

Macroeconomic aspects of the management of external debt and liquidity: reflections on the Mexican experience

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Introduction

It could be argued that the Mexican experience in late 1994 and 1995 was one of the first economic and financial crises in the new context of integrated global financial markets. In recent years, several economies have been subject to a severe disruption of their capital markets, which in some cases ended in speculative attacks on their currencies. In a world in which capital flows rapidly among countries, unprecedented negative externalities on domestic financial systems, and on the growth prospects of an economy, may be important. Furthermore, these externalities can easily be magnified in the presence of weak financial systems and macroeconomic disequilibria. Thus, a clear understanding of the risks and challenges that emerging economies face in global financial markets is needed.

This paper deals with the challenges that the volatile environment of capital markets poses to domestic financial systems and to the sustainability of economic reform. It is argued that to benefit from capital inflows as a complement to domestic saving, solid macroeconomic fundamentals and a sound financial system are required. A claim is made that prudent management of external debt and liquidity plays a significant role in fostering macroeconomic stability.

In addition, the paper suggests that once firm fundamentals and a healthy financial system are in place, the damaging effects of increased volatility in international capital markets on the domestic economy would be reduced significantly. In that case, the proper use of international reserves, market flexibility and the presence of contingent credit lines or other types of financial insurance agreements would represent an adequate response to a liquidity crisis. The Mexican record since the abrupt devaluation of the peso at the end of 1994 shows the importance of pursuing policies geared to macroeconomic and financial stability and

market flexibility, and the relevant role that proper management of external debt and liquidity plays in the overall economic strategy.

The paper is organised as follows: the next section provides an overview of the challenges that capital flows have posed to emerging market economies. The Mexican experience since the early 1990s is an interesting case study. This is so because prior to 1994 Mexico absorbed substantial capital inflows, but the 1994–95 crisis was accompanied by a drastic scarcity of such flows. Nevertheless, sound policies and macroeconomic stability allowed Mexican agents to return to international capital markets in record time. The challenges that huge swings of capital movements posed the Mexican economy are relevant to analyse, as is the debt management strategy that followed. Thus, the following section presents the main elements of Mexico's debt strategy. Particular emphasis is given to the importance of ensuring a balanced profile of debt amortisation. It is argued that even though governments might aim to procure a balanced and well diversified debt structure, market conditions might interfere, and on occasions cause important deviations from the attainment of that goal. Mexico's 1997 credit line with international financial institutions and the recently negotiated financial package are presented in some detail. The final section includes some considerations regarding debt management, liquidity provisions and financial stability that need to be addressed in order for emerging markets to be better equipped to face an uncertain environment.

Capital inflows and the Mexican economy

Capital inflows to emerging markets can provide much needed financing to increase investment and enhance economic growth. This occurs because the resources complement domestic saving and in many instances, due to the limited development of domestic capital markets, constitute the only financing alternative to governments and private sector entities. But such flows can also be associated with undesirable dynamics, especially when financial systems are weak and macroeconomic disequilibria are present. Recent crises in emerging markets have clearly shown the challenges that capital mobility poses to domestic financial systems and the urgency of building solid financial systems capable of handling sudden and unanticipated swings in capital

flows. Moreover, developments in international markets have called for an immediate response by emerging markets' authorities not only to upgrade financial regulatory frameworks and their transparency, but also to improve the management of foreign indebtedness and liquidity.

Mexico and other emerging markets experienced a significant increase in capital inflows during the early 1990s. The factors behind this development have been analysed extensively in the literature. Calvo, Leiderman and Reinhart (1993), for example, find in external factors, such as the reduction of interest rates in developed countries, an important reason behind the huge capital flows to Latin America in that period. It is clear that external factors indeed played an important role in determining capital flows to the Mexican economy. In particular, in the early 1990s portfolio investment in securities denominated in domestic currency absorbed a large share of total capital inflows. Nonetheless, it should be recognised that Mexico's growth potential, and the economic reforms undertaken in the preceding years, enhanced the country's attractiveness for investment, which was translated into higher levels of foreign direct investment.

