requirements and recent bank privatization, the stage was set for a large expansion of credit, including a large growth of consumer credit. Indeed, even though consumer credit was growing rapidly, no measures were taken to constrain such growth, largely because this was seen as inconsistent with a more liberal stance of managing monetary and credit policy.

Similar patterns of very rapid deregulation of the financial sector and the capital account, accompanied by expansionary impulses on macroeconomic management, leading to financial crisis, have also occurred in other countries, including developed ones. A recent IMF study (Drees and Pazarbasioglu, 1995) highlights such links for the Nordic countries, showing how the elimination of both controls on lending and exchange restrictions triggered a surge in lending to borrowers, who had previously been credit-rationed. As in the Mexican case, the authorities in the Nordic countries did not tighten prudential bank regulation quickly enough. External shocks later led to quite large and costly banking crises in those countries.

A second set of factors which contributed to the severity of the Mexican peso crisis, but which is not sufficiently stressed in the literature,[3] involves international capital markets. Though generally efficient, international capital markets do have some imperfections which may lead to overinvestment or overlending in certain markets. Once the excessive nature of the over-investment is perceived (and this may be due to a fairly small change in that particular market, and not to an important change in economic fundamentals), there can be a huge overreaction, with flows not only declining sharply but even becoming strongly negative.

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[1] Information from personal interviews. See also Ffrench-Davis and Agosin (1996).

[2] I thank Carmen Reinhart, from the IMF, for this point.

[3] An important exception can be found in Calvo and Mendoza (1995).

Four main elements explain this "boom-bust" behaviour in modern capital markets. First, over-optimism followed by over-pessimism is explained partly by fund managers' behaviour, linked to their incentive structure.[4] If a fund manager (or other investor) is wrong when everybody else is right (that is he/she misses out on a very profitable opportunity that everybody else is taking), his/her institution will be punished by the market. However, if a fund manager is wrong when everybody else is also wrong, the market is less likely to punish his/her institution; indeed, there may be a bailout, probably led by the IMF, to help deal with this collective mistake. This leads to band-wagon effects, or herd behaviour.

Second, in a highly diversified world capital market, where in-depth information is expensive to obtain, it may be rational for investors to react even to "small news". As a consequence, as Calvo and Mendoza (1995) argue, relatively small bad news can lead to a major speculative attack, even if the news is not related to any important change in economic fundamentals. This behaviour results from the important trade-off that foreign investors have between diversification and information. The more diversified an investor, the lower his incentives to obtain expensive information. As the number of countries in which to invest increases, the marginal benefit from information gathering falls. Herd behaviour is exacerbated by an increase in responsiveness by investors to market rumours or news, rather than to in-depth analysis of fundamentals. This clearly contributed to the rapid withdrawal of funds out of Mexico after the initial devaluation of 15%.

Third, a conflict of interest may arise when investment bankers act as advisors on markets in which they are investing. This explains the rapid inflow by foreign portfolio investors into Mexico in 1991-1993, United States mutual funds, had small research departments and therefore relied on advice from investment bankers, who wanted to protect the value of their own assets in the country. Even though formally they had "Chinese walls" around their analysts, analysts experienced subtle pressures to promote the market.[5] Furthermore, analysts themselves, who were recently brought into Latin American work, had a vested interest in promoting a positive atmosphere, as this would enhance their career prospects. Finally, most institutions were on the sales side: even when they were apparently providing independent advice, institutions like mutual funds were basically trying to market their products, to obtain commissions. For this purpose, they emphasized high yields and downplayed the risks. Even when information provided by the Mexican authorities was somewhat incomplete, which should have increased the perceived risk, analysts chose to ignore the lack of information. Such analysts continued to rely on factors such as their confidence in the credibility of the policy and, above all, of the policy makers.

A fourth element of "boom-bust" behaviour relates directly to theory of financial markets and its concept of disaster myopia (Guttentag and Herring, 1984). As David Lubin, an economist at Hong Kong and Shanghai Bank, London, states, "One finds it difficult to see disasters... You have a kind of built-in mechanism that tells you that things are going to manage themselves smoothly" (Galant, 1995). During the fist period of overinvesting, rationing constraints are excessively loosened; this implies that investors' perceptions of risk (which are subjective possibilities) can deviate from reality. Furthermore, competition may drive prudent lenders or investors from the market, replacing them with those willing to accept what is seen as a low-probability danger. Disaster myopia can lead to overreaction when investors must finally recognize the gravity of the situation, as happened in Mexico after the devaluation of the peso in December 1994.

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[4] I thank David Peretz from the UK Treasury for valuable insights on this point.

[5] Information from personal interviews. See also Emerging Markets Investor (1995) and Galant (1995).

This paper follows a relatively chronological order. Section 2 examines the apparently golden period of the early 1990s till March 1994; it points to the clouds which were already gathering and the policy options available. Section 3 analyses the period March 1994 to 20 December 1994, again emphasizing policy options. Section 4 focuses on the devaluation and the resulting crisis, analysing possible errors in its handling and also returning to the issue of capital market imperfections. As part of the focus on international capital markets, whenever feasible the paper provides information on changes in capital inflows and outflows, their origin and their composition.

2. The apparently golden years: 1988 to early 1994

In the aftermath of the Mexican peso crisis, so much analysis of the Mexican economy is gloomy. It is important to stress, however, that between 1988 and 1993, Mexico not only had many important achievements, but was widely praised as a major success story of the process of economic reforms and macroeconomic stabilization.

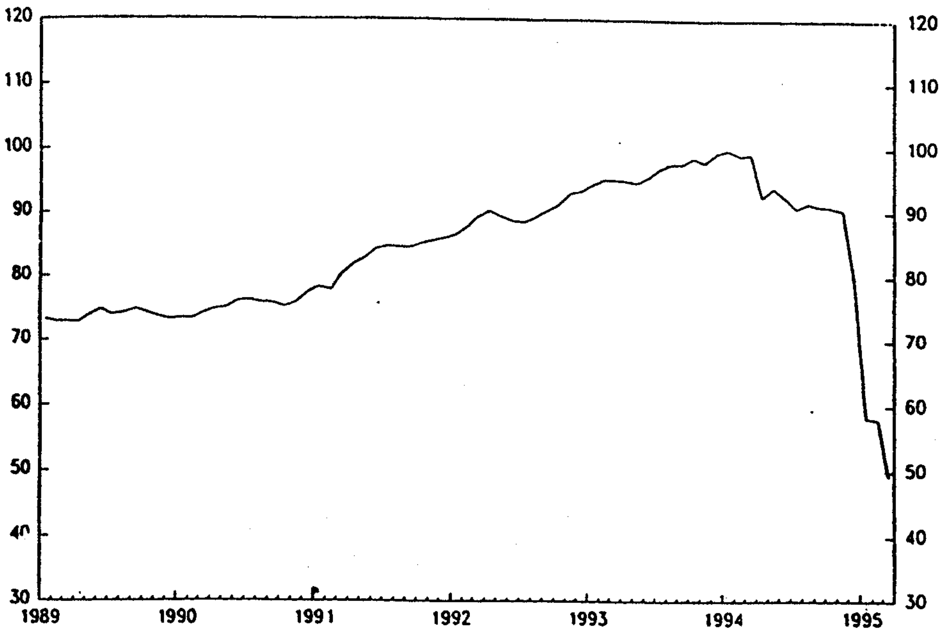
From 1988 to 1993, Mexico followed a strategy of economic adjustment and reform that strengthened fiscal consolidation and structural changes initiated after the 1982 debt crisis. The strategy, which had the active support of the IMF (Camdessus, 1995b), aimed at restoring macroeconomic stability, reducing the role of the public sector in the economy and laying the foundations for private-sector-led growth. The key elements of the strategy were the maintenance of fiscal and monetary discipline, a major debt restructuring and a comprehensive programme of structural reforms, including privatization and trade liberalization. The liberalization of the financial sector and of the capital account were thus part of a broader policy thrust. The implementation of the North American Free Trade Agreement (NAFTA) was seen as a culmination of the reform process, as a prize to the successful reformer and as an external lock on the reform process.

Certain macroeconomic variables followed an exemplary evolution. The overall public-sector financial balance reported a surplus of almost 1% of GDP in 1993, compared with 11% deficit of GDP in 1988. Inflation was reduced from 160% in 1987 to 8% in 1993.

