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No 8 – September 2000

MANAGING FOREIGN DEBT AND LIQUIDITY RISKS

BANK FOR INTERNATIONAL SETTLEMENTS
Monetary and Economic Department
Basel, Switzerland

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Participants in the meeting

Argentina	Martin Lagos Vice President
Chile	Jorge Marshall Vice President of the Executive Board
China	Li Fuxiang Director General of the State Administration of Foreign Exchange
	Song Xiangyan Deputy Director and Senior Economist, BIS and Forum Division
	Jiao Haisong State Administration of Foreign Exchange
	Wu Yi International Department
Czech Republic	Zdenek Tuma Deputy Governor
Hong Kong	Tony Latter Deputy Chief Executive
Hungary	Werner Riecke Deputy President
India	Y V Reddy Deputy Governor
	A Prasad Executive assistant to the Deputy Governor
Indonesia	Anwar Nasution Senior Deputy Governor

Israel	Sylvia Piterman Director of Foreign Exchange Department
Korea	Bo Yung Chung Director General of the International Department
Mexico	José Sidaoui Deputy Governor
Peru	Javier de la Rocha General Manager
Poland	Ryszard Kokoszczyński Deputy President
Saudi Arabia	Mohammed Al-Jasser Vice Governor
	Khalid A Al-Swailem Director, Investment Banking Department
Singapore	Ong Chong Tee Senior Director, Foreign Exchange, Liquidity and Gold Division
South Africa	James H Cross Deputy Governor
Thailand	Tanya Sirivedhin Deputy Governor
BIS	William White (Chairman) Pablo Graf John Hawkins Elmar Koch Dubravko Mihaljek Robert Sleeper Setsuya Sato Philip Turner (Secretary)
BIS Asian Office	Robert McCauley

Managing foreign debt and liquidity risks in emerging economies: an overview

John Hawkins and Philip Turner

Introduction*

Recent crises have revealed major shortcomings in the management of foreign debt and liquidity in emerging market economies. Possible responses were discussed by a small group of senior central bankers at the BIS during a two-day meeting in December 1999. Ideas included an integrated approach to managing risks in a broader national balance sheet and reforms to the government's own asset and liability management practices. Another important topic was how far the adequacy of foreign exchange reserves should be judged in relation to short-term foreign debt. Policies towards the private sector's management of liquidity risks also featured. The country papers that follow highlight the main experiences of specific economies. This paper provides an overview of the main issues.

The first section looks at lessons from recent crises on the dangers of excessive foreign debt, particularly if it is short-term. The second section considers official policies to manage foreign debt. It begins by evaluating the idea of "national liquidity", ie comparing the total liquid assets over the whole economy with the total foreign debt, in terms of both conceptual validity and practicality. Drawing on this discussion, the question of how much government debt should be issued domestically and how much externally is then posed. The role of simple guidelines for government debt management and their relationship with reserve management is also discussed.

The third section focuses on the issue of how the "optimal" size of foreign exchange reserves – if this is a useful concept – varies across countries and over time. The so-called "Guidotti rule" is discussed, along with some possible modifications. The final section examines possible policies towards the private sector's external debt. Such policies include prudential rules for banks and other financial institutions, capital controls,

* This overview has benefited greatly from the cooperation, comments and statistical input of the central banks invited to the meeting. Robert McCauley made a particularly notable contribution. Special thanks also go to Marc Klau for the econometric exercise in Annex A, Melissa Fiorelli, Marc Klau and Denis Pêtre for assistance with statistical data, Edith Sutton and Emma Warrack for secretarial assistance and Steve Arthur and Liliana Morandini for help with its production. Helpful comments were received from Palle Andersen, Steve Arthur, Pablo Graf, Nigel Hulbert, Elmar Koch, Dubravko Mihaljek, Sylvia Piterman, Setsuya Sato, Alison Spurway, Graeme Wheeler, Bill White and Rainer Widera. Opinions expressed are those of the authors and not necessarily shared by the BIS or the central banks involved.

possible disclosure requirements or regulations for companies, and restrictions on households. Options for developing domestic bond markets as an alternative to foreign borrowing are also examined.

Foreign debt and liquidity risks: recent crises

Large (short-term and unhedged) external debt was a contributory factor to the Asian financial crisis.[1] For example, the external debt in developing countries as a group averaged 35% of GDP at end-1996; but it reached over 50% of GDP in Indonesia and Thailand. Moreover, the debt tended to take a more volatile form than in earlier crises (Table 1). The emerging market debt crisis of the 1980s essentially involved a limited number of banks lending to governments. By contrast, the Mexican crisis of 1994–95 involved thousands of entities that had lent to the government via financial markets. In east Asia, the borrowing was predominantly by the private sector (often directly by companies in Indonesia, but mainly through the domestic banks in Thailand) from

Table 1

Taxonomy of foreign liquidity crises

Lenders	**Borrowers**		
	Governments	Companies	Banks
Banks	Latin America 1980s	Indonesia 1990s Korea 1990s	Australia 1890s Thailand 1990s
Bond markets	United Kingdom 1720s Latin America 1820s Argentina 1890s Mexico 1990s	France 1720s Netherlands 1760s	UK 1790s

Sources: Kindleberger (1996); BIS.

[1] To Furman and Stiglitz (1998), "the ability of this variable, by itself, to predict the crises of 1997 is remarkable". An even stronger statement was recently made by a major credit rating agency. According to Mahoney (1999), "the evidence suggests that not only are good fundamentals an inadequate defence against illiquidity, but also that poor fundamentals are largely irrelevant if a country is liquid". A number of statistical and econometric studies have concluded that the ratio of (short-term) foreign debt to reserves is an important indicator of vulnerability to a currency crisis.

Table 2

Share of external debt denominated in domestic currency[1]

In percentages; end-1999

	Loans from international banks		**International debt securities[2]**		
	Banks	Other borrowers	Corporate issuers	Financial institutions	Public sector
China	0	9	0	0	0
India	9	2	0	0	0
Hong Kong	3	18	14	18	25
Indonesia	0	7	2	0	0
Korea	2	8	0	0	0
Thailand	3	7	0	28	1
Argentina	5	0	3	1	2
Chile	8	0	0	0	0
Colombia	3	0	0	0	0
Mexico	9	0	0	0	0
Peru	2	0	0	0	0
Venezuela	8	1	0	0	0
Czech Republic	23	5	0	0	0
Hungary	4	1	0	0	0
Poland	14	3	12	0	0
Russia	27	1	0	0	0
Israel	1	1	0	0	0
Saudi Arabia	4	3	0	0	0
South Africa	30	11	37	73	0
Memo					
Australia	19	29	13	17	43
Canada	10	28	7	8	19
France	44	75	73	54	63
Germany	61	62	64	56	99
Japan	61	29	44	28	16
United Kingdom	10	26	44	36	13
United States	81	85	78	83	95

[1] For some emerging economies the figures may be overestimates as it is assumed all loans not denominated in a major currency are denominated in the domestic currency. [2] By country of residence.

Source: BIS.

both securities markets and international banks. As most of the foreign currency borrowing was unhedged, it left the economies very exposed to large exchange rate depreciations. Attempts to stem the

depreciations with large increases in interest rates spread the problem to domestic currency borrowers.

Because much of the foreign debt was short-term, it required frequent rolling over. For example, the share of debt with a maturity of less than one year was over twice as high in Thailand and Korea as in the average developing country. This left the economies vulnerable to swings in financial market confidence: between mid-1997 and end-1999, the total decline in international bank credit to Indonesia, Korea, Malaysia and Thailand reached almost $140 billion. Even some of the apparently longer-term borrowing was subject to put options, rendering it effectively short-term. Some recent estimates suggest that $30–40 billion worth of emerging market bonds have such options.[2]

The large unhedged foreign currency borrowing reflected a significant lacuna in financial markets. Many emerging economies with a history of high inflation and depreciation, in the words of Eichengreen and Hausmann (1999) "original sin", face great difficulty in marketing long-term securities denominated in the domestic currency. In addition, foreign lenders will not lend in the domestic currency (Table 2) and will tend to be unwilling to stand on the other side of a hedge contract.[3] In these circumstances firms can only choose between a currency mismatch and a maturity mismatch.

The concept of "national liquidity" and government debt management

The concept of "national liquidity"

Recent crises have demonstrated that countries can be faced with liquidity problems not only because of the foreign assets and liabilities of the government and central bank, but also because of the foreign (or foreign currency) liabilities of the banks and even the corporate sector. A crucial difference between domestic and foreign currency debt

[2] Greenspan (1999) cites an IMF estimate that more than $30 billion in outstanding emerging market debt instruments have put options attached. Recent BIS estimates place the amount at around $40 billion, or 10% of outstanding emerging market bonds.

[3] Hedging between domestic agents is like a game of "pass the parcel" which does not reduce the national exposure.

is that the authorities can provide virtually unlimited domestic currency liquidity but are (often tightly) constrained in their provision of foreign currency liquidity.

This has led to consideration of a broad concept of "national liquidity".[4] However, the relevance of a national balance sheet for policy purposes is controversial. One polar view is that the external deficits and debt that are the result of decisions of the private sector – and not due to government borrowing – are of little concern to policymakers. Advocates of this view, famously crystallised by UK finance minister Nigel Lawson in the late 1980s, regard private sector firms, not the government, as responsible for the consequences of their own decisions. Accordingly, the government does not need to take precautions in its own financing decisions to cover private sector foreign currency risk exposures. Indeed, any emphasis on "overall national liquidity" in public policy decisions would run the moral hazard risk of encouraging domestic borrowers, or international lenders, to expect the government to bail them out in the event of a crisis. In this view, any mismatches between demand for and supply of foreign currency that arise from private sector decisions would simply lead to equilibrating changes in the exchange rate.

Scepticism about national liquidity management is perhaps easier to defend in the case of industrial countries – whose access to international liquidity at zero risk spreads is normally assured. However, there are at least four counterarguments in the case of countries that are not so well placed. The first is the existence of *externalities*: large net borrowings by some entities in the economy tend to increase country risk premia and thus raise the interest rate charged to all borrowers.[5] Moreover, individual private borrowers may be unaware that the aggregate level of private foreign debt could strain the country's ability to pay in a crisis. In some countries, the foreign financing decisions of major business enterprises could affect macroeconomic conditions.

[4] Sheng (1996) generalises further to look at the responsibility of policymakers for national risk management. The Financial Stability Forum's Working Group on Capital Flows (2000, p 2) recently issued a report calling for "a risk management system that involves a system for monitoring and assessing the risks and liquidity of the economy as a whole, including at a sectoral level".

[5] This effect may be increasing, as studies seeking to predict financial crises are increasingly according an important role to external debt.

The quantitative importance of this effect is hard to assess. A simple econometric exercise reported in Annex A suggests that government credit ratings are more closely related to government debt than overall national debt. An increase in government debt of 8–11 percentage points of GDP causes a one notch deterioration in credit ratings (eg from B+ to B), which could lift borrowing costs by around 40 basis points.

A "first best" solution to any such externalities would be to internalise them. In theory, some form of tax on foreign borrowing could do this. If the externality is greater for shorter-term debt, the levy could be structured to reflect this difference. Such a levy might need to vary with the degree of externality. In practice, however, such a levy would be difficult to design, although the Chilean levy on capital inflows (discussed below) has some of these features.

The second counterargument is that private sector choices may be *distorted* by various government policies. One common example of this is the choice of exchange rate regime; in particular, fixed exchange rate regimes may encourage borrowing in foreign currencies to take advantage of lower interest rates. If fears of devaluation emerge – even if unjustified in terms of fundamentals – there may be a "rush to the exits" similar to a bank run. This can arise if borrowers had previously not hedged their foreign debt because they trusted the authorities to maintain the fixed rate but now suddenly doubt the authorities' resolve. If many holders of debt seek to cover themselves at the same time, the authorities may be unable to defend the exchange rate without a very large increase in interest rates. Even this may not help if high rates are not regarded as sustainable (and if the banking system is weak they will not be regarded as sustainable). A possible response would be to impose prudential limits on the private sector's foreign currency exposures. Another example of policy-generated distortion arises from implicit or explicit guarantees given to banks.

The third counterargument is that the exchange rate would *overshoot* if a country's access to capital markets dried up and it were forced suddenly to repay its foreign currency obligations. This could cause a deep recession.

The fourth counterargument is that private sector debt decisions also impinge on *government income* and balance sheets in several ways. For example, foreign borrowing implies interest payments to non-residents (non-taxable) rather than residents (taxable). If interest payments are

tax-deductible, higher gearing cuts into government revenue. If excessive foreign debt brings down companies, the government's debt will increase further as both personal and company tax revenues fall and social outlays rise.

Another policy aspect is the question of whether/how the official sector should take account of the maturity and currency mismatches of the private sector in structuring its own foreign assets and liabilities. There is a plausible prima facie case for doing so: for instance, if private sector debt is too short-term (or has an unbalanced currency structure), then it could be argued that the public sector should choose a longer maturity (or a different currency). Yet there are dangers. If the government were to act as a residual balancing item, there would be a risk that the private sector borrowing cheap (short-term) would force the government to borrow dear (long-term).

Nevertheless, the concept of a national balance sheet raises several tricky questions. How far do private sector foreign assets offset liabilities? Most would exclude private sector assets held abroad (especially if not intermediated through the local banking system – for example, flight capital) on the grounds that these are unlikely to be mobilised to meet maturing liabilities of any other sector in the economy. Hence the relevant national balance sheet may differ from the balance sheet of domestic residents. Another issue is the extent to which foreign exchange exposures fully capture vulnerability. One aspect of this is the treatment of foreign investments in domestic currency assets such as money market instruments, bonds and equities that can be sold and the proceeds converted into foreign exchange. Since domestic residents can also behave similarly (if capital markets are well enough developed), the basic distinction between domestic and foreign exposure might be questioned.

Information on national liquidity

Even if the usefulness of a national balance sheet approach is accepted in theory, several practical issues still remain. Are the available data adequate to allow the effective management of such a balance sheet? Although data on the banking sector's liabilities are widely available, accurate information on the corporate sector's debt is scarcer. The true off-balance sheet positions of banks may also be obscure. In addition,

modern financial markets permit the rapid transformation of debt profiles – long-term debt can quickly be made short-term.

Table 3 shows the proportion of 18 emerging economies with data available on various components. Coverage of government and banking data is comprehensive and regarded as reliable, although in some cases the data in individual state-owned enterprises' balance sheets are not aggregated into an overall figure. There are some gaps for other financial institutions. In two cases the breakdown into short-term debt is based on original rather than remaining maturity. The main sectors for which data are generally unavailable and/or of low quality are the corporate sector and, even more so, the household sector (in some cases household data are not separately distinguished from the corporate sector). Some countries rely on data collected from foreign lenders (including by the BIS), or samples of large companies' annual reports, for data on the corporate sector's external debt. Korea surveys the corporate sector, but only every two years. Countries are more likely to have data on the external debt of the private sector if they have, or relatively recently had, some form of capital controls. A particular area of weakness is data on foreign currency credit lines; in many countries little is known about these, even for some parts of the public sector.

Table 3

Percentage of 18 emerging economies with data available

	Central gov't	Central bank	Other gov't	SOEs	Banks	Other FIs	Com-panies	House-holds
External debt								
Domestic currency	100	100	94	67	100	61	83	28
Foreign currency	100	100	94	67	100	67	83	28
of which: short-term	100	100	94	67	94	67	78	n.a.
Domestic debt								
Domestic currency	100	100	94	67	100	67	67	33
Foreign currency	100	100	83	56	100	61	56	28
Liquid foreign currency assets	100	100	89	56	100	67	56	28
Credit lines in foreign currency	100	100	78	39	67	50	33	n.a.

SOEs = state-owned enterprises; FIs = financial intermediaries.

Source: Central banks.

Progress in agreeing or issuing international guidelines on transparency is very recent and, as yet, relatively few countries meet these guidelines.[6] In practice, information on the debt and liquid assets of the central government and central bank is generally made publicly available, but there is much less disclosure of the activities of other areas of government. The aggregate positions of the banking system are generally disclosed, but less is published about other financial institutions. A notable area of secrecy is the extent of credit lines in foreign currency of the authorities and financial institutions; even when data are available they are rarely disclosed (Table 4). Some governments do not release data if thought to be of poor quality. In some countries the authorities worry that publishing central banks' off-balance sheet positions (eg use of swaps) would compromise the effectiveness of monetary policy by revealing the government's hand. Instead they wish to maintain a "constructive amibiguity". However, there is an important distinction between disclosing actions and disclosing strategies.

Even where data are released, care needs to be taken in their interpretation. For example, there are currently differences in reporting maturity profiles of debt; some countries report debt by *original* rather than the more useful *remaining* maturity. Chile recently adopted a stricter definition for debt by remaining maturity, counting as short-term debt any repayments of long-term debt due within a year. India has also started publishing data on short-term debt by remaining maturity; short-term debt by original maturity and repayments of long-term debt due within a year are seperately identified. In some cases derivatives positions may make the published data misleading. For example, at the onset of the Russian crisis the forward position of the banks was largely unknown to western investors. Their subsequent inability to honour these large forward contracts was a risk not revealed by the external debt data.

The IMF's Special Data Dissemination Standard (SDDS) establishes minimum standards for the coverage, frequency and timeliness of key macroeconomic data. The prescriptions for international reserves data

[6] Those issued or soon to be issued include: SDDS (discussed below); Disclosure of Foreign Currency Positions; Enhancing Bank Transparency; Trading and Derivatives Disclosures by Banks: Disclosure Framework for Securities Settlement Systems; Transparency about Adherence to International Standards; and Disclosures by Financial Institutions, including highly leveraged institutions.

Table 4

Percentage of 18 emerging economies with data published[1]

	Central gov't	Central bank	Other gov't	SOEs	Banks	Other FIs	Com-panies	House-holds
External debt								
Domestic currency	83	89	67	50	78	44	67	22
Foreign currency	83	89	67	44	83	39	67	17
of which: short-term	67	78	67	28	67	33	50	na
Domestic debt								
Domestic currency	100	78	50	28	72	44	67	17
Foreign currency	83	83	61	39	56	44	39	22
Liquid foreign currency assets	61	78	61	28	56	39	17	11
Credit lines in foreign currency	50	28	61	6	33	22	11	na

SOEs = state-owned enterprises; FIs = financial intermediaries.

[1] Includes cases where debt is prohibited.

Source: Central banks.

were significantly strengthened in March 1999 to follow a template developed in conjunction with the Committee on the Global Financial System.[7] By June 2000 the majority of 48 SDDS subscribers were adhering to the template. The new template was developed in particular in response to the view that the data available on reserves in the run-up to the Asian crisis were misleading.[8]

Total external debt is included in the SDDS requirements under the "international investment position" category. As this category of data is

[7] See CGFS (1998a, 1998b).

[8] The Working Group on Transparency and Accountability (1998, pp 15–16), commented that "following the flotation of its exchange rate on 2nd July 1997, Thailand revealed that although the central bank held gross reserves of $32 billion at the end of June, outstanding forward and swap liabilities totalled $29 billion. In Korea, the central bank reported that gross reserves totalled $24 billion at the end of November, but almost two-thirds of this amount was not readily available to the Korean authorities because it had been deposited with overseas branches of Korean banks to assist the banks in meeting their external obligations." In the case of Russia there has also been strong criticism about the disclosure of reserves. Funds made available by the IMF were passed to a company outside Russia. While this company used the funds to buy short-term Russian government paper, and even to make loans to Russian banks, it was still being reported as foreign currency reserves.

known to be difficult to compile, subscribers have until the end of 2001 to disseminate it. At the time of writing (July 2000) 28 countries fully met the standard. The standard requires annual data with a two-quarter lag, although quarterly data with a quarterly lag are encouraged. A breakdown of liabilities in the form of securities and loans, by currency and maturity, is only encouraged, not required, and only for countries where analysis of debt is highly desirable. (Domestic debt denominated in foreign currencies, or indexed to them, does not have to be disclosed as part of the international investment position.) International standards are being developed for the reporting of external debt statistics by borrowing countries.

An alternative source is data from lenders. The most important source for this is the BIS data on lending by international banks (Table 5). These data are supplemented with other components of

Table 5

External debt of emerging economies

	Asia	Latin America	Europe	Africa and Middle East
From international banks				
Level (end-1999)	304	277	170	126
of which: <1 year maturity	140	134	67	69
1–2 year	24	20	13	9
>2 years	93	100	75	42
of which: by banks	108	51	72	41
by non-bank private	151	167	72	61
by public sector	37	57	24	24
Percentage change (annual rates)				
June 1995–June 1997	18.1	11.2	13.8	–0.9
June 1997–Dec 1999	–12.1	4.8	5.0	10.5
Net issues of international debt securities (US$ billion; annual rate)				
1995Q3–1997Q2	29	38	5	2
1997Q3–1999Q4	3	27	10	4

Source: BIS.

external debt from three other international agencies (OECD, IMF and World Bank) to provide statistics on the external debt of 176 developing and transition economies, which have been released quarterly since March 1999 (Table 6).

The data show a wide variation across emerging economies in the reliance on external debt and its maturity pattern. Bank loans account for around 40% of external debt. Latin America and central Europe make more use of securities (including Brady bonds) than do other regions. In Africa and the Middle East bond issuance is less common and there is more reliance on official lending. Typically between one quarter and one half of total foreign debt matures within a year, with bank loans tending to have a shorter maturity than other forms. About half the

Table 6

Composition of external debt of emerging economies

End-1999

	Asia	Latin America	Central Europe	Africa and Middle East
Composition of external debt: percentage of total[1]				
Bank loans	39	33	39	42
Debt securities issued abroad	17	32	22	10
Brady bonds	0	14	7	1
Non-bank trade credits	6	3	15	19
Multilateral claims	20	14	4	10
Official bilateral loans	17	4	12	17
Currency composition of long-term debt				
US dollars	52	87	47	62
Euro[2]	10	5	36	23
Japanese yen	29	4	3	5
Pounds sterling	2	0	2	3
Other (including multiple currencies)	6	4	13	7

[1] Approximate; based on major economies only and may include some double-counting. [2] Includes those originally denominated in legacy currencies or ECU.

Sources: Joint BIS-IMF-OECD-World Bank statistics on external debt (www.oecd.org/dac/debt/index.htm); BIS.

debt from banks is incurred directly by the non-bank private sector, a third by local banks and a sixth by the public sector. Banks have sharply cut their exposure to emerging economies, particularly in Asia, since mid-1997. Net issues of international bonds have almost dried up in Asia but are still substantial in Latin America, notably Argentina and Mexico.

The US dollar is by far the dominant foreign currency for borrowing in Latin America. In central Europe and Africa both the dollar and the euro play a large role. The dollar and yen are the most important in Asia.

Domestic and external borrowing by the government

Many emerging economies rely on external investors to hold a significant proportion of their debt. As Table 2 shows, this foreign debt is overwhelmingly denominated in foreign currency. In some countries, even a significant proportion of the domestically held debt is denominated in foreign currencies. The choice between domestic and foreign borrowing is complex and reflects several sets of factors. Four important dimensions are: macroeconomic; public choice; debt servicing; and balance sheets.

The main *macroeconomic* difference between domestic and foreign borrowing in the short term is that government borrowing locally pushes up domestic interest rates, and so crowds out private sector borrowing (perhaps forcing the private sector to borrow abroad). In the short term, foreign borrowing tends to avoid this crowding-out effect.[9] However, over time, as repayments rise, servicing foreign debts exerts a deflationary drag on the economy.

The *public choice* dimension arises because the manner of financing deficits affects the political debate about their size. Ensuring that the unpleasant consequences of heavy government borrowing are felt immediately (ie through higher domestic interest rates) may be more conducive to sober policymaking than resorting to devices (eg foreign

[9] Foreign borrowing may still push up domestic yields if it raises government debt to a level where credit risk becomes an important consideration. In practice, this seems to be a second-order effect; more important is the effect on the exchange rate.

borrowing) that postpone the pain. Even within western Europe, for example, countries have had quite divergent attitudes. The policies of Ireland and Sweden provide an illuminating contrast. Ireland in the 1980s made heavy use of foreign borrowing, preferring not to crowd out domestic borrowing by pushing up bond yields. The result was an easing of discipline on government borrowing. Eventually, mounting interest costs on foreign debt became a substantial drain on national income and the budget. By contrast, Sweden over a similar period avoided foreign borrowing almost entirely, so that the full impact of government deficits was reflected in bond yields, which rose to very high levels. In this way, it was hoped to build public support for a more disciplined fiscal stance. However, one consequence was that the private sector borrowers who were crowded out of domestic capital markets sought offshore funding – in effect, forcing the private sector to do what the public sector had avoided. Swedish banks' borrowing abroad rose substantially, and eventually doubts about their ability to meet their foreign currency obligations forced the government to guarantee them. In short, the government did not – despite its best intentions – escape the consequences of reckless private sector foreign borrowing. This was a major element of the Swedish banking crisis.

The third element is *debt servicing*. Particularly in emerging economies (whose domestic interest rates exceed international levels), the main incentive for governments to make heavy use of foreign currency debt is simply that it minimises current interest costs. But this is very imprudent because it leaves the country vulnerable to contagion risks as the bonds may become hard to roll over if there is a crisis in neighbouring or "similar" countries. If the exchange rate is devalued in such a crisis, the "cheap" debt will become very expensive (and, of course, if foreign interest rates are well below domestic rates, this is itself an indication that markets think the domestic currency is more likely to depreciate than appreciate[10]). Even in fundamentally sound

[10] If governments borrow in the foreign currency with the lowest interest rates, the situation may be even worse. This is the very currency markets are expecting to appreciate the most. This problem is exacerbated by the effect known as the "peso problem". The observed behaviour, as opposed to "textbook" behaviour, of exchange rates in high interest rate economies is not a gradual depreciation but long periods of stability followed by very sharp depreciation.

economies, there may be a liquidity crisis in the sovereign debt market if self-fulfilling adverse sentiment develops.

Another possibility is to issue debt denominated in the domestic currency but indexed to the exchange rate. The Mexican tesobonos are the best known example. From an analytical viewpoint, this is almost equivalent to borrowing in foreign currency, but can be less transparent if disclosure on currency denomination is incomplete.