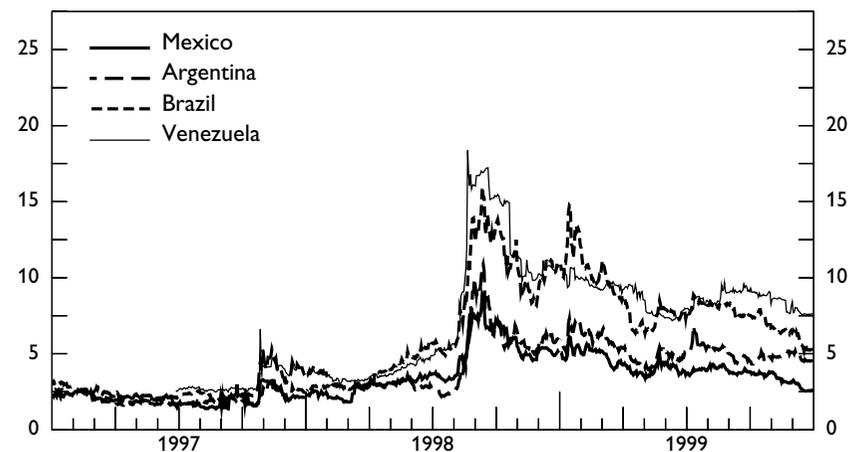
Some of the most important reforms undertaken in the Mexican economy that encouraged a substantial increase in capital inflows were the deregulation of economic activity, trade liberalisation, a large privatisation programme of government-owned enterprises and a successful renegotiation of Mexico's external debt.

Over the last decade, not only have the availability and size of capital inflows to developing countries expanded significantly, but also the main features of the flows have changed dramatically. In contrast to the early 1980s, when commercial banks represented the most important source of foreign funds to emerging markets, during the 1990s institutional investors have enlarged their participation as alternative sources of funds, through both bond and equities markets. In many cases, this was the cause and consequence of an increase in the liquidity of these instruments. As an example, and in spite of repeated periods of uncertainty regarding emerging markets, total turnover in secondary market transactions in debt instruments of emerging markets grew dramatically in recent years. This was not the case in the early 1980s, when the largest share of foreign debt of developing economies was held by commercial banks, a feature that made credits to emerging markets highly illiquid assets for international banks.

The presence of institutional investors, the renewed access of emerging economies to international capital markets and the higher speed at which capital nowadays flows among countries have altered the risks faced by financial market participants in emerging economies. Moreover, given that institutional investors are prone to undertake overall evaluations of their emerging market risk exposure, the perception of higher risk in a particular emerging market could be followed by a reduction in their total emerging market risk exposure. This could trigger outflows in markets not originally affected and induce contagion effects.

Thus, massive portfolio shifts engineered by institutional investors pose fresh challenges to financial authorities, because country-specific crises can have serious systemic consequences in other emerging markets. As was the case in the Mexican currency crisis of 1994–95, the Southeast Asian crisis of 1997 and the Russian crisis of 1998, investors tend to react jointly against emerging markets that are related or share common economic features. Figure 1 shows the behaviour of the spread between Brady Bond yields of different countries and US Treasury bond yields.

Figure 1
Spread between the discount Brady bond stripped yield for selected Latin American countries and the 30-year US Treasury bond
 In percentage points



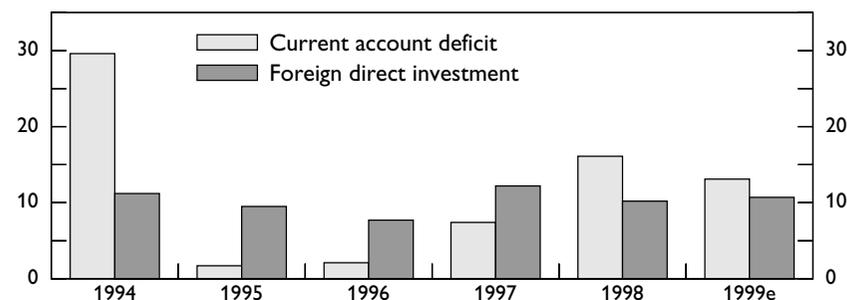
Source: Bloomberg.

Brady bond spreads for different emerging market economies have behaved similarly, though at different levels, in the midst of financial crises or increased uncertainty. Thus, the liquidity of emerging markets' securities and the collective behavior of institutional investors make the financial authorities' tasks more difficult, particularly since systemic risk may rise swiftly. A thorough discussion of these issues, as well as some policy recommendations, are presented in the final section.