Beginning in 1988 the exchange rate was used as the main nominal anchor, with income policies playing an important supportive role. As often occurs with such a policy, a nominal exchange-rate-based stabilization results in a real appreciation of the local currency, as it takes time for the differential between domestic and foreign inflation to fall. As figure 1 indicates, the Mexican real exchange rate (using consumer price indexes) appreciated by around 30% between the beginning of 1989 and late 1993. Even though the exchange rate regime underwent several changes, going from a fixed to a crawling peg and then to an adjustable band, the appreciation continued (Lustig, 1995).

Figure 1

Mexico: Real effective exchange rate[a] (1980=100)



Source: IMF, Information Notice System.

[a] Trade-weighted index of nominal exchange rates deflated by seasonally adjusted relative consumer prices. An increase indicates appreciation.

The appreciation of the real exchange rate was exacerbated by the large capital inflows which Mexico received in the early 1990s. These capital flows had two important features. First, they were very high, both in absolute amounts and as a proportion of GDP (Devlin, Ffrench-Davis and Griffith-Jones, 1995). Second, as can be seen in table 1, an extremely high proportion of the capital flowing into Mexico came as portfolio investment; it reached 67% of total inflows for 1990-1993. Portfolio flows are potentially volatile and prone to reversals, particularly if a high proportion of the portfolio inflows is into very short-term government paper.

During 1990-1993, capital inflows were dominated by flows to the private sector, which benefited from the internationalization of Mexican capital markets. In particular, equity and bonds provided inflows of US$ 24 billion and US$ 12 billion respectively (see table 2). Until the late 1980s, foreign equity participation in Mexican companies was restricted. At the end of 1989, non-residents accounted for just 6% of Mexico's equity market capitalization. Foreign participation rose rapidly in the wake of the Stock Market Law of December 1989, which liberalized access by foreign investors. Net foreign purchases of Mexican equities, which had been less than US$ 1 billion annually till 1989, reached a total of US$ 28 billion during 1990-1993. By the end of 1993, non-resident investors accounted for 27% of the capitalization of the Mexican market, a figure which remained broadly unchanged through 1994.

Table 1

COMPOSITION (%) OF MEXICAN AND OTHER COUNTRIES' CAPITAL INFLOWS (1990-1993)

	Mexico	Argentina	Chile	Thailand	Indonesia
Portfolio Investment	67	37	22	6	-3
Foreign Direct Investment	21	42	31	20	28
Other (inc. bank lending)	12	21	47	75	75
Total	100	100	100	100	100

Source: Banco de Mexico: IMF, International Financial Statistics.

Mexico returned to the international bond market in 1990, and placements rose over the following three years. Initially, Mexico's access to these markets depended on the provision of enhancements or high yield spreads over comparable industrial-country bonds. As Mexico's credit ratings improved, the need for enhancements and wide yield spreads diminished. Mexico was soon regarded as a benchmark bond issuer. It was one of the few former highly indebted countries to receive just-below-investment-grade ratings from major United States credit-rating agencies. Interestingly, Mexico's rating was not downgraded during 1994 when, the situation deteriorated, but only after the devaluation and crisis.

Another important item of capital inflows was foreign purchases of Mexican government securities. During the 1980s, peso-denominated government securities were sold only to Mexican residents. In 1990, the Government allowed direct sales to foreign residents. (Foreign residents were already able to do some purchases previously, through secondary purchases from Mexican banks.) In 1991 —the first year without restrictions— foreigners invested US$ 3.4 billion in government paper. Purchases rose rapidly, totalling over US$ 18 billion during 1991-1993 (see table 2). During this period, non-residents absorbed virtually all of the net increase in government securities. An important part of the issue of government securities in those years was not linked to financing fiscal deficits, but was issued largely as part of the monetary sterilization of capital inflows; paradoxically, that government paper led to new inflows.[6] The share of government securities held by foreigners during 1990-1993 rose from 8% at the end of 1990 to 57% at the end of 1993. Foreign investors held a larger proportion of short-maturity bills (1-12 months treasury certificates, or CETES) and a smaller proportion of longer-maturity notes (1 and 2 years bonds) than did residents: the average maturity of non-resident holdings at the end of 1993 was estimated at 280 days, compared to 350 days for residents holdings.

[6] I thank Ricardo Hausman for this point.

Table 2

MEXICO: SUMMARY CAPITAL ACCOUNTS, 1988-1994

(Millions of dollars)

	1988	1989	1990	1991	1992	1993	Prel. 1994
Current account	**-989**	**-5,823**	**-7,450**	**-14,649**	**-24,439**	**-23,400**	**-28,786**
Capital account	**-5,774**	**4,745**	**10,889**	**22,232**	**26,361**	**30,491**	**10,866**
Official capital	**265**	**-1,124**	**-1,820**	**3,424**	**7,940**	**7,882**	**-400**
Medium- and long-term borrowing	1,459	-29	6,371	1,226	-3,821	1,601	1,447
Commercial banks	-1,483	-1,199	4,555	-2,362	-5,744	-1,982	-725
Multilaterals	776	468	706	867	487	212	-165
Bilaterals and suppliers (excl. CCC)	556	616	688	1,422	1,246	171	-896
CCC	221	159	146	-377	-251	-166	-37
Bond placements & other	1,389	-73	276	1,675	441	3,366	3,270
Short term	219	-199	483	529	1,843	1,063	2,172
Non-resident purchases of Mexican Government treasury bills[a]	-	-	-	3,406	8,147	7,013	-1,942
Tesobonos	-	-	-	253	-62	1,063	14,338
Other	-	-	-	3,153	8,209	5,950	-16,280
Other government financial assets	-1,412	-896	-8,674	-1,736	1,772	-1,794	-2,076
Debt equity swaps	-868	-389	-85	-199	-	-	-
Long-term trade lending	-544	-507	-530	19	63	-281	-41
Debt enhancements[b]	-	-	-7,354	-604	1,165	-564	-615
Other	-	-	-706	-952	544	-948	-1,420
Private capital	**-6,039**	**5,869**	**12,709**	**18,807**	**18,421**	**22,609**	**11,266**
Direct investment	2,595	3,037	2,633	4,762	4,393	4,389	7,980
Equity investments	-	493	1,995	6,332	4,783	10,717	4,088
Bond placements	-	-	1,099	1,340	3,559	6,318	2,061
Banking sector	-	-	-	-143	621	1,738	-183
Non-bank private sector	-	-	1,099	1,483	2,938	4,580	2,244
Net external credits	-3,317	-170	4,647	8,576	2,577	6,260	2,417
Banking sector	-	-	4,250	6,195	449	3,428	1,181
Non-bank private sector	-	-	397	2,381	2,129	2,832	1,236
Increase in assets abroad (-)	-1,576	-1,860	-110	538	3,780	-1,809	-3,394
Interest earnings held abroad[c]	-1,576	-1,860	-1,747	-1,446	-837	-731	-1,188
Other	-	-	1,637	1,984	4,617	-1,078	-2,206
Other, including errors and omissions	-3,741	4,368	2,445	-2,740	-671	-3,266	-1,886
Net international reserves (increase -)	**6,763**	**1,078**	**-3,439**	**-7,583**	**-1,923**	**-7,092**	**17,919**

Source: Bank of Mexico, International Monetary Fund and Fund estimates.

a Excludes repayments associated with implicit interest earnings on zero coupon treasury bills, such as Tesobonos and CETES.

b Corresponds to implicit reinvestment of interest earnings on collateral for restructured commercial bank debts.

c Corresponds to assumed reinvestment of interest earnings of foreign investments.

