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Causes and Lessons of the Mexican Peso Crisis

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ABSTRACT

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

In the analysis of the causes of the grave Mexican peso crisis, consensus is emerging around some of them. These include the large scale of the current account deficit, as well as the fact that a large part of it was funded by relatively short-term capital inflows. They also include the fact that a somewhat overvalued exchange rate was welcomed by a government strongly committed to rapid inflation reduction. The causes include the fact that such a high proportion of government debt paper was so short-term, such a high proportion of it was in the hands of non-residents and that - 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 have been either neglected or insufficiently emphasised in the literature. The first is that the process of liberalisation in Mexico, both of the financial sector and of the capital account, was perhaps too rapid and that too many changes were made simultaneously. Secondly, the severity of the Mexican peso crisis can partly be explained by imperfections in international capital markets, which can lead to huge over-reactions to relatively small changes in countries' economic fundamentals. The paper analyses, both from a theoretical and empirical perspective, the nature of imperfections in international capital markets.

I 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, its large scale and its international consequences. To what extent was the Mexican peso crisis different from previous crisis, and therefore should be characterised, as the IMF Managing Director had done (Camdessus, 1995a), as 'the first major crisis of the 21st century'? What are the main elements which make this crisis different, and what are the elements of continuity with previous crises, suffered both by Mexico and by other countries?

A precise answer to these questions is very crucial, both so as to help avoid' Mexico-style' crises occurring again and to ensure that management of such crises can be improved, so as to reduce the tremendous costs which the Mexican crisis has implied. This analysis is based on the assumption that the Mexican peso crisis (though it had special features) was not unique, and that there is therefore the risk that 'Mexico-style' crisis could be repeated.

In the analysis of the causes of the Mexican peso crisis - and of its depth - consensus is emerging around a variety of factors. These include the large scale of the current account deficit, which had reached almost 8% of 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. They also include the Mexican authorities' commitment to a relatively fixed (in nominal terms) exchange rate, and the fact that a somewhat over-valued exchange rate was welcomed by a government strongly committed to reducing inflation very rapidly. They also include the rather lax monetary policy pursued in 1994, as reserves fell sharply. The causes include the fact that such a high proportion of government debt paper was so short-term, such a high proportion of it was in the hands of non-residents and that - during 1994 - the government had allowed the transformation of a large part of its government debt into dollar-denominated paper. Also, amongst the causes stressed - particularly by Mexican economists - is the 'mishandling' of the devaluation, the so-called 'errors of December'. Last but not least, unexpected extra-economic (political) events, are seen to have played an important part in causing the crisis. The latter factor is particularly highlighted by the Banco de Mexico (Buira, 1996; Gil Diaz and Carstens, 1996: Banco de Mexico 1995). Indeed, the Banco de Mexico argues that 'the crisis was fundamentally the outcome of a series of unpredictable political and criminal events'. (Buira, op. cit.)[1]

Though all these causes clearly provide a very important part of the explanation of the peso crisis - and of its severity - it would seem that another sets of factors, which were also important, have either been neglected or not sufficiently emphasised in the growing literature on the Mexican crisis. Firstly, it could be argued that the process of liberalisation which had occurred in Mexico in the early 1990's in the financial sector and in the capital account, was perhaps too rapid and -above all - that too many changes occurred at the same time for the economic system to adjust appropriately to so many large changes simultaneously, as well as cope with a large surge of capital inflows. Thus, it could be argued that the Mexican capital account should have been liberalised slower and/or more controls and/or taxes introduced to discourage short-term capital inflows when these surged. In this sense, it is noteworthy that both the IMF (1995a) and the BIS (1995) have recently explicitly recognised that - though having some limitations - measures taken by recipient governments to discourage short-term capital flows may - when combined with other policies that lead to sound macro-economic fundamentals - play a positive role in managing effectively capital flows and thus reducing the likelihood of a costly financial crisis. Calvo and Goldstein (1995) even imply that measures such as controls/taxes on short-term capital inflows should become part of a revised 'Washington consensus'.

One particular aspect of the rapid liberalisation of the capital account which particularly with the benefit of hindsight, was - or became - problematic was that non-residents were allowed in late 1990 - without any restrictions - to buy Mexican government paper, whereas previously they were not allowed to do so.[2] This was part of a broader liberalisation, whereby foreigners were allowed to purchase bonds and money market instruments, as well as shares.

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[1] The Banco de Mexico thesis goes further and argues that monetary (and other) policy, even in 1994, was correct, on the basis of the evidence available at the time. As will be seen below, this paper disagrees clearly on this aspect of the Banco de Mexico interpretation, though it recognises the difficulty of policy-making in changing and uncertain circumstances. Nor does this paper accept that the political and criminal events, important as they were in explaining the crisis, were the determinant explanatory factor.

[2] Interview material. See, also, Ffrench-Davis and Agosin (1995).

The process of rapid liberalisation of the capital account coincided with a process of re-privatisation of the banks. Furthermore, it 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.[3] As a result, an important constraint on credit expansion by the banks was lifted, at the same time as the banking system was re-privatised. The changes in the conduct of monetary and credit policy, accompanied by re-privatisation of banks (which implied many bankers were not experienced in evaluating credit and market risks) was not accompanied by sufficient efforts at improvement of bank supervision and regulation; in any case, improvements in bank supervision tend 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 pretty sophisticated supervisory skills, which take a fairly long time to develop. Thus, in Mexico, in a context of relatively weak bank supervision and regulation, rapid reduction of reserve requirements, and recent bank privatisation, the stage was set for a large expansion of credit, including a large growth of consumer credit. Indeed, even though consumer credit was growing so 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.[4]

It is interesting that similar patterns, of very rapid de-regulation of the financial sector and the capital account, accompanied by expansionary impulses on macro-economic management, leading to financial crisis, have occurred also in other countries, including developed ones. Indeed, a recent IMF study (Drees and Pazarbasioglu, 1995) highlights such links - for the Nordic countries - showing for example how the elimination of both controls on lending and exchange restrictions triggered an important increase in lending to borrowers, who had previously been credit-rationed, which implied a surge of lending to them, particularly as banks noticeably increased their risk taking. Like 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.

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

[4] Interview material.