Over the past decade, capital mobility has increased many times over and its main features have also changed, especially those related to the allocation between foreign investment and traditional lending. Mexico, as a recipient economy, has witnessed those events. Total capital inflows to Mexico grew from a yearly average of US\$ 2 billion in 1987–88 to \$36 billion in 1993. In the latter year, foreign investment amounted to 92% of capital inflow. The 1994 crisis caused an important reduction of these flows, to \$23 billion in 1995. Given that foreign investment for that year turned out to be negative, loans from abroad represented more than 100% of total capital inflows. For 1996–97 capital inflows were on average \$10 billion per year. However, it should be emphasised that total foreign investment represented more than 200% of that amount. That is, foreign investment more than compensated for the decline in indebtedness. For 1998–99 capital inflows are estimated to have averaged \$16 billion per year, with total foreign investment amounting to 77% of the inflows. Foreign direct investment grew from \$4 billion in 1993 to \$11 billion in 1994 and has kept a stable level of around \$10 billion per year since then. On the other hand, portfolio investment has shown more erratic behaviour. Having reached a peak of \$29 billion in 1993, it turned negative in 1995 (–\$10 billion) and for 1996–99 has averaged under \$1 billion per year.

The important reduction in the flows of foreign portfolio investment to Mexico since the crisis of 1994–95 is primarily explained by the adoption of a floating exchange rate regime. This regime has proved to be extremely helpful in inhibiting short-term foreign investments by reducing their expected return, once adjustment is made for exchange rate risk. Without the implicit guarantee to portfolio investment provided by the semi-fixed exchange rate regime, foreign direct investment started to play a more dominant role in financing Mexico's current account deficit (Figure 2).

Figure 2
Foreign direct investment and the current account deficit
 In billions of US dollars



Debt management strategy

The design of an adequate strategy for public debt management should include proper consideration of a number of questions. Among them, several come to mind: (a) how much public debt should be issued in domestic markets and how much in foreign capital markets? (b) what should be the currency denomination of new public debt issues? (c) what is the optimal maturity structure of public debt? (d) should governments consider redeeming in advance some issues and refinance them on different terms? (e) should public debt be issued at fixed or variable rates? and (f) should public debt issues be directed to a particular segment of the market (financial institutions, other institutional investors, corporate sector, etc)?

Most of these choices entail a trade-off between the level and the variance of debt costs and are highly dependent on both the domestic macroeconomic context and conditions in international markets. Nonetheless, the debt management strategy has important implications for the economy as a whole. Good liability management should result in lower borrowing costs and unimpeded access to international capital markets, while minimising any crowding-out effects on private sector borrowing.

The choice of the specific characteristics of the debt portfolio involves difficult decisions. While on a pure cost-based analysis it is tempting to choose short-term over long-term debt, the latter might

have a smaller refunding risk and thus be preferable in the end. That is, a better schedule of amortisations lowers country risk and finance costs over the medium term, both for the government and for the private sector. Likewise, borrowing domestically may turn out to be more expensive than in external markets. Yet borrowing in domestic markets could trigger a rapid development of these markets and pave the way for a solid corporate domestic market in the future. In sum, a good liability management strategy is one that helps minimise the cost of borrowing over the medium and long term. The objective is certainly not to save the last basis point in each transaction, but rather to bring down the overall borrowing cost. Thus, a smooth debt amortisation profile is crucial. There is no doubt that emerging economies have to work hard to ensure desirable characteristics in the debt profile, even if initially costly.

At the end of 1994, Mexico faced a liquidity crisis accompanied by a very high refinancing risk. This forced the country to seek support from the international community to confront the heavy short-term debt burden. Economic policy was oriented towards rapidly re-establishing macroeconomic stability. This was the only way to stop capital flight and gradually restore Mexico's access to international financial markets.

To deal with the scenario just described, a comprehensive package of policy measures was put together. The stabilisation programme was built upon restrictive fiscal and monetary policies and was reinforced by the financial package (Exchange Stabilisation Fund) assembled by the US financial authorities and multilateral organisations. The rescue package amounted to more than US\$ 52 billion: \$17.8 billion committed by the IMF, \$20 billion by the United States government, \$10 billion by the Bank for International Settlements, \$3 billion by commercial banks and \$1.5 billion by the Bank of Canada. It is worth mentioning, however, that in 1995 Mexico's drawings amounted to only \$24.9 billion.

A solvent government might still face liquidity problems that limit its ability to service its debt. For instance, an overly pessimistic view about the future of the economy might lead lenders to curtail the amount of financing temporarily even if the country is in fact solvent. Eventually, liquidity problems might escalate, negatively affecting the government's access to international capital markets. At this particular stage, the distinction between liquidity and solvency problems for a country is