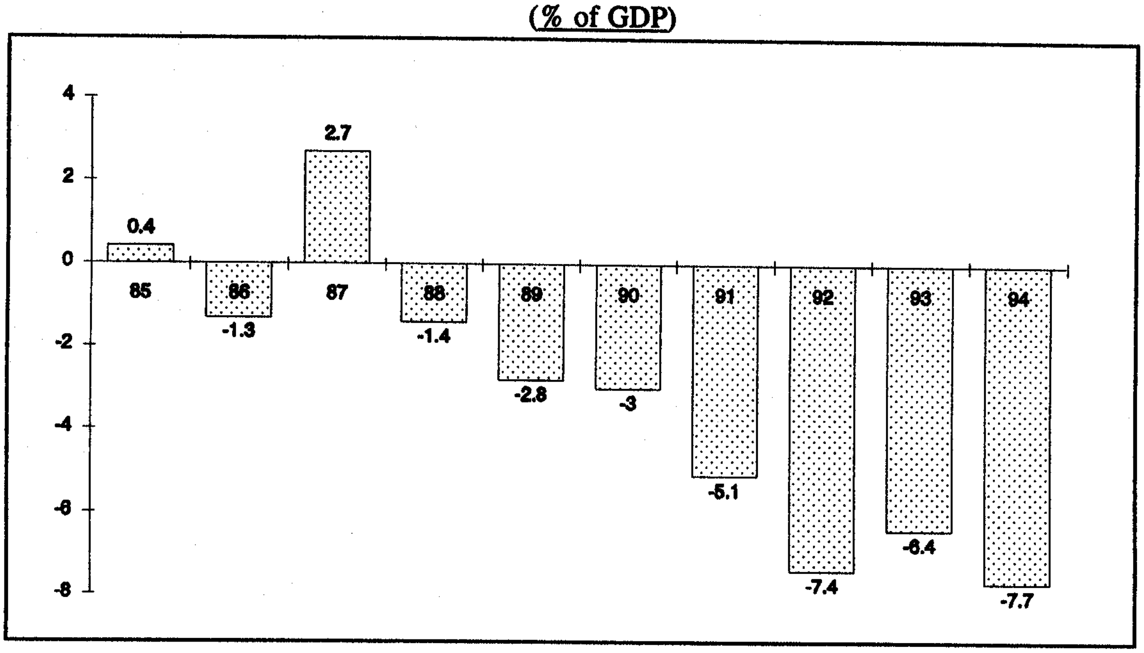
Also important during 1990-1993 was that the private sector regained access to international bank financing, with new credit flows totalling US$ 22 billion (see table 2). Two thirds of this amount represented interbank transactions, including dollar-denominated deposits to Mexican banks.

The Mexican authorities did not discourage these capital inflows. However, faced with massive inflows into short-term dollar-denominated certificates of deposit (CDs), in 1992 the monetary authorities put a cap of 10% on the share of foreign liabilities in total liabilities of banks. In addition, an amount equivalent to no less than 15% of foreign currency liabilities had to be placed in low-risk or risk-free assets (Gurría, 1995). This led to a decline of capital inflows intermediated through the banking system in 1992. After banks had adjusted their portfolios, however, capital inflows through the banks restarted, in line with the rapidly growing balance sheets of Mexican banks.

The current account deficit grew rapidly and consistently from 1988 to 1994 (see figure 2), it peaked at 7.7% of GDP in 1994. This growing disequilibrium in the current account was largely explained by the appreciation of the exchange rate. It was funded by net capital flows, which grew rapidly till 1993. As net capital flows were even larger than current account deficits till late 1993, levels of foreign exchange reserves increased even though the current account deficit was growing.

Figure 2

CURRENT ACCOUNT BALANCE
(% of GDP)

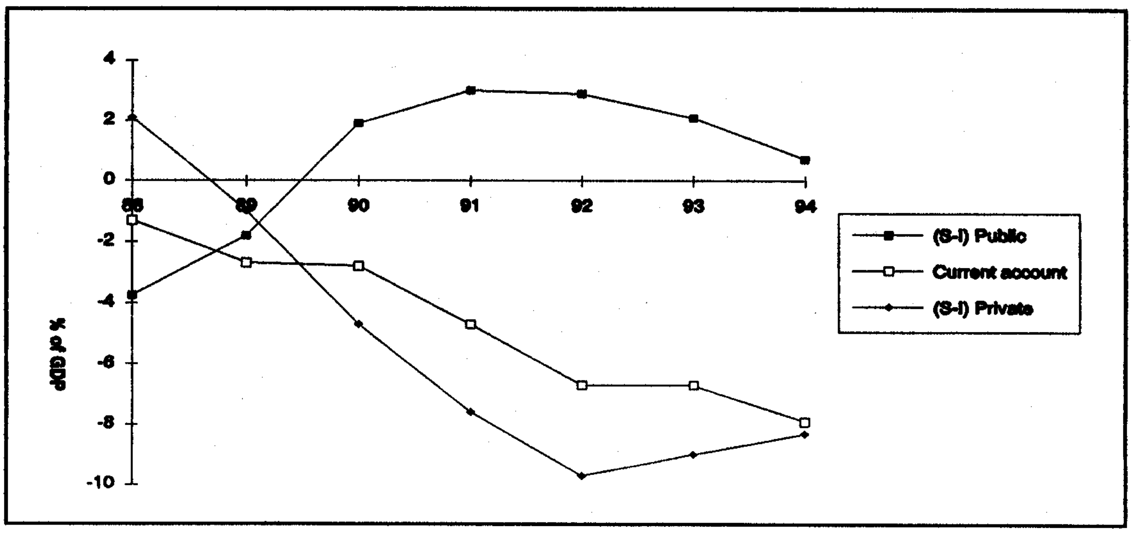


Source: Bank of Mexico.

In 1994, the current account deficit of around 8% of GDP was practically all explained by a private-sector net savings deficit, with the fiscal accounts in a small surplus (see figure 3). The determination of the current account reflected an excess of private investment over private savings; the majority of external borrowing in the 1990s (as discussed above) was done by private companies and banks. Until 1993, the public sector's net indebtedness did not increase much, as gross liabilities that were largely issued to sterilize the monetary effects of the capital inflows were matched till late 1993 by increasing foreign exchange reserves (Sachs, Velasco and Tornell, 1995). This contrasts sharply with the situation that led up to the 1982 Mexican debt crisis. In 1981, there was a similar scale of current account deficit as in 1994 (around 7% of GDP), but this was related to a fiscal deficit of around 13% of GDP and a positive net savings level of the private sector of around 6% (Villareal 1995).

Figure 3

SAVING-INVESTMENT GAP AND CURRENT ACCOUNT



Source: Bank of Mexico.

Thus, the current account deficit in the early 1990s occurred in spite of basic fiscal balance and could be practically entirely explained by dissaving by the private sector, though according to some sources the fiscal accounts did deteriorate somewhat in 1994. The fact that the counterpart of the current account deficit was not a fiscal deficit but a private one probably contributed to the benign neglect with which the Mexican authorities treated the current account deficit. (A similar situation and reaction had happened in Chile in the early 1980s and in the United Kingdom in the late 1980s, also with problematic consequences.) The obvious lesson is that it is the scale of the current account deficit that matters, and not whether it originates in deficits in the public or private sector.

Could Mexican economic policy have been conducted differently in the apparently golden years? Would this have diminished the likelihood or severity of the crisis that later occurred? Two important areas to consider are the exchange rate policy and the rate of liberalization of the financial sector and the capital account.

Exchange rate policy could have been conducted differently, as some economists suggested (Dornbusch and Werner, 1994; Leiderman, Liviatan and Thorne, 1994; Ros, 1994). The central bank could have widened the exchange rate band further or increased the daily depreciation of its ceiling to curb the appreciation of the real exchange rate. This may not have immediately changed the nominal exchange rate, but it would have increased the flexibility for future policy changes if capital flows slowed down or reversed themselves. The Mexican peso crisis was precipitated, though not caused, by a 15% movement of the band; if the band had been wider or at a more appropriate level, such an explicit shift may not have been necessary.

The economic authorities did not take such a course of action for several reasons. First, the dominant euphoria over Mexico, together with the fact that foreign exchange reserves were rising during this period lulled the authorities into a false, but somewhat understandable, sense of confidence. The entry of Mexico into NAFTA and later into the Organisation for Economic Cooperation and Development (OECD) strengthened this. Second, the Mexican authorities assumed that the problem of the growing current account deficit was relatively temporary and that the surge in capital flows was relatively permanent, or at least that it would last until the current account deficit started to improve. Both assumptions were dubious and very high risk, as several institutions and economists warned (ECLAC, 1994; Griffith-Jones, 1994). Third, the Mexican authorities gave very high priority to lowering inflation to single digit figures, and they saw the exchange rate regime —and an appreciating currency— as a very valuable tool for this purpose. However, allowing a strengthening of the real exchange rate, and therefore an increase of the current account deficit, carries the risk of a very large devaluation, which will cause a significant increase in inflation. Therefore, excessive emphasis on the use of the exchange rate to lower inflation rapidly in the short-term —with insufficient attention to maintaining a competitive exchange rate— may be undesirable even from the perspective of a sustained decline in inflation.