Another set of factors which contribute to explain the severity of the Mexican peso crisis, but which are not sufficiently stressed in the literature,[5] is that international capital markets, though generally efficient, do have some imperfections, and that these imperfections may lead them to over-invest or over-lend in certain markets; however, once the excessive nature of the over-investment is perceived, there can be a huge *over-reaction*, with flows not only declining sharply but even becoming strongly negative.

There would seem to be four main elements in explaining this 'boom-bust' behaviour in modern capital markets. Firstly, over-optimism followed by over-pessimism is explained partly by fund managers' behaviour, linked to their incentive structure.[6] Thus, 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 wrong, this will not be so serious, as the market is less likely to punish his/her institution, and indeed, there may be a bailout to help deal with this 'collective mistake'. This behaviour leads to 'band-wagon' effects or 'herd behaviour'.

Secondly, and this contributes mainly to explain the rapid withdrawal of funds out of Mexico, after the initial devaluation of 15%, it can be argued that in a highly diversified world capital market, where in-depth information is expensive to obtain, it may be rational for investors to react to even 'small news'. As a consequence, as Calvo and Mendoza, op. cit. 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 can be explained by 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. Indeed, as the number of countries in which to invest increases, the marginal benefit from information gathering falls. As a result of these trends, 'herding' is exacerbated by an increase in responsiveness by investors to 'market' rumours or news, rather than to in-depth analysis of fundamentals.

Thirdly, and this contributes mainly to explain the rapid inflow by foreign portfolio investors into Mexico in 1991 to 1993, there seemed to exist a

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

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

conflict of interest shown between the role of investment bankers as advisors (for example to US mutual funds, which themselves had small research departments and therefore relied on advice from investment bankers) and the fact that these investment banks had their own assets in the country, whose value they wanted to protect.

Also, most institutions were on the 'sale side'; even when they were apparently providing independent advice, institutions like mutual funds were basically trying to market their products, to obtain commissions.[7] For this purpose, they highlighted high yields, and down played the risks. Indeed, even when information provided by the Mexican authorities was somewhat incomplete, and there were reasons to believe that the situation could be deteriorating, (e.g. in the second half of 1994), analysts chose to ignore the lack of information.[8]

A fourth element relates directly to theory of financial markets, and to its concept of 'disaster myopia' (Guttentag and Herring, 1984). Indeed, the *Institutional Investor* article op. cit., highlights how 'observers displayed a basic inability to envision complete calamity'. It quotes amongst other David Lubin, an economist at HSBC, London, as saying '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.' Indeed, during the first period, of over-investing, rationing constraints are excessively loosened; this implies that investors' perceptions of risk can deviate from reality. Furthermore, competition can imply that, as prudent lenders or investors are driven from the market they are replaced by those willing to accept what is seen as a low probability danger. These trends can be explained 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.

We will follow a relatively chronological order. We will first (in section II) examine the apparently golden period, of the early 1990's till March 1994 but point to the clouds which were already gathering, and the policy options available. In section III, we will analyse the period March 1994 to 20 December 1994, again emphasising policy options. Section IV will focus on the devaluation, (analysing possible errors in its handling), and

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[7] Interview material. See, also, *Emerging Markets Investor*, (1995) and *Institutional Investor*, (1995).

[8] Interview material.

the resulting crisis, as well as returning to the issue of capital market imperfections.

II THE APPARENTLY GOLDEN YEARS, 1988 TO EARLY 1994

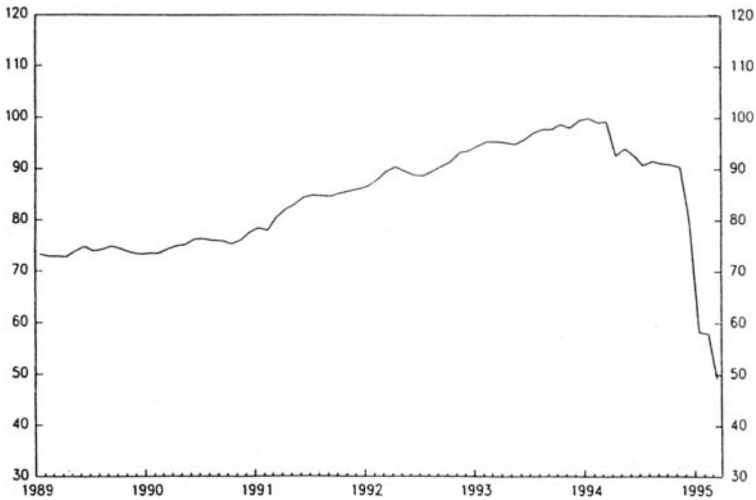
In the aftermath of the Mexican peso crisis, when so much analysis of the Mexican economy is so gloomy, it is important to stress that between 1988 and 1993, Mexico not only had many important achievements, but was above all widely praised internationally as a major 'success story' of the process of economic reforms and macro-economic stabilisation.

Indeed, 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 macro-economic 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 privatisation and trade liberalisation. The liberalisation of the financial sector and of the capital account discussed above were thus part of a broader policy thrust. The implementation of NAFTA was seen as a culmination of the reform process, as a prize to the successful reformer and as providing an 'external lock' on the reform process.

Certain macro-economic variables followed an exemplary evolution. Thus, 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 occurs often with such a policy, a nominal exchange rate-based stabilisation results in a real appreciation of the local currency, as it takes time for the differential between domestic and foreign inflation to fall. As can be seen in Chart 1, 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 (which later had its boundaries widened) (Lustig, 1995). The real exchange rate appreciation was exacerbated by the large capital inflows which Mexico received in the early 1990's, which led to a 'financial Dutch disease' type of phenomena. These capital flows had two important features. Firstly, they were very high, both in absolute amounts and as proportion of GDP (Devlin, Ffrench-Davis and Griffith-Jones, 1995). Secondly, as can be seen in Table 1, an extremely high proportion of the capital flowing into Mexico (compared not only both with Asian countries but also with other Latin American developing countries) came as portfolio investment; it reached 67% of total inflows for 1990-93. As experience later showed, but as was somewhat predictable, portfolio flows are potentially more volatile, and more prone to reversals (particularly if such a high proportion of the portfolio inflows was into very short-term government paper).

CHART 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.

TABLE 1: COMPOSITION (%) OF MEXICAN AND OTHER COUNTRIES' CAPITAL INFLOWS, 1990-93

	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.