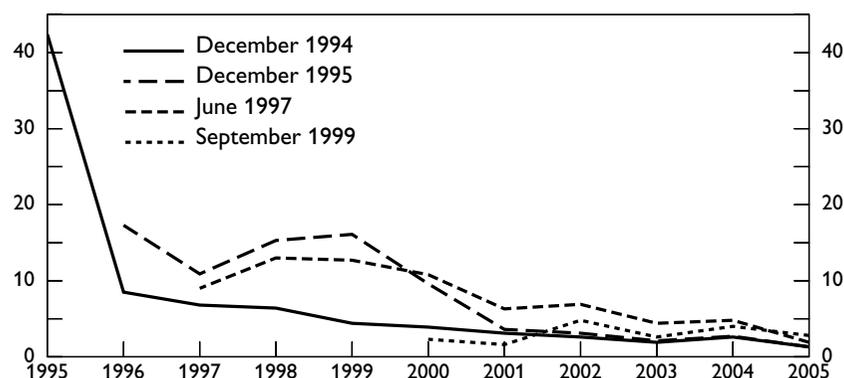
blurred. The Exchange Stabilisation Fund prevented the liquidity crisis from turning into a solvency crisis, whose repercussions would have been far more devastating.

Prior to 1994, both debtors and the banking system in general were in a fragile situation. Past due loans had increased substantially, and the lack of proper provisioning started to erode banks' capital. In addition, some commercial banks faced severe problems that were not revealed in their financial statements, and, in some instances, banks disregarded existing regulations and proper banking practices (Mancera (1997)). In this environment, the effect of the currency depreciation, rising inflation and higher interest rates on the credit service burden seriously jeopardised the Mexican financial system. At that time, the materialisation of systemic risk and its impact on the economy were major concerns. Faced with this situation, the government and the central bank implemented a comprehensive programme to deal with the banking sector crisis, without derailing monetary policy from its main task of procuring the reduction of inflation. The successful mix of policies ensured the consistency of Mexico's macroeconomic framework and allowed the economy to recover and rapidly return to international markets. An important element of the overall strategy was to provide liquidity to commercial banks to comply with their external obligations. To this end, a dollar facility was made available to them by the central bank. Thus, Banco de México played the role of lender of last resort for commercial banks at a time of distress, making foreign exchange available to banks through a specially designed credit window. These dollar-denominated loans were channelled through the Fund for the Protection of Savings (FOBAPROA).

At the beginning of April 1995, the dollar-denominated credits granted through FOBAPROA reached a maximum of US\$ 3.8 billion. However, the high level of interest rates purposely charged on such credits induced a rapid amortisation, as banks sought other sources of financing. By 6 September 1995, the 17 commercial banks that had participated in this scheme had already repaid their credits. In this sense, the programme achieved its stated purpose, namely that of providing temporary assistance.

Once international markets were reopened to Mexican agents (July 1995), the main objectives for the immediate future included the refinancing of the Exchange Stabilisation Fund in the market,

Figure 3
Public sector market external debt amortisations
 In billions of US dollars



while reshaping completely the external debt amortisation profile and smoothing the domestic debt structure as much as possible. One should recall that, in barely one year, Mexico had to amortise close to US\$ 30 billion in dollar-indexed short-term securities – the so-called “tesobonos” (Figure 3).

Mexico’s dramatic experience during 1995 raised significant concerns regarding the appropriate strategy for public debt management in emerging markets. It has always been clear to governments that a more balanced and well distributed profile of debt amortisation provides a more stable macroeconomic environment and that financial authorities should strive to obtain it. Nevertheless, the Mexican episode provided empirical evidence that, on occasions, market conditions may interfere with the attainment of that goal. That is, during 1994 the Mexican government was unable to place fixed rate domestic debt and relied instead on dollar-indexed short-term securities. At that time, the placement of other types of debt instruments seemed extremely expensive. Thus, a corollary from Mexico’s experience is that macroeconomic soundness is an important prerequisite for a balanced and proper debt profile. Once markets recognise sound and prudent policies in a specific economy, they will be ready and willing to provide financing. Furthermore, prudent debt management will in turn foster a more stable economy, thus contributing to a virtuous circle that goes from

macroeconomic stability to proper debt management and then back to macroeconomic stability.

Under the circumstances that have prevailed in international financial markets during the last decade, sound macroeconomic policies are a necessary but not sufficient condition to ensure stability. Proper debt management should provide an additional element that would allow emerging market economies to strengthen otherwise solid fundamentals. The debt management strategy has to be implemented in an integral fashion, for both domestic and foreign debt. Furthermore, it should focus on reducing refinancing risks.

Thus, starting in 1995, Mexico diversified the currency denomination of its debt and assigned a high priority to reliance on long-term external debt. As of June 2000, 55% of the debt issued since the onset of the crisis has a maturity that exceeds five years (Table 1).