It was not just exchange rate policy that should have been conducted differently, important as that was. The timing and sequencing of liberalization and privatization in the financial sector and liberalization of the capital account could have incorporated more gradual changes and fewer simultaneous changes. Within four years, not only was the banking system reprivatized, but the conduct of monetary policy was changed drastically, as reserve requirements were reduced and quantitative credit controls were eliminated in the late 1980s. Calvo and Mendoza (1995) attribute the near doubling of the M2 money multiplier, from about 4.2 at the end of 1988 to 8 in December 1994, to these two changes; they further see this as a major factor in explaining the large rise in M2 in real terms which occurred since the late 1980s. After many years of nationalization, the private commercial banks had little experience and inappropriate organizational systems to adequately assess credit and other market risks, as well as monitor and collect loans. According to the IMF (1995b) the strengthening of public finances reduced public-sector demand for bank credit and implied a shift towards more risky borrowers. Lack of proper supervision and inadequate regulatory standards further contributed to a large expansion of commercial bank credit and an increase in non-performing loans. Between 1987 and 1994, commercial bank credit grew by over 100% in real terms, with credit for housing increasing by almost 1,000% and credit for consumption by over 450% (Ramírez de la O, 1995, based on Bank of Mexico data). A fairly large part of those large increases occurred before capital flows surged. No attempt at regulating or restricting such credit was made. The poor quality of some of these loans, even before the crisis, implied that the ratio of past-due loans to total loans grew from 4% in 1991 to 8% in late 1994.

At the same time that large changes were taking place within the financial sector, a rapid liberalization was taking place on the Mexican capital account, as described in section 1. Non-residents could now buy shares, government paper, etc. (In part, these changes were a response to the fact that non-residents had previously been able to get round existing restrictions, for example through secondary purchases of government securities from Mexican banks. However, the fact that the authorities chose to liberalize completely rather than reinforce restrictions on non-residents reflected the liberalization philosophy.) Regulatory changes in the United States (such as rule 144-A) and elsewhere were facilitating sales of Mexican and other Latin American shares in international markets (Griffith-Jones, 1992). The combination of all these changes facilitated and promoted the large surge in capital flows to Mexico, which to an important extent was intermediated through the banking system. This surge contributed significantly to the credit expansion to the private sector —which must play a big role in explaining the sharp decline in private net savings discussed above— and also probably contributed to the deterioration of the commercial banks' loan portfolio.

The critique here is not to the measures themselves, as they are in the long term both correct and unavoidable, but to the pace at which they were introduced. Also, compensatory measures were not adopted, for example to curb excessive capital inflows via measures such as reserve requirements, as in Chile (Ffrench-Davis, Agosin and Uthoff, 1995), and no significant efforts were made to improve bank supervision and regulation. This latter critique cannot just be addressed to the Mexican authorities. So many in the economics professions and in the international institutions encouraged speedy and simultaneous liberalization as the most efficient path towards economic growth, and praised Mexico as a model pupil of such a path. For example, the IMF in its last Staff Report for Mexico's Article IV Consultation before the crisis (issued in February 1994) praised Mexico's "considerable success in its comprehensive programme". It did not argue for change in the exchange rate policy, and it projected different scenarios for Mexico's Balance of Payments (till 1998), all of which assume high and steady capital inflows. To be fair, the report argued for the need for flexibility and pragmatism in responding to changing circumstances in financial markets, but it did not specify any more than that. However, the literature on timing and sequencing of reforms had already emphasized the need to proceed more cautiously with the liberalization of the capital account.[7]

3. February-December 1994: The clouds darken

The period starts in February 1994, a month in which the level of foreign exchange reserves peaked at US$ 29.2 billion (Bank of Mexico 1995). Reserves had grown so much in the first two months of 1994 that there reportedly was some discussion of the need to revalue the peso. Capital inflows in January and February were strong, as political uncertainties linked to the Chiapas uprising were offset by the continuing favourable impact of approval of NAFTA by the United States Congress. However, important changes in United States monetary policy, which coincided with dramatic and unexpected political developments in Mexico, significantly diminished the attractiveness of Mexico for both foreign and domestic investors.

In February 1994, the United States Federal Reserve Bank raised interest rates from 3% to 3.25%. Further rises were expected, as the United States monetary authorities were keen to slow the rapid pace

[7] Though one can criticize the role of the IMF before the crisis and the stabilization package negotiated by it with the Mexican authorities, the role played by the IMF in controlling the crisis in December 1994-January 1995 was crucial.

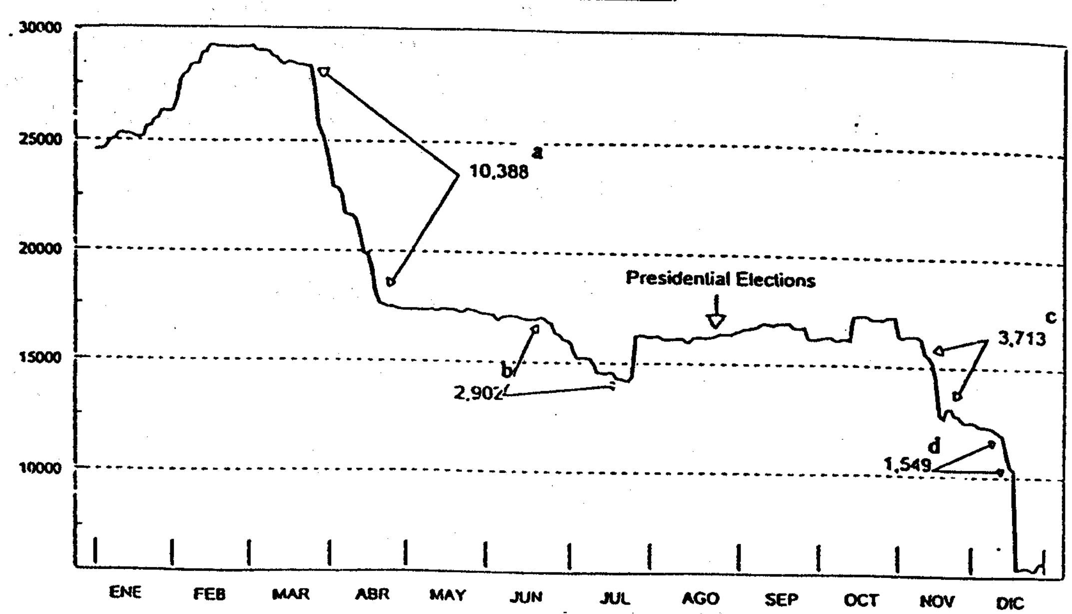
of growth of the United States economy. Indeed, United States interest rates increased six times in 1994, with yields on United States treasury bills increasing from 3% in January 1994 to 5.6% in December 1994.

The differential between United States and Mexican treasury bills narrowed in February 1994, as United States rates rose and, surprisingly, Mexican rates fell by 1% as monetary conditions were eased. The differential increased further when United States interest rates increased a second time (22 March).

However, the assassination of the presidential candidate, Luis Colosio, on 23 March seemed to precipitate more directly the large outflow of capital and a dramatic decline of foreign exchange reserves, which fell by almost US$ 11 billion between 23 March and 21 April (see also figure 4). In fact, throughout 1994, the combination of the significant increase in United States yields and the increased perception of Mexican political instability discouraged capital flowing into Mexico, and indeed caused outflows. The differential premium, compared with the differential risk (between investing in Mexico and the United States in particular), had fallen significantly.

Figure 4

STOCK OF NET INTERNATIONAL RESERVES IN 1994
(in millions of dollars)



Source: Bank of Mexico.

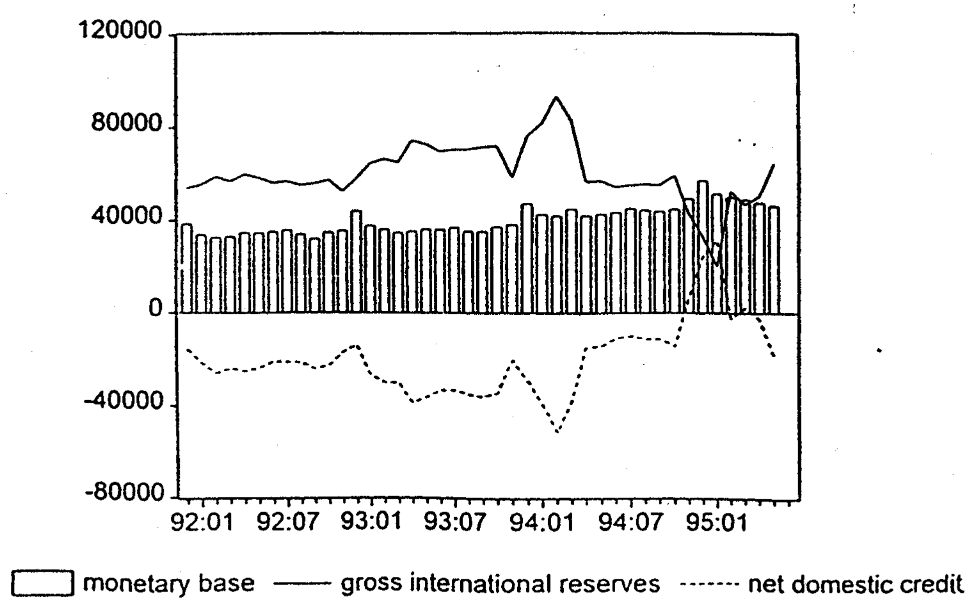
[a] Assassination of the PRI's Presidential candidate.
[b] Resignation of the Secretary of the Interior.
[c] Statements by the Deputy Attorney-General.
[d] Renewed hostility by the EZLN.