Furthermore, as long-term foreign borrowing by developing countries with a low credit rating is often judged to be too expensive, there is a tendency for the "weaker" borrowers to rely too heavily on short-term borrowing because the credit risk spread is usually lower. This makes the rollover problem much more acute. While longer-term debt appears more expensive, in Greenspan's (1999) words "this short-sighted approach ignores the insurance imbedded in long-term debt, insurance that is often well worth the price". Even longer-term debt can present a rollover risk (for example, as a result of sanctions imposed on a country for political reasons) if it is concentrated on a particular maturity.

The final aspect is the *balance sheet* dimension: the nature of liabilities chosen depends on the nature of assets on the other side of the balance sheet. An approach pioneered by New Zealand is to relate government debt management to an overall government balance sheet, encompassing not just financial assets and debts but physical assets, such as schools and roads, and liabilities for future pensions. It is possible to go further and also incorporate the present discounted value of future tax revenue and social expenditures. While there are practical difficulties, such as in the treatment of contingent liabilities from implicit or explicit deposit insurance, some useful conclusions have emerged from this work:[11]

- as the average duration of government assets is quite long, longer-dated debt should be issued;
- as the assets are mostly insensitive to exchange rate movements, most debt should be in domestic currency;
- as many assets generate returns that are more stable in real than in nominal terms, there is a case for issuing inflation-indexed debt (although this raises some wider issues which are discussed below).

[11] See Anderson (1999) for further information.

The exercise could potentially be extended to cover all national assets and liabilities, adding the value of houses and factories (and human capital?) and netting out domestically held equity and pension entitlements. This would probably reinforce the message that the greater part of government debt should be long-term and denominated in domestic currency.

A final possibility to be reviewed is that the government may issue too little foreign debt from a national perspective, rather than too much. For example, the Central Bank of Chile reports that the government raised $0.5 billion in bonds in 1999, just to maintain a presence in international bond markets, even though it did not need the funds. The Bank noted that "before this sovereign debt was issued there was no reliable measure of country risk because all other Chilean bonds were corporate, and Chilean debt was treated similar to other countries' debt. Preliminary observation of spreads after this placement showed a positive externality in country-risk premium for the private sector".[12] Other countries have also noted that government foreign debt issues can usefully establish benchmarks. Furthermore, regular small issues maintain access to the market, which may be helpful in the event of a sudden need for heavier borrowing.

The Financial Stability Forum's Working Group on Capital Flows (2000, pp 24–26) recommends that a set of operational guidelines or sound practices should be developed for government asset/liability management. The IMF and World Bank are currently working on developing such guidelines.

Strategies to reduce the cost of government external debt

Another way of cutting immediate borrowing costs is to offer foreign investors some form of sweetener. As noted above, put options have been issued to allow early repayment in special conditions (eg the Industrial Finance Corporation of Thailand issued bonds with put options that could be exercised in the event of a lowering of its credit rating). But this is a risky undertaking because such options would be exercised just when the country is under pressure. In general it would seem wiser

[12] See the paper by Marshall in this volume.

for countries to buy options rather than write them to avoid paying a sovereign risk premium. As purchasers of options would know the options will only be exercised when the country is in difficulties, they will price in the possibility that the country will not honour them. Often bonds will have cross-default clauses under which the government must repay early if it defaults on obligations to any other creditors.

A preferable way of limiting interest costs is to offer an option that only pays when a country is doing well or structured notes with contingent payment terms. Thus far, as Haldane (1999, p 200) comments, "there are to date only a handful of real-world examples of emerging countries issuing state-contingent debt. They include Bulgaria which has issued GDP-indexed bonds and Mexico which has issued oil-indexed bonds". But there is scope for their wider use. The "Willard" Working Group on International Financial Crises (1998, pp 11–12) notes that "while the purchase price of such insurance may seem expensive during periods of strong capital flows to emerging markets, recent events have illustrated the potential value of … bonds linked to the prices of key commodities as well as bonds linked to overall indices of emerging market risk. The recent development in advanced markets of bonds issued by insurance companies that cease payment in the event of a catastrophic natural disaster suggests the possibility of developing markets for innovative bonds that contain a similar form of risk-sharing. It is also worth considering the addition of options to sovereign bonds and interbank credit lines that would allow a debtor government or debtor banks to extend the maturity of a bond or credit line for a specified period of time at a predetermined spread."

Greenspan (1999) suggested a rule whereby the average maturity of external liabilities should exceed, say, three years. Moreover, dates for scheduled repayments should be evenly distributed over time and not concentrated in any particular period either.[13] This would tend to limit repayments falling due during (usually short-lived) periods of crisis when

[13] Anderson (1999, p 9) also argues that "as well as reducing the pressure on markets when the supply of bonds increases unexpectedly, an even maturity profile also provides a sovereign with greater flexibility in an environment of fiscal surpluses. It increases the chances of having sufficient debt maturing with which to use surpluses without needing to repurchase debt or build up assets, which have cost and risk consequences." In addition, a rule on dispersion would prevent countries evading the intent of the rule, for example by holding a small amount of bonds with an extremely long maturity so that the "average" maturity is over three years.

credit risk spreads are abnormally high. An additional advantage is that lenders would be involved in some burden-sharing as they are exposed to capital losses on long-term bonds. While some countries might object that selling enough long-term securities to meet such a rule is impossible (or prohibitively expensive), it could be argued that this is really an admission of excessive borrowing.

Management of central government debt

Tables 7 and 8 show the institutional arrangements for government debt management. Some results from a survey of about 50 developing economies by the World Bank are given in the bottom row of Table 7 and in Table 8. It is striking that over half the respondents to the World Bank's survey mentioned institutional capacity as their major problem in debt management.

The use of benchmarks is becoming more common in debt management. For example, Colombia has benchmarks for liquidity (less than 15% of the outstanding stock should mature within a year, the average maturity should be at least 5 years), interest rate (less than 30% should carry a floating rate, the modified duration should exceed 3–4 years) and currency composition (US dollar 83%, euro 13%, yen 4%). Rationales for currency benchmarks include matching the external debt structure with that of international reserves, exports or the currencies in the basket against which the local currency is pegged or managed.[14] Countries without benchmarks often have guidelines such as limiting short-term debt, matching foreign currency debt to reserves or limiting floating rate debt. Once a benchmark is established, the next question is how much discretion should be allowed the debt managers to deviate from the benchmark. While cost savings are possible from the judicious switching between different maturities and currencies, there are also serious risks in trying to beat the market, particularly if the debt management agency does not have experienced staff and adequate middle and back office monitoring. Furthermore, the government will often be sufficiently large to move markets against it if it tries to move aggressively.

There are many other decisions to be faced in designing a government bond programme. For example, issuing bonds according to a preannounced calendar may reduce uncertainty in the market

[14] Setting the benchmarks is also not easy. Claessens (1992) presents a procedure to calculate the optimal currency mix for external debt by calculating the portfolio that "minimises the variability in domestic currency of export earnings net of foreign liability debt service". However, he finds the relevant covariances are often unstable.

Table 7

Institutional arrangements for debt and reserves management

	Central government		State/local government	SOEs	Reserves
	Domestic currency debt	Foreign currency debt		Foreign debt	
China	MoF	MoF	not allowed	SOEs	SAFE
India	CB	MoF	not allowed	SOEs	CB
Hong Kong	none	none	none	SOEs	CB
Indonesia	MoF	MoF	not allowed		CB
Korea	MoF	MoF	own responsibility[1]	SOEs[2]	CB
Singapore	MoF & CB	none			CB
Thailand	DMO under MoF	DMO under MoF	none	MoF	CB
Argentina	MoF	MoF	own responsibility		CB
Chile	none	MoF	not allowed	MoF	CB
Colombia	MoF	MoF	state govts/MoF	SOEs/MoF	CB
Mexico	MoF	MoF	SOBs	MoF	CB
Peru	DMO under MoF	DMO under MoF	DMO under MoF	MoF	CB
Venezuela	MoF	MoF	not allowed	not allowed	CB
Czech Republic	MoF	none	MoF[3]	SOEs	CB
Hungary	DMO under MoF	DMO under MoF		none	CB
Poland	MoF	MoF	own responsibility		CB
Russia	MoF	MoF	regional agencies		CB
Israel	MoF	MoF	own responsibility	SOEs	CB
South Africa	DMO in MoF	DMO in MoF	not allowed	MoF	CB
World Bank survey	MoF (55%) CB (11%) MoF & CB (30%) other (4%)	MoF (51%) CB (11%) MoF & CB (30%) other (8%)			

CB = central bank; DMO = debt management office; MoF = ministry of finance; SAFE = State Administration of Foreign Exchange; SOBs = state-owned banks; SOEs = state-owned enterprises.

[1] Require approval of Ministry of Government Administration and Home Affairs. [2] Require approval of Ministry of Planning and Budget. [3] MoF has only weak restrictive powers; large municipalities are largely autonomous.

Sources: Jensen (1999); central banks.

but has the drawback of constraining the government's flexibility. Marketing bonds to retail investors involves higher transactions costs; but such investors may be more stable holders than institutional investors (particularly foreign institutions).

Table 8

Survey of institutional arrangements for sovereign debt management

In percentages

	Oct 1999	(Oct 1997)
Coordination of foreign currency debt and reserves management		
None	34	
Meetings between ministry of finance and central bank	45	
Reserve composition and debt matched	11	
Both managed by central bank	10	
State, provincial or local governments and SOEs raise funds abroad	71	(74)
of which: with explicit central government guarantee	51	
Highest approval needed for individual borrowing transaction (domestic/foreign)		
Parliament or congress	6/21	
President or prime minister	6/9	
Ministerial board	8/12	
Minister, governor or head of debt management agency	80/58	
Government collects data on external debt of private banks	57	
Government collects data on external debt of other private entities	51	
Established a strategic benchmark for domestic currency debt management	10	
Established a strategic benchmark for foreign currency debt management	21	(2)
Using analytical tools	40	
of which: value-at-risk	15	
duration	6	
debt sustainability/sensitivity scenario	10	
other	9	
Use derivatives to hedge currency or interest rate exposure	27	(31)
Use currency swaps for liability management	29	(35)
Use exchange-traded financial futures and options	2	(0)
Use commodity futures and options	7	

Source: Jensen (1999).

There are some parallel arguments between the domestic/foreign currency choice and the nominal and indexed debt choice. Theory suggests the mix should depend on the nature of the most common shocks.[15] Frequent supply shocks (such as oil price rises) favour nominal debt. Demand and monetary shocks favour indexed debt.[16] Issuing indexed (or foreign currency) debt may avoid the cost of an inflation (exchange rate) risk premium and comparing the yields on it with those on nominal domestic debt provides a useful and timely measure of inflation (exchange rate) expectations. Supporters of indexed (or foreign currency) debt have argued it can underline a commitment to low inflation while issuing nominal (domestic currency) debt creates a temptation to inflate.[17] However, some opposition to indexed debt reflects concern that it weakens the constituency against inflation.

In practice, indexed bond markets are usually much less developed and liquid than nominal bond markets even in those countries where they have a long history.[18] Apparent reasons are unfavourable tax treatment, low expected inflation, the more complicated return offered and the illiquidity of indexed bonds, which are mainly bought by institutions such as pension funds wanting to hold them to match long-term liabilities. It remains an open question whether the heavier issuance of indexed debt would itself improve the liquidity of the market.

Some government debt is guaranteed by international agencies, allowing the governments to borrow more cheaply. For example, the World Bank guaranteed interest payments on yankee bonds issued by the Electricity Generating Authority of Thailand in April 1999 and some debt for key projects in China. A debt issue by the Petroleum Authority

[15] Missale (1999) provides a guide to the theoretical literature. Barro (1997) argues that, if the government's aim is to smooth taxes over time to minimise its distortions, it should issue long-term indexed debt. See also Anderson (1999) for the effect of this literature on actual government strategy.

[16] The argument is that "negative supply shocks (such as an oil price rise) have the effect of increasing inflation and decreasing real income, therefore leading to a deterioration in the fiscal position. To reduce the need to increase taxes in the face of such an event, a debt portfolio comprising nominal long-term debt is preferable to inflation-indexed debt. In the case of a negative demand shock (such as a tightening of monetary policy) both output and inflation would decelerate, and the government's fiscal position would deteriorate. In these circumstances, inflation-indexed debt servicing costs would fall and help offset the deteriorating fiscal position." Anderson (1999), p 4.

[17] See Jónsson (1999), who reviews Iceland's experience with financial indexation.

[18] An exception is Israel.

of Thailand in 1998 was guaranteed by Japan's Ministry of International Trade and Industry. Some Israeli debt was guaranteed by the US Treasury.

Government agencies will sometimes use derivatives to manage currency or interest rate exposure. For example, all the yen bonds and two Deutsche mark bonds issued by Colombia have been swapped into US dollars. However, their use of derivatives is only modest (Table 8), mainly reflecting a lack of institutional capacity.

Debt of other tiers of government

In some emerging economies, state/provincial and local governments and state-owned enterprises also borrow substantially abroad. This debt is usually formally guaranteed by the national government (Table 8). Even when not, it is often regarded as implicitly guaranteed. In many cases, the agency managing debt for the central government also manages debt for state/provincial governments and state-owned enterprises (Table 7).

One important question is how far the central government should control borrowing by other government entities. In practice, decisions on the coordination of debt issues are highly political. Under Indonesia's "one window" policy, the ministry of finance is the only public sector body authorised to negotiate and sign agreements on foreign borrowing. This will change in 2001 as part of a programme to allow more regional autonomy.

Coordination of reserve and debt management

In most countries, the management of foreign exchange reserves and the management of the government's foreign debt are assigned to two distinct organisations with distinct mandates. This is because reserves and debt need to be managed according to quite different objectives. The reserve manager's main mandate is to ensure adequate liquidity – and this will dictate holding short-term and highly liquid assets. But the debt manager will typically want longer term liabilities to limit refinancing risks. Assigning these two different tasks to separate institutions has the advantage of facilitating accountability since each institution can be called to account for its area of responsibility according to specially tailored criteria.

Nevertheless, a degree of coordination between the management of reserves and debt can in principle reduce risk exposures. This can apply

to levels of reserves/debt, to currency of composition, and to maturity. As to levels, it may be wasteful for the public sector simultaneously to issue large amounts of foreign debt and hold large amounts of foreign reserves, as the return on the reserves is likely to be well below the cost of the debt. However, to some extent such borrowing can be justified as a form of insurance (or purchase of liquidity) to ensure reserves are adequate to meet an unexpected demand.[19] In addition, the currency composition of reserves may influence the currency composition of debt. For example, it could be a mistake for the debt managers to buy a derivative to remove their exposure to a given currency if there is already an offsetting exposure in the international reserves. Similar considerations may apply to maturity – for example, to prevent both debt office and central bank from lengthening maturities at the same time because they have different views about future interest rate trends.

However, there are often formidable practical difficulties in organising such coordination and Table 8 suggests it often does not occur. When it does, it is more likely to result from meetings between the debt managers (often part of the finance ministry) and the central bank rather than because the one agency is responsible for both.

Colombia's Debt Advisory Committee brings together the central bank and ministry of finance to determine the currency benchmarks for external debt taking into account the international reserves and balance of payments projections. In Thailand, the National Debt Policy Committee (which comprises the central bank, two agencies within the finance ministry and the National Economic and Social Development Board) performs a coordinating role. In China, the structure and liquidity of foreign exchange reserves are often adjusted according to the external debt.

Stress testing

By analogy with bank supervisors' requirements that banks assess the effect of various adverse shocks on their capital through value-at-risk calculations, the authorities might assess the extent to which the

[19] In some countries it may reflect internal politics. Paying off government agencies' debt using international reserves may remove an important discipline on them.

national liquidity position is vulnerable to shocks. Greenspan (1999) suggests calculating "liquidity-at-risk" based on "a range of possible outcomes for relevant financial variables (exchange rates, commodity prices, credit spreads etc)". Countries could then assess whether they held sufficient liquid assets to avoid new borrowing for a year with an x0/0 probability. The calculations could (and indeed should) allow for use of credit lines or exercise of options etc.

Such an approach has several weaknesses, some remediable, others not. The first is that the exact results would be model-dependent. To address this, it may be worthwhile using alternative models and assessing the sensitivity of the results to certain key parameters. A second weakness is that these kinds of analyses typically assume that shocks are normally distributed. There is some evidence that true distributions are "fatter-tailed", at least at the far end of one tail. For example, share prices fell by a third in October 1987 but have never *risen* by a third in the space of a few days, and minor currencies seem to experience rapid large depreciations against major currencies more often than appreciations. However, there is by definition little experience of these extreme events from which to calibrate distributions. A third problem is that covariances calculated during normal times may no longer apply (and could even change signs) during extreme conditions, and may be influenced by policy responses. These factors all argue for caution in using the "liquidity at risk" approach. But however inexact these calculations, they should sharpen thinking about the risks as well as benefits of short-term foreign borrowing.

"Risk audits" or "stress tests" are carried out by only a few economies. The Central Bank of Peru evaluates different scenarios for their economic programme contingent to external shocks once or twice a year. Monthly evaluations are made of the targets of the monetary programme. Mexico's central bank conducted an exercise in mid-1998 to evaluate liquidity needs given the scarcity of foreign capital. The exercise was carried out using different assumptions regarding the rollover ratios of bonds and commercial paper maturing during 1999, as well as of credit lines from foreign commercial banks. In Korea, the effects of various shocks such as devaluation and an oil price hike on the liquidity and external debt profile of the overall economy are frequently analysed. Thailand's Ministry of Finance uses the Commonwealth Secretariat Debt Recording and Management

System (CS-DRMS) to conduct sensitivity analysis of its foreign debt. In India both the Reserve Bank and the Ministry of Finance use the CS-DRMS to undertake scenario analysis of external debt which provides an important input to policy formulation.

Implications for foreign exchange reserves

Is there an optimal level of reserves?

A crucial aspect of liquidity management is the level of (potential) international reserves. In the Asian crisis, the economies with the largest reserves were able to hold their exchange rates steady (China and Hong Kong) or suffered only relatively modest depreciations (Singapore and Taiwan) while most other emerging economies in the region suffered severe devaluations. A recent poll of reserve managers supports Fischer's (2000) supposition that "it is very likely that countries seeking to draw lessons of the international financial crisis will decide to hold much larger reserves than before".[20] One senior emerging economy central banker characterised the prevailing view as "the more reserves the better". Table 9 and Graph 1 show just how much reserves have increased in Asia since the crisis.

Even countries with a pure floating exchange rate regime hold reserves, as insurance against natural disasters. But it is no easy matter to decide how large international reserves (or the liquid component of them) need to be. The optimal level could depend on a number of factors, such as the volatility of the real economy, which is typically higher in emerging economies than in advanced economies. Countries operating a fixed exchange rate regime, or which are particularly vulnerable to exchange rate swings, may need even more liquidity. Countries with large current account deficits or undiversified exports, or that are vulnerable to contagion from weak neighbours, may also need more conservative liquidity management policies. Economies with better access to international financial markets may need fewer reserves. These factors will differ between countries but also change over time.

[20] See Weller (1999).

Table 9

Foreign exchange reserves[1]

	June 1997	December 1999	June 1997	December 1999
	in billions of US dollars		as a ratio to short-term debt	
China	121	155	4.0	8.2
India	25	32	3.3	3.7
Hong Kong	68	96	..[2]	..[2]
Indonesia	20	26	0.6	1.4
Korea	33	74	0.5	2.1
Thailand	31	34	0.7	2.4
Argentina	19	26	0.8	0.7
Chile	17	14	2.2	2.0
Colombia	10	8	1.5	1.5
Mexico	23	31	0.8	1.3
Peru	11	9	2.0	1.4
Venezuela	13	12	3.6	2.5
Czech Republic	11	13	1.8	2.4
Hungary	8	11	2.1	2.3
Poland	20	27	5.0	4.1
Russia	20	8	0.5	0.8
Israel	18	23	6.7	6.3
Saudi Arabia	14	15	2.1	1.5
South Africa	4	6	0.3	0.5

[1] Excludes gold. [2] As this includes banking sector liabilities, it is not a suitable measure for countries with a large international banking sector.

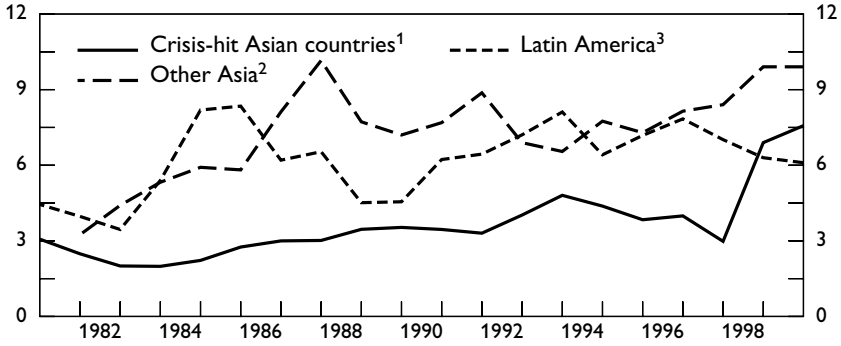
Sources: BIS; IMF.

Countries may also wish to hold temporarily higher reserves during the process of liberalising capital controls.

Some have argued there is no *objective* way of calibrating the desired level of reserves: it may simply be necessary for developing countries to maintain reserves at a level that the market (and rating agencies) perceive to be *adequate* in the circumstances. The market's idea of adequacy may depend on the "reputation" of the country, its recent record of depreciation or default. Or it may just be based on the level of reserves *relative to that in comparable countries*. If this is the case, there might be a significant problem for international economic policy:

Graph 1

Foreign exchange reserves expressed in months of imports



Note: End-year reserves divided by the average monthly imports for that year.

[1] Indonesia, Korea, Malaysia and Thailand. [2] China, India, the Philippines, Singapore and Taiwan. [3] Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela.

countries may "compete" with each other and drive up reserves to wasteful levels.

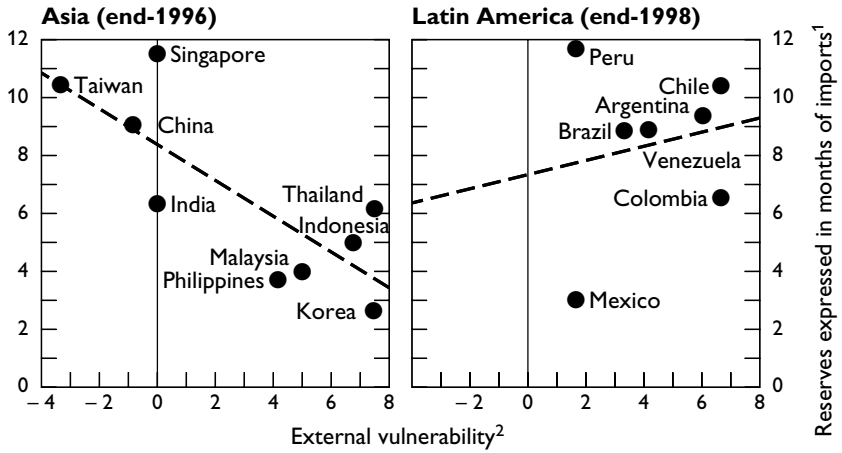
The level of reserves is often just the by-product of other policies or events. In the case of Hong Kong, the currency board arrangement means that the level of reserves is largely determined by capital flows, the size of the accumulated fiscal surplus (which is largely invested in foreign currency assets) and the earnings thereon. In other countries, the current level is largely a reflection of past intervention to achieve exchange rate objectives. Some central banks are constrained to accumulate reserves by agreements with the IMF.

In practice, however, it is difficult to establish any clear relationship between a country's reserve levels and its potential vulnerability to liquidity crises. By way of illustration, Graph 2 compares the reserve/import ratios of Asian and Latin American countries before their respective crises.[21] There does not seem to be any strong positive

[21] The index is a weighted average of scores for the following indicators of external vulnerability: the deviation of the real effective exchange rate from its long-term average, the current account balance as % to GDP, export growth relative to trend, the level and growth of external debt as % to GDP and the ratio of short-term debt to international reserves. The maximum score (ie greatest vulnerability) is 10. It is discussed in more detail in Hawkins and Klau (2000).

Graph 2

Foreign exchange reserves and external vulnerability



[1] End-year reserves divided by the average monthly imports for that year. [2] Based on BIS calculations: the higher the score, the greater the external vulnerability.

correlation. Indeed, in Asia, as shown by the fitted lines, the relationship is if anything inverse. In Latin America there is a slight positive relationship. This admittedly quick and crude test suggests that policy-makers in countries where external vulnerability is high do not direct their central bank to hold high reserves as a precaution against future trouble.[22]

There are, of course, *costs of holding reserves*. Their assessment is complicated by the alternative opportunity costs used to calculate them. The opportunity costs of reserves accumulated from a succession of current account surpluses are the returns on *forgone domestic investment*. This approach is prevalent in the academic literature. It is particularly salient at present in Asia; the large reserve accumulation

[22] Similar results apply when the IMF's indices of "vulnerability" are used. See IMF (2000). The correlation between reserve holdings relative to short-term debt in emerging economies as at end-1999 (shown in Table 9) and the volatility of economic growth over the previous two decades is actually negative while the correlation with past volatility in capital flows is zero. Nor are the high reserve holders those with the lower credit ratings. However, this lack of correlation must be interpreted with caution as, while vulnerability could lead a country to hold more reserves, this would itself lower the measure of vulnerability.

can be viewed as the counterpart of a much reduced rate of domestic investment. However, the marginal productivity of capital is hard to measure.

A more common approach by policymakers is to calculate the *quasi-fiscal* cost of acquiring assets of low-yielding international paper through the issuance of often high-yielding domestic currency liabilities.[23] For many high-inflation countries that have implemented drastic stabilisation policies based on a fixed (or nearly fixed) exchange rate, this cost has proved to be very heavy. Yet the ultimate cost of holding reserves may be lower than this once allowance is made for future depreciation of the domestic currency. In the case of foreign borrowing to build reserves, the cost is the *credit spread*, negligible for borrowers at the upper end of investment grade, but high for many emerging economies. Both of these calculations might overstate the cost of reserve accumulation to the economy as a whole; higher reserves may lead to improved sovereign credit ratings and so lower interest rates for many borrowers. Increasing foreign reserves by borrowing demonstrates that foreign counterparties are comfortable with extending credit. And of course recent crises have shown the cost of running out of reserves can be very high.