During 1990-93, capital inflows were dominated by flows to the private sector, which benefited from the internationalisation of Mexican capital markets, particularly in respect of equity and bonds, which provided inflows of US$12 billion and US$24 billion respectively (see Table 2). Until the late 1980's, foreign equity participation in Mexican companies was restricted. At the end of 1989, non-residents accounted for just 6% of Mexico's equity market capitalisation. Foreign participation rose rapidly in the wake of the Stock Market Law of December 1989, which liberalised access to foreign investors. As a result of this (and other factors) net foreign purchases of Mexican equities - which had been less than US$1 billion annually until 1989 - reached a total of US$28 billion during 1990-93. By the end of 1993, non-resident investors accounted for 27% of the capitalisation of the Mexican market, a figure which remained broadly unchanged through 1994.

Mexico returned to the international bond market in 1990, and placements rose over the following three years; during 1990-93, placements totalled US$24 billion. Initially, Mexico's access to these markets depended on the provision of enhancements or high yield spreads. However, as Mexico's credit ratings improved, the need for enhancements and wide yield spreads diminished. By this point, Mexico was regarded as 'a benchmark bond issuer'. Indeed, Mexico was one of the few former highly indebted countries to receive just below investment grade ratings from major US credit-rating agencies; interestingly, Mexico's rating was not down-graded 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 1980's, 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 1991-93, (see again Table 2). During this period, non-residents absorbed virtually all of the net increase in government securities. It is paradoxical that an important part of the issue of government securities was in those years *not linked to financing fiscal deficits*, but was issued largely as part of the monetary sterilisation of capital inflows, and that government paper led to new inflows.[9] The share of government securities held by foreigners during 1990-93 rose from 8% at the end of 1990 to 57% at the end of 1993. It is noteworthy that foreign investors held a larger proportion of short-maturity bills (1-12 months CETES) and a smaller proportion of longer-maturity notes (1 and 2 years bonds) than did residents; as a consequence, the average maturity of non-resident holdings at the end of 1993 was estimated at 280 days, compared to 350 days for residents holdings.[10]

Also important during 1990-93 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 inter-bank transactions, including dollar denominated deposits, for example CDs, to Mexican banks.

On the whole, the Mexican authorities did not discourage these capital inflows. However, faced with massive inflows into short-term dollar denominated certificates of deposit, 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 (Gurria, 1995). Initially, this led to a decline (in 1992) of capital inflows intermediated through the banking system. However, after banks had adjusted their portfolios, capital inflows through the banks re-started, in line with the rapidly growing balance sheets of Mexican banks.

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9 I thank Ricardo Hausman for this point.

10 Interview material.

TABLE 2: MEXICO: SUMMARY CAPITAL ACCOUNTS, 1988-94

	1988	1989	1990	1991	1992	1993	Prel. 1994
			In millions of US dollars				
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 and 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*

Sources: Bank of Mexico; and Fund staff estimates.

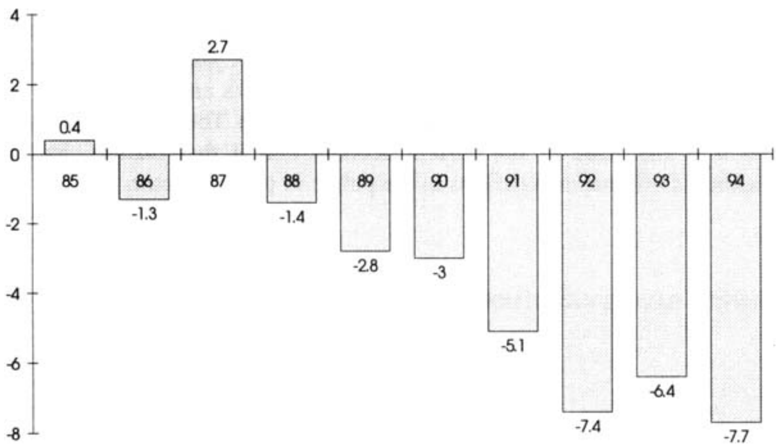
a) Excludes repayments associated with implicit interest earnings on zero coupon treasury bills, such as Tesobonos and CETES.

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.

A rapidly and consistently growing current account deficit since 1988 (see Chart 2) peaked at 7.7% of GDP in 1994. To an important extent, this growing disequilibrium in the current account was explained by the appreciation of the exchange rate. It was funded by the rapidly growing - till 1993 - net capital flows. Indeed, 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.

CHART 2: CURRENT ACCOUNT BALANCE (% OF GDP)



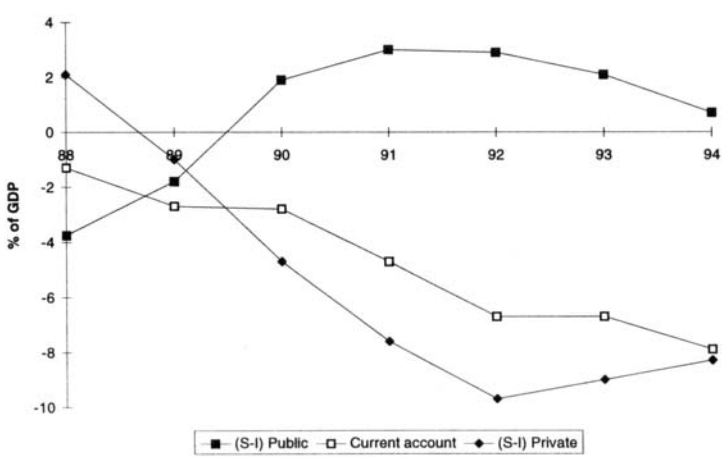
Source: Banco de Mexico

An important point to mention is the extent to which the current account deficit was explained by private or public deficits.

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 Chart 3). The determination of the current account reflected an excess of private investment over private savings; the majority of external borrowing in the 1990's 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 sterilise the monetary effects of the capital inflows were matched till late 1993 by increasing foreign exchange reserves (Sachs, Velasco, Tornell, 1995). There is here a sharp contrast 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 (of 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).

Thus, the current account deficit in the early 1990's occurred in spite of basic fiscal balance (though according to some sources there was some deterioration in the fiscal accounts in 1994), and could practically entirely be explained by dissaving by the private sector. 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 1980's and in the UK in the late 1980's, also with problematic consequences.) The obvious lesson is that it is the scale of the current account deficit that matters, and not whether is originates in deficits in the public or private sector.