Faced with the change in perceptions by both domestic and foreign investors, the Mexican authorities could choose one of two options. The first option would have been to tighten monetary policy significantly and increase the crawl or widen the exchange rate band. The tightening of monetary policy would have started to diminish the large current account deficit (though with a lag) and, more immediately, would have increased significantly the differential premium between investing in Mexico and the United States thus making Mexico more attractive for investors. Accelerating the crawl or widening the exchange rate band would have had a positive effect on the current account, also with a lag, though its immediate effect on investors is unclear. Both measures would have dealt at a fundamental level with the decline in the willingness of foreign investors to fund the large current account, and the resulting need to increase the attractiveness of Mexico for investors and to start adjusting the economy to reduce the current account. Several observers (for example Leiderman and Thorne, 1995) believe that such a shift of both monetary policy and exchange rate policy in the first quarter of 1994 could have avoided much of the crisis. This seems a reasonable assumption, though we will never know for sure.

The Mexican authorities did not pursue this first option. Though monetary policy was tightened a bit after the Colosio assassination, and interest rates on Treasury certificates (CETES) increased from 10.1% on 23 March to 17.8% one month later, there was no further tightening of monetary policy after that, and interest rates on CETES fluctuated between 16% and 18%. Indeed, in August interest rates declined and then fluctuated in the range of 13% to 15% till late November. Instead, the Mexican monetary authorities "sterilized" the monetary impact of the outflow of foreign exchange reserves by expanding net domestic credit quite significantly. As a result, the monetary base increased, even though reserves were falling so rapidly (see figure 5). The increase in net domestic credit was particularly large following Colosio's assassination and again in the month before the December devaluation and crisis. The reason why the monetary authorities sterilized the fall in reserves was that they assumed that the sharp

Figure 5

MEXICO: CENTRAL BANK STERILIZED INTERVENTION

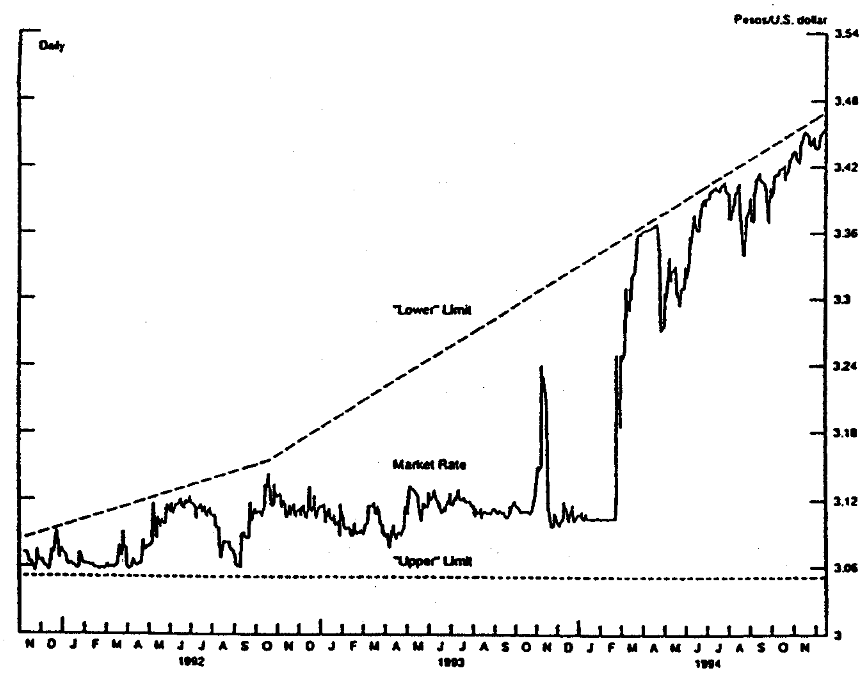


Source: Bank of Mexico.

slowdown in inflows and the existence of surges of outflows were a temporary phenomena. We now know ex post that this assumption was wrong, but even at the time the available information indicated that they were taking a fairly large risk. Additionally, the exchange rate policy was not modified, even though there was some real devaluation caused by the fact that the peso moved to very close to the limit of the band in late March, and stayed near there till December (see figure 6).

Figure 6

MEXICAN EXCHANGE RATE CHANGES WITHIN THE EXCHANGE RATE BAND, NOVEMBER 1991 THROUGH MID-DECEMBER 1994



Source: Bank of Mexico.

The policy option that the Mexican authorities implied allowing foreign exchange reserves to fall (the declines occurred in particular moments with stable levels in between (see figure 5); and allowing a major switch by non-residents from peso-denominated treasury bills (CETES) to dollar-denominated treasury bills (Tesobonos) (see table 3). The stock of Tesobonos rose from US$ 3.1 billion in March 1994 to US$ 12.6 billion in June 1994; it rose further to US$ 19.2 billion in September and US$ 29 billion in December 1994 (see figure 7). As a result, the composition of government debt held by foreigners was dramatically modified: in December 1993, 70% was in CETES and 6% in Tesobonos; by December 1994, 10% was in CETES while 87% was in Tesobonos (Lustig, 1995). Reportedly, it was institutions like the United States mutual funds which were switching from CETES to Tesobonos. Mexican capital tended, if nervous, to leave the country rather than switch to Tesobonos.

Table 3

MEXICO: NON-RESIDENT INVESTMENTS IN MEXICAN GOVERNMENT SECURITIES, 1991-1995

	CETES	Ajustabonos	Tesobonos	Bondes [a]	Total
	In billions of US dollars				
Net non-resident purchases					
1991	2.3	1.4	0.3	-0.5	3.5
1992	5.6	2.1	-0.1	0.5	8.1
1993	5.6	0.7	1.1	-0.4	7.0
1994	-11.6	-3.9	14.3	-0.9	-2.1
Non-resident holdings[b]					
January 1991	1.4	0.3	-	1.6	3.3
December 1991	3.0	1.5	-	0.7	5.2
December 1992	9.1	3.7	0.2	1.3	14.3
December 1993	15.4	4.4	1.3	0.8	21.9
December 1994	2.5	0.5	17.4	-	20.4
April 1995	3.4	0.4	10.2	0.3	14.3
	Percentage of total public holdings				
Non-resident holdings[b]					
January 1991	7.3	7.4	58.9	8.4	8.0
December 1991	21.9	15.9	78.7	4.0	13.1
December 1992	75.8	41.4	58.6	12.4	45.6
December 1993	63.1	53.4	80.3	18.7	56.6
December 1994	60.2	19.1	79.0	5.0	69.3
April 1995	60.8	17.8	90.4	15.4	68.4

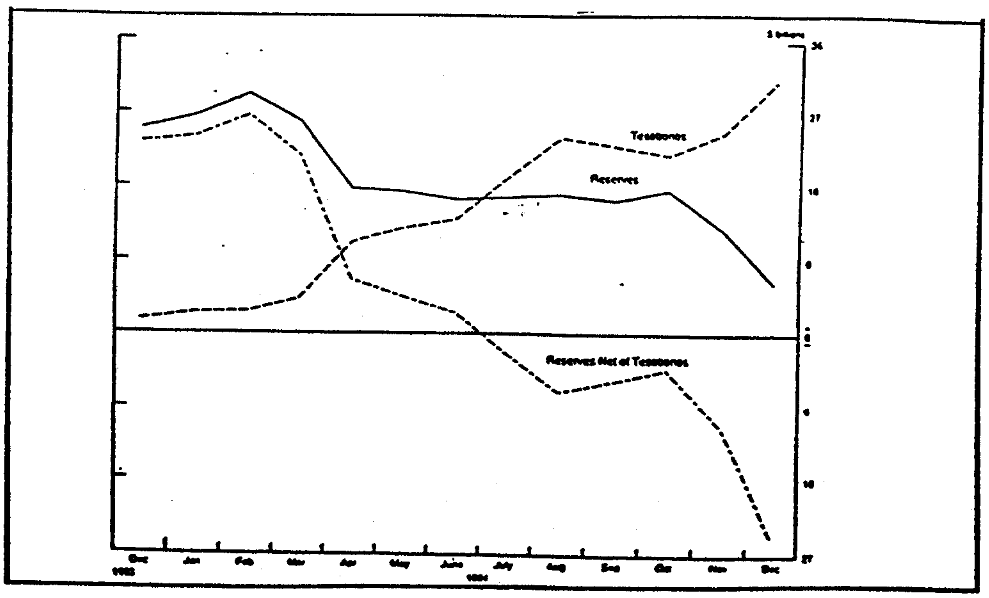
Source: Bank of Mexico, and International Monetary Fund estimates.