Building up and holding excessive reserves may also give rise to other types of costs, such as excessive monetary expansion – particularly when underdeveloped financial markets limit the effectiveness of sterilisation operations – or policy mistakes that high reserves allow to be maintained for longer.

Rules of thumb for reserve adequacy

In the days when the balance of payments was dominated by trade, holding the equivalent of three months' imports was regarded as a useful rule of thumb. Some countries still to some extent apply such rules. The Czech central bank aims at keeping reserves at over three months' imports while in Chile the goal is five to six months. Poland revised its reserves target from three to six months following recent

[23] This cost may be negative for those few countries (at present China, Japan and Singapore) whose domestic interest rates are lower than those paid on the currencies they hold as reserves.

currency crises. Although India does not have a specific reserve target, adequacy of reserves is assessed in relation to the stock of short-term debt and portfolio flows apart from the traditional import cover.

An alternative (or additional) rule of thumb for today's environment, where capital flows dwarf trade, was brought to public attention by Greenspan (1999). It is often called the "Guidotti rule", as a form of it was proposed by Guidotti (1999). The rule states that usable foreign exchange reserves, including any available through contingent credit lines, should be sufficient to meet all repayments and interest on foreign debt falling due over the next year.[24] (This rule is sometimes expressed as "being able to live without new foreign borrowing for up to one year". This is not a helpful way of putting it as it implicitly assumes that there is a balanced current account and no other capital transactions. In particular, it assumes no capital flight, and this is most likely to occur just when the adequacy of reserves is attracting most attention.) An earlier measure used by Reddy (1997) combined both rules of thumb; he expressed India's reserves in terms of "months of payments for imports and debt service taken together" but also noted the need to supplement this statistic with other indicators.[25]

Some recent empirical support for the Guidotti rule is provided by Bussière and Mulder (1999).[26] The rule would also have been a good predictor of the Asian crisis. The crisis-hit Asian countries' reserves had been less than their short-term debt (and their *underlying* reserve position was even weaker – see footnote 8) while the other Asian countries' reserves position was much stronger – see Tables 9 and 10

[24] But as Grenville (1999, p 49) comments, "it raises the issue of why this short-term debt was useful in the first place, if the proceeds of the short-term borrowing have to be stacked away in reserves (at a lower rate of return than the cost of borrowing)".

[25] Reddy noted that other indicators (such as short-term debt and portfolio flows) were also taken into account in assessing reserve adequacy in India: the total stock of short-term debt and portfolio flows was less than 75% of the level of reserves.

[26] They find that the level of reserves relative to short-term debt is one of a few key variables useful for predicting financial crises. It performs much better than relating reserves to imports, money base or money supply. Their results suggest (p 5) "higher liquidity (as presented by the level of reserves over short-term debt) can offset weak fundamentals (as represented by the current account deficit and the appreciation of the exchange rate) and limit the vulnerability of countries in periods of contagion". Based on the estimated parameters, "as a rule of thumb, for countries with real exchange rates that are not significantly misaligned, and modest current account deficits, a reserve coverage of short-term debt of one is broadly consistent with avoiding sizeable contagion". See also IMF (2000).

Table 10

Comparison of imports rule and Guidotti rule

	Reserves/imports	Reserves/short-term debt
	in months; June 1997	in percentages; June 1997
Crisis-hit Asian countries	3.8	66
Other Asia	8.7	123
Latin America	7.6	123

and Graphs 1 and 2. By contrast, even the crisis-hit countries had been comfortably meeting the traditional "three months' imports" rule.[27]

The Guidotti rule has the virtue of simplicity but it only focuses on one type of potential claim on international reserves. An easy modification is to add the forecast current account deficit to the denominator.[28] A more sophisticated approach would also look at other financial claims and their probability of being redeemed in a crisis. This requires greater knowledge about the terms of outstanding debt and about the different classes of investors that hold debt. A start could be made on such a distinction by looking at the volatility of capital flows during past crises. It could be argued that reserves should be related to some volatility-weighted aggregate of liabilities in order to quantify more precisely the exposure to sudden capital outflows. For example, FDI was far more stable than portfolio and bank flows during the Asian crisis; and this has generally been the case in emerging economies.[29] Reddy (1999, and his paper in this volume) suggests trade-related credit is less volatile than other forms of short-term credit. Liabilities that easily reverse might be thought to "require" higher

[27] See IMF (2000), in particular comparing Figure 1 with Figure 3, for further evidence on this point.

[28] Before the Asian crisis, Indonesia, Korea, the Philippines and Thailand failed to pass this respecified Guidotti test; but all now pass it. It is of interest that Latin American countries pass the original Guidotti test (just!) but fail once the test is respecified. On the other hand, IMF (2000) reports empirical tests suggesting the simple Guidotti rule is a better predictor than the augmented rule.

[29] See Frankel (1998) for a further discussion.

reserves than more stable inflows. However, historical volatilities may simply reflect the scale and nature of past macroeconomic shocks, rather than the intrinsic nature of capital flows, and in any case an investor "locked in" holding one asset (eg an FDI-type asset such as a factory) can easily take a potentially offsetting position using a derivative.

There are a number of other questions that have been raised about the appropriate definition of both the numerator and denominator for the Guidotti ratio. One concerns the appropriate treatment of the liquidity position of commercial banks (discussed in more detail below). The external assets held by commercial banks (as well as the central bank) can support the country's international liquidity position. If commercial banks' liquidity position is high (eg because the regulators ensure external liabilities are covered by required holdings of foreign assets – see Table 11 below), the 'need' for central bank reserves may be lessened.

Further questions include: should trade credit be excluded on the grounds it can be repaid by the proceeds of the exports it is financing? Should some liabilities of the monetary authorities be netted off reserves rather than included in debt (as in the IMF concept of net reserves)? Should domestically issued domestic currency debt now held offshore be included in external debt (and can it be measured)? What about debt issued offshore but now held domestically? Should long-term debt with put options exercisable within a year be regarded as short-term, even if the options are well out-of-the-money? Should the denominator be adjusted for any hedging, if the data are available? In currency board economies, should the numerator be only the excess of reserves over those covering the monetary base?

In practice, few, if any, economies have formal Guidotti-type rules although some have policies along similar lines. India aims to build reserves and reduce short-term debt by "encouraging non-debt creating flows and de-emphasising debt creating flows" and takes into account the maturity profile in approving individual capital account transactions.[30]

[30] Reddy (1999). Peru is required to develop a policy for the management of foreign debt under the terms of a World Bank loan. Indonesia has had since 1991 a Foreign Commercial Borrowings Team, headed by the senior economic minister, with the finance minister, central bank governor and chair of the national development agency as members. It both monitors foreign borrowing by corporations and sets ceilings for borrowing by SOEs.

A country wishing to move quickly to meet the Guidotti rule would face hard choices about abruptly raising interest rates to curtail imports and attract capital inflows or undertaking expensive long-term borrowing.

Managing reserves

If, for reasons discussed above, higher reserves are held, it becomes more important to seek higher returns on them. The reserve managers may argue they can raise returns by active management; but this depends on their ability to beat the market. It is becoming increasingly common for central banks to contract out at least part of the task to external fund managers. Several central banks have increased returns by lengthening the average maturity of their foreign assets; at the same time, the use of repo markets and other forms of borrowing have given central banks better access to liquidity. But there are important constraints on investment choices. One is the need to maintain a large amount of the reserves in securities that are liquid – and not just liquid in normal times but which will stay liquid in a crisis.

Credit lines

An alternative to building up reserves through borrowing or running current account surpluses is to arrange a credit line. If the need for liquidity is episodic or precautionary rather than continual, and the capital charge for a credit line is smaller than for drawn credit (eg it has a 50% weighting in the original Basel Accord), then contingent credit may be cheaper than the equivalent loan.

The cost of a (contingent) credit line has at least four facets:

- commitment fee;
- interest rate charged on drawdowns (which could be fixed or related to eg Libor);
- degree of contingency; drawdown at the country's discretion or only under certain conditions, such as a recession (but who defines this and how?) or the collapse of a key commodity export price;
- amount of collateral required.

Comparing the cost of borrowing reserves with arranging a credit facility is complicated by the fact that the cost of the facility is likely to be influenced by the size of the country's reserves, as this will influence the chance of the line being drawn.

A more fundamental question is whether a contract to borrow is as good as money in the bank. This question raises issues of legal provisions, of market perception, and of the reactions of credit providers. *Legal provisions* can take the form of quantitative conditions for drawing or a less precise proviso that credit can be denied in the event of a "material adverse change" in the borrower's condition. The *market* may have difficulty valuing contingent credit lines – and their value is indeed hard to determine (eg a contingent credit that can be drawn at 50 basis points over Libor is worth more to a country than one drawable at 200 basis points). Faced with such uncertainty, market analysts may place most emphasis on actual reserves.

The *reactions of credit providers* will determine the true "additionality" of credit: for instance, if the central bank arranges credit lines with the same international banks that have lent to the domestic banks and their corporate customers, the attitude of these international banks could change when problems arise in the domestic economy. They might be more disposed to restructure or roll over loans to the domestic banks if they know that the alternative is having the government drawing down on a credit line which would still leave the international bank exposed to the troubled country. However, it may also have the opposite effect. The international bank may respond to the prospect of the central bank drawing down the credit line by cutting back other exposures to the country; there is evidence of this happening when Mexico drew down its line. In Argentina, the banks providing credit lines also bought out-of-the-money options on government bonds as a hedge. Finally, there are concerns that the credit lines may be difficult to renew in times of volatility.

In 1996 the Central Bank of Argentina established a credit line, to allow assistance to banks in a crisis without violating the currency board framework.[31] Under the facility currently arranged with 16 international banks, the central bank has the right to borrow up to $7.1 billion with a maturity of two to five years at Libor plus 205 basis points collateralised by Argentine government bonds denominated in US dollars. The facility

[31] The description of Argentina's facility given here is drawn from Powell (1999), who gives further information, and Financial Stability Forum (2000).

has lasted for three years and is renewed each quarter. The commitment fee rose from around 30 to 60 basis points after the Asian crisis but has since dropped back to 33 basis points. The facility is subject to margin calls, but under a 1998 agreement the World Bank and Inter-American Development Bank would assist in meeting up to $1 billion of these under a contingent loan commitment.

Mexico established a $2.7 billion facility in November 1997.[32] Once exercised, the facility had a maturity of 18 months, and an interest rate of three-month Libor plus 50 to 100 basis points. The Mexican government had to pay a fee of 30 basis points (around $7.5 million) to keep the option alive. The facility was activated in late September 1998, allowing Mexico to borrow at a significantly below market rate. The participating banks reportedly objected to this drawdown, arguing that using the facility in a non-emergency situation[33] was against the spirit of the agreement. In March 1999 the Mexican government reached an agreement with most of the participant institutions to restructure its liabilities. More recently, Mexico has been able to negotiate financial agreements with international financial institutions as well as with its NAFTA partners. These agreements are an essential component of Mexico's strategy to ensure sound and predictable external financing and to be protected against volatility in international capital markets.

Indonesia established a series of credit lines (of $0.5 billion each) with large banks over 1994–97. During the subsequent crisis, these lines were all nearly fully utilised. Further lines have been or are being arranged under the IMF programme. After the 1997 koruna crisis, the Czech central bank arranged a $2 billion syndicated credit facility with foreign banks in order to be able to boost credibility if reserves dropped further.

The Bank of Thailand has a credit line under the IMF's Standby Arrangement. The ASEAN Swap Agreement allows Indonesia, Malaysia, the Philippines, Singapore and Thailand to request swap transactions with

[32] For further details see the paper by Sidaoui in this volume and IMF (1999).

[33] While it is arguable whether the situation in September 1998 constituted an emergency, it was certainly a stressful period, with conditions facing emerging economies in international financial markets deteriorated and the value of oil exports sharply reduced due to low prices.

each other within a small predetermined credit line. Under the recent Chiang Mai initiative these arrangements are being broadened to include China, Japan and Korea. Lines that add to liquidity may also be useful. Central banks with very large reserves invested in relatively illiquid assets (to improve returns) can be vulnerable to a sudden attack on their currency. Arrangements whereby other central banks effectively make such assets liquid (eg repurchase agreements against bonds) can be particularly useful. Such agreements do not of course relieve the central bank of the need to hold a high level of reserves but they do allow it to invest in a wider and less liquid range of assets. Ten Asia-Pacific central banks have since 1995 gradually built up a network of bilateral repo agreements but so far these facilities have not been activated. This may reflect their small size compared to the shocks faced in the Asian crisis, the simultaneity of pressure on so many of the parties to the agreements, or the need to provide collateral in the form of US Treasury bonds.

Feldstein (1999) suggests that credit lines could be collateralised. Export earnings paid to a trustee institution could form the collateral. US loans to Mexico in 1983 and 1995, for example, were collateralised against the Mexican government's future revenues from the sale of oil. Participation by the IMF and/or World Bank on the same terms as the private lenders could build confidence. The arrangement would need to be accompanied by currency controls and arrangements to ensure that the same asset is not used to collateralise loans from different banks. Other proposals include partial guarantees being provided by the multilateral development banks.

In October 1998, the G7 endorsed a US proposal for the IMF to establish a short-term line of credit for countries pursuing strong IMF-approved policies but vulnerable to contagion. The IMF instituted such a Contingent Credit Line facility in April 1999. Eligible countries would be able to borrow quickly up to three to five times their IMF quota. Loans would usually be repayable within 18 months and the interest rate charged would be 3–5 percentage points above short-term official rates.

Major questions arise concerning how eligibility for such a line should be determined. A line that is irrevocable provides no incentive for the maintenance of sound policies. On the other hand, revoking a credit line to a vulnerable country may well trigger a crisis by itself. The IMF has

set four categories of policy conditionality. An eligible country must be pursuing sound policies, must meet (or be progressing towards meeting) various international codes of conduct, must submit an acceptable policy programme and must have good relations with private creditors. Before drawing on the line, the country must satisfy the IMF that it is a victim of contagion. So far, no countries have announced they have signed up. The various reasons that have been cited for this include a concern that being an early applicant could be interpreted by markets as a sign that a crisis was expected, the cost (relative to other, less demanding, IMF facilities), and the difficulty a country might have proving it was suffering due to contagion.[34] In any event, this programme does represent a widening of the financing possibilities open to countries in crisis.

Policies for the private sector

Banks

The case for government intervention in the external liquidity policies of the banking sector is stronger than for the corporate sector. Banks are often viewed by markets (rightly or wrongly) as implicitly guaranteed by the government, even if formal deposit insurance arrangements only cover small domestic deposits. Almost invariably, governments have stepped in when a systemic crisis threatened. This has usually involved the central bank providing liquidity support or arranging for the private sector to provide it. While central banks try to retain "constructive ambiguity" about whether this assistance will be forthcoming, in practice large banks are often regarded as "too big to fail", particularly where a few large banks dominate the banking system. Furthermore, illiquidity in banks' foreign exchange balance sheet can pose systemic problems, putting confidence in the banking system at risk. In practice, generalised runs in the international interbank market, as in Norway, Sweden and Korea, led the central bank to give its banks access to its international reserves to meet interbank liabilities denominated in foreign currency.

[34] See Fischer (2000) and Group of 24 (2000).

The recognition in the market that international reserves are being or have been deployed to meet an interbank run is, of course, one of the propagation mechanisms by which a banking crisis becomes a currency crisis.

Regulation of the liquidity of banks' foreign currency assets and liabilities is, therefore, a means of promoting self-reliance, rather than implicit reliance on the authorities. Under some styles of supervision, there are strict rules limiting the size of exposures (gross, net and vis-à-vis individual currencies) relative to capital, while in others the emphasis is placed on ensuring that banks have appropriate systems in place to monitor and control such exposures.

In some cases, these rules have been tightened following recent crises. For example, the Korean authorities have strictly limited foreign-currency maturity mismatches. For residual maturities of seven days and less, assets must exceed liabilities; for residual maturities of three months or less, assets must represent 80% of liabilities; for loans of three years or more, 50% of the funding must be at three or more years' maturity. These rules may still leave banks vulnerable to defaults by counter-parties. Banks in Indonesia intending to borrow abroad must submit their annual plan three months in advance and the central bank will allocate a ceiling to each bank based on its past performance. Banks are also required to limit external borrowings under two years' maturity to less than 30% of their paid-up capital and use at least 80% of it for export credits.

Banks in emerging economies have often made extensive use of borrowing in foreign currency to fund domestic credit – both from foreign banks and, in some cases, through offering domestic residents foreign currency deposits (Table 11). In such cases the banks' direct foreign currency exposure may be small because domestic assets denominated in foreign currency "balance" foreign liabilities. But they remain exposed to credit risk and therefore need to monitor their borrowers' foreign exchange risks. In practice this often has been neglected. In addition, the gross foreign currency exposure of the total banking system might be a problem even if net positions in individual banks seemed prudent. If banks do indeed have significant foreign (gross) liabilities, there is a case for subjecting them to special liquidity ratios (eg requiring that a certain proportion of liquid assets be held in the form of liquid foreign assets). As Powell (1999) comments, "if there is a

Table 11

Banking regulations and foreign borrowing

End-1999

	Minimum liquid foreign currency assets?	Credit lines with inter-national banks?	Borrowing from foreign banks as a percentage of domestic credit
China	yes	no	4
Hong Kong	no; but need to state policy	encouraged	..[1]
Indonesia	3%	encouraged	51
Korea		no	16
Singapore	no	no	..[1]
Thailand	no	no	20
Argentina	21%	required	23
Chile	demand: 19%, time: 14%	no	7
Colombia	no	no	15
Mexico	0–50%, depends on duration	no	13
Peru	20%	yes	18
Venezuela	17%	no	19
Czech Republic	no		22
Hungary	no	no	57
Poland	no	regarded positively	21
Russia	no		152
Israel	some reserve requirements	no	4
Saudi Arabia			26
South Africa	no	no	10
Memo			
Australia			16
Canada			19
France			35
Germany			22
Japan			76
United States			15

[1] Not an appropriate measure for international banking centres.

Sources: Central banks; IMF; BIS.

crisis of confidence in an emerging country banking system, there will be an increased demand for foreign assets and reserves in domestic assets may not help". The local central bank cannot be an unlimited last resort lender of foreign currency as it can for home currency.

The different reserve (and liquid asset) requirements for local and foreign currency deposits in a number of countries are discussed in Financial Stability Forum (2000). As these alter the relative cost of local and foreign currency funding, they will affect the composition of liquidity. For example, Colombia, the Philippines, Singapore and Saudi Arabia impose reserve requirements on local currency deposits but not foreign currency deposits. China and Poland impose a lower reserve requirement on foreign currency accounts. In India, the reserve requirements on non-resident deposits are varied in line with the stance on capital flows.

The high foreign liquidity requirements imposed on Argentine banks (20% of most banking liabilities) helped them weather a banking run in 1995. Only assets with a high credit quality were acceptable: they include highly rated foreign bonds and deposits with a major designated foreign bank in New York. Allowing bank deposits rather than marketable instruments may create an additional monitoring need. In particular, the authorities will have to make sure that local banks do not conclude hidden arrangements allowing such deposits to be used as collateral for other business.

In addition to holding foreign assets, banks could be encouraged to arrange credit lines with international banks. This is akin to privatising the lender of last resort function. As such facilities will be on a commercial basis, the potential lender has incentives to examine the health of the bank seeking such a line and impose conditions on it. If a competitive market can be established, the price charged should reflect the risks involved and so encourage the banks to limit their risks. The home supervisors of the potential lenders will need to be satisfied that their banks are capable of managing large exposures to troubled banks. Such credit lines need to be legally watertight as the bank providing the facility may well baulk when faced with making a loan to a troubled customer. They might be allowed to count (but only after some appropriate discounting) in meeting required liquidity ratios. Mexican banks, for instance, are allowed to count undrawn credit lines in meeting liquidity requirements with the central bank's authorisation.

Foreign banks may be in a different position to domestic banks in managing their debt and liquidity. They may have special access to foreign currency from their parent banks. The position may differ between foreign banks present as branches and those operating as subsidiaries (particularly if only partially owned). However, prudential rules are generally applied equally to foreign and domestic banks. Foreign parents would probably save their subsidiaries if they ran into problems individually but there is no expectation that foreign banks would help in a systemic crisis.

Care needs to be taken that the presence of foreign banks does not encourage excessive use of foreign currency borrowing by domestic banks or corporations. With the benefit of hindsight, it was a mistake for Thailand to allow the banks operating in the Bangkok International Banking Facilities to use foreign funds for domestic as well as external lending, and to encourage them to believe that increased lending would be rewarded by being granted full banking licences.

Other financial institutions

Other financial institutions such as mutual funds, pension funds and unit trusts are becoming more important. Standard portfolio theory suggests that such institutions would provide the best return-risk mix to their investors by including a significant amount of foreign assets. In practice, however, a marked "home bias" has been observed; far fewer foreign assets are included than theory would imply. Most countries tend to discourage, or prohibit, funds from investing abroad so as to retain scarce capital for domestic development. One notable exception is Chile, where the authorities aim to increase the fraction of assets invested abroad in order to reduce the concentration of risk (Table 12).

Requiring institutional investors to hold a minimum proportion of foreign assets would raise national holdings of foreign assets. If the requirement were that the share of foreign assets be kept within a narrow band, it might also help stabilise the exchange rate as the funds managers would need to buy domestic currency assets following a depreciation. However, there are obvious dangers in an overly interventionist approach to institutions' investment decisions.

Table 12

Rules on holdings of foreign currency assets by funds managers

	Mutual funds/unit trusts	Pension/ superannuation funds
China	not allowed to invest abroad	
India	<$50 mn; only ADRs of Indian companies	<$50 mn; only ADRs of Indian companies
Hong Kong	no restrictions	no restrictions, except for funds under Mandatory Provident Fund scheme: <70%
Indonesia	only if issued by local company	only if issued by local company
Korea	no restrictions	no restrictions
Singapore	no restrictions	<30%
Thailand	none allowed	none allowed (except government pension fund)
Argentina	<25%	<17%
Chile	no limit	<16% (gradually raised from <2% in 1992)
Colombia	no limit	no limit
Mexico	allowed	allowed
Peru	no limit	no limit
Venezuela	no limit	no limit
Czech Republic	only OECD marketable securities	only OECD government bonds
Hungary	limited	limited
Poland	<5%	<5%
Israel	no limits	<5% (and discouraged by tax)
South Africa	<15% (and under asset "swap mechanism" can only accumulate foreign assets while they can find foeign parties investing an equal amount in the domestic market)	<15% (and under asset "swap mechanism" can only accumulate foreign assets while they can find foreign parties investing an equal amount in the domestic market)

Source: Central banks.

Foreign borrowing by the corporate sector

Data on the foreign debt of the corporate sector are sparse. But it is notable that companies in some emerging economies have borrowed extensively from foreign lenders. In the case of bonds, significant

proportions have been placed internationally. Table 2 shows that these bonds are almost invariably denominated in foreign currencies.

Preventing "excessive" foreign indebtedness of the corporate sector is a difficult policy challenge as companies are not subject to the sort of regulation applying to banks. The usual avenue would be to rely on greater public disclosure, either ex ante or ex post. Such requirements could be imposed by the government, or may be included in accounting standards or stock market listing requirements. Companies may fear an adverse response from investors and lenders to the disclosure of large foreign currency exposures and so be dissuaded from excessive borrowing. However, as disclosure through annual reports is infrequent and slow, there may be a case for requiring some form of more frequent disclosure, at least to the authorities, by large companies. Some countries are contemplating a (real-time) credit register for companies to help lenders be better informed about the current debt of potential borrowers. Credit registers have been used in several European countries. For large companies, registers might need to be established on a global level to be useful.

An alternative is to impose direct prudential controls. For example, only companies rated above a certain grade, or which can demonstrate they either have foreign currency income or adequate systems to manage the risk, could be allowed to borrow offshore. Foreign borrowings could be limited in size or a minimum maturity could be set.[35]

Prudential capital controls

Controls on capital *inflows* are a preventive measure and less likely than controls on outflows to damage confidence in the country imposing them, although over time they may reduce the efficiency of the financial system. The Chilean experience has been much discussed. Most forms of foreign investment are required to remain in Chile for a minimum period of one year (previously three to ten years, depending on the type of inflow). There is also an unremunerated reserve requirement, in the form of a non-interest-bearing deposit, that provides a disincentive

[35] In India, foreign borrowing by companies (other than trade credit) is regulated by the authorities, which insist on a minimum maturity of five years for loans over $20 million (and do not allow put options to subvert this).

to short-term capital. It affects most forms of external financing but excludes FDI. The deposit has to be kept for a year regardless of the maturity of the inflow. The rate was set at 20% in 1991, increased to 30% in 1993 and, although reduced to zero as capital flows to emerging markets dried up in 1998, has not been abolished. The requirement seems to have lengthened the maturity of debt, which should make the economy less vulnerable to sudden losses of confidence, but with the consequence of raising domestic interest rates compared with what they otherwise would have been. Indeed, one objective of the policy was to allow domestic interest rates to be held above international levels. The evidence that the policy may have lowered total inflows is rather weaker.[36] Its effectiveness may have been eroded over time as market players learnt to circumvent the intent of the rules. China limits capital inflows by distinguishing between two classes of equity, with only B shares being open to foreigners. In India, portfolio investment is restricted to registered foreign institutional investors (through which foreign corporates and individuals can invest) and non-resident Indians subject to overall limits related to the paid-up capital of a company.

Generally controls on *outflows* by non-residents are not favoured, except perhaps as an emergency measure. Edwards's (1999) reading of the economic literature concludes that controls on capital outflows are often counterproductive in that the private sector quickly finds ways of avoiding them and the authorities use them as an excuse for not undertaking more fundamental reforms. This suggests there still may be a role for temporary limits accompanied by reform. Malaysia's use of some temporary controls on capital outflows is an example. This experience is still too recent for a definitive judgment. One provisional assessment that has some support is that by Krugman (1999), who notes that controls have not had the dire consequences predicted by some, but nor do they appear to have made a decisive difference to the country's economic performance.

Developing domestic bond markets

One reason why companies in emerging markets borrow in foreign markets is that domestic securities markets are often underdeveloped.

[36] See Edwards (1999, pp 14–16, 18–19) and the studies referred to therein.

Outstanding volumes are relatively small and turnover is very low in most of eastern Europe and Latin America and much of Asia. In addition, most local debt securities in the developing world are dominated by short-term paper.