CHART 3: SAVING-INVESTMENT GAP AND CURRENT ACCOUNT



The key question is whether in the apparent golden years, Mexican economic policy could have been conducted differently, and whether this would have diminished the likelihood (and/or severity) of the crisis that later occurred. It should be mentioned in this context that there was a group of Mexican economists who repeatedly warned of the danger of exchange rate appreciation and growing current account deficit. Because of generalised euphoria (both in Mexico and abroad), their views had little impact on Mexican policy.

Firstly, exchange rate policy could have been conducted differently, as some economists both in Mexico and internationally suggested (Dornbusch and Werner, 1994; Leiderman, Liviatan and Thorne, 1994; Ros, 1994). The Central Bank could have widened the exchange rate band further and/or increased the daily depreciation of its ceiling in order to curb the appreciation of the real exchange rate. Even though this may not have immediately changed the nominal exchange rate, it would have increased the flexibility for future policy changes if capital flows slowed down or reversed themselves. Indeed, it is worth stressing that 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.

Why did the economic authorities not take such a course of action? First, the dominant euphoria over Mexico - and 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 strengthened this. Secondly, the Mexican authorities assumed that the problem of the growing current account deficit was relatively temporary, while the surge in capital flows was relatively permanent, or at least 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). Thirdly, the Mexican authorities gave very high priority to lowering inflation to single digit figures, and saw the exchange rate regime - and an appreciating currency - as a very valuable tool for this purpose. Another of the paradoxes of using the exchange rate mainly as a tool for inflation lowering is that - by allowing a strengthening of the real exchange rate, and therefore an increase of the current account deficit - the country risks the possibility of a very large devaluation, which will then imply a significant increase in inflation. Therefore, excessive emphasis on the use of the exchange rate to lower rapidly inflation in the short-term - and insufficient attention to maintaining a competitive exchange rate - may be undesirable even from the perspective of a sustained decline in inflation.

However, not only exchange rate policy should have been conducted differently, important as that was. As argued above, the timing and sequencing of liberalisation and privatisation in the financial sector and liberalisation of the capital account could have implied more gradual changes, and less simultaneous changes. Within four years, not only was the banking system re-privatised, but the conduct of monetary policy was changed drastically, as reserve requirements had been reduced, and quantitative credit controls were eliminated in the late 1980's. Calvo and Mendoza, op. cit. attribute the near doubling of the M_2 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 M_2 (in real terms) which occurred since the late 1980's. The private commercial banks - after many years of nationalisation - had little experience and inappropriate organisational 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 (which reduced public sector demand for bank credit) implied a shift towards more risky borrowers. Combined with lack of proper supervision and inadequate regulatory standards, this contributed both to a large expansion of commercial bank credit *and* to 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 1000% and credit for consumption by over 450% (Ramirez de la O, 1995, based on Banco de Mexico data), with a fairly large part of those large increases occurring 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 liberalisation was taking place on the Mexican capital account. This implied that non-residents could 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 liberalise completely rather than reinforce restrictions on non-residents reflected the liberalisation philosophy.) Furthermore, regulatory changes in the US (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. This surge - to an important extent intermediated through the banking system - had 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).

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, particularly with the benefit of hindsight, it seems worth asking why compensatory measures were not adopted, for example to curb excessive capital inflows via measures such as reserve requirements á la Chile (Ffrench-Davis et al., 1995); also why greater efforts to improve bank supervision and regulation were not made?

This latter critique cannot just be of the Mexican authorities, as so many in the economics professions - and in the international institutions - encouraged speedy and simultaneous liberalisation as the most efficient path towards economic growth, and praised Mexico as a model pupil of such a path. It is thus interesting that 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, it argued for the need for flexibility and pragmatism in responding to changing circumstances in financial markets, but did not specify any more than that. However, it should be stressed that the literature on timing and sequencing of reforms had already emphasised the need to proceed more cautiously - and last - with the liberalisation of the capital account.

III 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 (Banco de Mexico, 1995). As reserves had grown so much in the first two months of 1994, there reportedly was some discussion of the need to revalue the peso.[11] Capital

[11] Interview material.

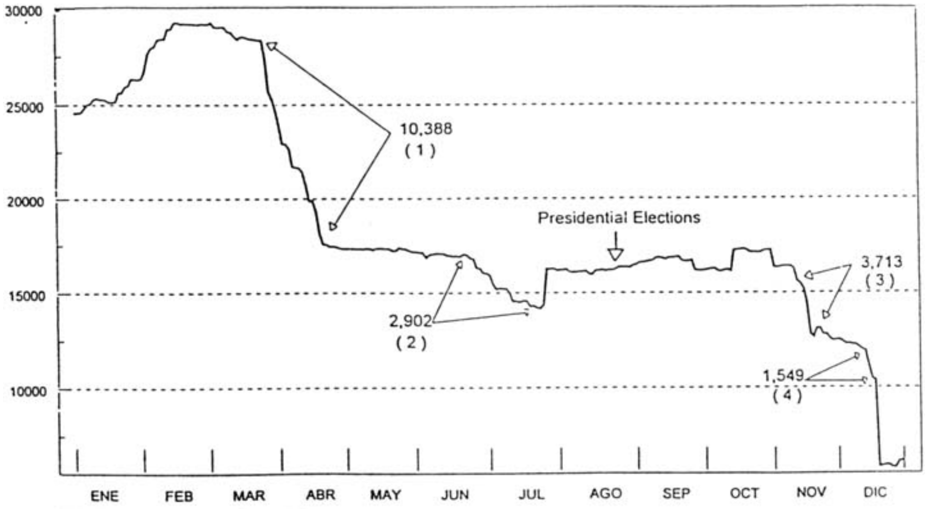
inflows in January and February were strong as political uncertainties linked to the Chiapas uprising were offset by the continuing favourable impact of approval of NAFTA by the US Congress.

However, important changes in US monetary policy, which coincided with dramatic and unexpected political developments in Mexico, significantly diminished the attractiveness of Mexico both for foreign and domestic investors. In February 1994, the US Federal Reserve decided to raise interest rates, from 3% to 3.25%. Further rises were expected, as the US monetary authorities were keen to slow the rapid pace of growth of the US economy. Indeed, throughout 1994, US interest rates increased six times, with yields on US Treasury Bills increasing from 3% in January 1994 to 5.6% in December 1994. The differential between US and Mexican Treasury bills narrowed in February 1994, as US rates rose and - surprisingly - Mexican rates fell by 1% as monetary conditions were eased. The differential increased further, when US interest rates increased a second time (22 March).