[a] Development bonds.

[b] Change in holdings reflects net purchases of securities, exchange rate revaluation, and the indexation features of Ajustabonos and Tesobonos.

Figure 7

MEXICAN INTERNATIONAL RESERVES AND TESOBONOS OUTSTANDING



Source: **Bank of Mexico.**

The dramatic shift reflected investors' fears that the exchange rate was not sustainable, and they were therefore willing to stay in Mexico only in dollar-denominated paper. This really meant that those investors had already left Mexico, at least halfway. The Mexican authorities persuaded them to stay in Mexico by taking over the exchange rate risk. By mid-1994 the Tesobonos were very large scale, very short term, dollar denominated and owned by increasingly nervous non-residents. When the stock of Tesobonos became higher than total foreign reserves in mid-1994, the situation became particularly delicate, especially because the paper was so short term. The fact that the debt was dollar denominated implied that the Mexican authorities could neither deflate the value of this debt in case of devaluation nor issue money to service that debt. Neither could they service the debt from foreign exchange reserves if investors refused to roll over the Tesobonos. Since mid-1994 the stock of reserves was lower than the stock of Tesobonos and the gap continued to widen (see figure 7). In December 1994 investors became aware that it was unclear whether Mexico could meet entirely its maturing short-term debt obligations (with US$ 29 billion of Tesobonos maturing in 1995 and international reserves of around US$ 10 billion). Roll over of that debt became difficult, which made a major contribution to transforming the December devaluation into a major crisis.

Another, less widely mentioned, source of financial vulnerability for Mexico was the banks' increased reliance on short-term financing such as certificates of deposit from non-residents. This short-term financing rose from US$ 19 billion in 1991 to US$ 25 billion in 1994. Though less serious than the Tesobono problem in greatly magnifying the crisis, the banks' difficulties in rolling over foreign-currency-denominated CDs and other short-term lines of external credit became an important problem for the Mexican authorities after the devaluation. It is interesting to examine how the capital account and its composition evolved (for details see table 4).

Table 4
MEXICO: QUARTERLY CAPITAL ACCOUNT, 1993-FIRST QUARTER 1995
(in millions of dollars)

	1993				1994				1995
	I	II	III	IV	I	II	III	IV	I
Capital account	7,959	7,639	6,955	7,938	7,729	-2,040	7,754	-2,576	-6,253
Official capital	4,678	367	2,648	191	2,730	-474	2,278	-4,933	-1,935
Medium- and long-term borrowing	-98	679	653	367	826	520	-189	290	-1,421
Commercial banks	-343	-607	-256	-776	-230	-280	-7	-209	-307
Multilaterals	-68	2	38	240	-102	-42	-169	147	-231
Bilaterals and suppliers[a]	-233	207	-42	74	-381	-256	-291	-4	-652
Bond placements and other	546	1,077	913	830	1,539	1,098	278	355	-232
Short-term borrowing	1,347	29	-317	4	834	154	984	200	-1,969
Exchange Stabilisation Fund	-	-	-	-	-	-	-	-	5,236
Non-resident purchase of Mexican Government treasury bills[b]	3,718	1,227	1,694	374	1,487	35	1,163	-4,627	-4,652
CETES	2,330	-205	2,175	1,304	-60	-5,509	-1,955	-4,063	933
Tesobonos	-120	-25	515	693	1,732	7,108	4,628	870	-5,578
Other	1,508	1,457	-966	-1,623	-185	-1,564	1,510	-1,434	-7
Other Government financial assets	-288	-1,567	618	-555	-417	-1,183	320	-796	872
Long-term trade lending	-119	-274	-4	115	-41	-112	92	20	69
Debt enhancements	-137	-140	-143	-146	-149	-152	-155	-159	-162
Other	-33	-1,154	764	-525	-227	-919	383	-657	965
Private capital	3,281	7,272	4,307	7,748	4,999	-1,566	5,476	2,357	-4,318
Direct investment	1,164	954	550	1,721	1,846	1,618	2,325	2,191	607
Equity investment	1,269	1,312	1,879	6,257	3,466	248	744	-369	119
Bond placements	994	1,865	1,968	1,491	1,486	74	446	55	-1,185
Banking sector	-	325	1,253	160	173	-62	-136	-158	-14
Non-bank private sector	994	1,540	715	1,331	1,313	136	582	213	-1,171
Net external credits	1,943	2,337	536	1,445	3,352	-381	-1,199	645	-1,188
Banking sector	675	2,125	298	330	1,953	-317	-1,278	823	-2.315
Non-bank private sector	1,268	212	238	1,115	1,399	-64	79	-178	1,127
Increase in assets abroad (-)	-482	528	-230	-1.625	-2,695	-632	588	-655	-1,286
Interest earnings held abroad	-204	-170	-166	-192	-199	-287	-323	-380	-407
Other	-278	698	-64	-1,434	-2,496	-345	911	-275	-879
Other, including errors and omissions	-1,605	276	-395	-1,541	-2,456	-2,493	2,572	491	-1,385

Source: Bank of Mexico; and International Monetary Fund Staff estimates.

[a] Incudes CCC.

[b] Short- and medium-term financing provided by the United States and Canada under the North American Framework Agreement (NAFTA).

[c] Excludes repayments associated with implicit interest earnings on zero coupon treasury bills, such as Tesobonos and CETES.

[d] Correspnds to implicit reinvestment of interest earnings on collateral for restructured commercial bank debts.

[e] Corresponds to assumed reinvestment of interest earnings on foreign investments.

During the second quarter of 1994 (the period which includes the Colosio assassination and rises in United States interest rates), the capital account deteriorated sharply, from US$ 7.7 billion in the first quarter of 1994 (figure slightly higher than the average for 1993) to US$ 2 billion in the second quarter. The only category that remained strong was foreign direct investment. This was more than offset by shortfalls in portfolio investments (particularly in equity but also in bonds) and by negative residents' borrowing abroad. The latter implied a decline of almost US$ 4 billion from the level in the first quarter of 1994 (see table 3). As discussed above, a record number of Tesobonos (over US$ 7 billion) were sold to non-residents during April-June; these investments were matched by redemptions of CETES and Ajustabonos so that net foreign purchases of government securities were virtually zero, compared to a quarterly average inflow of US$ 1.7 billion, during the previous year.

Capital market inflows recovered fairly strongly in the third quarter as political conditions seemed to stabilize after the presidential elections on 21 August. Foreign direct investment rose to a record level, while residents reportedly returned substantial amounts of capital after large net outflows earlier in the year. Non-residents' purchases of equities, bonds and government securities were stronger than during the second quarter, but they were sharply lower than previously. The switch from CETES and Ajustabonos to Tesobonos continued, but at a slower speed than in the first quarter. Borrowing from abroad continued to fall.

In the October-December period, capital inflows again declined drastically. In October, there were large capital inflows, mainly from repatriation of flight capital. In November, however, foreigners sold equities and government securities, with the latter falling by US$ 2 billion. December saw a further pull-back by non-residents from government securities' markets.

The Mexican authorities' response to this evolution in the capital account was to assume that the declines in capital inflows and the outflows were temporary and were due to transitory political uncertainty (Buira, 1995). Such an interpretation, though perhaps understandable, seems difficult to justify. It ignored John Williamson's (1994) rule that "negative shocks should be treated as permanent, and positive shocks as temporary". Indeed, the Mexican authorities tended to do the opposite. The key problem was that this implied a very high risk strategy, and this is the main critique of the approach adopted by the Mexican authorities.

To avoid such high risk, the Mexican authorities could have widened the band or accelerated the crawl, they should have significantly tightened monetary policy and they should have issued far, far fewer Tesobonos. Those Tesobonos that they did issue they should have tried to place for longer maturities. The average maturity of "domestic" public debt, which had risen from less than 40 days in 1985 to more than 400 days in 1992, was allowed to fall sharply. According to the IMF, by the end of 1994 almost 60% of this debt was maturing in less than 12 months. Longer maturities would have meant higher financial costs, but smaller financial vulnerability. Reportedly, the Mexican authorities did not even try to issue more long-term Tesobonos, though it is not completely sure that they would have been able to place significant amounts. Had that been the case (which seems unlikely), the preferred choice would have been not to issue so many Tesobonos! Indeed, the need to increase Tesobonos so much should have been a clear indication of the lack of credibility of the exchange rate policy, in particular, and the macro-economic stance in general.