Bond markets in Latin America have been inhibited by periodic bouts of very high inflation – as low inflation becomes more established in this region, corporate bond markets should also develop. An important reason for the small size of bond markets in much of Asia is that historically governments have not run budget deficits requiring large issues of bonds. The absence of a yield curve for benchmark government bonds also makes it difficult to price corporate bonds and appears to inhibit their issuance. Indonesia does not have a government bond market and the few corporate bonds are not actively traded. However, government deficits have recently risen sharply across Asia and are likely to remain high for the foreseeable future. In addition, a large volume of bonds is being issued to finance bank recapitalisation. Thailand is considering whether it should issue some government bonds, even when the budget is balanced, to help develop the bond market. This was one reason why the Hong Kong Monetary Authority issued its own paper, despite a history of government surpluses. A similar exercise has been conducted in Singapore.

This raises the question of the official role in the development of a bond market (Table 13).[37] Providing a stable low-inflation macroeconomic environment is, of course, an important contribution by the central bank, but it may not be sufficient. In Thailand, a Domestic Bond Market Committee has been established to coordinate efforts by the central bank, securities commission and ministry of finance. The authorities can provide, or coordinate, a supporting infrastructure. Important elements would be standard documents, appropriate governing legislation and an efficient registry, trading and settlement system linked to the payment system so as to allow delivery-versus-payment and the provision of information on yields and volumes traded. Other supporting measures

[37] CGFS (1999) specifically addresses means of increasing liquidity, which it defines as "where participants can readily execute large-volume transactions with little impact on prices", in government bond markets but many of the same principles apply to the corporate debt market.

include removing legal, regulatory or tax impediments to greater market liquidity. For example, government securities in Poland used to be tax-free but now the tax treatment for all bonds has been equalised. Singapore has gone further and offers concessionary company tax rates on trading and interest income. The authorities can also help promote transparency, competition, market-making and robust trading rules. For example, the Reserve Bank of India has taken the lead in institutional development, establishing a system of primary and satellite dealers and initiating work on electronic dealing systems. Listing of bonds on the stock market may make them more liquid and ease access by retail investors; this may require changes to listing rules. International linkages between national systems could further broaden and deepen bond markets; the Hong Kong authorities set up a clearing, settlement and custodian system which they have now linked with Euroclear, Cedel and central securities depositories in Australia, New Zealand and South Korea.

Furthermore, official action to support the establishment of a secondary mortgage market would help bond markets to develop. Argentina sought to facilitate this by introducing standard procedures for the origination of home mortgages. Liquidity could also be enhanced by the public sector encouraging repo markets. Facilitating the stripping of interest payment coupons from the bonds may make them appeal to more potential buyers. Allowing short-selling may also deepen the market. Encouraging the use of international credit rating agencies, and perhaps the establishment of domestic agencies, could make such paper more marketable. Singapore has offered concessionary tax rates to attract credit rating agencies. On the demand side, the development of pension funds would create natural buyers for longer-term paper. The process of market development is partly self-fulfilling: as participants become more willing to transact in liquid markets, liquidity is developed.

One consideration that may argue for caution is that bond issues could skim off the better corporate credits from the banking system, weakening the average quality of banks' loan portfolio. This will depend in part on how far domestic corporate bond issuance substitutes for domestic bank loans. Many large corporations already rely more on issuance of international bonds than on bank loans. For such firms, a deeper domestic bond market will tend to divert business from international markets rather than from domestic banks. The overall

Table 13

Measures to develop the corporate bond market

	Extend maturity of govern-ment bonds	Trading and settlement systems	Mortgage securiti-sation	Taxation changes	Rating agencies	Funds man-agers
China	✓	✓				✓
India	✓	✓	✓	✓		
Hong Kong	✓	✓	✓	✓		✓
Indonesia		✓			✓	
Korea		✓	✓			✓
Singapore	✓	✓	✓	✓	✓	✓
Thailand		✓		✓		
Argentina	✓	✓	✓	✓	✓	✓
Chile	✓		✓		✓	✓
Colombia		✓	proposal with congress			
Mexico					✓	✓
Peru		✓		✓	✓	✓
Czech Republic	✓		✓			✓
Hungary	✓	✓				✓
Poland		✓		✓		✓
Russia		✓				
Israel	✓	✓	planned	possible	✓	✓
South Africa		✓				

Source: Central banks.

impact will therefore partly depend on whether it is only highly rated large companies (already active in international bond markets) that issue domestic securities, or whether issuance will extend to other good quality entities – or even as in the United States to the issue of junk bonds. How far (if at all) regulators should seek to influence the "credit rating cut-off" for domestic bond issuance is one important issue. A second issue is whether the authorities should discourage shorter-dated issues. The proposed new Basel Capital Accord, which aligns capital requirements more closely to the credit rating of the borrower, may change the decision between borrowing from a bank and issuing bonds for some companies.

Developing deeper domestic currency debt markets does not guarantee they will displace foreign currency debt. In Mexico, the tesobonos were developed in response to the fall in demand for the domestic currency cetes. It is also possible for deeper markets to hurt a small country. International fund managers will sometimes sell in a liquid market as a "proxy" for hedging risks in illiquid markets. Hungary and South Africa were notably affected in the wake of the Russian crisis.

The household sector

Households' direct holdings of foreign currency assets or liabilities are probably rather small in most advanced economies. The position is different where past hyperinflations or confiscations have led people to be wary of the domestic currency or banks. In some of these economies, wealthy households have foreign bank accounts or foreign currency deposits with domestic banks but this does not provide any meaningful offset to foreign debt of other sectors.

In China and India regulations aim to prevent residents either borrowing in foreign currency from local banks or placing funds with foreign banks. In Korea, households can hold deposits abroad up to $50,000 but cannot borrow in foreign currency.

Conclusion

The fact that excessive short-term foreign currency borrowing was a key ingredient of the Asian crisis has stimulated much debate about how to manage foreign debt and liquidity risks – not only of the government but also of the private sector.

In principle, the private sector should manage its own liquidity risks, and not count on the public sector to provide liquidity in an emergency. Policies to help achieve this fall under several headings. First, the supervisory system should ensure that banks not only limit the direct foreign currency maturity mismatches on their own balance sheets, but also avoid potential credit risks from borrowers overexposed to exchange rate movements. How best to do this depends on local circumstances. In some cases (eg where banks have the necessary capacities and where deep and liquid financial markets permit the

more sophisticated hedging techniques), the main emphasis will be on monitoring banks' own risk management techniques and exposures. Oversight by bank supervisors can be supplemented by more effective market discipline – requiring fuller disclosure by banks to the markets on how they manage foreign exchange and liquidity risks. Improved disclosure by non-financial corporations of their underlying foreign exchange exposures would support such an approach. In other cases, however, rather more direct regulatory mechanisms could be more appropriate. This may include ceilings on banks' net and gross foreign currency positions as well as reserve or liquidity requirements calibrated to limit foreign currency exposures.

Secondly, domestic bond markets need to be further developed. The absence of local bond markets typically forces corporations to borrow abroad, exposing themselves to foreign exchange risks. It is important that tax or legal impediments to the development of bond markets be removed. Gearing government issuance programmes to the development of more liquid markets in government bonds – which typically play a key benchmark role – can also help.

Thirdly, policy distortions that encourage excessive foreign borrowing by the private sector should also be avoided. Implicit or explicit guarantees to private borrowers fall under this heading. Another instance can be pegged exchange rate regimes which encourage borrowing in foreign currencies to take advantage of lower interest rates.

In managing its own debt, the public sector should resist the temptation to lower the immediate financing cost by borrowing short term in foreign currencies. Such borrowing exposes the government to interest rate and exchange rate risks that have often been underestimated. Borrowing in domestic markets with a wide range of maturities may well prove more expensive in the short run, but provides the borrower with greater protection against possible adverse developments in the medium term. Finally, borrowing in domestic markets as a general rule ensures that heavy government borrowing has the immediate and unpleasant consequence of pushing up domestic interest rates. Too often foreign borrowing has merely postponed the pain, and delayed corrective action.

A more controversial question is how far the government's management of its own foreign liquidity position should take account of

the configuration of the private sector's assets and liabilities. Should the national balance sheet (private sector as well as public sector) influence policy? In particular, should central bank foreign exchange reserves be higher if the private sector short-term foreign currency debt is large? Views differ about these issues. One side of the argument is that external liquidity positions that are the result of private sector decisions – and not of government policy – can be viewed as of little concern to policymakers. On this view, attempts by governments or central banks to build up reserves to cover private sector foreign currency risks may encourage more reckless behaviour in the private sector. The other side of the argument is that policymakers have to be concerned because liquidity crises provoked by excessive private sector borrowing can trigger disruptive adjustments that hurt everybody. Even in the absence of crises, externalities can be important: heavy borrowing by some entities tends in many countries to increase country risk premia and thus the interest rate charged to all borrowers.

Even if this basic issue remains unresolved, three conclusions could perhaps be offered. The first is that recent crises and the general experience of volatility in capital flows appear to have increased emerging market central banks' demand for reserves. One reason may be that measuring reserve adequacy has become an element in private sector checklists of a country's vulnerability to liquidity crises. Credit rating agencies, in particular, follow closely the ratio of reserves to short-term foreign currency liabilities. But any simple or universal "rule" on a minimum ratio of reserves to short-term foreign currency debt can only be a first step towards building greater resilience.

The second is that the cost of holding reserves and the development of financial markets make it sensible to look for alternative mechanisms. For example, financial instruments may help to protect countries from external shocks (options based on commodity prices). Contingent credit lines may also have an important role to play in supplementing actual reserves, and several countries have concluded agreements with private banks. When not used, such credit lines may help confidence and be relatively inexpensive to renew. However, it is unclear at present how far their actual use provides additional credit.

The third conclusion is that more needs to be done to monitor exposures to liquidity and foreign exchange risk, both in aggregate and at the sectoral level. This will involve fuller disclosure by both the private

and the public sectors and better, more timely statistical coverage. It will also involve continuous review of a country's vulnerability to external shocks, monitoring changes in the probability of shocks (as macroeconomic and financial conditions evolve) and measuring how exposures can be altered by such shocks (stress tests). Devising ways of designing such assessments is a formidable but important challenge for the future.

Annex A

Econometric test for externalities in foreign debt and reserves

This annex describes a test for externalities arising from external debt. The dependent variable in all the regressions is a measure of Standard & Poor's sovereign credit ratings. It has been transformed into a number by assigning the value 19 to AAA, 18 to AA+ etc down to 1 for CCC– and 0 for default. (A possible weakness of this is that experience with ratings of companies suggests default probabilities are not linearly related to ratings.) The data refer to 20 emerging markets over the period 1996–98.

The first two, common, explanatory variables are the logs of per capita GDP (on a PPP basis) and inflation, which studies such as Cantor and Packer (1996) have shown to have an important influence on ratings. They always enter with the expected sign although their significance is sometimes marginal.

Two alternative measures of external debt are employed. The first is external debt of the government itself. The second is a broader measure that adds in external debt of the private sector.

Comparing the results in specification (1) versus (2), or (4) versus (5) implies that sovereign credit ratings are more closely related to government debt than overall national debt. (1) and (4) imply increasing government debt by 8–11 percentage points of GDP would lower credit ratings by one notch, eg from B+ to B. Cantor and Packer (1996, p 44) show that a move from BBB to BB, ie three notches, lifts borrowing costs by around 1.2 percentage points. However, if (2) is considered alone, the impact is very much smaller. An increase in national debt of 43 percentage points of GDP is necessary to cause a one-notch deterioration in credit ratings.

The results may depend on definitions. S&P's sovereign credit ratings are "an assessment of each government's capacity and willingness to repay debt" while Moody's is "a measure of the ability and willingness of the country's central bank to make available foreign currency to service debt, including that of the government itself". The S&P definition appears to be more narrowly focused on the public sector.

Specification (3) looks at whether rating agencies apply something like the "Guidotti rule". Holding more reserves relative to short-term debt is associated with higher sovereign credit ratings but the variable is only marginally significant.

Specifications (4) and (5) look at the extent to which holding reserves offsets the effect of debt on credit ratings. In both cases debt and reserves have opposite signs as expected. The reserve coefficient has a larger absolute value, which would imply that borrowing to build reserves would boost credit ratings, but the difference is not statistically significant.

Table A1

Econometric test for externalities

Dependent variable: S&P sovereign credit ratings	(1)	(2)	(3)	(4)	(5)
Constant	−3.72	−6.53	−6.63	2.96	2.87
	(7.74)	(8.21)	(7.88)	(6.97)	(7.53)
Log GDP per capita	1.84	2.13	1.97	0.86	0.91
	(0.83)	(0.88)	(0.87)	(0.78)	(0.83)
Log inflation	−0.68	−0.87	−0.94	−0.65	−0.90
	(0.38)	(0.40)	(0.39)	(0.33)	(0.35)
Government external debt (as a percentage of GDP)	−0.09			−0.12	
	(0.04)			(0.03)	
Total external debt (as a percentage of GDP)		−0.02			−0.06
		(0.02)			(0.02)
Reserves/short-term external debt		0.005			
		(0.003)			
Reserves (as a percentage of GDP)				0.18	0.21
				(0.05)	(0.06)
R^2	0.40	0.32	0.35	0.56	0.51

Note: Standard errors in parentheses.

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Managing foreign debt and liquidity risks in Chile

Jorge Marshall*

Introduction

Post-crisis developments in emerging markets support the view that future economic progress will go together with increasing global integration, both in trade and financial markets. This places a serious responsibility on all participants in the international capital markets to design policies that allow emerging economies to integrate smoothly with the rest of the world and increase the efficiency of world capital markets. Thus, the topic of this meeting is very timely and relevant as it points to policies that should be promoted to achieve greater economic and financial integration, but without the abrupt disruptions of recent years.

Since the crises in Mexico in 1994 and in Asia in 1997, many initiatives have been launched to achieve a safer or more resilient international financial system. These proposals are not aimed at having a crisis-proof system, which is impossible. To be useful, nevertheless, these initiatives should address properly identified imperfections (otherwise the medicine may be worse than the disease) and not just be well intended general proposals.

Rather than evaluating these initiatives, the purpose of this paper is to review the Chilean experience in risk management during the 1990s. Even though Chile does not have a fully-fledged policy scheme explicitly targeted to managing liquidity and debt risks, most of the elements of such a policy have been in place, starting from a sound external solvency position, which has been an underlying objective of economic policy throughout these years. Related to this explicit objective, several policy initiatives have had significant effects on debt and liquidity risks, in particular:

* Thanks to Carlos Massad, Luis Ahumada, Leonardo Hernandez and participants at the meeting for helpful comments.

- prudential regulation of the capital account
- accumulation of international reserves
- fiscal surplus and stabilisation funds for primary products
- strict banking regulation
- capital market development

One common purpose of all these policies is to preserve external solvency and financial stability, confronting the risks associated with the increased volume and volatility of capital flows. This approach addresses the risks both of abundance and of shortage of external financing.

Prudential regulation of the capital account

Prudential regulation of the capital account considers that in some cases, due to market failures or imperfections (sometimes policy-induced), market-related controls may help to reduce certain risks such as excessive reliance on rolling over short-term debt. The purpose of this prudential regulation is to change the composition of capital inflows and give monetary policy more flexibility to pursue inflation or current account targets. In this respect, Chile has applied two types of policies. First, there is a requirement for most forms of foreign investment to remain in Chile for a minimum period of one year. Second, there is a reserve requirement that places a wedge between domestic and foreign interest rates, and provides a disincentive to short-term capital.

The requirement of a minimum period of one year for foreign capital is a legacy of the debt crisis of the early 1980s, which led to the imposition of this and many other restrictions on capital movements (mainly outflows). Indeed, in the past this requirement was even more stringent – three and 10 years depending on the type of inflow. In the 1990s this limitation was reduced gradually as part of the capital account liberalisation policy. In fact, the country has been on a gradual liberalisation trend with respect to both capital inflows and outflows since the early 1990s – and this movement has been the dominating force behind all capital account regulatory changes.

But in the episodes of large capital inflows this restriction was considered a way to moderate inflows, at least temporarily, rather than affect outflows. However, as the economy becomes more integrated, the efficiency costs of restricting capital flows will tend to exceed the

associated benefits, especially when it comes to outflows. In fact, past experience shows that capital flight typically takes place before the authorities realise (or acknowledge) that there is a problem, imposing severe costs on the economy.

Regarding the reserve requirement, it has the form of a fractional non-remunerated deposit with the central bank and affects most forms of external financing, including foreign credit and foreign currency deposits, but it has excluded productive equity investment like FDI and primary ADRs. The deposit has to be kept for a year irrespective of the maturity of the foreign inflow. The rate of the deposit was set at 20% in 1991 and increased to 30% in 1993, but it was reduced to zero in September 1998, mainly because of the higher premium of foreign financing towards emerging economies.

The objectives of this policy were, first, to favour equity over debt and long- rather than short-term financing; and second, to increase the effectiveness of monetary policy. The policy allowed a tight monetary policy without causing a large capital account surplus and contained the appreciation of the real exchange rate. It also sought to limit the volatility of flows – and the costs associated with it – by taxing hot money more heavily.

A frequently asked question is whether this unremunerated reserve requirement (URR) has been effective in achieving its objectives. It is worth emphasising that this is one instrument in a broader set of macro (and micro) economic policies. However, in spite of its controversial nature, this prudential control induced a significant change in the composition of capital inflows. Indeed, direct and longer-term portfolio investment grew in importance relative to foreign debt. There was also a change in the composition of foreign borrowing, where medium- and long-term debt increased its share in the total. There is also preliminary evidence, although rather weak, that the reserve requirement reduced the inflows, and, consequently, the excess appreciation and the volatility of the real exchange rate. In this assessment one should bear in mind that capital inflow averaged 7% of GDP in 1990–97 and peaked at around 10% of GDP in 1997. It is also important to note that due to legal limitations the regulation could not be imposed on all flows, thus leaving loopholes that reduced its effectiveness.

Regarding the convenience of using instruments like the Chilean reserve requirement, the following policy lessons are worth stressing:

- The URR at the margin attained the benefits listed above, but this was a temporary effect since market players were very active in uncovering loopholes and designing methods to bypass the regulations.
- These benefits were possible because the central bank was very active in trying to maintain its effectiveness by closing loopholes and constantly increasing the URR coverage. Also, the high enforcement capacity of the central bank and the low degree of corruption achieved this, but nothing guarantees that it will work elsewhere. In other words, it is not certain that a similar type of instrument could work as effectively in other countries.
- The URR is not a costless policy instrument; it leads to higher interest rates, which in turn may lower growth and investment.
- On balance, it was possibly worth using it, but there may be more efficient (less costly) instruments for achieving the same goal (a distribution of liabilities tilted to the long term).

Ongoing work in this area examines the experience of other countries in using different forms of capital controls, and in liberalising different components of the capital account. This inquiry relates to the more general notion that countries should encourage equity rather than debt flows, and long- rather than short-term flows. Additional research and a careful analysis of alternative policy options are needed at this stage to establish stronger conclusions for best practices in this regard.

International reserves

One pillar of the liquidity management policy in Chile is the large stock of international reserves held by the central bank, which today stands at about 22% of GDP, 42% of total foreign debt and over 12 months of imports. It is important to note that international reserves have stood at high levels during the entire decade and not only in recent months as a result of the slowdown in economic activity.

Holding a large stock of reserves has been considered a key element of the policies aimed at enhancing the resilience of the economy, and proved to be correct as Chile passed through the financial turmoil of the past two years relatively unscathed. Indeed, in order to achieve this

result, the central bank spent about 17% of the initial stock of reserves (about US$ 3 billion in total) between end-1997 and the third quarter of 1999. Possibly a smoother transition could have been achieved had the Central Bank spent an even larger share of reserves, although doing so would have meant weakening the fundamentals. Obviously, this course of action appears feasible after many of the risks present at the time faded away, but it was considered too risky during a period of high uncertainty and volatility in international capital markets.

The "large" stock of reserves was accumulated as a result of the efforts to sterilise the large inflows of capital received during the 1990s. This policy was, in turn, aimed at avoiding the overheating caused by the surge in inflows. However, despite proving to be an important buffer against the shocks arising from the Asian, Russian and Brazilian crises in past years, it was an expensive strategy. Rough estimates – based on restrictive assumptions – suggest that the cost of holding a large stock of reserves during the 1990s was about half of a percentage point of GDP per year.[1] But at the time this strategy was designed there were no alternatives, and the costs of the new ones, like the IMF's contingent credit line, have yet to be calculated. Furthermore, despite not having a reliable methodology to estimate the costs of a financial crisis, based on our own experience and that of other Latin American countries during the 1980s, we believe that this cost is worth paying.

The need to hold a large stock of reserves decreases as we move towards a more integrated economy and the private sector plays a more active role in assessing foreign exchange and other risks. The latter is currently the case after having adopted a floating exchange rate system. In this context liquidity management has to be redesigned with greater emphasis on prudential regulation, setting adequate standards, and increasing accountability and transparency.

[1] This estimate corresponds to the pre-crisis period. Considering the subsequent depreciation of the peso, the cost may be lower.

Chile: external sector 1990–99

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Balance of payments (as a percentage of GDP)										
Current account	–1.6	–0.3	–2.3	–5.7	–3.1	–2.1	–5.1	–4.9	–5.7	–0.1
Capital account	1.8	–0.8	1.4	5.8	4.2	1.9	6.1	5.5	7.3	–0.2
Balance of payments	7.8	3.6	6.0	1.3	6.3	1.6	1.7	4.2	–2.8	–1.0
External debt (as a percentage of GDP)										
Short-term	14.2	9.5	11.1	10.9	10.7	7.9	6.5	4.7	5.4	5.8
Medium- and long-term	43.3	37.7	32.4	32.2	31.5	25.4	27.0	30.5	38.0	44.6
Total debt	57.5	47.2	43.6	43.1	42.2	33.3	33.5	35.2	43.4	50.4
Debt/exports (%)	208.1	183.0	182.3	208.6	185.1	135.6	149.2	160.2	213.7	217.8
International reserves										
Reserves/GDP (%)	17.6	19.2	21.5	21.9	26.4	22.7	22.6	23.5	21.9	21.8
Reserves/M2 (%)	77.2	82.6	82.5	77.8	91.7	77.0	65.8	63.7	52.8	46.7
Fiscal policy (as a percentage of GDP)										
Fiscal surplus	0.8	1.5	2.3	2.0	1.7	2.6	2.3	2.0	0.4	–1.5
Public debt	38.9	30.5	23.0	20.3	17.9	11.5	7.5	6.7	7.8	8.6
Residents' investment abroad (stock, as a percentage of GDP)										
Banks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.0
Pension funds	0.0	0.0	0.0	0.2	0.4	0.1	0.2	0.4	2.2	6.8
Other	0.6	0.8	1.5	2.3	3.6	3.8	4.9	7.2	11.3	19.1
Total	0.6	0.8	1.5	2.5	4.0	3.9	5.1	7.6	14.9	29.9

Fiscal policy and central government

An important response to the increase in net capital inflows in the early 1990s was a policy mix that included a steady fiscal surplus, along with greater exchange rate flexibility, a relatively tight monetary policy and (heavy) sterilisation. All of these components were aimed at maintaining the price stabilisation programme and keeping the current account deficit within a sustainable range, so the economy as a whole would become more resilient to shocks.

For the central government this meant a continuous reduction of its external debt, which was the only explicit debt policy.[2] The average fiscal surplus between 1990 and 1999 was 1.4% of GDP, while the external debt of the central government decreased from 39% to 8% of GDP in the same period. Furthermore, accumulated surpluses of the central government and international reserves of the Central Bank were used to advance the payment of external debt during 1995–96. After these prepayments were made, almost all public debt outstanding was with the multilateral financial institutions.

This policy of prepaying public debt was re-examined after the financial crises in emerging markets during 1997 and 1998. Thus, although the public sector did not need new financial resources, the Chilean government placed US$ 500 million of international bonds in 1999. The rationale underpinning this placement was that an economy like Chile, which has an active participation in international financial markets, needed some presence in international bond markets in order to improve the information and the monitoring capacity of international financial institutions. In fact, before this sovereign debt was issued there was no reliable measure of country risk because all other Chilean bonds were corporate, and Chilean debt was treated similarly to other countries' debt. Preliminary observation of spreads after this placement showed a positive externality in country risk premium for the private sector.

In addition to the rather simple policies on debt and liquidity described above, the central government maintains two stabilisation funds for primary products, namely oil and copper. The function of these

[2] Indeed, the external debt manager position, created after the early 1980s crisis, was eliminated in 1991.

funds is to compensate for terms-of-trade shocks, which, in turn, have important effects on both the current account and government budget. Although these funds were not designed for liquidity management purposes, they may be considered substitutes for other instruments, like the issue of liabilities with contingency clauses (ie copper bonds for Chile or oil bonds in the case of Mexico).

Banking sector

The banking crisis of the early 1980s left a clear message for strategies of financial liberalisation. The main lesson of this episode was that capital account opening has to be accompanied by – and preferably preceded by – an overhaul of the country's capacity to supervise, regulate and manage financial institutions. This sequencing allows the domestic financial system to cope properly with the complexities that go with risk management and free capital movements.

After the crisis, new ideas about prudential regulation and supervision were incorporated into the financial system. The new approach imposed more stringent disclosure requirements on banks, explicitly limited the coverage of deposit insurance to small depositors, and established clear procedures for the closure and liquidation of insolvent institutions. At the same time, the government agency increased its supervisory capacity.

During the 1990s this approach was harmonised with new developments in the banking industry and in international regulatory standards. Important in this respect is the incorporation of the guidelines of the Basel Committee. Also, the Central Bank and the Superintendency of Banks started to implement guidelines to improve the monitoring of diverse sources of risks as banks began embarking on more sophisticated activities.[3]

These new guidelines incorporate standards for interest rate, currency and liquidity mismatches for the banking sector,[4] all of them

[3] Among these are derivatives (forwards, swaps) and cross-border lending.

[4] Some of these regulatory changes coincided with the Asian crisis, but they were not a reaction to it. The main impact caused by the Asian crisis was a delay in the implementation of some measures.

measured against core capital (tier 1). The liquidity risk is measured by comparing residual maturing flows from assets and liabilities at two distinct terms, 30 and 90 days. The liquidity gap for each currency (domestic and foreign) cannot be greater than core capital at the 30-day range. Alternatively, the maximum gap allowed for the 90-day range, for all currencies added, cannot be greater than twice core capital.