It was however the assassination of the presidential candidate, Luis Colosio, on 23 March, which 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 Chart 4).

In fact, throughout 1994, it was the combination of the simultaneous increase in US yields, (well above the very low US yields which had existed in the early 1990's) and the increased perception of political instability - and therefore political risk - for Mexico, which discouraged capital flowing into Mexico, and indeed caused outflows; the differential premium, compared with the differential risk (between investing in Mexico and the US in particular) had fallen significantly.

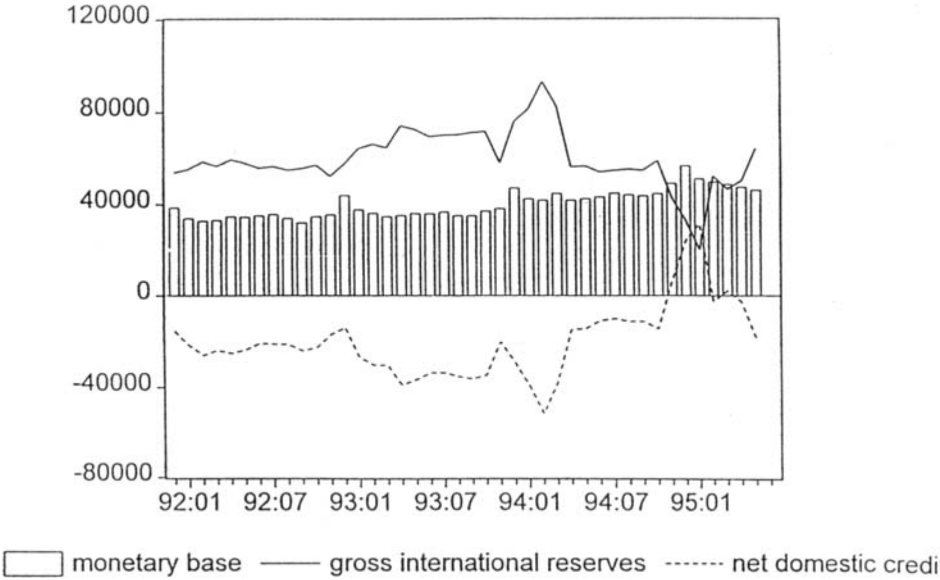
CHART 4: STOCK OF NET INTERNATIONAL RESERVES IN 1994
(IN MILLIONS OF US DOLLARS)



(1) Assassination of the PRI's presidential candidate.
(2) Resignation of the Secretary of the Interior.
(3) Statements by the Deputy Attorney-General.
(4) Renewed hostility by the EZLN.

Faced with the change in perceptions - both by 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 more; the tightening of monetary policy would have both 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 US, thus making Mexico more attractive for investors. Accelerating the crawl or widening the exchange rate band would have, also with a lag, had a positive effect on the current account, 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 both increase the attractiveness of Mexico for investors and start adjusting the economy to reduce the current account. Several observers (for example Leiderman and Thorne, 1995) believe that such a shift of policy (in both monetary 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.

CHART 5: MEXICO: CENTRAL BANK STERILISED INTERVENTION



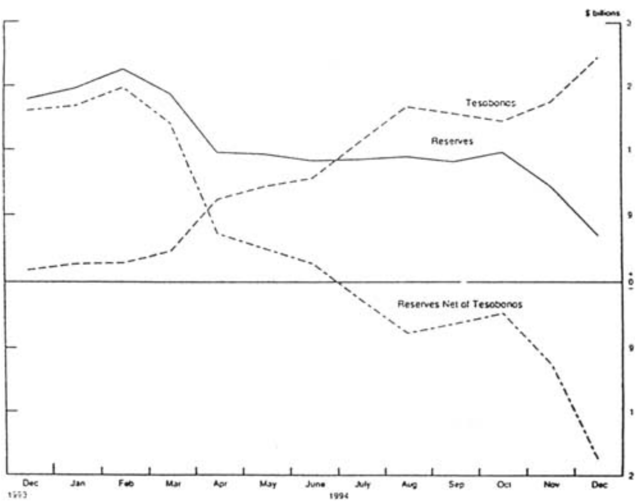
Basically the Mexican authorities did not pursue this first option. Though monetary policy was tightened a bit after the Colosio assassination, and interest rates on CETES (government securities) increased from 10.1% on 23 March to 17.8% one month later, there was no further tightening of monetary policy after that, and interest rates on CETES fluctuated between 16 and 18%; indeed, in August interest rates declined and till late November fluctuated in the range of 13 to 15%. Basically, what the Mexican monetary authorities did was to 'sterilise' 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 Chart 5). The increase in net domestic credit was particularly large following Colosio's assassination and in the month before the December devaluation and crisis. The reason why the monetary authorities 'sterilised' the fall in reserves, was because they assumed - wrongly as we now know ex-post, and taking a fairly large risk as was evident even at the time from the information then available - that the sharp slowdown in inflows, and the existence of surges of outflows, was a temporary phenomena.

CHART 6: MEXICAN EXCHANGE RATE CHANGES WITHIN THE EXCHANGE RATE BAND (NOVEMBER 1991 THROUGH MID-DECEMBER 1994)

Neither was the exchange rate policy modified, even though there was some real devaluation, caused by the fact that the peso moved from late March to very close to the limit of the band, and stayed near there till December (see Chart 6).