The relatively loose monetary policy could have some political explanation —though no justification— till the August elections. A puzzle is why the monetary policy continued to be loose after the Institutional Revolutionary Party (PRI) won a clear victory. If the preference was to maintain the exchange rate policy, why was monetary policy not tightened? Reportedly one of the main reasons was the concern for the destabilizing effects of higher interest rates on a rather fragile banking system.[8] Were that the case (and of course measures can always be taken to strengthen banks, as the Mexican authorities did on a dramatic scale in 1995), the exchange rate policy could have been modified in August.

4. The massive financial crisis explodes

On 20 December, the Mexican authorities widened the intervention limit for the peso by 15%. This led to a massive outflow of funds: during 20 and 21 December, foreign exchange reserves in Mexico fell by over US$ 4 billion. Reserves fell to fairly low levels, and the peso was then allowed to float. Even though many observers had said a devaluation of around 20% was necessary, this decision precipitated an incredibly large financial and balance-of-payments crisis for Mexico, with strong ripple effects not just in Latin America, but throughout the developing world and even in some of the weaker developed economies.

Though the Mexican authorities had made mistakes in the conduct of macroeconomic policy and in the pace of liberalization and though the devaluation itself could have been both better timed and better handled, the reaction of the financial markets to the devaluation —which in itself was a correct policy move— was both absolutely brutal and quite unexpected. From practically one day to the next, the perception of Mexico by the financial markets changed dramatically from "model economy" to "traitor of foreign investors", even though the economic fundamentals had not changed and political fundamentals had not deteriorated significantly (though the situation in Chiapas had marginally deteriorated in early December 1994). A full understanding of the Mexican peso crisis cannot solely emphasize the policy mistakes of the Mexican authorities, but also needs to focus on the imperfections of international capital markets. Before exploring these in more depth, this section will analyse how the devaluation was handled, and outline briefly the impact on the balance of payments.

Having said that the initial devaluation was in many ways an appropriate response to a very large current account deficit which could no longer be financed by large capital outflows, it remains to examine problems associated with the handling of the devaluation. First, it was done too late. The widening of the band was only announced when reserves had fallen to US$ 10 billion. If it had been done earlier —either from a position of strength, for example in late February 1994 with reserves at US$ 29 billion or in mid-April when reserves fell systematically to US$ 17 billion after the murder of Colosio, or in August, when reserves had increased to US$ 16 billion from a previous low— the authorities would have been in a stronger position to defend the currency. Furthermore, there would have been little or no overhang of Tesobonos maturing, and the difference between reserves and Tesobonos would have been either positive or mildly negative (see figure 7).

Second, several mistakes were made in the way the devaluation was handled. These are called the errors of December in Mexico, where many analysts attribute great importance to the "mishandling" of the devaluation. However, the importance of this mishandling should not be exaggerated. These mistakes are far more obvious with the benefit of hindsight and with the knowledge of the dramatic scale of the crisis. Among the possible mistakes on how the widening of the band was handled are the following:

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[8] Information from personal interviews. See also Lustig (1995).

a) Perhaps most importantly the measure was announced in a bit of a policy vacuum; Mexican authorities did not simultaneously announce a broader adjustment package (which could have included, for example, tightening of monetary policy) or a programme of further privatizations. Both of these measures would have reassured investors. They did announce agreements between business and labour leaders in Mexico to restrain wage and price increases, but this was not enough to satisfy the markets;

b) The moving of the band was not linked to a loan agreement with the IMF. Such a loan agreement could have helped to reassure investors, especially foreign ones. The Mexican authorities did announce, simultaneously with the devaluation, the activation of a US$ 7 billion swap line with Canada and the United States as an important line of defence. It was only because the crisis was so big that this swap line became insufficient;

c) The devaluation was first discussed in a long meeting within the Economic Solidarity Pact (Pacto). The Pacto is a forum of representatives of the government, the business sector, workers and agricultural producers, which is used for agreeing on macroeconomic policy, including an incomes policy which covers wages, prices and the exchange rate. Though the Pacto is a valuable instrument for achieving consensus on Mexican economic policy, using such a forum to discuss a specific change in exchange rate policy in a situation of rapidly falling reserves seemed inappropriate at two levels. First, it is best practice that the Governor of the central bank takes such a decision on devaluation with the agreement only of the Minister of Finance and Public Credit, so as to avoid rumours spreading, which can destabilize financial markets. Second, in the specific case of the Mexican devaluation, there are unverified reports that some of the business representatives participating in the meetings immediately used the information of a forthcoming devaluation to buy dollars. This not only increased pressure on the peso, but also angered foreign investors, who argued that they did not have access to this inside information; reportedly, this accelerated their withdrawal of dollars;

d) The measure was implemented by a new Minister of Finance and Public Credit who had not had time, and had not devoted enough efforts, to establish close links with the foreign investor community, as had the previous Minister;

e) It was decided only to widen the band; the decision to float the peso was taken only after the band was attacked so strongly. Several analysts argue that it would have been better to have shifted immediately to a float, as the Bank of Mexico had proposed and the Pacto had rejected;

f) The decision was taken very near Christmas, when markets tend to be very thin.

The significance of the errors of December should not be overplayed, as the more structural features of the situation surely played a dominant role. Nevertheless, understanding them may offer useful lessons for other countries which in future may face similar situations.

After the 15% devaluation, and even more after the floating of the peso, investors rushed for the exit, with the incredible speed of a stampede. As mentioned above, US$ 4.5 billion of reserves were lost between 20 December and 22 December. Reportedly much of this was money belonging to Mexican residents, but the flight was increasingly joined by foreign investors, who panicked. As can be seen in table 5, for example, the dollar value of foreign investment in the Mexican Stock Exchange fell dramatically, from US$ 50 billion in November 1994 to US$ 18 billion in February 1995. However, the decline in the share of foreign investment in the Mexican Stock Exchange fell by only around 1% in that period, from 25.7% in November 1994 to 24.5%. The explanation lies in the fact that the total value of

Table 5

MEXICAN STOCK EXCHANGE (BMV), 1989-1995

Year/Month	Market Value		Foreign Investment		Share of Foreigners	IPC	
	Amount (000,000) US $	Variation	Amount (000,000) US $	Variation %	BMV%	Points	Variation
December 1989	26,562.71	-	808	-	3.04	418.93	-
December 1990	40,939.86	54.13	4079.45	404.88	9.96	628.79	50.10
December 1991	101,718.65	13.59	18,542.51	9.07	18.23	1,431.46	3.42
December 1992	138,749.07	4.68	28,668.00	3.66	20.66	1,759.44	2.55
December 1993	200,613.34	18.70	54,623.05	26.97	27.23	2,602.63	17.46
January 1994	215,383.00	7.36	60,924.55	11.52	28.29	2,781.37	6.87
February 1994	202,646.12	(5.91)	56,166.82	(7.81)	27.72	2,585.44	(7.04)
March 1994	186,301.92	(8.07)	50,296.03	(10.45)	27.00	2,410.38	(6.77)
April 1994	181,114.11	(2.78)	48,328.32	(3.91)	26.68	2,294.10	(4.82)
May 1994	188,229.96	3.93	51,032.43	7.17	27.52	2,483.73	8.27
June 1994	174,633.22	(7.22)	46,445.26	(10.32)	26.60	2,262.58	(8.90)
July 1994	184,371.77	5.58	51,032.43	9.88	27.68	2,462.27	8.83
August 1994	202,574.72	9.87	55,394.16	8.55	27.35	2,702.73	9.77
September 1994	204,480.98	0.94	55,913.07	0.94	27.34	2,746.11	1.61
October 1994	195,429.07	(4.43)	50,747.94	(9.24)	25.97	2,552.08	(7.07)
November 1994	195,838.05	0.21	50,393.06	(0.70)	25.73	2,591.34	1.54
December 1994	129,850.36	(33.70)	34,395.16	(31.75)	26.49	2,375.66	(8.32)
January 1995	88,124.25	(32.13	22,973.06	(33.21)	26.07	2,093.98	(11.86)
February 1995	77,300.67	(12.28)	18,946.20	(17.53)	24.51	1,549.84	(25.99)
March 1995	74,349.02	(3.82)	19,935.00	5.22	26.81	1,832.83	18.26
April 1995	90,499.83	21.72	23,125.15	16.00	25.55	1,960.554	6.97
May 1995	82,747.61	(8.57)	21,952.44	(5.07)	26.53	1,945.13	(0.79)
June 1995	93,471.87	12.96	23,844.27	8.62	25.51	2,196.08	12.90
July 1995	106,265.19	13.69	26,826.11	12.51	25.24	2,375.17	8.15
August 1995	106,508.83	0.23	27,179.39	1.32	25.52	2,516.99	5.97
September 1995	100,885.73	13.69	25,165.44	(7.41)	24.94	2,392.26	(4.96)

Source: Bolsa Mexicana de Valores, Dirección de Información y Estadística. I thank Mr. Víctor Rojas for providing this information.

the Mexican Stock Exchange fell sharply in dollar terms, mainly because of the falling peso, but also because of some decline in prices of stocks.