Regarding interest rate risk, the measure separates payments of assets and liabilities within time bands (considering both fixed and variable rate contracts), which subsequently are weighted by a factor that captures the volatility of interest rates as well as the duration of each payment. Total interest rate exposure, including derivatives, must not be greater than 8% of core capital.

Currency mismatch is measured by adding the absolute value of each currency gap. The norm allows a maximum mismatch equal to 20% of core capital. In this calculation, the gaps in currencies of countries for which external debt is in the AAA category are weighted less than those in other currencies, due to the lower volatility of these currencies against the Chilean peso.

A special treatment in the foreign currency mismatch norm is applied to those banks (mainly foreign) whose capital base is subject to the foreign investment statute. In this case, since capital can be maintained in foreign currency, in addition to the above-mentioned norm an incremental currency gap is permitted that cannot be greater than core capital. This waiver is also extended to retained earnings derived from the capital invested and legal reserves maintained in foreign currency. Aside from the treatment just mentioned given to foreign capital, there are no particular regulations that could favour the position of foreign vis-à-vis domestic banks.[5]

Regarding minimum requirements of holdings of foreign liquid assets, demand deposits in foreign currency are subject to a reserve requirement of 19%. Time deposits, savings accounts and other long-term obligations in foreign currency are subject to a 13.6% reserve requirement.

[5] Also, the banking law in Chile makes no distinction between foreign branches and subsidiaries since banks operate on a solo basis. For example, branches receive the benefits of local regulations concerning deposit insurance just like domestic banks, they are required to have their own capital and therefore are not allowed to consolidate capital with their holding company.

These guidelines are part of an effort to strengthen the banking system. Having well capitalised banks, accompanied by strong management and supervision, reduces the chances of crisis. In this regard, the Central Bank closely monitors the banking sector and performs sensitivity analyses with regard to sudden changes in the exchange rate, the interest rate, and sudden withdrawals of funds. This is done at the level of each bank and for the system as a whole. However, the exercise is aimed at assessing the potential problems with regard to domestic liquidity (as opposed to external liquidity).

Capital market development

For a small and increasingly open economy like Chile, financial integration represents a source of opportunities in terms of risk sharing and also the possibility of financing new investment projects. However, it conveys significant risks in terms of contagion and bandwagon effects, among others. The strategy adopted by the Chilean authorities in order to manage these risks consists of building cushions and strengthening the economy's resilience to shocks but without phasing out the process of financial integration.

Chilean allocation of resources is highly specialised. Exports remain highly dependent on commodities, mainly copper. As a consequence, the development of the domestic capital market is an important device for reducing risk exposure. In particular, policies have been aimed at increasing the fraction of Chilean assets invested abroad. Thus, the portfolio of Chilean assets will be less concentrated in domestic risk, increasing the resilience of the whole economy.

After having implemented a major pension reform in the early 1980s, which replaced the old pay-as-you-go system with a privately administered capitalisation system, during the 1990s the authorities sought to increase the share of assets held abroad by Chilean institutional investors – pension funds and insurance companies. In addition, the authorities lessened restrictions on capital outflows – outward direct investment and others – in order to induce greater investment abroad by the manufacturing and banking sectors.

For instance, for pension funds the maximum holding of foreign assets permitted in early 1992 was 1.5% of their total portfolio. Later that year,

however, this limit was increased to 3%, and in 1995 it was raised twice, to 6% and 9%. In 1997 the limit was put up to 12%, and by end-1999 stood at 16% (comprising fixed and variable income securities). Similarly, mutual funds currently face no restriction on their holdings of foreign assets.

Despite lessening the restrictions on investing abroad, macroeconomic management during the 1990s, namely, a combination of relatively high domestic interest rates and limited variability of the nominal exchange rate, made foreign investment less attractive, holding up the outflow of domestic capital. Thus, until late 1997 Chilean institutional investors held most of their portfolios in domestic assets, outward direct investment being the only significant outflow of capital (and mainly driven by privatisation and other reform processes taking place in neighbouring countries). However, change in external conditions in 1997 (the greater scarcity of foreign funds in emerging markets), and the necessary correction in relative prices (the expected depreciation of the peso), led to a portfolio shift in 1998, increasing the share that foreign assets represented in domestic portfolios. Moreover, the experience of the past year shows that domestic institutional investors have changed the composition of their portfolios consistently with the expected movements in the real exchange rate, a desirable result that will help to foster the development of long-term hedging instruments and deepen the foreign exchange market. Given the new international conditions and institutional arrangements for the exchange rate system, we expect a significant and permanent increase in the share of domestic wealth invested abroad.

But that is not all. In order to foster the development of domestic capital markets several measures have been taken, some of them aimed at deepening markets, while others are intended to increase transparency and enhance due diligence and accountability. For instance, mortgage securitisation, separate trading of bond coupons, and the issue of zero coupon bonds were recently authorised. Also, private rating agencies are long established for risk classification of debt instruments (mainly instruments in which pension funds are allowed to invest). Many of these firms are partners with well-known international rating agencies. This development, although initially thought to support the development of the pension fund industry, proved to be useful years later when domestic firms started issuing debt abroad. The expertise developed in

the early stages of the rating industry's development plus the strategic alliances with international agencies helped the Chilean corporate sector when it began tapping the international capital markets in the early 1990s.

But the list of remaining tasks to increase the resilience of the economy is still long. Among the priorities is the issue of long-term debt denominated in domestic currency in the international capital markets, so that the exchange rate risk can be shared with foreign investors. Similarly, in order to reduce the risk of contagion and bandwagon effects, more timely and effective signals are needed to allow foreign investors to differentiate Chile from other emerging economies. A small step in this direction was taken in recent months by issuing a small amount of sovereign bonds in international capital markets, but a more complete set of signals will be needed in the future, especially as the fiscal accounts return to surplus.

Conclusions

The Chilean experience of the 1990s shows that greater stability is achieved if adverse effects of shocks are spread across several markets and variables. In emerging economies with structural rigidities, imperfect institutions and incomplete markets, it would be a mistake to leave the whole weight of the adjustment to fall on one particular variable (or market). Hence, the need to build buffers across the entire economic system and to strengthen the economy's fundamentals. For this purpose a stable macroeconomic environment and a sound regulatory and supervisory framework are at the heart of a risk management policy. The former implies building cushions at the macro and micro level that allow the economy to increase its resilience to shocks (ie a large stock of reserves, high capital base for banks, etc). The latter implies putting in place clear and transparent rules and building appropriate institutions.

In this regard, it is important to emphasise that well capitalised banks, accompanied by strong management and supervision, reduce the likelihood of crises. Similar positive effects arise from sustaining a strong fiscal position. But that may not be enough. At the margin and when accompanied by consistent policies, some types of prudential controls may help to avoid certain risks such as excessive reliance on rolling

over short-term debt. Similarly, flexible exchange rates work better when other conditions are in place, such as deep financial markets offering adequate hedging mechanisms, continuous price stability and low indexation.

In sum, the process of financial integration needs to be carefully managed to avoid the excesses caused by not having in place adequate institutions. However, the lack of adequate institutions should not be used as an excuse to slow this process. Rather, it should lead to acceleration of the institutional building that is necessary to achieve a full but safe integration.

Managing the external balance sheet: a Hong Kong perspective

Tony Latter

Hong Kong is perhaps a somewhat atypical and unhelpful case study to include in this collection. Atypical, because the government has no external debt; in fact, the government has no direct debt at all, internal or external (although the Exchange Fund issues bills and notes for market development purposes and to facilitate operation of the discount window, and certain public sector bodies – eg railways and airport – raise funds in their own names in debt markets). Unhelpful, because there are no statistics on the external balance sheet of the non-bank corporate sector or the personal sector. Indeed, the statistical distinction between residents and non-residents has never been considered of particular importance in Hong Kong, and has only been introduced comparatively recently, primarily at the behest of balance of payments compilers.

Hong Kong's foreign exchange reserves stand at over US$ 90 billion. This puts Hong Kong at fourth or fifth position in the world rankings, but we would be among the first to admit that this type of league table is of little value without some accompanying assessment of the relative need for reserves, their optimal level, and indeed the possible negative implications of excessive reserve accumulation.

In Hong Kong we cannot claim that our reserve position is the result of any particularly scientific calculation of optimality. Reserves were accumulated over time largely as a consequence of persistent fiscal surpluses which were invested in foreign currencies. These developments were, in turn, symptomatic of Hong Kong's deliberately conservative management of public finances, for strategic reasons (for instance, up until the handover of sovereignty in 1997, successive British governments were keen that the colony should be financially self-sufficient) and as a means of building financial confidence. Moreover, particularly in a small economy such as Hong Kong's, there would have been limited opportunities to invest fiscal surpluses domestically, without unacceptable credit risk or the build-up of significant conflicts of interest in an environment where the government has always aimed to limit its involvement in the economy.

The conventional IMF calculation of the import cover of reserves produces a figure of approximately six months, but we do not regard this as a key yardstick. More important, in the context of Hong Kong's currency board arrangements, is the fact that reserves provide more than threefold cover for the monetary base, which is defined as physical currency on issue, banks' balances with the Exchange Fund and debt instruments issued by the Exchange Fund. The excess is more than sufficient to cover the accumulated fiscal surplus, leaving a substantial unassigned surplus.

Under the currency board arrangement, changes in the monetary base are fully and simultaneously matched by changes in reserves (in effect, unsterilised intervention). However, the Monetary Authority can also buy or sell reserves outside the currency board account (sterilised intervention). It does so mainly in association with changes in the fiscal position, but some flexibility can be exercised, notably in the timing and tactics of such operations in the light of prevailing conditions in the foreign exchange and money markets.

That portion of reserves which is earmarked as backing for the monetary base under the currency board is, partly for operational reasons but equally importantly for presentational reasons, held in the most liquid US dollar instruments. The remainder is invested, either by the Monetary Authority directly or by appointed fund managers operating to strict guidelines, in highly rated instruments in major currencies. Although some of these investments may be in long-term bonds or even in equities, there is an emphasis on investing only in very liquid markets.

During the 16-year period of operation of the HK$/US$ exchange rate peg, there has mostly been a premium on HK dollar interest rates over those on US dollars for comparable instruments and maturities. This raises the question of the apparent implicit negative interest carry on the authorities' net foreign currency asset position. However, as noted above, given the policy of running fiscal surpluses, it would have been difficult not to invest surpluses overseas. And, in practice, active management of the foreign asset portfolio has produced returns which, though fluctuating from one year to the next, have typically exceeded the interest rate on domestic liabilities.

When, as in the recent recession, the fiscal position has moved into temporary deficit, there has been no hesitation to finance it by

reducing overseas assets. If, however, deficits were to persist, the point might be reached where the reduction in external assets adversely affected confidence in the exchange rate regime specifically, or in the government's economic management more generally. The premium on HK dollar interest rates would then increase. Clearly, it would be wise to have shifted towards some domestic borrowing, while preserving external assets intact, before that point was reached. There has not, however, been any conclusive research to identify that point; in any case it may never be reached, since to run persistent deficits would conflict with Hong Kong's *Basic Law*. As noted above, certain public corporations, which operate outside the government budget, already have borrowing programmes in local currency.

There are no reliable data on the balance sheet of the non-bank private sector, but it is generally presumed that the gross foreign currency components are substantial. This is a long-standing feature of Hong Kong's open economy and not something which of itself causes concern. It is probable that some borrowing from abroad and some placement of funds abroad have, at the margin, been prompted by the lack of a mature local debt market. The HKMA is keen to facilitate the development of that market and has taken a number of initiatives in that direction. However, the motivation here, in Hong Kong's case, has been to develop channels of financial intermediation with a view to achieving a better allocation of resources, rather than to attempt explicitly to reduce the scale of flows through external channels because of any concerns about the vulnerability of the external balance sheet.

The financial crisis which struck Hong Kong in August 1998 was not caused by problems with the balance of payments, or with the scale or liquidity of the external balance sheet. Rather, it arose because large international players could muster sufficient resources to give them a dominant influence in relatively small markets. In particular, with Hong Kong's very transparent currency board system it was possible for individual large players to be price-setters rather than mere price-takers in the short-term money market. Measures have since been adopted to broaden the base of the local money market so that inflows or outflows can occur across a considerably wider range than hitherto before triggering sizeable shifts in interest rates. The measures have curtailed but not entirely eliminated the scope for manipulative behaviour.

Managing foreign debt and liquidity: India's experience

Y V Reddy

Introduction

This paper describes in successive sections: the policy governing cross-border capital flows; the size and composition of capital flows with special reference to debt; tools of management of capital flows; the framework for management of external debt; the approach to short-term debt; the policies governing reserves and the exchange rate; the crisis avoidance strategies adopted; and the moves towards transparency in reporting debt and foreign exchange reserves.

Policy governing cross-border flows

India, after independence, opted for a model of development characterised by what was then perceived as self-reliance. Hence, till the early 1980s, external financing was confined to external assistance through multilateral and bilateral sources, mostly on concessional terms to or through government. In the 1980s, global developments, particularly the perceptible decline in the availability of official concessional flows in relation to the external financing needs of developing countries, changed the external sector situation at a time when India was initiating liberalisation. The compulsory repayments to the IMF during the late 1980s (of the Extended Fund Facility withdrawals in the early 1980s) added to the problems. Hence, recourse to external debt on commercial terms became inevitable. In addition to institutional sources (such as export-import agencies), syndicated loans and bonds, and deposits from non-resident Indians, were accessed. These had to be supplemented in the late 1980s with significantly large recourse to short-term facilities including, in particular, short-term non-resident deposits. Most of these liabilities were on account of government or government-owned enterprises or government-owned financial institutions.

The onset of the 1990s, however, saw the impact of the Gulf crisis on India. Combined with the large fiscal deficits of the 1980s and political uncertainties, this resulted in a drying-up of commercial sources of financing and in what could be described as a severe liquidity crisis in the balance of payments. Another global dimension that affected India's management of the balance of payments during this period was the serious disruption of trade with the erstwhile USSR on top of worrisome recessionary tendencies in the industrialised countries and loss of export markets in West Asia. The crisis was overcome by a series of stringent measures with an overriding objective of honouring all external obligations, and not rescheduling or prioritising any external payment obligation.

Along with stabilisation, a reform process was undertaken in many sectors. The broad approach to reform in the external sector was laid out in the *Report of the High Level Committee on Balance of Payments* chaired by Dr C Rangarajan. The Committee recommended the introduction of a market-determined exchange rate regime while emphasising the need to contain the current account deficit. It recommended, inter alia: liberalisation of current account transactions leading to current account convertibility; a compositional shift in capital flows away from debt to non-debt creating flows; strict regulation of external commercial borrowings, especially short-term debt; discouraging volatile elements of flows from non-resident Indians; gradual liberalisation of outflows; and dissociation of government from the intermediation of external assistance. The Committee thought that the traditional practice of viewing the level of desirable reserves as a percentage of imports was now inadequate. It recommended that due attention should be paid to the payment obligations in addition to the level of imports while monitoring reserves. The policy framework for the external sector based on the Committee's Report was implemented along with policy changes in trade, industrial and financial sectors.

In brief, reform in the external sector was meshed with reform in other related sectors. Within the external sector reform, capital flows were managed keeping in view the needs of efficiency and stability. There was a fairly smooth transition from an administered exchange rate system to a market-determined exchange rate. In this process, the Reserve Bank of India (RBI) attempts to ensure that volatility and

speculative elements in foreign exchange markets are curbed through both direct and indirect measures.

Size and composition of capital flows

Since the gradual capital account liberalisation was initiated in 1991, capital flows have been in excess of the current account deficit except in 1992/93 and 1995/96, thus adding to reserves. It is interesting to note that while the stock of external debt increased by US$ 8 billion between 1991/92 and 1997/98, foreign currency assets increased by US$ 20 billion, thus implying that much of the reserves was accumulated through increasing non-debt creating flows. However, in 1998/99, external debt increased by $4.1 billion whereas foreign currency assets increased by $3.5 billion. During 1999/2000 (up to December 1999), external debt increased by $1.3 billion while foreign currency assets increased by $2.5 billion.

As regards the composition of capital flows, net private flows, which averaged about half of total net capital flows in the 1980s, accounted for nearly the whole of the net capital flows between 1997/98 and 1999/2000. Foreign direct investment (FDI) was the most significant vehicle of private capital. It increased from an average of $80 million, (around 1% of net capital flows) in the 1980s to an average of $2.7 billion (27% of net capital flows) during the period 1996/97 to 1999/2000. Total portfolio investment flows on account of foreign institutional investors, global depositary receipts and others averaged around $2.6 billion during 1995/96 to 1997/98 despite a sharp drop in flows during 1997/98 to $1.8 billion from $3.3 billion in 1996/97. Portfolio flows turned slightly negative during 1998/99 reflecting uncertainties in both the domestic and the international environment. However, such flows recovered during 1999/2000, with net inflows of $3.0 billion.

Management of capital flows

Based on the policy framework and the projected financing requirement for each year, management of the capital account is operationalised through procedures for FDI, portfolio investment, external commercial

borrowings, non-resident Indian (NRI) deposits, and outflows. The broad approach to targeting FDI has been to permit such inflows on the automatic route for all categories unless specified otherwise. Portfolio investments are restricted to selected players, viz, foreign institutional investors, NRIs and Overseas Corporate Bodies predominantly owned by NRIs and wealthy individuals. Indian corporates are allowed to issue global depositary receipts and American depositary receipts without prior approval subject to specified guidelines. External commercial borrowings are subject to case by case approval, based on the size and sector. In respect of NRI deposits, control over inflows is exercised through specification of interest rate ceilings for different maturities in respect of deposits in selected schemes. More generally, variable reserve requirements are stipulated for encouraging or discouraging such flows. As regards external assistance, both bilateral and multilateral flows are administered by the Indian government.

In respect of capital outflows related to inflows (ie principal, interest, dividend, profit and sale proceeds) there are no restrictions at all. In respect of capital outflows from residents, the approach has been to facilitate direct overseas investment through joint ventures and wholly owned subsidiaries and provision of financial support to promote exports, especially project exports from India. There are dual routes, namely automatic and case by case and there is an aggregate annual ceiling for such approvals.

The general thrust is to liberalise gradually by giving adequate notice, and opportunity to adjust, to the market participants. Liberalisation measures are also timed to take cognisance of the state of financial markets, especially foreign exchange markets, and the progress of reform in other sectors of economy.

Management of external debt

If a precise statement on our policy towards external commercial borrowings (ECBs) were made, it would read as follows:

> "Consistent with the overriding norms of prudent debt management, the Government's policy approach towards commercial borrowing essentially reflects the finance needs of the country in terms of a sustainable current account deficit and the availability and relative

costs of various forms of external capital. Prescribing annual ceilings for commercial borrowings and attaching priority in approvals to sectors such as infrastructure (power, telecommunications, transportation, railways, etc), capital goods imports, and exports have constituted the basic approach towards policies relating to ECBs. Requiring prior authorisation for foreign borrowing is a prudent way of protecting a country's long-term balance of payments position."

India's short-term debt (less than one year of maturity) has remained less than 10% of total debt. The maturity structure of new commitments to India indicates that for official loans the average maturity fell from about 41 years in 1980/81 to 26 years in 1998/99 and for private commercial loans, the decline was from about 16 years in 1990/91 to seven years in 1998/99. Compared with other debtor developing economies, the term structure of the debt flows to India has also been by and large longer. For example, average maturity of new commitments to Mexico was nine years for official credit and seven years for private credit.

The policy dimension relating to an appropriate maturity structure, which was earlier viewed as a micro decision, is now being recognised as a macro aspect and a stability issue. Elongation of the average maturity ensures a sort of private sector burden-sharing in times of crisis. It is important to recognise that the insurance embedded in long-term debt often outweighs the cost. These issues have direct relevance to corporations' access to external funds, in terms of both cost and the period of borrowings. The cost of borrowings may increase on account of longer maturities, but they will have the comfort of stable flows. In times of crisis, the costs of disruption on account of destabilising flows may far exceed the cost of raising longer-term debt.

There are questions about how the policymakers could promote or ensure an optimal maturity structure. There can be several views on what is an optimal maturity. There is one influential view that the average maturity of a country's external liabilities should exceed a certain threshold, say three years.

In India, emphasis is laid not only on the cost and size of debt, but also on the maturity. The desired maturity profile is taken into account in policy articulation and clearance of individual cases. The preferred average maturity of our ECBs is five years or more. A liberal view is taken if maturity exceeds eight years. At the same time, in according

individual clearances, bunching of repayment obligations is avoided. More recently, it has been decided, in principle, to allow ECBs of up to $50 million without prior approval. Basically, considerations of the size, cost and maturity are embedded in the clearance mechanism for ECBs.

Approach to short-term debt

Among short-term liabilities, debt constitutes a contractual obligation and is thus on a different footing to the others. The link between short-term debt and reserves has come to the fore in recent deliberations. Our view is that there is a cost to building up reserves through large debt flows since the cost of debt would generally be higher than the return on reserves. However, not all short-term flows are bad and some short-term finance is essential to finance transactions. In fact, we recognise that trade related short-term credit is not as volatile as non-trade related credit. Short-term credit is controlled through specific authorisations restricted to trade related credits within annual ceilings as well as an overall cap on outstandings.

The share of short-term debt has remained low. Compared with other developing countries, India has a relatively low dependence on external financing of short-term maturity. India's short-term debt was 10% of total debt in 1990, compared with an average of 18% across all developing countries. By December 1999 the figure had come down to 5% for India as compared with about 17% for developing countries as a whole.

Our reserve management strategy does take into consideration the size of short-term debt while deciding the adequacy of foreign exchange reserves. At the end of December 1999, the ratio of short-term debt to the level of reserves stood at around 13%.

Policies on reserves

In international fora, there has been a continuous but inconclusive discussion on the optimum level of reserves. Traditionally, however, the adequacy of reserves has been mainly linked to import requirements.

The RBI Annual Report of 1996/97 stated that "in the context of the changing interface with the external sector and the importance of the capital account, reserve adequacy needs to be evaluated in terms of indicators other than conventional norms. Thus, even if exchange market developments accentuate the leads and lags in external receipts and payments the reserves should be adequate to withstand both cyclical and unanticipated shocks. Furthermore, in the context of fluctuating capital flows, it is useful to assess the level of reserves in terms of the volume of short-term debt which can be covered by the reserves."

In 1997/98, the RBI Annual Report reiterated that "from the standpoint of achieving the goal of ensuring orderly conditions in the foreign exchange market and also to deal with situations arising on account of unanticipated and sudden reversals of capital flows, a level of reserve assets that could be considered as adequate needs to take into consideration a host of factors such as the cover for sufficient months of current payments, the stock of short-term and volatile external liabilities, shift in the pattern of leads and lags in payments/ receipts during exchange market uncertainties along with the conventional norm of cover for sufficient months of imports."

India's foreign exchange reserves (comprising foreign currency assets and gold held by the RBI and Special Drawing Rights held by the government) increased for the fourth successive year during 1999/2000. The reserves increased by US$5.5 billion from $32.5 billion at end-March 1999 to $38.0 billion at end-March 2000. This followed increases of $4.7 billion during 1996/97, $2.9 billion during 1997/98 and $3.1 billion during 1998/99.

The $35 billion in gross foreign exchange reserves at end-1999 compared with outstanding short-term debt of about $5 billion. Cumulative net inflows of about $9 billion under portfolio investment by foreign institutional investors and cumulative issuance of global depositary receipts of about $7 billion up to December 1999, contributed to the build-up of reserves. Net of outstanding forward liabilities, the RBI's foreign exchange reserves, at about $37 billion (end-March 2000), were equivalent to eight months' imports and adequate to deal with any external imbalances arising on account of fluctuations in capital flows.

It is sometimes argued that we should not increase our borrowings when there is a build-up of foreign exchange reserves, since the return

on reserves is less than the cost of debt. But it must be noted that the level of reserves satisfies the need for liquidity, offers insulation against unforeseen shocks and acts as a source of comfort to foreign investors. The cost at which ECB is raised has country and other credit risk built into it, which is influenced by a host of factors, including the level of reserves. The essence of reserves management being safety and liquidity, all the investments made thereof are of highest credit quality and excellent liquidity and are usually short-term. Hence, the return on reserves and the cost of borrowing are not strictly comparable, though they need to be considered relevant if a borrowing is meant merely to shore up the reserves. Reserves, by themselves, should not, therefore, influence the desirable level of external borrowing. In fact, a comfortable level of reserves could help lower spreads on ECBs, and in that sense they are complementary rather than substitutable.

Besides the size of reserves, the quality of reserves also assumes importance. Unencumbered reserve assets must be available to the authorities at any point in time for fulfilling various objectives assigned to reserves. In India, the only encumberance is forward sales net of purchases. The RBI's accumulated forward liabilities, which were only $40 million in August 1997, rose to a peak of $3.2 billion (13% of the corresponding foreign currency assets) by January 1998 and then declined to $1.6 billion by June 1998. Forward liabilities stood well below $1 billion as at end-April 2000. As a matter of prudent management of external liabilities, the Reserve Bank's policy is to keep forward liabilities at a relatively low level, say less than 10% of gross foreign currency assets. Also, any bunching of such forward liabilities is avoided by deliberately spreading them predominantly over six months. Currently, there is also an inclination to ensure some minimal presence of the RBI in forward markets, say, at 2 to 3% of foreign currency assets.

Reserves and the exchange rate

The exchange rate is determined by the market, ie forces of demand and supply. The objectives and purposes of exchange rate management are to ensure that economic fundamentals are reflected in the external value of the rupee as evidenced by a sustainable current account deficit. Subject

to this general objective, the conduct of exchange rate policy is guided by three major purposes:

- to reduce excess volatility in exchange rates, while ensuring that the movements are orderly and calibrated.
- to help maintain an adequate level of foreign exchange reserves; and,
- to help eliminate market constraints with a view to the development of a healthy foreign exchange market.

As a general rule, foreign currency transactions take place to finance defined underlying transactions supported by documentation. Genuine hedging of exposures as well as some flexibility in dynamically reducing the cost of hedging is allowed. Basically, the policy is aimed at preventing destabilising speculation in the market while facilitating foreign exchange transactions at market rates for all permissible purposes.