Table 1
Debt issuance 1995–99
 As a percentage of the total (US\$ 34.3 billion)

US dollar	63	1–3 years	12
Euro	21	4–5 years	33
Yen	14	>5 years	55
Other	2		

In addition, Mexico has continued its efforts aimed at lengthening the maturity of domestic debt (Figure 4).

Figure 4
Domestic debt maturity
 In days

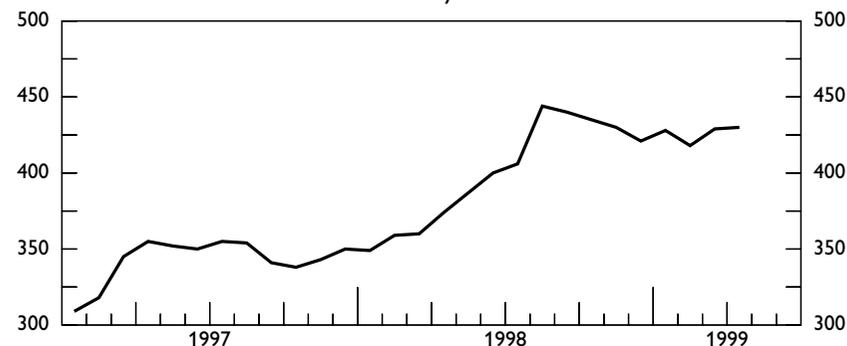
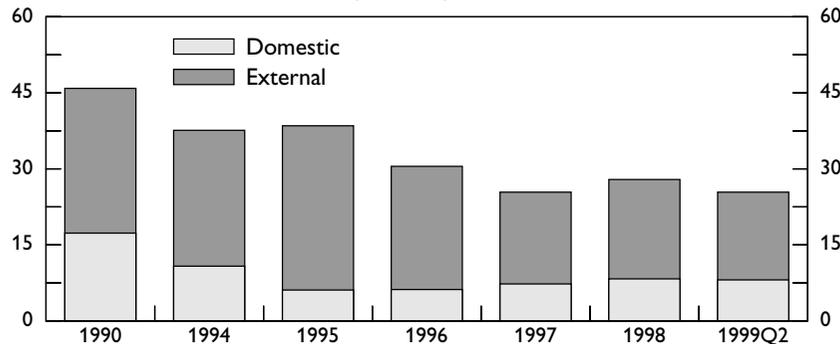


Figure 5
Mexico's public debt: 1990-99
 As a percentage of GDP



At the same time, the private pension fund system has continued to grow, making long-term resources more widely available. Today, Mexico's foreign debt amortisation schedule is light and well distributed over time. The overall debt burden, including domestic and external debt, diminished from levels above 45% of GDP in 1990 to approximately 28% in 1998. This trend is thought to have continued in 1999 (Figure 5).

The country's solvency and liquidity indicators compare favorably to those of other countries: external debt as a share of GDP amounted to 17% in early 1999, while the ratio of total exports to external debt was 1.7.

An example of Mexico's strategy to ensure external financing when conditions in international capital markets turn adverse is the credit line secured with international financial institutions in November 1997. The original features of this contingent credit line were the following:

- The credit line amounted to US\$ 2.7 billion.
- 33 financial institutions from 10 countries participated.
- Funds were available for a year and could be renewed for another year; drawings could be made (a) to refinance external public debt (when conditions in financial markets deteriorated and the possibility to rollover the debt on competitive terms was negligible) and (b) to close the gap resulting from unexpected reductions in tax revenues, expenditure increases as a result of higher international interest rates, a fall in oil prices or a sudden disruption of capital inflows.

- Repayment accrued 18 months after the credit line was accessed.
- No penalty was applied on prepayments.
- The agreed interest rate was three-month Libor plus a spread of (a) 50 basis point for the first six months, (b) 75 basis points for the second six months, and (c) 100 basis points during the last six months.
- A fee of 30 basis points (approximately \$7.6 million) had to be paid in order to ensure the availability of funds.
- Participating countries and institutions:
 Germany: Deutsche Bank and Dresdner Bank.
 Canada: Bank of Nova Scotia and Royal Bank of Canada.
 Spain: Banco Bilbao Vizcaya.
 United States: Bank of America, Citibank, Chase Manhattan Bank, Goldman Sachs, JP Morgan, Lehman Brothers, Merrill Lynch, Morgan Stanley, Republic National Bank and Salomon Brothers.
 France: Banque Paribas, Crédit Lyonnais and Société Générale.
 Netherlands: ABN AMRO Bank.
 Japan: Bank of Tokyo Mitsubishi, Daiwa Securities, Fuji Bank, Industrial Bank of Japan and Sumitomo Bank.
 Latin America: BLADDEX.
 United Kingdom: Barclays Bank, Midland Bank and West Merchant Bank.
 Switzerland: Credit Suisse First Boston, SBC Warburg Dillon Read and Union Bank of Switzerland.