The Mexican authorities followed a policy option, which implied allowing foreign exchange reserves to fall (the declines occurred in particular moments - see Chart 5 - with stable levels in between) and allowing a major switch by non-residents from peso-dominated 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 Chart 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)

CHART 7: MEXICAN INTERNATIONAL RESERVES AND TESOBONOS OUTSTANDING



Reportedly, it was institutions like the US mutual funds, which were switching from CETES to Tesobonos; it seems that Mexican capital tended, if nervous, to leave the country rather than switch to Tesobonos.[12]

The dramatic shift reflected investors' fears that the exchange rate was not sustainable, and were therefore willing to stay in Mexico only in dollar-denominated paper; what this really meant was that those investors had *already - at least halfway - left Mexico.* The Mexican authorities 'persuaded' them to stay in Mexico, by 'taking over' the exchange rate risk. By mid-1994 the Tesobonos combined several features (their large scale, their ownership by increasingly nervous non-residents, the fact that they were dollar-denominated, and their very short-term nature),which made them a bit of potential time bomb in the hands of the Mexican authorities. What was also very dangerous, and proved critical, was the combination of decreasing foreign exchange reserves and short-term dollar-denominated government debt (see again Chart 7). When from mid-1994, the stock of Tesobonos became higher than total foreign exchange reserves, the situation became particularly delicate, especially because the paper was so short-term. Furthermore, the fact that the debt was dollar-denominated

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12 Interview material.

implied that the Mexican authorities could not deflate the value of this debt in case of devaluation. Nor could they issue money to service that debt as it was dollar-denominated. Neither could they - if investors refused to roll over the Tesobonos - service them from foreign exchange reserves, as the stock of reserves was since mid-1994 lower than the stock of Tesobonos and the gap continued to widen (see Chart 7 again).

TABLE 3: MEXICO: NON-RESIDENT INVESTMENTS IN MEXICAN GOVERNMENT SECURITIES, 1991-95

	CETES	Ajustabonos	Tesobonos	Bondes	Total
Net non-resident purchases		In billions of US dollars			
1991	2.3	1.4	0.3	-0.5	3.4
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	-1.9
Non-resident holdings[a)]					
January 1991	1.4	0.3	-	1.6	3.3
December 1991	3.0	1.5	-	0.7	5.5
December 1992	9.1	3.7	0.2	1.3	014.3
December 1993	15.4	4.4	1.3	0.8	21.9
December 1994	2.5	0.5	17.4	-	20.5
April 1995	3.4	0.4	10.2	0.3	14.3
Non-residents holdings[a)]		Percentage of total public holdings			
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

Sources: Bank of Mexico; and Fund staff estimates.

a) Change in holdings reflects net purchases of securities, exchange rate revaluation, and the indexation features of ajustabonos and Tesobonos.

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 already from 1991, (when it reached US$19 billion) to US$25 billion in 1994. 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 US 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 Fund Staff estimates.

a) Includes CCC; b) Short- and medium-term financing provided by the US and Canada under the North American Framework Agreement (NAFA)

During the second quarter of 1994 (period which includes the Colosio assassination and rises in US interest rates), the capital account *deteriorated sharply*, from US$7.7 billion in the first quarter of 1994 (figure slightly higher to the average for 1993) to US$2 billion in the second quarter. The only category that remained strong was foreign direct investment. This was however more than offset by short falls in portfolio investments (particularly in equity but also in bonds) and by negative residents' borrowing abroad.

Capital market inflows recovered fairly strongly in the third quarter, as political conditions seemed to stabilise after the 21 August Presidential elections. In the October - December period, capital inflows again declined drastically. In November, however, foreigners sold equities and government securities. In December, there was 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. Though such an interpretation can be understood, it 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, one could say that 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.

Within a less high risk approach, the Mexican authorities could have widened the band more and/or accelerated the crawl, they should have significantly tightened monetary policy and they should have issued far, far fewer Tesobonos, and those that they did issue they should have tried to place for longer maturities. In this context it is worth stressing that 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 to be allowed to *fall sharply*, and by end-1994 almost 60% of this debt was maturing in less than 12 months.[13] Longer maturities would have meant higher financial costs, but smaller financial vulnerability. Reportedly,[14] 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 preferable

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[13] Source: IMF.

[14] Interview material.

choice would have been not to issue so many Tesobonos! Indeed, the need to increase Tesobonos so much should have been a clear sign of the lack of credibility of the exchange rate policy, in particular, and the overall macro-stance in general.

The relatively loose (in the circumstances) monetary policy could have some political explanation - though no justification - till the August elections. A puzzle is why did monetary policy continue to be loose after the 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 destabilising effects of higher interest rates on a rather fragile banking system.[15]

IV THE MASSIVE FINANCIAL CRISIS EXPLODES

On 20 December the Mexican authorities widened the intervention limit for the peso by 15%. Because this led to such a massive outflow of funds (during 20 and 21 December foreign exchange reserves in Mexico fell by over US$4 billion) and reserves fell to fairly low levels, the peso was then allowed to float.

Even though the Mexican authorities on 20 December did what many observers had said was necessary (a devaluation of around 20%), 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 macro-economic policy and in the pace of liberalisation (see above) and though the devaluation itself (see below) 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 extremely unexpected. From practically one day to the other, 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 at that point: nor had there even been an important further deterioration of political fundamentals. For this reason, a

[15] Interview material. See also Lustig (1995).

full understanding of the Mexican peso crisis cannot just (or perhaps even mainly) emphasise policy mistakes of the Mexican authorities, but needs to focus also on the imperfections of international capital markets. Before exploring these more, we will analyse how the devaluation was handled, and outline briefly the impact on the Balance of Payments.

Having said that the initial devaluation actually was in many ways an appropriate response to a very large current account deficit, which could no longer be financed by large capital outflows, how was the devaluation mishandled?

Firstly, it can be argued that 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 after the murder of Colosio, when reserves fell systematically to US$17 billion by mid-April, or in August, when reserves had increased from a previous low, to US$16 billion), the authorities would have been in a stronger position to defend the currency. Furthermore, if done earlier, there would have been no or a smaller overhang of Tesobonos maturing, and therefore the difference between reserves and Tesobonos would have been either positive or mildly negative (see again Chart 7).

Secondly, and again this is clearer with the benefit of hindsight, several mistakes were made in the way the devaluation was handled. These are called 'the errors of December' in Mexico country, where many analysts attribute great importance to the 'mishandling' of the devaluation.[16] However, the importance of this 'mishandling' should not be exaggerated. Furthermore, these 'mistakes' are far more obvious with the benefit of hindsight, and with the knowledge of the dramatic scale of the crisis.