The RBI makes sales and purchases of foreign currency, basically to even out lumpy demand or supply in the thin foreign exchange market; large lumpiness in demand is mainly on account of oil imports and external debt servicing on Government account. Such sales and purchases are not governed by a predetermined target or band around the exchange rate.

Crisis avoidance

It would not be appropriate to conclude that managing capital flows on the above lines, however efficient, ensures that there is total stability in capital flows. In fact, even with a managed capital account, we had to contend with occasional surges in capital flows between 1993 and 1997. In general, the short-term response has taken a number of forms, viz, raising of reserve requirements, reviewing the pace of removal of restrictions on capital inflows, relaxation of end-use specifications, liberalisation of capital outflows, partial sterilisation through open market operations, and deepening the foreign exchange market by routing an increased volume of transactions through the market.

The prolonged stability in the exchange rate of the rupee from March 1993 came under stress in the second half of 1995/96. In response to the upheavals, the RBI intervened in the market to signal that the fundamentals were in place and to ensure that movements in the exchange rate were orderly and calibrated. The pressures intensified

towards the end of January 1996 and the first week of February 1996. The RBI undertook measures to encourage faster realisation of export proceeds and to prevent an acceleration of import payments. The interest rate surcharge on import finance was raised, the scheme of post-shipment export credit denominated in foreign currency was scrapped and the RBI continued to intervene actively in the spot, forward and swap/money markets.

During periods of undue turbulence during the Asian crisis, exchange market intervention was supported by monetary policy action to withdraw liquidity. The year 1997/98 and the first quarter of 1998/99 posed severe challenges in exchange rate management in the face of the threat of external contagion and other uncertainties. Distinct phases of exchange rate movements and RBI responses can be identified. During April to August 1997, excess supply conditions prevailed in the market and the RBI undertook large net purchases of foreign currency. From September 1997 to mid-January 1998, acute exchange market pressure was staved off through the sale of foreign currency, coupled with administrative and monetary policy measures. Mid-January to April 1998 marked the return of stability and enabled rolling-back of the tight monetary measures introduced in January 1998.

When the foreign exchange market was characterised by considerable uncertainties in May–June 1998, several measures were announced by the RBI in June 1998 to reverse the destabilising sentiment in the market. Important amongst these measures were:

- the Reserve Bank's readiness to sell foreign exchange to meet temporary demand-supply mismatches;
- allowing the facility of forward cover to foreign institutional investors;
- allowing domestic financial institutions, with the Reserve Bank's prior approval, to buy back their own debt paper or other Indian paper from international markets;
- allowing banks acting on behalf of the foreign institutional investors to approach the RBI for direct purchase of foreign exchange; and
- advising banks to charge a spread of not more than 1.5 percentage points (previously 2–2.5) above Libor on export credit in foreign currency.

The market responded positively to these measures, but in August 1998 there were fluctuations in the exchange rate in view of international developments. The RBI once again undertook monetary

measures, which included raising the repo rate and the cash reserve requirement of banks.

An extraordinary situation that arose in 1998/99 consequent upon imposition of sanctions and the issue of Resurgent India Bonds (RIBs) is an interesting example of the management of the capital account in such a situation. The RIBs were designed to compensate for the extraordinary events in 1998/99, which may have resulted in some shortfall in the normally expected level of capital inflows in relation to the current account deficit of less than 2% of GDP. Due to these sudden developments in 1998/99, a temporary disruption in normal capital flows, especially debt flows, was anticipated. Instead of dipping into currency reserves, which might have affected sentiment adversely, or cutting the current account deficit through drastic import cuts, which would have affected real economic activity, the alternative was to enhance debt flows at the least possible cost.

During May 2000, the RBI undertook a series of measures in view of the prevailing uncertainty in the foreign exchange market. Important measures taken were:

- an interest rate surcharge of 50%, on a temporary basis, of the lending rate on import finance on all non-essential imports;
- meeting requirements of crude oil imports by the publicly owned Indian Oil Corporation and government debt service payments partly or fully by the RBI directly;
- the RBI would continue to meet temporary demand-supply imbalances;
- a minimum interest rate of 25% on overdue export bills;
- it was reiterated that the banks acting on behalf of foreign institutional investors are free to approach the Reserve Bank to procure foreign exchange. The banks were also advised to enter into transactions in the foreign exchange market only on the basis of genuine requirements.

Thus, the operations in the foreign exchange market have combined, as the situation warranted, sterilisation by way of open market operation, management of liquidity through repos, change in reserve requirements, signalling through interest rate changes (ie bank rate), levy of import surcharge and other measures. Such a coordinated response was demonstrated by the RBI during bouts of large capital flows as well as moderation in such inflows. Through close monitoring of domestic and

international developments, and timely as well as effective monetary and administrative measures, India was able to ward off the threat of contagion and mitigate the potential adverse effects of domestic developments such as the protracted border tension with Pakistan over Kargil.

Transparency

The issue of clarity is really an issue of defining properly categories or components of external debt, collecting data in an internationally comparable form and effective monitoring. Above all, the issue of transparency relates to clearly explaining the status of external debt.

The total external debt of India is compiled and published by the Ministry of Finance and the RBI at different frequencies. The Ministry publishes data annually in the *Status Report* and in the *Economic Survey*, which are public documents. The RBI publishes data in its *Annual Report* and the annual *Report on Currency and Finance*.

A Technical Group on External Debt (May 1998) has identified the areas needing further attention in regard to external debt data. These include presentation of external debt data on both original and residual maturity basis for some time before a final shift to residual maturity is made. Currently, a Monitoring Group on External Debt has been constituted to implement the recommendations of the Technical Group on External Debt and to work out the modalities for compiling and publishing quarterly data.

The RBI publishes daily data on exchange rates, forward premia, etc in the *Weekly Statistical Supplement* of the *RBI Bulletin* with a lag of one week. The movements in foreign exchange reserves of the RBI on a weekly basis are also furnished in the same publication. In addition, daily data on turnover in the foreign exchange market is published every week with a lag of about two weeks. Since July 1998, the RBI has published nominal and real effective exchange rate indices, based on trade with five and 36 countries, in the *RBI Bulletin*, with a lag of about one month. Way ahead of many developing and industrial country central banks, the RBI has been publishing the size of its gross intervention (purchase and sale) and its net forward liability position each month with a lag of only one month.

Stabilisation, vulnerability and liquidity as a safety net: some thoughts evoked by the Israeli experience

Sylvia Piterman*

Introduction

This paper focuses on the Israeli experience during the prolonged transition period from an inflationary and controlled economy to a deregulated low-inflation one, with special emphasis on international liquidity as a safety net which can provide some protection against the risks inherent in the stabilisation process.

First, I will present some stylised facts about the Israeli economy during the last 15 years, since the successful implementation of an economic stabilisation plan. In the second section, I will describe and analyse the sources of financial vulnerability during this period. The third section discusses various kinds of volatility while the fourth will be dedicated to the concept of maintaining a "third line" of defence – a strong international liquidity position – in addition to and in support of prudent macroeconomic policies and a sound banking system. This section will survey ways in which the authorities can reduce financial vulnerability and describe how this was done in the Israeli context. The paper concludes with a summary of the main points.

Some stylised facts concerning the Israeli stabilisation process

The Israeli economy has undergone a profound transformation during the last 15 years. This came after a decade in which fiscal excesses, a weak central bank and an unsound banking system, together with

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negative external shocks, led to financial instability and high inflation. An inevitable crisis took place in 1983–84, when inflation accelerated to almost hyperinflationary levels.

Following the heterodox stabilisation programme implemented in 1985, the government deficit decreased from an unsustainably high level to a low one, and runaway inflation was restrained. The annual inflation rate stabilised at 18–20% and remained at that level until the beginning of the 1990s. Stabilisation was achieved by means of an exchange rate anchor, but since 1992 the monetary system has been characterised by gradually increasing flexibility of the exchange rate regime. Since 1992, monetary policy implementation has been guided by inflation targets, bringing about a gradual decrease in the inflation rate to 3–4% a year (which is also the target for 2000). In August 2000 the Israeli government for the first time adopted a price stability target (a 1–3% annual inflation rate) to be achieved by 2003. Specific inflation rates were set as follows: 2.5–3.5% for 2001 and 2–3% for 2002. The government's decision was in line with a broader strategy of accomodating Maastricht criteria by 2003.

Monetary stabilisation, coupled with the fall in the borrowing requirements of the government and the increasing flexibility of the exchange rate regime, enabled the Bank of Israel and the Ministry of Finance to gradually liberalise money, capital and foreign exchange markets. Today, the money and foreign exchange markets are completely liberalised and open to capital movements. Regrettably, capital markets still lag behind, especially with respect to the ability of pension funds, provident funds and insurance companies to invest abroad. Moreover, the pension system is very much in need of an overhaul.

The transition from very high inflation rates to a rate of 3–4% brought about significant changes in the assets and liabilities portfolio of the public. Since the stabilisation plan of 1985, the share of CPI-indexed assets and assets denominated in foreign currencies has contracted, in favour of non-linked assets denominated in domestic currency. This transformation accelerated during the mid-1990s when meeting inflation targets involved high real interest rates. Nevertheless, the many years of high inflation made the public very cautious, and therefore most of the increase in non-linked assets was in short-term assets. It seems that many years of stability are needed before investment in long-term fixed income assets becomes popular.

As has happened in many emerging markets during the mid-1990s, growth of net domestic non-linked assets was mainly fed by huge capital inflows. A significant part of these flows came in the form of foreign exchange credit to the public by domestic banks. The banks did not take direct currency risks since they used funds from abroad. Nevertheless, they took indirect currency risk through credit risk associated with the loans.

According to the Controller of Foreign Exchange (2000) estimates, the net foreign currency exposure of the business sector was just $11.3 billion by end-1999. Such aggregation might, though, disguise the fact that some economic entities have surplus foreign-currency liabilities and others have surplus foreign-currency assets. An indication of the extent of the bias can be derived from a survey (Ibid, p 92) of 33 big Israeli corporations that are also major exporters. While their foreign liabilities amounted to $14.5 billion (44% of the sector's liabilities), their assets amounted to $3 billion (only 14% of the sector's assets). Their exposure, therefore, amounted to 90% of the exposure of the whole business sector in June 1999.

It should also be noted that until the end of 1994 the business sector, by and large, preferred being over-exposed to the Israeli shekel and under-exposed to foreign currency, since local interest rates were relatively low. But as local interest rates were raised, the business sector gradually shifted its position towards being exposed to foreign currency, and probably even excessively so. Since mid-1997 Israeli companies' exposure to foreign currency has been declining, and today the central bank does not regard the sector's exposure to be a cause for concern, since a large portion of the business sector has income in foreign currency. The decline of the business sector's exposure to foreign currency was due to an increasing awareness of the risks involved in being exposed to the foreign currency market. The Bank of Israel fostered this growing awareness through a substantial widening of the foreign exchange band in mid-1997 and its watertight policy of non-intervention in the foreign currency market.

At the beginning of 1998 the Supervisor of Banks examined the indirect foreign currency exposure of Israeli banks, called their attention to risky positions and instructed a number of them to take corrective actions. The Bank of Israel also held discussions concerning the need for specific capital requirements to cope with the aforementioned risks,

but no final decision was reached. The Supervisor of Banks monitors the exposure of Israeli Banks on a regular basis.

In sum, the rather stable monetary and financial system created during 15 years of stabilisation has sheltered Israel from the turmoil of recent years. Implementation of the principles of strict fiscal and monetary discipline, flexibility of the exchange rate regime, soundness of the financial system and adequate international liquidity, have all contributed to the stability of recent years. It seems then that it is possible to build lines of defence that can help protect the economy from strong external shocks.

Financial vulnerability is inherent to the stabilisation process

Financial vulnerability is inherent in a transition from an emerging economy to an advanced one, and this truism holds even if the transition is very successful. Exposing the deeper reasons for this imbedded vulnerability needs more research, but two of the usual suspects to be rounded up here are the learning process needed for adjusting to the new system, and aspects of moral hazard.

Some of the most fundamental reasons for these vulnerabilities can be attributed to the new rules of the game set by the government, and to the learning process which all participants, including the authorities themselves, need to undergo on how to operate in the new environment. Apart from policymakers, the sectors in need of adaptation include savers, corporations and, last but not least, the financial sector.

A second reason for those vulnerabilities might have to do with moral hazard. Agents, especially sophisticated ones, such as those often found in the financial system, might use the new and less regulated environment to take bigger risks, believing that if worst comes to worst, the government will step in and rescue them, rather than risk a systemic crisis.

It seems that the main potential for vulnerabilities comes from three different areas: macroeconomic policies, financial sector activities and corporate sector operations. Vulnerability could stem, for instance, from the following sources:

Macroeconomic sources of vulnerability

- *Exchange rate ambiguities and misunderstandings*: A fixed or managed exchange rate regime is usually crucial to bringing inflation down from very high levels. A managed exchange rate is very credible in the short run: it generally comes after a huge devaluation of the currency, leaving room for some real appreciation. Moreover, nobody believes that the government will give in during the first month or two of the programme. However, as time passes and inflation continues to erode the real exchange rate, the public starts having its doubts. And obviously households, corporations and banks commit errors of judgement during the transition period. Authorities sometimes contribute to the making of such errors since they make promises that they can not fulfil. A considerable degree of moral hazard can be created if the authorities do not convey the right messages to all the relevant parties.
- *"Remonetarisation"*: Once inflation comes down, the demand for domestic currency denominated assets grows substantially. But initially this growth (known as "remonetarisation") is concentrated in short term assets, eg bank deposits, CDs, etc. This creates a large pool of liquidity, which is susceptible to any sign of weakness in the system.
- *More efficient markets*: Developed money markets make it much easier to mobilise domestic credit and make operating in credit and other financial markets much smoother. While this does in general contribute to a superior functioning of the economy it also entails some risks, primarily because it makes possible large and rapid changes in the composition of the public's portfolio of assets and liabilities at times of increasing risk.
- *Capital import exuberance*: Achieving the standard of living of developed countries means that emerging economies have to grow faster. Growing faster necessitates mobilising savings, part of which would usually come from abroad. This means foreign financing of a deficit in the current account of the balance of payments, and it is very difficult to judge what constitutes a sustainable level of such a deficit. Therefore, occasional macroeconomic adjustment might be needed, accompanied by a contraction of the economy, financial distress and social pain.

- *Inflation complacency*: While bringing inflation down from very high rates to medium ones can be achieved almost overnight, bringing it down further to low levels is usually a long and painful process, requiring sustained tough monetary policy and high interest rates. Such monetary policy can not be popular and it usually creates pressures on the central bank to loosen its grip. A combination of such pressures and a temporary fall in inflation – due to seasonal, random or one-time effects – might make the monetary authorities loosen their stance. Such premature lowering of interest rates might bring about a relapse of higher inflation, and worse still: the loss of credibility that the central bank suffered might necessitate higher interest rates than would have been needed without the premature interest rate reduction.

Financial sector vulnerabilities

- *Exposure to exchange rate risk*: Growth of domestic monetary aggregates ("remonetarisation") is usually fed by capital inflows, all the more so when the exchange rate is managed. Moreover, tight monetary policy, which means high local interest rates, can make foreign currency credit seem attractive for borrowers. Such credit increases the exposure of the private sector to exchange rate risks. Even if domestic banks cover their direct exchange rate exposure, they are not always aware of the substantial indirect exposure, stemming from the exposure of their clients to exchange rate fluctuations. Special attention should therefore be paid to the extent of foreign currency leverage of corporations, as it could be possible that the net foreign currency exposure of the private sector (firms, households and banks) is nil while gross exposure – namely the exposure of particular sectors – is perilous.
- *Hedging instruments and the concentration of risk*: Increasing the flexibility of the exchange rate regime encourages the development of hedging instruments. These instruments can allow market participants with opposite positions to reduce risk. Nevertheless, they can also move the risk from one market player to the other and sometimes they can cause an unhealthy concentration of risk, especially in the banking sector, which is the leading seller of these instruments. Writing options, for example, is especially risky if the market for

foreign exchange is narrow, as nascent markets usually are. In such markets, small shifts in the demand for, or supply of, foreign currency can cause significant changes in the price of the asset, making it difficult to manage the risk of the options writers and leaving them exposed.

Regarding the argument that in order to reduce national risk exposure counterparties need to be offshore, it needs to be emphasised that widening the distribution of risks is important per se for risk minimisation, even if its efficiency is hard to judge. However, it is not very probable that having foreign banks as the counterparties would enhance stability, as such institutions might be reluctant to remain exposed to the local currency when the economic environment becomes even marginally less stable.

- *Learning process*: Decreasing reserve requirements allows the financial sector to move from sovereign risk to corporate risk. New financial instruments – such as the hedging instruments mentioned above – which develop in freer markets create big opportunities for profits but also entail big risks. Moreover, rules of conduct and of information disclosure do not always keep pace with innovations, and it therefore takes time before prudent practices are fully established. The supervision mechanisms change slowly, so that risks are not properly managed and the banks might fail to accumulate capital reserves when times are good, in preparation for rainy days. For all these reasons and the others mentioned above, the banking sector becomes more vulnerable during the transition period.

Real sector vulnerabilities

- *Credit over-expansion*: The fall in the government borrowing requirement and the liberalisation of the money, capital and foreign exchange markets, made possible by increased stability, enable increased leverage of the corporate sector. Easier credit necessitates a greater degree of restraint in both giving credit and using it, but such prudent credit policies take time, and often crises and bankruptcies, to develop.
- *Exchange rate hazards*: A liberalised exchange rate regime could mean a more volatile exchange rate, at least in the short run. Financial markets can supply effective instruments for coping with exchange rate risks. However, the management of risks with such instruments

requires that the risks be well known, understood and internalised. In the meantime, corporations remain vulnerable to the risk involved in the new financial environment.

- *Structural changes*: Periods of transition and stabilisation involve widespread changes in the real economy, stemming from privatisation, increased competition, the reduction of protection of the domestic sector, and fundamental transformation of many economic enterprises. The turmoil inherent in this process can increase the vulnerability of the economy and place severe constraints on the authorities' policy options.

While fundamental vulnerabilities might concentrate in the aforementioned areas, the first signs of weakness of the economy often emerge in the foreign exchange market. The latter can therefore be regarded as the economy's early warning system. Moreover, it is important to note that the current international financial environment magnifies the exposure to foreign exchange risks. Volatility, volume and globalisation of world financial markets seem to be the channels through which an attack on the system might spread itself. Since these characteristics are here to stay, the question of how to be prepared to face their consequences must be addressed.

How can the authorities reduce the vulnerability of the financial system?

This section will start with some general thoughts about coping with financial vulnerability, emphasising the concept of maintaining "sufficient" foreign reserves. This subject has received some attention recently, but the ideas that have been discussed are difficult to implement and it is not clear to what extent they are effective in coping with the vulnerabilities of the system. However, as we will see, one lesson from the Israeli experience is that high net liquidity can help to lower the overall cost of borrowing abroad as well as maintaining financial stability.

Some general thoughts

Dealing with the new and more fragile financial environment means building multiple lines of defence, which support one another and

can weather an attack. Moreover, the existence of an adequate third line of defence – to be described in the following sections – can reduce the likelihood of attack, and reduce damage should an attack develop.

The first line of defence would include all the elements of prudent macropolicies; proper fiscal policy is the most obvious element, but adequate monetary policy, combined with as flexible an exchange rate regime as possible, is also crucial. A second line of defence consists of a sound financial system, and especially a sound banking system. An invisible hand alone cannot ensure soundness and confidence. Regulators and supervisors have to supply this public good. A critical third line of defence, which also plays the role of a safety net, is the proper management of the country's international debt and liquidity. This line of defence, to which increasing attention has been paid in the aftermath of the recent financial crises in emerging markets, will be the subject of the rest of this section.

There is now a consensus on the desirability of taking into account the size and duration of foreign exchange liabilities when setting the appropriate size of foreign exchange liquidity. Pablo Guidotti from Argentina has suggested that countries should manage their external assets and liabilities in such a way that they are always able to live without new foreign borrowing for up to one year. But what does "to live without new foreign borrowing for up to one year" actually mean? How is it possible to know the borrowing requirements for the next year? If Guidotti's rule means maintaining reserves that are at least sufficient for servicing the debt one year ahead, will this provide a sufficient cushion against shocks?

Alan Greenspan (1999) recently introduced another concept, "liquidity at risk". This can be calculated by considering the "country's liquidity position under a range of possible outcomes for relevant financial variables (exchange rates, commodity prices, credit spreads, etc)" and the probabilities of these outcomes. A country can manage its "liquidity at risk" position by different combinations of reserves, debt and their maturity. "For example, an acceptable debt structure can have an average maturity in excess of a certain limit. In addition, countries could be expected to hold sufficient liquid reserves to ensure that they could avoid new borrowing for one year with a certain ex-ante probability, such as 95% of the time."

Greenspan mentioned setting international standards for the level of "liquidity at risk", which can be handled in different ways. Increasing the level of reserves through mobilising long-term debt can decrease the level of "liquidity at risk". However, "a wide range of innovative financial instruments – contingent credit lines with collateral such as the one maintained by Argentina, options on commodity prices, opposite options on bonds, etc" can also be used to manage a country's "liquidity at risk".

The rather new concept of sovereign countries establishing contingent credit lines with private banks is, of course, intriguing. At first sight it looks like a perfect solution for countries that need to strengthen their foreign position. It is straightforward, transparent and seems to reduce the risks to which a country is exposed when approaching a crisis. Moreover, this way can also reduce the odds of such a crisis taking place. However, on closer examination, lines of credit look just a little too perfect: can such lines be big enough to be of consequence when a real crisis hits? Will the international banking system refrain from defending itself by cutting parallel credit lines to a country when the contingent credit lines are used? Will such contingent arrangements not be too much of a temptation for governments not to pose the familiar moral hazard problem? Such reservations are by no means an indication that this idea is a bad one. It is, after all, an insurance arrangement, and it is believed that in general insurance does work. But only time and further experience will tell how effective and efficient contingent credit lines really are.

Following Guidotti's rule or setting some limit to "liquidity at risk" would not always provide sufficient cushioning against shocks. In the case of a breakdown of confidence in the government's policy, demand for foreign exchange might be much larger than the level of reserves determined according to such a rule. Demand might come from different directions: repaying or hedging short- or long-term debt, requirements for accumulating foreign assets and financing the current account, hedging FDI, etc. Once the currency is under attack and the central bank is selling foreign currency, it is unable to discriminate between different flows.

Nevertheless, Guidotti's rule and the highly interesting concept of "liquidity at risk" deserve careful consideration. Adopting these rules can provide a cushion by increasing the financial stability of the economy,

as it improves the structure of its net external debt, namely by enlarging the relative weight of its long-term debt. A stronger financial structure of assets and liabilities increases the credibility of the economy and enhances its access to international capital markets.

It is important to note that the rule introduced by Greenspan is stochastic. The required level of "liquidity at risk" could be provided by the level of reserves which ensures that the economy could avoid new borrowing for one year with a particular ex-ante probability, such as 95% of the time. It can be calculated by considering the country's liquidity position under a range of possible outcomes for relevant financial variables and the probabilities of these outcomes. Implementing such a rule is much more complicated than Guidotti's rule. But keeping in mind that the concept of "Value at Risk" is already quite well known, it might be possible to develop and to implement the approach of "liquidity at risk", with the help of institutions that are familiar with calculating "Value at Risk".

Let us assume that the authorities wish to improve their liquidity position. How could this be achieved? In the long run, policy will have to be aimed at improving the underlying performance of the economy, by reducing the current account deficit, encouraging balanced growth, especially in exports, promoting adequate domestic savings, and so on. In the shorter term, improving the liquidity position of the economy cannot be based on intervention, since it could necessitate overly restrictive fiscal and monetary policies, aimed at attracting capital inflows and creating a surplus in the current account. However, it might be feasible to improve liquidity by long-term government borrowing aimed at building up foreign reserves. Moreover, it is advisable to achieve this goal by changing the structure of the external debt, and specifically by increasing the weight of long-term debt, rather than increasing reserves. But changing the structure of the external debt takes time and entails costs, especially if a country finds it difficult to raise long-term debt. Therefore, any application of these rules has to be gradual.

Optimal reserves in the context of a floating exchange rate regime

The exchange rate regime per se is not of crucial importance for setting the optimal level of reserves. It seems that the main factor is the extent of long-term proven stability. Obviously a fixed exchange rate regime

makes liquidity essential. However, an economy with a floating exchange regime which has not yet achieved long-term proven stability will also need huge liquidity. Worse still, a floating exchange rate regime can bring about nominal instability if the underlying financial situation of the economy is not strong. In this case, one of those factors which will strengthen the financial situation is the liquidity position of the economy.

Therefore, while the rules mentioned above were developed against the background of a managed exchange regime of one type or another, they can also provide a rule of thumb for the optimal level of foreign exchange reserves in emerging markets that maintain a flexible exchange rate regime. A possible definition of the optimal level of reserves here would be "the minimum level that ensures access to international capital markets for the economy, when needed".

This definition might be adequate for the financial environment in which we live. When a country is faced with the need to finance a deficit in its current account and refinance its outstanding foreign debt, long-term stability is dependent on its success in ensuring adequate external financing. One important way to ensure the availability of financing is for the government to borrow long term while holding short-maturity liquid assets. Against this background, it seems that Guidotti's rule or "liquidity at risk" might serve to set a minimum level of reserves, which is also optimal. Maintaining this level can decrease the risk premium for the whole economy and, as a result, bring the net cost of external financing down to a low level.

It should be emphasised that adopting such rules of optimal level of reserves (when the reserves are not actually intended to be used) seems to be a very costly strategy. It is clear that borrowing will generally be more expensive than investing, all the more so as the maturity of the loans is significantly longer than the maturity of the assets. Moreover, does holding liquid assets make sense at all while it is possible to borrow in the deep international financial markets, should the need arise? I think the answer is yes, as access to the capital markets cannot be taken for granted, and capital might not be available precisely when it is most urgently needed. Moreover, as mentioned before, holding high levels of reserves can lower the cost of borrowing for the economy as a whole, making the strategy optimal for the country as a whole.

This effect can be gauged indirectly from the impact of the level of reserves on the country's rating as published by rating agencies –

which are known to take this variable into consideration in their assessments – and the effect of the country's rating on the cost of borrowing abroad.