The credit line was exercised in September 1998. The aforementioned transaction was justified in light of the prevailing environment at the time: (a) conditions in international financial markets had deteriorated, especially for emerging market economies; (b) the value of oil exports was severely reduced due to the sharp contraction in oil prices; and (c) increased uncertainty regarding financial markets caused interest rates to register significant upward movements.

Repayment of this credit was to take place in April 2000. Nonetheless, with the purpose of lengthening the maturity of its external debt, in March 1999 the Mexican government decided to refinance the credit line, offering a voluntary exchange of debt instruments. The new instruments and the resulting composition of the debt were as follows:

- Guaranteed commercial paper with a maturity of two years, for US\$ 500 million.

- Dollar floating rate bond with a five-year maturity, for \$500 million.
- Euro floating rate bond with a five-year maturity, for US\$ 410 million.
- \$466 million paid in cash with funds obtained from a 10-year global bond issue, and
- \$785 million remained under the original terms.

Refinancing the credit line helped avoid a sizeable amortisation of external debt in the year 2000, thus extending the maturity of a large share of these liabilities (71%) to the two- to ten-year range.

When the Mexican government decided to exercise the credit line, some participating intermediaries had objections. This attitude could have been the result of some ambiguity regarding the circumstances under which the credit line could be exercised. That is, in spite of the sharp fall in oil prices and the severe deterioration of market access for Mexican securities, there was neither any significant reversal of capital flows nor substantial international reserves losses. The fact that the severity of the shocks that the Mexican economy experienced at that time was not immediately translated into more volatile domestic markets caused some dissatisfaction to financial institutions when Mexico decided to draw the funds. Moreover, the interest rate charged was relatively low (three-month Libor, plus a maximum spread of 100 basis points when current spreads fluctuated between 200 and 400 basis points).

The aforementioned experience points to the fact that it may be advisable for governments, banks and corporations that engage in these type of insurance agreements to make sure that the decision to exercise rests exclusively with the borrower, and its terms are more market-determined. For the borrower this alternative might be equivalent to the purchase of an option (the option to be financed by a group of institutions) that is exercised at a predetermined interest rate at any time before the option matures. That is, treating contingent credit lines as financial derivatives would result in proper pricing for both debtors and creditors, thus producing more competitive and fair results.

Contingent financing facilities could certainly be of significant usefulness in cases of financial distress. Nonetheless, once a global financial crisis erupts, international financial institutions might face liquidity problems and will probably not be in a position to honour their credit commitments (in some instances, international banks might even prefer to risk a lawsuit rather than to grant credit). For

this reason, one should expect this type of credit arrangement to be more prevalent in country-specific crises and not in conditions of global distress. Needless to say, for credit lines to serve efficiently as a viable instrument to guard against abrupt reductions in foreign credit, the terms and pricing of this instrument should be completely determined by the market.

Contingent credit lines can be treated as insurance against severe restrictions in external financing. A related topic, on which Mexico's experience can shed some light, is the convenience for emerging economies of acquiring insurance in world financial markets against other adverse developments such as a reduction in the price of a major commodity like oil.

As a result of oil overproduction in certain countries and the fall in demand caused by the economic crisis in several Southeast Asian economies, during 1998 the oil market experienced a sudden and unexpected depression. The average price for the Mexican oil export mix fell to \$10.16 per barrel, 38% below the price that had prevailed in 1997. In fact, at one point in December 1998, the Mexican mix was quoted below \$7 per barrel, its lowest level in two decades. As a result, oil revenues fell by 1.7 percentage points of GDP compared to 1997. To prevent the loss in oil revenues feeding into a higher fiscal deficit, and so affecting the overall macroeconomic strategy for the year, the financial authorities carried out, in a decisive and timely fashion, three successive public expenditure reductions. These adjustments amounted to, approximately, 1 percentage point of GDP. By these means, the government absorbed the oil shock in its entirety. Had Mexico been insured against the decline of oil prices at the time, the cost faced by the economy would certainly have been lower.

On the topic of public debt management in Mexico, the main challenge for the future lies in the development of a long-term domestic market. Meanwhile, efforts will continue to be aimed at lowering the stock of external debt as a percentage of GDP and maintaining a manageable external debt amortisation schedule.