The main impact of capital flows on the crisis was via the Tesobonos. Initially, both foreign and domestic investors, actually increased their holdings of Tesobonos after the devaluation. Foreign holdings of Tesobonos, which amounted to US$ 16.1 billion on the day before the first devaluation, peaked at US$ 17 billion on 27 December, mainly reflecting a further shift from peso-denominated CETES. Holdings of Tesobonos by non-bank residents also rose, from US$ 3.9 billion to a peak of US$ 5.1 billion on 23 December.

As the crisis continued, investors (especially foreign ones, who held the majority of Tesobonos) became increasingly concerned about the amount of Tesobonos that would mature in the first few months of 1995. There was suddenly strong focus on the fact that a total of US$ 9.9 billion was expected to mature in the first quarter, while foreign exchange reserves had fallen to US$ 6.3 billion at the end of December 1994. Panic spread that the Mexican government could perhaps default on its obligations. Three weekly auctions of Tesobonos starting on 27 December 1994 were well short of the amount of Tesobonos offered. Bid-cover ratios (proportion of amount bid to amount offered) bottomed at a disastrous 5% on 27 December 1994, when US$ 600 million in Tesobonos were offered and bids for only US$ 28 million were received! Though demand for CETES was a bit higher, bids at several CETES auctions also fell short of the amount offered.

The unwillingness of mainly foreign investors to buy Tesobonos greatly accentuated the crisis, as their fears became potentially self-fulfilling. It was only the massive United States Treasury-IMF package agreed in late January 1995 that stopped the risk of a potential default.

In any case, the total of investment in all Mexican government securities (including Tesobonos, CETES, Ajustabonos and development bonds) fell from US$ 21 billion in December 1994 to US$ 14 billion in April 1995 to US$ 7 billion in September 1995; this decline was almost totally explained by the sharp fall in foreign investors' holdings of Tesobonos, which fell from their peak of US$ 17.8 billion in December 1994 to US$ 1.8 billion in late September 1995.[9]

Another source of potential vulnerability is hardly mentioned in the literature, but it played an important role in the crisis, though a smaller one than the Tesobonos. In January 1995 Mexican banks faced severe dollar-liquidity problems stemming from difficulties in rolling over foreign-currency-denominated CDs and other short-term lines of external credit, due to the higher country risk perceived by foreign lenders. The problem was accentuated by the fact that many of these loans were using Tesobonos as collateral. To ease the difficulty, the Bank of Mexico had to provide a special window for collateralized dollar loans for banks. Total drawings of this facility peaked at US$ 3.6 billion in April 1995 and declined afterwards.

During the first quarter of 1995, the weakness of capital flows intensified and became generalized to different categories. We have already discussed the problems of renewing Tesobonos (which the Mexican authorities tried to stop selling mid-February 1995) and the difficulties commercial banks had renewing credits and interbank liabilities. State agencies and companies also faced difficulties in rolling over short-term lines of credit, and the non-bank private sector faced bond payments that could not be

[9] See table 3 and data prepared by Bolsa Mexicana de Valores.

rolled over (see table 4). During the first quarter of 1995, net capital outflows totalled US$ 11.5 billion (excluding the special loans via IMF and United States Treasury, as part of the massive rescue package for Mexico), compared to an average quarterly inflow of US$ 7.6 billion during 1993 and an average quarterly inflow of around US$ 2.5 billion in 1994.

As discussed at some length in section 1, the speed and scale of the response of international capital markets to the December devaluation cannot fully be explained by a sharp deterioration of economic or political fundamentals —as this did not occur in December 1994— or by the increase in financial vulnerability (e.g., Tesobono-to-reserves ratio). Rather, certain imperfections in international capital markets made them overreact to the devaluation.

Kindleberger (1978) has developed an approach which considers financial crises as a response to previous excesses linked to euphoria. In the case of Mexico, the euphoria was linked to the country's status as a model reformer, as well as its access to NAFTA and OECD. As in Kindleberger's model, monetary and credit policy in Mexico played a role in exacerbating the boom, but dramatic changes in perceptions also conditioned behaviour. Even had optimal policies been followed, there could still have been a problem linked to perceptions, first excessively rosy and then excessively black.

Kindleberger (1978) also uses both theoretical analysis and historical experience to show that in a crisis or panic, credit may become unavailable at any price, which happened in Mexico in late December 1994 and early 1995. In such circumstances, markets are cleared by rationing; indeed, when panic is severe, as occurred in Mexico, obtaining funds via borrowing or other mechanisms may become impossible.

Shafer (1986) further develops relevant theoretical analysis of financial crises by emphasizing the role of uncertainty. The role of uncertainty is particularly great in a context of financial innovation, when behaviour of new instruments or mechanisms is not well tested and when such new instruments are not well regulated. In Mexico, instruments such as emerging markets' mutual funds were both fairly new and not appropriately regulated. Theory shows that in a context of uncertainty, negative surprises can provoke shifts of confidence which affect markets more than appears warranted by the intrinsic significance of the event. As discussed in section 1, this effect is reinforced by the fact that investors now have very diversified international opportunities. The relatively high cost of in-depth information on countries may make it rational for investors to react very negatively to small bad news, even if that news is not related to any important change in economic fundamentals. As a result, in December 1994 a relatively small devaluation and a very small deterioration in the political situation in Chiapas led to a major speculative attack on the Mexican peso. This experience leads to the conclusion that investment behaviour in such an internationalized global economy can have highly problematic effects on individual countries. Small news or even rumours can provoke massive capital outflows, both because international diversification encourages ignorance and because the development of new, not properly regulated, investment instruments encourages volatility.

The effects of uncertainty are magnified by herding behaviour, or band-wagon effects. In international capital markets herding is strongly related to fund managers' incentive structure. Individual fund managers have strong incentives to follow other fund managers, as their performance is always assessed at very short intervals according to how it compares with an average or benchmark index. This pushes fund managers to follow others, in both the inflow and outflow stages.

In the case of specific instruments, there were special reasons for rapid withdrawal.For example, as the result of the Mexican devaluation, two causes pushed emerging-market mutual funds to pull out of Mexico. First, the funds either got smaller because of redemptions or were expected to get smaller because of likely future redemptions. Second and more importantly, the share which the smaller fund wished to hold in Mexican paper also fell. Some mutual funds operate almost like banks, guaranteeing, at a minimum, to return 100% of the initial deposit to their investors. As a result, they need to avoid important losses and/or volatile markets. These types of funds pulled out of Mexico very quickly as the crisis started.

Finally, disaster myopia reportedly played a big role in investors' behaviour. This disaster myopia can be explained by both psychological and institutional mechanisms. The psychological elements include what Guttentag and Herring (1984) call cognitive dissonance, which appears when new information becomes available which suggests that there is serious risk. In an attempt to justify previous decisions —and their own self-esteem— decision-makers in the market may either ignore or reject the information. This could help explain why lenders and investors in Mexico ignored negative information about the country's deteriorating current account. Psychological biases can be reinforced by institutional factors, such as the brief periods during which the performance of loan officers or investment managers is evaluated for purposes such as salary bonuses. There is also a possible asymmetry between results for managers and loan officers, who get salary bonuses in times of extraordinary profit, and shareholders and investors, who have to shoulder possible losses.

The unjustified faith that there would be no devaluation helps explain the overreaction to the devaluation, when it did occur. Such disaster myopia and subsequent overreaction seems to have been accentuated by the sheer inexperience and youth of many of the people both analysing and deciding on investment in Mexico and Latin America in the early 1990s; the fact that many would not have been adults when the 1982 debt crisis occurred may have implied that they had little knowledge of the region's history of capital flows and Balance of Payments crises (Galant, 1995).

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