The Israeli experience

The concept of the optimal level of reserves in general, and for Israel in particular, has evolved over time. Fifteen years ago "three months of imports" was considered the optimal level of reserves for Israel, which would imply a level of close to US$ 11 billion in 1999, compared with an actual level of $22 billion. Based on research conducted by Ben-Bassat and Gottlieb (1992a, b) at the Bank of Israel, taking into account the volatility of capital flows, "window dressing" effects and country risk, the optimal level of reserves at the beginning of the 1990s was estimated at $5–6 billion. At that time, the Bank of Israel managed the exchange rate inside a narrow band.

Currently the exchange rate is floating (within a very wide band – see below). Nevertheless, it seems that the optimal level of reserves today is much higher than it was at the beginning of the 1990s, and rather close to the current level of $22 billion. This level is higher than that of the short-term debt (including principal and interest payments on short- and long-term debt in the following year). As can be seen in Table 1, the level of foreign reserves has grown in comparison to all major financial variables. For example, their average level in 1999 was larger than the level of short-term liabilities of the country and exceeded the level of the central bank's domestic liabilities to the private sector.

Why is the optimal level of reserves so much higher today than it was at the beginning of the 1990s? First of all, with the globalisation of capital and money markets, it became much more difficult to predict the volatility of capital flows, as was shown by the financial turmoil of recent years. An additional argument would be the 'Cosí fan tutti' one. Most economies deem it necessary to maintain a higher level of foreign reserves than in the past. And even if such a higher level would not be necessary from a strictly economic point of view, in an open and transparent world, not abiding by the new rules might cost a country dearly.

How did the improvement in the liquidity position take place and what were the forces behind it? In the case of Israel, debt has

Table 1

Israel's foreign currency reserves relative to various aggregates

Annual averages, in percentages

	Bank of Israel's shekel liabilities[1]	Monetary base	Unlinked shekel assets	M1	Foreign currency credits	Short-term external debt	Gross external debt	Months of imports
1991	..	328	64	223	76	59	21	3.2
1992	..	283	50	177	67	55	18	2.7
1993	..	219	37	145	62	44	15	2.1
1994	..	208	33	142	66	43	15	2.1
1995	139	295	34	183	62	50	19	2.5
1996	107	288	32	190	55	49	21	2.6
1997	110	466	48	316	75	84	33	4.6
1998	111	520	55	392	82	108	39	5.9
1999	105	506	50	392	77	103	39	5.8

[1] Includes the monetary base, time deposits of commercial banks and government deposits connected to outstanding balances of short-term loans.

already been of long maturity for many years; but reserves increased dramatically during 1995 to 1997 as a result of heavy intervention, aimed at avoiding the exchange rate impact of huge private sector capital inflows. Therefore, this improvement of the liquidity position was a by-product of a tough monetary policy coupled with the constraints of the prevailing exchange rate regime.

The exchange rate is currently allowed to float within a very wide band (its width is 36% – relative to the average of its boundaries – and it is increasing by 4% a year). The Bank of Israel has committed itself not to intervene in the foreign exchange market as long as the exchange rate remains within the boundaries set by the band. Some commentators criticise what they perceive to be the central bank's failure to use the stock of foreign reserves in order to stabilise the exchange rate. But more to the point, questions are raised concerning the need for such a high level of reserves if they are not "used" by the central bank.

The answer to this legitimate concern is that high reserves are doing their job by just being there. Precisely this very level of liquidity was one of the factors that protected Israel from the financial turmoil of the last few years, and helped it to maintain a relatively low risk premium on its foreign debt. But then, the thorough economist might wonder; why are foreign reserves needed at all if the exchange rate is basically a floating one? The answer is that the rather large government debt, and the practice of rolling it over, call for high foreign reserves, as they help in proving the country's economic stability.

But then again, our thorough economist might keep wondering, would a hypothetical elimination of the government debt render holding foreign reserves unnecessary? Regrettably the answer would be negative: Israel lacks a tradition of price stability, and economic agents still have not completely kicked the habit of adjusting local prices upwards following a depreciation. Therefore, those accountable for price stability in Israel, unlike their luckier colleagues in other developed countries, cannot be indifferent to rapid and/or large changes in the exchange rate. For the last two years the Bank of Israel has not intervened in the foreign exchange market, even during a period of considerable turmoil in the foreign exchange market in October 1998. Nevertheless, I believe that the relative stability of the exchange rate is connected to the existence of the foreign exchange band and to the public awareness of the Bank of Israel's commitment to defend its

boundaries if the need arises. And the credibility of the Central Bank's commitment depends to a large extent on the level of its foreign currency reserves.

Conclusion

The transition process from an inflationary and highly regulated economy to a liberalised low-inflation economy is a long one and new financial vulnerabilities cannot be avoided. Such vulnerabilities are connected to aspects of moral hazard and to the process of learning the new rules of the game. The vulnerabilities stem from many sources: a managed exchange rate regime, liberalisation of financial markets – especially the foreign exchange market, the learning process of risk management, rapid growth of domestic monetary aggregates and foreign capital inflows which are the source of this growth, etc.

While such vulnerabilities cannot be avoided, even when the transition process is very successful, they can be contained and dealt with through proper policy measures. Prudent macroeconomic policies and successful supervision of the banking system are the first and second lines of defence in coping with the vulnerability of the system. Nevertheless, the first signs of weakness of the system always appear in the foreign exchange market. Therefore, maintaining a strong foreign liquidity position plays an important role in assuring the economy's good health.

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Policy responses to strengthen liquidity risk management in Korea

Bo Yung Chung

Introduction

Korea's currency crisis at the end of 1997 was caused by structural weaknesses in the Korean economy. These vulnerabilities were brought suddenly into the open by changes in both the domestic and international economic environments.

The direct trigger for the crisis, however, may be traced to problems in maturity mismatches between foreign currency assets and liabilities, which were further exacerbated when domestic financial institutions borrowed excessively in the short term and invested long term in high-risk assets. This implied major shortcomings in Korea's management of liquidity risk, including external debt, at a national level.

Following the currency crisis, Korea lifted most regulations it had placed on capital account transactions, while cross-border capital movements became more active and fast-paced internationally. As this exposes Korea very acutely to changes in the international, as well as domestic, financial market environment, the possibility of a sudden and rapid flow of short-term foreign capital is higher than ever before.

This being the case, the need to manage liquidity risk effectively at an integrated, national level, whereby public, financial and private sector levels of foreign debt and liquidity are fully grasped and their monitoring strengthened, has increased.

Foreign exchange liberalisation since the currency crisis

Since the 1980s, Korea has steadily eased regulations on capital account transactions. However, it was not until the 1990s that full-blown capital account liberalisation was pursued. Since then, with the currency crisis of late 1997 serving as the turning point, the scope of liberalisation has been widely expanded.

It all started with Korea's shift to a freely floating exchange rate system in December 1997. Through the abolition of all restrictions on foreign investments in domestic equities, short-term money market instruments (May 1998) and domestic bonds (July 1998), the capital markets were, in effect, fully opened.

The range of industries opened to foreign direct investment (FDI) has also been continuously expanded, so that FDI is now allowed in almost all industries except certain portions of the public sector. In May 1998, foreigners were even allowed to engage in hostile takeovers of domestic firms, and later, in November 1998, the *Act on Foreign Direct Investment and Foreign Capital Inducement* was replaced by the *Foreign Investment Promotion Act*. Furthermore, in June 1998 all qualifications for overseas issuance of foreign currency securities and restrictions on the use of their proceeds were eliminated. In July 1998, domestic corporations' medium- to long-term foreign currency borrowings, as well as overseas issuance of foreign currency securities, both of which had previously been allowed only for maturities of three years or more, became permissible for maturities of one year or more.

Meanwhile, realising that, in order for the Korean economy to make another leap forward, the establishment of a new foreign exchange system championing the principles of an open market economy was necessary, the Korean government worked out, in June 1998, a plan for a sweeping, two-stage liberalisation of all foreign exchange transactions. With the implementation of the new *Foreign Exchange Transactions Act* on 1 April 1999, the first stage of liberalisation took effect.

In this first phase, most foreign exchange transactions related to the foreign operations of domestic corporations and financial institutions were liberalised, marking the transition of the regulatory framework on capital account transactions from the previous "positive list system" to the current "negative list system" where the permission of the authorities is only required for a few categories of transactions. For example, domestic firms' short-term overseas borrowing and issues of foreign currency securities,[1] as well as non-residents' issuance (domestic and overseas) of won-denominated securities and the opening of

[1] Short-term foreign currency borrowing and overseas issues of foreign currency securities are allowed only for firms whose financial position is judged to be sound, and whose credit ratings from qualified credit ratings agencies are above investment grade.

Korean won deposit and trust accounts – all with maturities of one year or more – were liberalised. In addition, the bona-fide demand principle, which had been in place for derivatives transactions, was abolished, and the derivatives transactions of foreign exchange business institutions were fully liberalised.[2] However, in order to block possible attacks on the Korean won by speculative funds, some capital transactions, including non-residents' deposits of Korean won for less than a year, and derivatives transactions bypassing *foreign exchange business institutions*, were not liberalised.

On the other hand, as a result of such extensive liberalisation of foreign exchange transactions, the possibility of disruptions in domestic financial and foreign exchange markets triggered by sudden and rapid flows of capital has become increasingly high. This being the case, a legal framework, with safeguards which may be implemented in times of need within the boundaries set by international norms, has been prepared.

For example, it is stipulated in the *Foreign Exchange Transactions Act* that where there is concern over either (i) the balance of payments and international financing becoming severely strained, or (ii) cross-border capital movements hampering the conduct of macroeconomic policies, certain measures may be taken. These include requiring permission for foreign exchange transactions, a variable deposit requirement (which can require a proportion of non-FDI capital inflows to be placed in a zero-interest account) and marginal reserve requirements. In principle, however, safeguards are to be implemented on a selective basis, only when deemed inevitable. Such measures may last for only up to six months, and must be lifted as soon as their cause is no longer a threat.

Finally, in the second stage of liberalisation, scheduled to take effect from early 2001, almost all foreign exchange transactions, excluding only those transactions interrupting the maintenance of world peace and social order, will be liberalised.

[2] As a result of this measure, transactions in the domestic currency swap market and won/dollar non-deliverable forward market have been promoted. However, the range and depth of these markets are still quite insufficient, in comparison with those in developed economies.

Policy responses to strengthen liquidity risk management

Enhancing the transparency of external debt statistics and improving external debt management

Following domestic financial institutions' poor management of their external debt and liquidity towards the end of 1997, Korea has, since the currency crisis, started not only to monitor the external debt of the public sector and financial institutions, but also comprehensively monitor the foreign debt of the private sector.

First, in order to dispel the scepticism in international financial circles at the time of the currency crisis as to the amount of Korea's external debt, and as a means of enhancing the transparency of its external debt statistics, from December 1997, Korea started to compile and disseminate its external debt statistics on a monthly basis, following a definition of "total external liabilities"[3] agreed between the Korean government and the IMF.

Then, in 1998, to enhance the accuracy and credibility of its external debt statistics, the government and the Bank of Korea revised the manual for compiling such statistics. Furthermore, since the collection of information on the foreign currency liquidity status of the overall economy is instrumental for the efficient management of national liquidity, the Bank of Korea conducted an extensive survey to gauge the actual external debt of the public, financial and private sectors. Based on this survey, a complete time series on total external assets and liabilities was compiled.

Finally, in 1999, the Bank of Korea constructed a database containing loan-by-loan information on long-term external debt, which it uses to analyse repayment schedules and debt profiles. In addition, through semi-annual surveys of the 150 or so domestic corporations which account for 80% of total domestic corporate foreign currency liabilities and assets, the Bank of Korea monitors the foreign currency liquidity status of domestic corporations.

[3] *Total external liabilities* is the sum of external debt, as defined by the World Bank, and domestic financial institutions' offshore borrowing, as well as borrowing by domestic financial institutions' overseas branches and subsidiaries. This definition essentially covers all liabilities ultimately repayable by Korea.

By the end of 2000, in order to compile the statistics on external assets and liabilities in a more timely and accurate manner, the Bank of Korea plans to establish a computerised system, whereby data will be collected through the "Foreign Exchange Information Network" – launched in April 1999 to link the computer networks of financial institutions.

In addition, the Korean government is currently developing a sovereign debt risk management system, with technical assistance from the World Bank, to expand its sovereign debt management capacity. Before the crisis, government debt did not exceed 10% of GDP. Thereafter, however, following a significant increase in government borrowing from multilateral institutions, such as the IBRD and the ADB, as well as issues of government bonds to finance structural reform programmes, government debt, is estimated to have increased to around 22% of GDP by end-1999. This, however, is a far cry from the OECD average of about 70%. Moreover, the government is on course to reduce its debt and restore fiscal balance in 2004.

Table 1

Trends in government debt

At end-year

	1996	1997	1998	1999
Government debt ($ bn)	43.6	46.8	76.0	84.4
Percentage to GDP	8.4	9.8	23.7	20.8

Note: Government debt is the sum of central government debt and IMF credit.

On the international scene, Korea's ongoing efforts to improve its debt management practices have led to the strengthening of its cooperation with multilateral institutions. Starting in 1998, Korea resumed its Debtor Reporting System reports (of external public debt and private debt publicly guaranteed) to the World Bank. Korea is also actively following developments with regard to the introduction of an external debt category in the IMF's SDDS (Special Data Dissemination Standard).

As a result of all its endeavours, Korea was able to reduce its total external liabilities to US$ 136 billion at end-1999, a decrease of

$24 billion compared to the time of the crisis at end-1997. Total external assets, on the other hand, reached $146 billion, an increase of $41 billion over the same period. As a result, for the first time ever, Korea became a net creditor (by $9 billion). The reasons behind such a decrease in total external debt, accompanied by an increase in total external claims at the other end, may be summarised as: continued current account surpluses in 1998 and 1999; consistent inflows of foreign investments; and prepayment of the IMF's Supplementary Reserve Facility loans and financial institutions' external debt.

A look at the debt profile also shows significant improvements, particularly in the maturity structure. The percentage of short-term external debt dropped from 40% (or US$ 64 billion) at end-1997 to 28% (or US$ 38 billion[4]) at end-1999. Moreover, scheduled amortisation payments on long-term external debt are now appropriately dispersed. Before the crisis, the short-term component of total external debt was excessively high, as domestic financial institutions depended heavily on short-term borrowing to secure necessary foreign currency funds.

Table 2

Trends in total external assets and liabilities

In billions of US dollars (percentage of total)

	Dec 1997	Dec 1998	Dec 1999
Total external liabilities	159 (100)	149 (100)	136 (100)
Long-term	96 (60)	118 (79)	98 (72)
Short-term	64 (40)	30 (21)	38 (28)
Total external assets	105 (100)	129 (100)	144 (100)
Long-term	32 (31)	30 (24)	25 (17)
Short-term	73 (69)	98 (76)	119 (83)
Net external liabilities	54	20	–9

However, in April 1998, the Korean government took measures to reschedule the short-term foreign currency liabilities of domestic financial institutions into medium- to long-term liabilities of one, two- and three-year maturities. As a result, the ratio of short-term external debt was significantly reduced.

[4] Short-term external debt on a residual maturity basis is estimated as US$ 55 billion.

Strengthening prudential regulations and supervision of financial institutions' foreign currency operations

From the 1990s, Korean financial institutions hastily expanded their operations related to foreign exchange and international finance during the full-scale liberalisation and opening of Korea's financial markets. However, prudential regulatory schemes to keep up with such abrupt developments were inadequate.

The criteria for classifying asset soundness, such as the BIS capital adequacy ratio and loan classification criteria, were applied in quite a lax manner in Korea, compared to the standards recognised in international financial circles. Various prudential supervisory measures, such as a liquidity ratio, risk management standards, restrictions on investments in high-risk assets, etc, were not sufficient. In particular, with regard to financial institutions' foreign currency borrowing, regulations on the inflows of short-term and long-term capital were asymmetrical. That is, while long-term borrowing was regulated,[5] no restrictions were placed on short-term borrowing.

Under such circumstances, a considerable number of Korea's financial institutions exhibited business patterns centred around high-risk, high-return assets, securing foreign currency funds through short-term borrowing, while utilizing those same funds long-term. And when currency crises struck the east Asian economies and domestic corporations became insolvent, Korean financial institutions were confronted with severe liquidity crises, witnessing a precipitous drop in their short-term rollover ratios.

Accordingly, the Korean government has, since the currency crisis, taken several measures to strengthen prudential supervision, including measures to tighten financial institutions' asset classification criteria. Regulations on liquidity risk management, relating to the funding and employment of foreign currency funds, have also been strengthened.

Maturity mismatches of foreign currency assets and liabilities are now regulated by the Financial Supervisory Service (FSS) as follows:

- The ratio of foreign currency assets falling due within three months to foreign currency liabilities maturing within three months must be maintained at 80% or higher.

[5] Domestic financial institutions had to report to the government their long-term foreign currency borrowings exceeding US$ 10 million.

- The maturity mismatch of foreign currency assets and liabilities is further regulated through maturity gap ratios. For all foreign currency assets and liabilities maturing within seven days, the sum of assets must exceed that of liabilities. For those maturing within one month, the amount by which the sum of liabilities exceeds assets must be kept within 10% of total foreign currency assets.
- In addition, over 50% of the funding on foreign currency loans with maturities of three years or more is to be made with foreign currency borrowings with redemption periods of three years or more.
- The FSS also requires domestic financial institutions to establish and apply in-house risk management guidelines. These categorise risks associated with foreign exchange transactions by type, eg country risk, large credit exposure risk, derivatives transactions risk, market risk, etc. Their asset classification was modified so that future cash flows are reflected (the so-called "forward looking criteria"). The guidelines for accumulating loan loss provisions were also tightened from the end of fiscal year 1999.
- The limits on domestic financial institutions' foreign exchange positions, relative to equity capital as of the end of the preceding month, was raised from 15% to 20% in January 1999. The methodology for computing positions was changed from *net-aggregate position* to the standard recommended by the Basel Committee, *shorthand position*. As a result, risks stemming from exchange rate fluctuations are now more accurately reflected.

Building up foreign exchange reserves

Just before the outbreak of the currency crisis, at end-October 1997, Korea's usable foreign exchange reserves amounted to a modest US$ 22 billion. However, since November 1997, when the first symptoms of an impending crisis began to emerge, Korea's reserves had been rapidly depleted to as low as $4 billion on 18 December 1997.

This was because the Bank of Korea provided from its reserves the external settlement funds badly needed by domestic financial institutions, which at the time were faced with insolvency following the withdrawal of short-term foreign currency loans by foreign banks. Furthermore, in order to offset the lack of liquidity in the foreign exchange markets, the

Table 3

Disbursement and redemption of funds from multilateral institutions

Flows, in billions of US dollars

		1997	1998			1999			Total
		Year	First half	Second half	Year	First half	Second half	Year	
IMF	Disbursement	11.1	5.9	2.0	7.9	0.5	–	0.5	19.5
	Redemption	–	–	–2.9	–2.9	–5.8	–5.0	–10.8	–13.7
ADB	Disbursement	2.0	1.0	0.7	1.7	–	–	–	3.7
IBRD	Disbursement	2.9	2.0	1.0	2.9	1.0	–	1.0	6.9
Total	Disbursement	16.1	8.9	3.7	12.5	1.5	–	1.5	30.1
	Redemption	–	–	–2.9	–2.9	–5.8	–5.0	–10.8	–13.7

Bank of Korea had to inject foreign currency into the markets, further depleting its foreign reserves.

Consequently, as the build-up of external liquidity became pressing, the Korean government turned first to the IMF for financial support, and then borrowed further from the World Bank, the ADB and others. By end-1999, a total of US$ 30 billion had been borrowed, of which $14 billion (IMF Supplementary Reserve Facility loans) had already been repaid.

Korea's foreign exchange reserves were further built up with issues of Foreign Exchange Stabilisation Fund Bonds totalling $4 billion on 8 April 1998.

Furthermore, as the current account continued to run a large surplus, and foreign direct and portfolio investments had been flowing in consistently since 1998, the Bank of Korea was able to call in its foreign currency deposits at domestic financial institutions and appropriate them to build up more reserves. As a result, usable foreign exchange reserves increased dramatically, reaching US$ 74 billion[6] at end-1999. This amount is well above the traditional yardstick for determining the optimal level of foreign exchange reserves – an amount large enough to cover current account payments for three consecutive months. The current level of reserves also exceeds short-term external debt, in terms of both original (US$ 38 billion at end-1999) and residual (approximately $55 billion) maturities.

Table 4

Trends in the current account and foreign investments

In billions of US dollars

	1997	1998	1999				
			Q1	Q2	Q3	Q4	Year
Current account surplus	–8.2	40.6	6.2	6.4	6.7	5.7	25.0
Net FDI inflow	1.3	4.0	0.8	1.9	2.5	2.6	7.9
Net inflow of foreign portfolio investments[1]	1.9	5.2	2.9	4.5	–0.2	5.1	12.4

[1] Funds invested in domestic equities, bonds, stock price index futures and options or short-term money market instruments. Proceeds from the issues of overseas securities are also included.

[6] Of this amount, funds raised by borrowing from multilateral institutions or issuing Foreign Exchange Stabilisation Fund Bonds total US$ 21 billion.

Table 5

Trends in usable foreign exchange reserves

In billions of US dollars

	Dec 97	Mar 98	Jun 98	Sep 98	Dec 98	Mar 99	Jun 99	Sep 99	Nov 99
Foreign exchange reserves (A)	8.9	24.2	37.0	43.4	48.5	54.5	60.4	65.5	74.1
Short-term external debt[1] (B)	63.6	53.5	33.8	30.7	30.7	31.8	31.8	35.0	38.0
A/B (in percentages)	14	45	109	141	158	171	190	187	194

[1] Based on original maturity.

Since the level of its foreign exchange reserves topped US$ 74 billion at end-1999, the optimal level of reserves has been a matter of public debate in Korea. The Bank of Korea has been experimenting with various methods for calculating the optimal level of foreign exchange reserves. One of these is an expanded definition of the Guidotti Rule.

It is important that adequate foreign exchange reserves are maintained, large enough to make provision against payments on possible withdrawals of external liabilities and foreign investments in the short-term, and to defend domestic foreign exchange market stability. Reserve accumulation obviously incurs opportunity costs. However, the cost of holding reserves should not be overstated. For it entails benefits that are largely unquantifiable – reserves not only lower borrowing costs through upgrading of the sovereign ratings but also help avoid potential crises.

In addition to the expansion of reserves, repo agreements were signed with seven central banks, including those of China, Japan, Australia and Singapore, as possible supplements to liquidity in times of crisis.

On the operational side, the Bank of Korea has established benchmarks for reserve management, paying due regard to details including the currency composition and maturity profile of total external debt. By doing so, the Bank of Korea is minimising risks associated with exchange rate fluctuations, while at the same time preparing against possible deterioration of the foreign exchange liquidity position of the overall economy.

Strengthening the monitoring of cross-border capital movements

Having experienced the currency crisis, Korea recognised the urgency of establishing a system that would enable authorities to assess readily day-to-day capital flows and follow international financial market developments, as well as maintain and use relevant data in an efficient manner.

Moreover, as a result of government measures to expand capital account liberalisation following the currency crisis, the Korean economy has become ever more exposed to changes in international financial markets. Measures to expand capital account liberalisation have also increased the possibility of domestic financial and foreign exchange markets being disrupted by abrupt, cross-border movements of short-term speculative funds. Hence, the need to strengthen the monitoring of cross-border capital movements has become even greater.

In this context, together with the implementation of the first stage of foreign exchange liberalisation in April 1999, the government and the Bank of Korea set up the Foreign Exchange Information Network to monitor constantly foreign exchange transactions. The government and the Bank of Korea also founded the Korea Centre for International Finance (KCIF), bringing together a group of specialists capable of reading international financial markets and devising swift countermeasures.

Centred around the Bank of Korea, which serves as a foreign exchange information concentration centre, the Foreign Exchange Information Network links the computer systems of all foreign exchange business institutions and users. It is a computerised network, capable of timely collection and dissemination of information on foreign exchange transactions to users. Through the use of this network, systematic analysis of the trends in various foreign exchange transactions, including short-term foreign funds and derivatives, as well as movements of principal market indices, is made possible. In particular, monitoring is centred on the trends in the flow of foreign portfolio investments, investments in domestic securities, residents' foreign currency deposits, etc. The collected data are also shared with the Ministry of Finance and Economy, the FSS, the KCIF and others.

The KCIF, on the other hand, has the function of collecting and analysing information on international financial market developments and reporting its findings to the government, the Bank of Korea and other institutions on a regular and occasional basis. The KCIF is also developing an early warning system with technical assistance from the World Bank. This uses a stastical forecasting model to detect early signs of a currency crisis.

Furthermore, the Bank of Korea has also established, within its International Department, a specialised monitoring team exclusively responsible for keeping a constant watch over the day-to-day situation in the international and domestic financial markets.

Enhancing corporations' capacity to manage foreign exchange risks

Following the currency crisis, transactions aimed at hedging against exchange rate and interest rate risks through derivatives increased. This was due to the increase in domestic corporations' holdings of foreign currency assets, including foreign currency deposits, for the purpose of

securing foreign exchange liquidity, and their heightened interest in risk management.

At the other end, domestic financial institutions are developing various schemes that would induce domestic firms to step up their management of foreign exchange risks. One example is the recent move by banks and merchant banking corporations to include domestic firms' foreign currency risk management status as one of the items to be evaluated during the loan screening process. Another is the inclusion of clauses in domestic firms' loan agreements that would bind them to report periodically any derivatives transactions exceeding a specified amount to creditor banks.

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

José Sidaoui

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.