Amongst the possible mistakes on how the widening of the band was handled are the following: a) perhaps most importantly the measure was announced in a bit of a policy vacuum; there was no broader adjustment package simultaneously announced (which could have included for example tightening of monetary policy); nor was a programme of further privatisations announced. Both of these measures would have reassured investors. In defence of the Mexican authorities it should, however, be said that agreements between business and labour leaders in Mexico to restrain wage and price increases were announced, at the same time as the

[16] Interview material.

devaluation. However, this was not enough to satisfy the markets; b) the moving of the band was not linked to a loan agreement with the IMF, again such a loan agreement could have helped to reassure investors, especially foreign ones. To be fair to the Mexican authorities it should be mentioned that, simultaneously with the devaluation, the activation of a US$7 billion swap line with Canada and the US was announced, as an important line of defence. 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 Pacto (Pact of Economic Solidarity). The 'Pacto' is a forum of representatives of the government, the business sector, workers and agricultural producers, used for agreeing macro-economic 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, discussing a specific change in exchange rate policy in a situation of rapidly falling reserves in such a forum seemed inappropriate at two levels. Firstly, it is best practice that the Governor of Central Bank (with agreement only of the Finance Minister) takes such a decision on devaluation, so as to avoid rumours spreading, which can destablise financial markets. Secondly, in the specific case of the Mexican devaluation, there are unverified reports that some of the business representatives participating in the meetings themselves immediately used the information of a forthcoming devaluation to buy dollars. This not only increased pressure on the peso, but also reports of it angered foreign investors, who argued that they did not have access to this 'inside information'; reportedly, this accelerated their withdrawal of dollars;[17] d) the measure was implemented by a new Finance Minister who had not had time, and not devoted enough efforts, to establish close links with the foreign investor community as the previous Finance Minister had; e) it was decided only to widen the band; only when the band was attacked, so strongly, was the decision taken to float the peso. Several analysts argue that it would have been better to have shifted immediately to a float, as the Banco de Mexico had proposed and the Pacto had rejected,[18] f) the decision was taken very near Christmas, when markets tend to be very thin, and g) the decision to devalue was announced on a Tuesday, which left the markets the possibility of attacking during the rest of the week; usually devaluations are done late on Friday.

[17] Interview material.

[18] Interview material.

TABLE 5: MEXICAN STOCK EXCHANGE (BMV), 1989-1995

Month/Year	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	1,960.55	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 Victor Rojas for providing this information.

However, 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.[19] However, 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$18 billion in February 1995; however, the decline in the share of foreign investment in the Mexican Stock Exchange fell by only around 1% in that period (from 25.7% in November 1994 to 24.5% in February 1995). The explanation lies in the fact that the total value of the Mexican Stock Exchange fell sharply in US$ terms, mainly due to the falling peso, but also because of some decline in prices of stocks.

However, the main impact of capital flows on the crisis was especially via the Tesobonos but also via the banking system. Towards the end of December investors (and 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 be forced by events to default on its obligations. As a result of these fears, three weekly auctions of Tesobonos starting in 27 December 1994 were well short of the amount of Tesobonos offered at auctions. 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

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[19] Interview material.

was only the massive US 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 Bondes) 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 practically totally explained by the sharp fall in foreign investors holdings of Tesobonos, which fell from their peak in December 1994, at US$17.8 billion, to US$1.8 billion in late September.[20]

There was another source of potential vulnerability, which is hardly mentioned in the literature, but which also played an important (though smaller) role in the crisis than the Tesobonos.[21] Mexican banks in January 1995 *faced severe dollar liquidity problems*, as they faced difficulties in rolling over foreign currency denominated certificates of deposit (CD's) and other short-term lines of external credit, due to the higher country risk perceived by foreign lenders, accentuated by the fact that many of these loans were using Tesobonos as collateral.

During the first quarter of 1995, the weakness of capital flows intensified and became generalised to different categories. We have already discussed the problems of renewing Tesobonos and of the difficulties for commercial banks. Also, state agencies and companies faced difficulties in rolling over short-term lines of credit and the non-bank private sector faced bond payments that could not be rolled over (see again Table 4). During the first quarter of 1995, net capital outflows totalled US$11.5 billion (excluding the special loans via IMF and US Treasury, as part of the massive rescue package for Mexico), compared to an average quarterly *inflow* of US$7.6 billion during 1993, and of around US$2.5 billion in 1994.

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 (and even political) fundamentals - as this did not occur in December 1994 - nor by the increase in financial vulnerability (e.g. Tesobono to reserves ratio), though all these factors played an important part. An important factor in explaining the magnitude and speed with which international markets reacted, are certain imperfections in these markets, which made them *overreact* to the devaluation.

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[20] See Table 3 again, and data prepared by Bolsa Mexicana de Valores.

[21] Interview material.

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 being 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 behaviour was also conditioned by dramatic changes in perceptions. Kindleberger, op. cit., also shows - both via theoretical analysis and drawing on historical experience - that in a crisis, or panic, credit, at any price, may become unavailable. In such circumstances, (which illustrate what happened in Mexico in late December 1994 and early 1995), 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 emphasising the role of uncertainty. The role of uncertainty is particularly great in a context of financial innovation, when behaviour of new instruments / mechanisms is not well tested. It can be argued that instruments such as emerging markets' mutual funds were both fairly new and not appropriately regulated. Theory shows that negative surprises - in a context of uncertainty - can provoke shifts of confidence, and therefore runs that *affect markets more than appears warranted by the intrinsic significance of the event.* As result of the relatively high cost of in-depth information on countries, it may become rational for investors to react very negatively (and exit) to even small bad news, even if the news are not related to any important change in economic fundamentals. As a result, a relatively small devaluation in December 1994, led to a major speculative attack on the Mexican peso. This experience leads to the conclusion that investment behaviour in such an internationalised global economy can have highly problematic effects, on individual countries, as 'small news' or even rumours can provoke massive capital outflows.

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. Firstly, the funds got smaller because of redemptions (or expected to get smaller due to future likely redemptions). Secondly and more importantly, the share which the smaller fund wished to hold in Mexican paper also falls.[22] Some mutual funds operate almost like banks, guaranteeing, at a

22 Interview material.

minimum, to return 100% of the initial deposit to their investors.[23] As a result, they need to avoid important losses and/or volatile markets. These types of funds pulled very quickly out of Mexico as the crisis started.

Finally, 'disaster myopia' reportedly played a big role in investors' behaviour. Because there was so much (unjustified) faith that there would be no devaluation, this also helps to explain why there was so much over-reaction to the devaluation, when it did occur. Such 'disaster myopia', and later over-reaction seems to have been accentuated by the sheer inexperience and great youth of many of the people both analysing and deciding on investment in Mexico and Latin America in the early 1990's; 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 (*Institutional Investor*, op. cit.).