During 1999 Mexico was able to negotiate a financial package amounting to US\$ 16.9 billion. This package is an essential component of the government's strategy to ensure sound and predictable external financing through the year 2000 and to be protected against volatility in international capital markets. The package comprises:

- \$4.2 billion from the IMF;
- \$5.2 billion in loans from the World Bank;
- \$3.5 billion in loans from the Inter-American Development Bank; and,
- \$4 billion in credit lines from the Export-Import Bank of the United States.

In addition, close cooperation on economic and financial issues with Mexico's NAFTA partners will continue to help preserve stability and growth. In this regard, The North American Framework Agreement was renewed until December 2000. Were it to be activated, this facility would comprise up to \$3 billion from the Federal Reserve System, \$3 billion from the United States Treasury Department, and approximately \$0.8 billion from the Bank of Canada, totalling \$6.8 billion. These safeguards should significantly reduce Mexico's vulnerability to unexpected changes in the international environment.

Financial systems and debt management challenges

Although developing countries are likely to increase domestic saving to finance the investment they need to promote economic growth, the overall trend of emerging markets as recipients of significant flows of foreign capital is expected to continue. This poses difficult challenges to financial regulators in developing countries, especially since financial systems face new and more complex risks.

The combination of a recently liberalised financial system with a feeble institutional and legal framework can cause serious distortions to financial intermediation and economic development in general. To avoid these distortions, policymakers in developing economies should proceed with financial deregulation, making sure that the proper legal and institutional reforms are firmly in place. Not doing so will inhibit emerging markets from benefiting from using external saving as a complement to domestic saving and could increase asymmetric information problems that might eventually lead to financial crises.

The increasing globalisation of financial markets has raised concerns regarding the viability and vulnerability of domestic financial systems exposed to massive and rapid capital movements. Monetary and financial authorities nowadays face a more volatile environment which can indeed seriously weaken any financial system. Sound financial systems are not

only required in order to take advantage of external saving, but also to be better equipped to deal with volatile capital flows and to reduce the likelihood of periods of stress and uncertainty.

The importance of having a sound financial system under circumstances of highly volatile capital markets not only stems from the need to foster financial intermediation but also from the necessity to maintain the effectiveness and credibility of fiscal and monetary policies. Long-lasting stability can only be attained by the design and enforcement of prudential regulation, improved supervision and, above all, through providing an adequate set of incentives to equity holders, debtors and depositors of financial institutions. It cannot be overemphasised that macroeconomic stability and economic growth rely heavily on the viability and soundness of the financial system.

Given the importance of a solid and healthy financial system, the Mexican authorities have not hesitated in taking steps to ensure the development of such a system. The main feature of the overall strategy has been to provide adequate incentives for all market participants. Thus, progress has been made on several fronts:

- development of an explicit and limited-coverage deposit insurance scheme;
- increased transparency of financial information through the convergence of domestic practices to internationally accepted accounting standards for banks;
- adoption of mark-to-market accounting;
- capital adequacy requirements that comply with international guidelines, for both market and credit risks;
- evaluation of financial institutions' risk management standards through the performance of stress tests;
- improved derivatives regulation; and
- close monitoring of banks' exposure to foreign exchange risk.

As for foreign exchange risk exposure of commercial banks, the following regulations are worth mentioning:

- a) *Net open foreign exchange position*: banks are not allowed to hold a net open foreign exchange open position in excess of 15% of their net capital (Tier 1 + Tier 2 capital);
- b) *Limits on foreign currency liabilities*: after netting out high-quality foreign currency assets and credits, banks are not permitted to hold liabilities denominated in foreign currency in excess of 1.83 times their Tier 1

capital. The referred liabilities are weighted by a coefficient that penalises short-term maturities and,

- c) *Foreign currency liquidity coefficient*: the goal of this regulation is to provide commercial banks with liquid assets in foreign currency in accordance with their liabilities, and to promote long-term financing in foreign currency. Foreign currency liabilities with less than 60 days left to mature that have no corresponding assets of the same or shorter maturity must be matched entirely by high-quality liquid foreign currency denominated assets. Liabilities with less than sixty days left to mature that are matched by non-liquid assets of the same or shorter maturity, must be corresponded by the referred high quality liquid assets in a percentage linked to their maturity. This percentage ranges from zero for those liabilities that have a maturity of 60 days to 50% for liabilities that have one day left to mature.

Given the banking system's contribution to the development of the economy, compliance must be carefully monitored by the financial authorities. In addition, fiscal and monetary policies play a crucial role in the promotion of lasting stability and the development of domestic markets for government and corporate debt. With this in mind, fiscal and monetary policies have adopted a restrictive stance in recent years. Banco de México's commitment to the abatement of inflation has contributed to a more stable environment and thus to the development of a deeper and more solid domestic debt market. It should be emphasised that once macroeconomic stability is attained, pension funds and voluntary savings can easily provide the required financial resources for the development of a domestic corporate bond market.