V CONCLUSIONS AND POLICY IMPLICATIONS

This paper assumes that the Mexican peso crisis (though having special features) was not unique, and there is the risk that 'Mexico-style crisis' could be repeated in developing or transition economies. Therefore policy-makers need, as a very important policy objective, to aim at avoiding such crises, as they are extremely costly to the domestic economy. It is important to stress that Mexican GDP fell by 7% in 1995, consumption declined by over 17% and investment fell by 30% (there has been an important recovery in 1996, but levels of output, consumption and investment per capita are still well below 1994 levels).

Important lessons can be learnt (or re-learnt) from a careful analysis of the Mexican peso crisis, as well as from precious foreign exchange crises. These relate both to macro-economic management of capital flows and to the style and pace of liberalisation both of the capital account and the financial sector.

As regards macro-economic management, there is growing consensus amongst international financial institutions, as well as in academic circles, on certain broad criteria to avoid foreign exchange crises. However, unfortunately, such criteria are not followed in individual countries, as

[23] Interview material.

policy-makers in deteriorating situations often tend to have a bias toward complacency, and are always stressing reasons why 'their country is special', and therefore a crisis is far more unlikely there. Many of these latter perceptions are of course reinforced by the enthusiasm with which foreign capital lenders or investors may be channelling flows to that country, without sufficient account being taken of how rapidly and drastically international financial markets can change their perception of particular countries or of emerging markets in general (as described above occurred so dramatically in the case of the Mexican peso crisis). Furthermore, international institutions that learn lessons in one region do not always transfer them sufficiently to their policy advice in other regions.

The following criteria for macro-policy seem essential:

1) Unsustainable current account deficits should be avoided, especially for longer periods (more than one or two years). It is difficult to establish in advance what levels of current account deficit are sustainable - that is, will continue to be financed. However, the emerging consensus is that for countries growing at 5% per annum or less, the current account deficit should not exceed 3-4% of GDP. For countries with faster growth, where a large share of the current account deficit is invested rather than consumed, and where the deficit is funded mainly by long-term capital flows, the maximum advisable current account deficit could be somewhat, but not much, higher.

   Once a potentially unsustainable current account deficit emerges, it is far less costly to adjust earlier (and take small costs up-front) than to wait and risk a crisis, which will imply a far more costly adjustment later, both in terms of loss of output and increased inflation.

2) As regards exchange rate policy, there is a trade off. While exchange rate flexibility can have some inflationary effect, - though there is growing evidence that the degree of pass-through from exchange rate to prices is relatively low, especially for relatively low inflation economies (Leiderman and Bufman, 1995) - greater exchange rate flexibility also diminishes the risk of declines in output and employment. If priority is given to the latter objective, that is avoiding declines in output and employment, then a more flexible exchange rate regime is more desirable.

   Furthermore, it is important to avoid excessive over-valuation of the currency even if this is attractive to governments, like the Mexican one in the 1992-94 period, as it helps lower inflation quicker. However, if there is a crisis, not only will output fall, but inflation itself will accelerate significantly, as it did in Mexico in 1995.

It should be mentioned that managing exchange rates in times of very large capital surges poses difficult dilemmas to policy-makers (see Ffrench-Davis and Griffith-Jones, 1995). This is one important reason why excessive surges of short-term capital flows should be discouraged, so as to help avoid a very sharp short-term deviation of the exchange rate from its medium-term equilibrium.

3) A third area of macro-economic policy where clear lessons can be extracted from the Mexican peso crisis relates to the management of the stock of public debt.

   Economic authorities should definitely avoid assuming the foreign exchange risk in short-term government debt (as the Mexican authorities did on a large scale by issuing very significant amounts of Tesobonos). Furthermore, it may be desirable to change the structure of government debt towards more long-term paper, even if this implies somewhat higher costs in interest payments. More specifically, large scale purchases by foreigners of short-term government debt are to be avoided.

4) A final macro-economic criteria, emerging from the study of the Mexican peso crisis, is that in very open economies, it is necessary to have far higher foreign exchange reserves than in the past, due to the volatility of capital flows. Sharp declines of foreign exchange reserves require a speedy policy response, and should never be dismissed as a temporary problem.

As regards the style and pace of liberalisation, both of the capital account and the financial sector, there has been a fairly important shift in thinking by international financial institutions, (for example towards recognising the desirability of discouraging large short-term capital surges), but this shift still seems to be incomplete.

The key issues here include:

1) Slow and gradual liberalisation of the capital account is desirable, and should be done when the economy is properly stabilised, and has a healthy financial sector. If excessive surges of capital flows occur, after liberalisation of the capital account measures need to be adopted to discourage them e.g. via reserve requirements for taxes). This is not a step back in the reform process, but a measure to make the reforms -

and above all economic growth - sustainable. This seems one of the most clear-cut lesson from the Mexican peso crisis.

2) The liberalisation of the financial system should also be done gradually, especially if it coincides with a period of liberalising the capital account and of surges of capital flows. Large capital inflows (and subsequent outflows) can have very disruptive effects on banking systems.

   Liberalisation of the financial system should be quicker than the development of a sound regulatory framework (including training personnel in new and complex tasks) will allows, without risk of a very large increase in non-performing loans. This is particularly the case when the banking system (as in Mexico) has just been privatised, as banks will be inexperienced in evaluating risk.

3) There are two specific important areas of regulation, whose need is highlighted by the Mexican experience.

   Firstly, there is a need to appropriately take account of exchange rate risks, and of the fact that exchange rate risk becomes credit risk in the case of a large devaluation and may lead to sharp increases in bad loans. If a bank borrows in foreign exchange, even if it lends in foreign exchange, there is an indirect but important exchange rate (and credit) risk, as in the case of a large devaluation, the borrower may become insolvent and therefore unable to pay. The Mexican and other regulators did not fully take account of this risk, and it is important that this is properly done in the future.

   Secondly, episodes of financial liberalisation are often followed by large booms of consumer lending (not just in Mexico, but also for example in the UK). This tends to lead to a decline in private savings which contributes to higher current account deficit. This tendency is sharply strengthened if there is a simultaneous surge in capital flows, especially if intermediated by the banking system. There seems to be a particularly strong case for discouraging excessive growth of consumer lending by regulatory (as well as macroeconomic measures). A complementary policy is to do the liberalisation of consumer credit particularly slowly and carefully, as Asian countries have done.

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