Mexico's experience also shows how, under conditions of uncertainty, different sectors of an economy are even more interconnected and spillovers do take place. That is, difficulties faced by the government in placing debt in international capital markets are often translated into more rigorous terms for the placement of private sector debt. However, the reverse is also true. Given the possibility that the fiscal position of a government might be affected by the weak performance of some of the main corporations, uncertainties that first appeared in the corporate sector can easily be translated into difficulties for the public sector.

As mentioned above, during 1995 Banco de México temporarily played the role of lender of last resort for commercial banks that faced

difficulties in rolling over their debt in international capital markets. Unfortunately, governments may be tempted to play such a role in order to alleviate pressures on the corporate sector stemming from the impossibility of refinancing their debt in foreign markets. If firms and corporations anticipate that kind of government behaviour, moral hazard problems might ensue and the private sector could engage in riskier transactions. The development of markets that allow economic agents to hedge their risks alleviates the pressures that financial authorities might face to bail out private sector entities when market conditions deteriorate.

Regardless of the government's final decision on bailing out domestic private entities when capital markets are closed, financial authorities will certainly be better off once a comprehensive understanding of the solvency and liquidity requirements of the entire economy is attained. This is not an easy task. In Mexico, for example, capital controls have long been abolished and no comprehensive record of corporate foreign transactions is available.

Because of the above, policies should be oriented towards the establishment of adequate incentives for all economic agents, and, if possible, some type of monitoring of the debt profile of the private sector in domestic and international markets should take place. Financial authorities would be put on a sounder footing by achieving a thorough understanding of the risks that the overall economy faces in a particular moment and of the liquidity conditions of the country as a whole. Furthermore, future crises might be avoided altogether once the complete picture of the debt profile, risks and financial exposure of the global economy is available.

A thorough knowledge of the liquidity and solvency risks of all sectors of an economy would certainly be valuable for financial authorities. When this information is available, the optimal level of international reserves of an economy could easily be derived. That is, if governments were able to determine the amount of funds they would be called upon to provide to different sectors of an economy during times of distress, the authorities would only need to accumulate reserves up to their optimal level.

However, the real world is not that simple. Solvency and liquidity risk exposure information for some sectors of the economy is in general not available and financial authorities will not engage in the

costly endeavour of reserve accumulation for the sole purpose of eventually bailing out negligent economic agents. Moreover, the optimal level of international reserves is not independent of the exchange rate regime. If the currency floats freely, the authorities will have to decide how much of the adjustment should be carried out by the market through the appreciation or depreciation of the currency and when might it be justified to intervene in the foreign exchange market to try to smooth movements.

Circumstances differ across countries, and what seems an optimal strategy for reserve accumulation for one economy might not be a prudent framework for another country. Hence, those rules that provide simple prescriptions for the optimal level of international reserves (as a function of imports or short-term foreign liabilities) should, at best, be taken as very crude guidelines. Nevertheless, a proper level of international reserves, the possibility to contract credit lines with foreign financial institutions and exchange rate flexibility may serve as instruments to meet a liquidity shortage in international capital markets and even prevent the scarcity of funds from turning into a full-fledged solvency crisis.

Mexico's recent experience with a floating exchange rate regime and international reserve accumulation deserves some analysis. Even though Mexico adopted a freely floating exchange rate regime, the financial authorities deemed it convenient to accumulate reserves. Even in the context of a floating exchange rate regime, a relatively large stock of reserves is still suitable for an emerging market economy such as Mexico. This is because debt obligations must be serviced and because market participants and international financial organisations feel more comfortable with a country that maintains high levels of international reserves. Moreover, adequate levels of reserves pave the way for more favourable debt placement terms for both governments and private entities.

With this in mind, the Mexican authorities designed a scheme (the put options mechanism) for reserve accumulation whose main feature is not to alter the basic nature of the floating exchange rate regime. The mechanism favours commercial banks' sales of dollars to the central bank only when the market is offered, while inhibiting such sales when demand for foreign currency prevails. Dollar sales to the central bank take place through the exercise of previously issued put options by the central

bank. Hence, commercial banks that hold these options can only sell foreign currency to the central bank when the Mexican peso shows a definite trend towards appreciation. Thus, the options mechanism introduced in August 1996 has resulted in an important accumulation of international reserves in the context of a freely floating exchange rate regime.

References

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