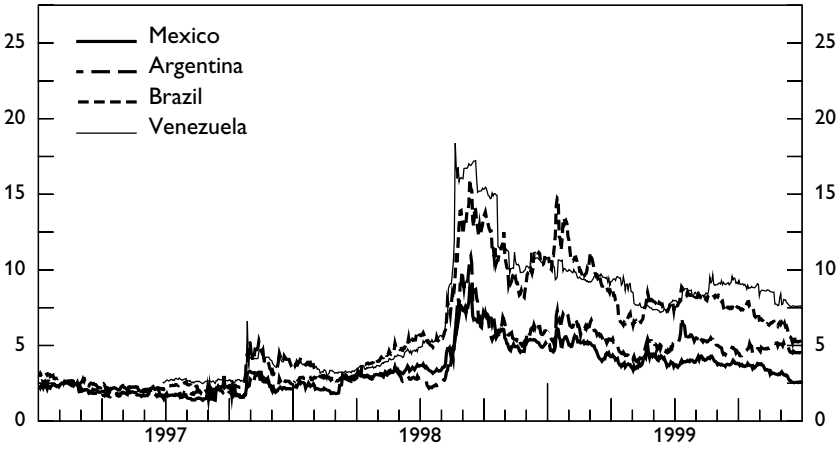
The presence of institutional investors, the renewed access of emerging economies to international capital markets and the higher speed at which capital nowadays flows among countries have altered the risks faced by financial market participants in emerging economies. Moreover, given that institutional 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.

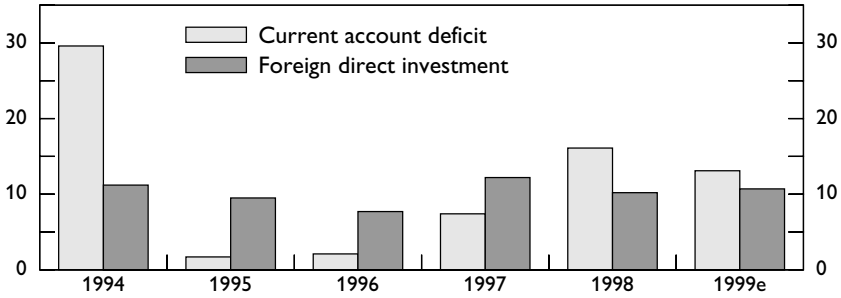
Over the past decade, capital mobility has increased many times over and its main features have also changed, especially those related to the allocation between foreign investment and traditional lending. Mexico, as a recipient economy, has witnessed those events. Total capital inflows to Mexico grew 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).

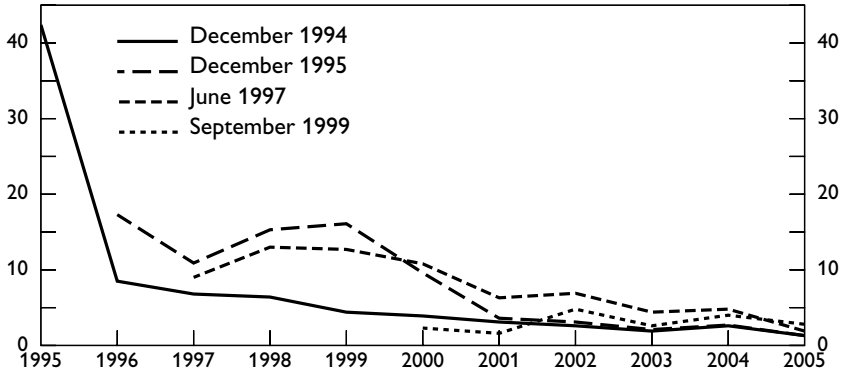
At the beginning of April 1995, the dollar-denominated credits granted through FOBAPROA reached a maximum of US$ 3.8 billion. However, the high level of interest rates purposely charged on such credits induced a rapid amortisation, as banks sought other sources of financing. By 6 September 1995, the 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

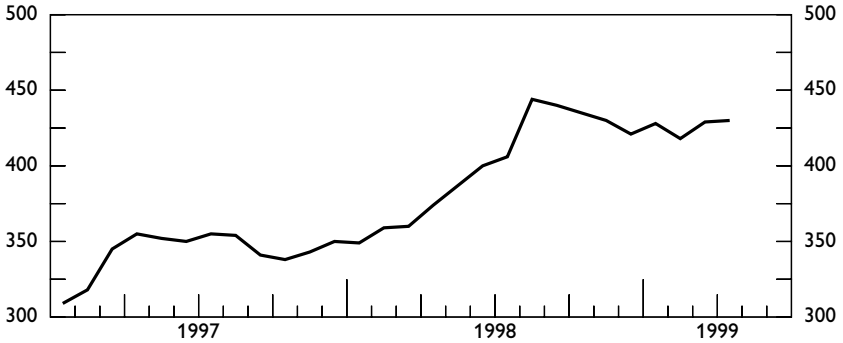
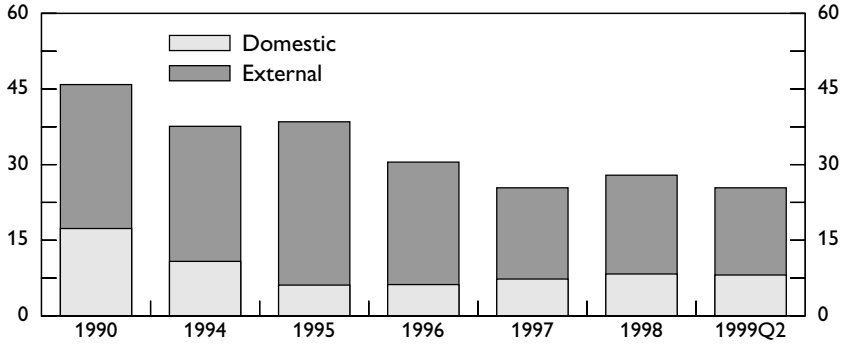


Figure 5

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: ABM AMRO Bank.
  Japan: Bank of Tokyo Mitsubishi, Daiwa Securities, Fuji Bank, Industrial Bank of Japan and Sumitomo Bank.
  Latin America: BLADEX.
  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 transitorily 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.

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Poland's vulnerability to turbulence in financial markets

Ryszard Kokoszczyński and Andrzej Sławiński*

Introduction

This paper was written at the beginning of November 1999, when the current account deficit in Poland reached 7% of GDP and political disputes over the budget and reform of the tax system weakened the zloty within its trading band. This was the right moment to reassess Poland's susceptibility to turbulence in the domestic and international financial markets. The paper is organised as follows. The first section discusses the risk management problems at the macro and micro level. The second section describes the evolution of the exchange rate regime in Poland towards a floating exchange rate. The third section looks at the development of financial markets in Poland and their impact on exchange rate policy.

Risk management at the macro and micro level

Fiscal stance and central bank autonomy

The first-generation models of currency crises focused on risky macroeconomic policy, such as expansionary fiscal policies (Krugman, 1979). They were the cause of several currency crises including Argentina in 1981, Mexico in 1982 and Russia in 1998. With a budget deficit well below 2% of GDP, Poland is not exposed to such a risk. Additionally, Poland has recently launched several structural reforms, including pension system reform, which will contribute to fiscal discipline in the future. Public debt declined from the equivalent of 89% of GDP in 1993 to 42% in 1999. The external part of the public debt amounts to US$ 33 billion (50% of public debt). This is relatively low as official gross

* Andrzej Sławiński is Adviser to the Governor at the National Bank of Poland.

reserves amount to US$ 26 billion. The cost of servicing the public debt represents 3% of GDP. According to government projections, by 2004 the ratio of public debt to GDP will fall to about 37%. The relative decrease of the public debt creates room for the issuance of domestic debt to finance repayments of external debt in coming years.

The decisive factor keeping the Polish economy on a sustained growth path is the independence of the National Bank of Poland (NBP). An illustration was the sharp rise in interest rates implemented by the NBP in July 1997 to stop the rapid growth in domestic credit. The move was effective in closing the developing demand gap in the Polish economy, although it produced a substantial decrease in the rate of GDP growth. Without real NBP autonomy such a step would not have been politically viable.

Banking supervision

The second-generation models of currency crises are driven by the deficiencies of risk-management at a micro level, which can produce macroeconomic imbalances despite sound macroeconomic policies. Examples are the excessive private sector indebtedness in Chile in the late 1970s and in South Korea in the 1990s resulting from the lack of proper banking supervision and the existence of (sometimes implicit) government guarantees for the domestic banking system. Again, this is not something that applies to Poland. After the serious bad loan crisis in 1991–92, NBP introduced a properly functioning system of banking supervision. In addition, banks were provided with more capital, although bad loans were not taken out of their balance sheets. Banks were forced to operate with bad loan portfolios, which was a learning experience on the merits of prudent lending policy and a pre-emptive action against the moral hazard potentially influencing the banks' future behavior.

The influence of banking supervision has been strengthened by the development of risk management procedures in banks. Domestic banks started to develop special risk management departments, which are assessing credit and market risks. Larger banks implemented *value-at-risk* procedures to measure the market risk. At the same time, they started to utilise *VaR* methodology to monitor credit risk. However, this is much more difficult as losses resulting from credit risk are not normally distributed. Domestic banks are not able to use instruments such as

JP Morgan's *CreditMetrics* because only a few domestic firms have obtained a credit rating, which can be translated into the probability of their default.

Argentina's experience during the tequila crisis in 1995 illustrated that a properly capitalised and strictly supervised banking system can weather even a serious currency crisis combined with bank panic resulting in deposit withdrawals. As in Argentina, in Poland too, banks' capital adequacy ratios exceed Basel Committee standards.

There is also an additional safety valve in the form of excess liquidity within the banking system, which is a typical phenomenon for economies in transition. This will change in the near future as the NBP decided to securitise its claims on the government into Treasury bonds and sell these bonds to absorb the excess of liquidity from the domestic banks. The first step was taken with issuing NBP floaters to absorb a large part of the excess liquidity in order to create room for reducing the ratio of required reserves from 12% to 5% in October 1999.

Without the cushion of excess liquidity domestic banks will be more exposed to risks associated with potential capital outflows. This is one of the reasons why Poland is not considering the imposition of a currency board, since that would mean NBP relinquishing the function of lender of last resort.

Corporate governance

As far as the corporate sector is concerned, risk management procedures are in their infancy. Privatisation alone is by no means enough to impose proper corporate governance. The force that can impose proper corporate governance standards is a developed capital market. In this respect, the situation in Poland is similar to that in other transition economies. Capital markets have had to be built from scratch.[1] Thus they are much less developed than in Asia or Latin America. The capitalisation of Warsaw Stock Exchange amounts to about 15% of GDP. Thus its role in imposing proper corporate governance standards can be only modest. The pension system reform

[1] See Kokoszczyński (1999) for the early history of the development of the Polish capital market in the 1990s.

will contribute to the development of the capital market in Poland, but this will take some time. In the interim Poland's economy will be exposed to the risk of inefficient allocation of resources. The tools to reduce this risk are strict banking supervision and disciplined macro policies. However, they can not substitute fully for the discipline of a developed capital market.

The legal infrastructure for corporate governance in Poland does not differ from international standards. The corporate sector operates under the *Civil Code, Commercial Code*, and *Bankruptcy Law* from 1938, when there was a fully-fledged market economy in Poland.

Exchange rate regime

Evolution towards a flexible exchange rate

The Mexican and Asian crises showed that the rational choice for emerging economies is a flexible exchange rate regime. As far as Poland is concerned, there was an evolution towards a flexible exchange rate. The reasons for this evolution were not only the lessons from currency crises in other countries but also the mounting costs of sterilisation resulting from massive capital inflows. In 1995 Poland's foreign exchange reserves increased by an amount equivalent to M1 in Poland in 1994. The NBP reacted to the massive capital inflow by widening the trading band of the zloty from 2% to 7% around its crawling peg in May 1995 and the step revaluation in December 1995.

Initially, this did not increase the volatility of the market rate of the zloty much. The reason was that in the shallow foreign exchange market NBP interventions were effective. The risk associated with speculation against NBP intervention level was high. Accordingly, foreign exchange market dealers preferred to stick to the NBP intervention level.

Due to the stability of the market rate of the zloty, NBP could use the changes in its intervention level as a substitute for small central rate devaluations, as was the case in 1997, when the trade account started to deteriorate substantially. The widening of the zloty trading band allowed NBP to enjoy the comfort of not defending the domestic currency during turbulence in international financial markets such as during the Czech crisis in May 1997 when NBP allowed a short-lived blip in the

zloty. The next such period occurred in 1998 during the Russian crisis when the zloty dropped initially by 8%, but rebounded fully without NBP intervention.

The trading band of the zloty was successively widened from 7% around the central rate to 10% (February 1998), then 12% (October 1998) and finally to 15% (March 1999). In March 1998, NBP sharply reduced the scale of its interventions in the foreign exchange market. The withdrawal was prompted by inflows of short-term capital, which inflated the amount of excess liquidity absorbed by the NBP to the equivalent of US$ 8 billion. Thereafter, the only form of central bank intervention in the market was so-called transactional fixing introduced previously to provide liquidity to the shallow market. However, in June 1999, due to the deepening of the market, the NBP withdrew from this form of direct market involvement. In fact, the NBP withdrawal from active and passive intervention in the market meant a change of exchange rate regime. Officially there is a crawling band system, however the zloty fluctuates freely within a 30% band.[2]

Corporate sector external borrowing

The major reason for currency crises in several countries was excessive foreign borrowing without hedging against exchange rate risk. Domestic firms were usually tempted to borrow abroad in order to reduce the cost of capital. During the currency crisis the combined impact of a sharp drop in the exchange rate and a hike in interest rates produced a liquidity crisis in the banking system. The IMF multibillion dollar assistance was needed to bail out banks and firms from an insolvency crisis.

The need to dissuade domestic firms from borrowing abroad was one of the factors that prompted the evolution towards an increasingly flexible exchange rate regime in Poland. One of the reasons why the NBP did not intervene in the foreign exchange market during the Russian crisis was to provide the corporate sector with a learning experience on the risks associated with borrowing abroad without hedging against exchange rate risk. However, the episode was too short

[2] The evolution of the Polish exchange rate regime is presented in greater detail in Durjasz and Kokoszczyński (1999).

to bring about the intended results. The zloty rebounded quickly, in spite of the fact that portfolio capital was flowing out. It was the external borrowing of the corporate sector that pushed up the zloty. Domestic firms perceived the fall of the zloty as only temporary. Accordingly, the continued external borrowing made this a self-fulfilling expectation. The actual scale of the domestic firms' exposure to exchange rate risk was larger than reflected by the statistics, primarily due to the zloty-denominated loans indexed to Libor. Domestic banks were using foreign exchange swaps to fund such loans. The maturity mismatch of the swaps was closed with the dollar indexed loans.

The effective learning experience for the corporate sector was in January and February 1999, when the zloty slipped by 14% from its previous level as a result of the deep cut in the domestic interest rate and the Brazilian crisis. There was a massive withdrawal by the corporate sector from borrowing abroad, as for the first time the zloty did not rebound quickly after a short-lived fall. The increased volatility of the zloty was among the factors that kept external borrowing by the corporate sector at a relatively low level despite the large interest rate differential.

Privatisation and exchange rate behaviour

The most important problems of exchange rate policy in transition economies are appreciation pressures produced by capital inflows resulting from privatisation. In spring 1999, market expectations about such capital inflows was the reason why the zloty was appreciating strongly despite the continuing deterioration of the current account. The zloty weakened after the announcement that the government funds from privatisation would be deposited with the central bank and a large part would be used to fund the repayment of the external debt. The decision[3] solved the problem of potential excessive zloty appreciation but it may have exposed Poland to potential problems stemming from a situation in which part of the official stock of foreign exchange reserves is not owned by the central bank.

[3] At the time of writing, there is a general agreement between the central bank and the government, but its details are still being negotiated.

Development of financial markets

The need for a liquid secondary bond market

In the 1990s, a large part of the capital that flowed to the emerging countries was in the form of portfolio investments. Lending through investing in bonds reduced the credit risk for investors. However, they were exposed to the risk that shallow bond markets in emerging economies could turn illiquid, as was the case, albeit extreme, in Russia. In other countries, investors faced unexpectedly sharp drops in bond prices, as happened also in Poland.

In September 1998, investors were selling Polish treasury paper in order to cover losses they took in Russia. However, the shallowness of the Polish treasury bond market produced a sharp drop in prices. The episode illustrated the structural weakness of the Polish treasury bond market stemming from the inefficient securities settlement system. Since then the system has been improved. Nonetheless, the market is not deep enough to sustain substantial capital flows without strongly affecting bond prices.

The other structural weakness of the capital market in Poland is the lack of a developed corporate bond market. This produces a situation in which the largest domestic firms are not able to borrow funds they need, neither from the strictly supervised banks nor the almost non-existent corporate bond market. The result is that they are issuing bonds in the international market, that can be a factor adding to the strength of the zloty when the current account deficit is widening.

There is potential for development of the domestic corporate bond market, which would add to domestic savings and reduce the need for borrowing abroad. During the last two years, the short-term commercial paper market has been developing successfully. Domestic firms preferred short-term debt owing to the downward trend in interest rates. However, due to the burden of short-term debt service, firms have become more interested in issuing longer-term debt. The factors that will contribute to the development of the bond market in Poland are the pension system reform and the rapid development of the life insurance sector, that will increase the number of institutional investors and the demand for longer-term instruments.

Opening of the capital account

As in other countries, the opening of the capital account has contributed greatly to the development of domestic financial markets in Poland. Nonetheless, short-term capital flows can limit central bank choices, as was the case in Poland in 1995, when persistent short-term capital inflows forced a step zloty revaluation, and in 1998, when the leverage of the non-deliverable forward market accelerated the NBP's decision to withdraw from interventions.

The NBP did not try to cope with short-term capital flows by imposing strict foreign exchange restrictions. As far as foreign investors are concerned, the zloty is in fact fully convertible. They are not allowed to borrow in zloty and keep zloty time deposits with Polish banks if the maturity of these transactions is shorter than legally defined minimum periods. However, they do use foreign exchange swaps to borrow synthetically in zloty or engineer zloty time deposits. The forex swap market contributed greatly to the integration between the Polish money market and the international financial market. There are periods when the interest rates in the forex swap market influence substantially the interest rate behaviour in the domestic interbank deposit market. Non-resident banks are playing an increasingly important role in the domestic foreign exchange market. In the long term, this will deepen the market and reduce the volatility of the zloty.

As far as domestic firms are concerned, the only important foreign exchange restriction is the necessity to obtain permission for borrowing short-term abroad.

Concluding remarks

The pains experienced after the international debt crisis taught the emerging economies the price which had to be paid for imprudent macro policies. The second-generation crises of the 1990s illustrated the need for proper risk management at the micro level. The problem is that authorities in emerging countries can impose prudential rules on banks and financial institutions, but it is difficult to achieve quickly a substantial improvement in corporate governance as this depends largely on the existence of a developed capital market. This will take

time until the privatisations, the development of the domestic capital markets and the opening of the economy produce a situation in which the corporate governance in transition economies catches up with international standards. Before such a situation is achieved, transition economies will be exposed to the risk of inefficient resource allocation.

The recent weakness of the zloty should not result in larger-scale turmoil in the domestic financial markets, as there is no threat of a liquidity crisis in the public or private sector and exports have just started to recover. Nonetheless, the challenge for policymakers in Poland is to create a situation in which corporate governance will be improved enough to shield the economy against the risk of imprudent investment decisions at a micro level producing large macroeconomic imbalances.

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Managing foreign debt and liquidity risks in emerging markets: selected issues from a South African perspective

James Cross

This note is intended to raise debate regarding a number of issues related to foreign debt and liquidity risk management, without pretending to have incontestable solutions or answers. South Africa has had more than its fair share of disruptions in foreign debt and foreign exchange markets; in the recent past it faced severe turmoil in the foreign currency market both in 1996 and in 1998. Extracting from that and earlier experiences, a handful of points will be covered in this short paper.

First, in analysing and managing liquidity risks, it seems advisable to guard against an excessive fixation on *quantities* rather than giving due attention to *pricing* and *underlying structure*. To illustrate: some countries with sound, well functioning financial markets and institutions and which are relatively open to international trade may have high short-term foreign debt, overwhelmingly related to trade finance – which should by its nature be short-term. It has been South Africa's experience that trade-related credit from abroad is quite robust, even during periods of extreme financial stress. This is, of course, related to exporters in all countries wishing to maintain and expand their profitable export business. Other countries, with underdeveloped financial markets, may find that their only avenue to foreign finance is through government or parastatal borrowing, which can be of a longer-term nature and the proceeds of which are then channelled by government or the parastatals to importers and other users of foreign currency. Perversely, the first group of countries may appear more vulnerable in terms of relative levels of short-term foreign debt. It is only when the underlying structure is understood that vulnerability can be properly assessed. Simple rules, while perhaps handy when attempting to sell policies, have strong limitations.

Pricing of foreign assets, liabilities and contingent items may be at least as important as quantities in assessing foreign debt and liquidity

management policies. Artificial pricing, as is often encountered when for instance negative real interest rates are pursued or allowed by the authorities, should signal as strong a warning as weak liquidity ratios. The exchange rate regime also falls under the broad heading of pricing; it seems sensible that countries with fixed exchange rates would generally need more liquidity (or otherwise might be forced to become countries with floating exchange rates!).

Second, the combination of well developed, liquid money, capital and foreign exchange markets in any particular emerging market country can be a mixed blessing under conditions of general disillusionment with emerging market investments. There are indications that during the 1998 turmoil, when international investors decided to lighten their exposures to emerging markets, they liquidated their assets in countries such as South Africa where they could do so with great ease and on short notice, rather than in some of the other emerging markets with far less attractive fundamentals. However, this is of course not to say that poor-functioning, illiquid markets are to be preferred; the absence of well-developed financial markets would structurally sabotage growth and development. But great care must be taken in a liquid market environment to ensure robustness and ongoing liquidity, not least by reinforcing solid supervision and accepting price flexibility. In spite of all that, levels of reserves that inspire confidence should still be vigorously pursued. The appropriate level should most probably be based on more than the Guidotti rule alone. Judgment, formal models and scenario analysis should probably all play a part.

Third, when turmoil and liquidity outflows strike, it may be advisable to think very carefully about the often heard prescription of raising domestic interest rates promptly and strongly. About the direction and timing there should not be much of a dispute; there is probably no alternative. However, as far as the magnitude is concerned, great care should be exercised. Does a sudden, huge rise in interest rates not signal clearly to investors, "We're deep in trouble, we face volatile times, so if you are risk-averse or long-term oriented, rather stay out and allow those with a high-risk-high-return profile to play the market"? Quite perverse reactions may arise from this kind of policy response, with long-lasting adverse results. It would seem prudent in the setting of official interest rates to strive always for sustainability; if rates reflect a pattern of preferences between current and future consumption that

clearly cannot hold over anything but short periods, perverse reactions will probably dominate. While sustainability in policy is therefore the key, it might be devilishly hard to define the appropriate sustainable instrument settings in practice.

Fourth, there is a strong case to be made for utilising more policy instruments rather than fewer when dealing with sudden outflows of funds and volatile financial markets. Reliance on a single policy instrument or variable to rebalance matters may involve much more extreme settings of the instrument or variable than if several of them share the adjustment burden. In turn, this causes less fallout in the financial system and in the real economy. For instance, if the instability arises from a large current account deficit in combination with a sudden reversal of financial flows from inward to outward, the adjustment can be smoothed by adopting a combination of tighter interest rates, tighter fiscal policy, some foreign exchange participation by the central bank and exchange rate depreciation, instead of relying on the latter variable alone. The magnitude of overshooting and frictional costs to the economy are thereby contained. Of course, this brings us back to the matter of sustainability in policy which was raised under the third point above; a less dramatic change in each of several policy-related variables is more likely to be sustainable, and to be perceived as sustainable by all economic agents concerned.

Fifth, elaborating on the need for more policy instruments raised above: given the unique circumstances with which South Africa has had to deal, adjustment has on many occasions been smoothed through central bank involvement in the forward foreign exchange market. The South African Reserve Bank has for many years been involved in the dollar/rand forward foreign exchange market. The reasons for participation were primarily the need to acquire foreign exchange, particularly during the era of sanctions. The interaction between isolation from the rest of the world, international sanctions, low domestic savings, low foreign reserves and the existence of a dual currency "financial rand" system until March 1995 virtually ensured the continued participation of the Reserve Bank in the forward market.

In difficult times the existence of the forward book enabled South African institutions to borrow abroad. It also served as a means to protect the domestic economy from excessive volatility in international financial markets during the time of political transition and crises. It

encouraged much needed capital inflows (in the form of short-term and long-term trade credit and project finance) to substitute for the normal portfolio inflows which were precluded by the financial rand mechanism.

Notwithstanding these advantages of using the forward book, there are various risks. Most importantly, the government incurs the foreign currency risk on the forward book. Moreover, the credibility of the monetary authorities has been called into question as the market focuses, from time to time, on the sustained ability of the Reserve Bank to run a large, uncovered forward book. The Reserve Bank, however, has not experienced any difficulty in rolling over maturing forward contracts, and earning the forward premium, should it not wish to deliver into the maturing contract.

Since late 1998 the strategy has been to work down gradually the forward book; considerable progress has already been made in this regard. In essence it can be reduced by either central bank buying of foreign exchange or by official borrowing of foreign exchange, in both cases delivering the foreign exchange against the forward book. If the Reserve Bank buys foreign exchange from the market, then it strives to purchase at times when flows judged to be of a more permanent nature augment the more fickle portfolio flows. More permanent sources of reserve flows, other than emanating from current account surpluses, tend to be long-term borrowing by the government, the offshore proceeds of privatisation and foreign direct investment including inflows emanating from offshore listings by South African companies. The risk associated with the purchase of foreign exchange from the market is that perceptions towards the rand may change, and an orderly decline in the nominal external value of the rand can turn into a sharp depreciation. The Reserve Bank may borrow reserves either itself or may purchase the foreign proceeds of government foreign currency denominated loans.

A sixth point, for the record: the latest World Bank *Global Development Finance* country tables show that South Africa has a ratio of foreign debt to annual exports of 68%, against 146% for all developing countries and 134% for middle-income countries. Similarly, they show South Africa's foreign debt to GNP ratio as 20%, compared with 37% for all developing countries and 36% for middle-income countries. Regarding the composition of South Africa's foreign currency

denominated debt, less than half constitutes debt of the public sector and less than one sixth is debt of the central government.

The South African government relies less on external debt in its overall funding mix than other emerging market countries, with foreign currency debt only around 5% of the government's total debt. This is easily manageable, leaving the government substantial scope in managing its future debt profile. Even after adding in the open position in foreign currency related to the South African Reserve Bank's forward market participation, the total exposure of government to exchange rate fluctuations as a percentage of total government debt would have only been around 25%. This compares favourably with the comparable average ratio of 40% for peer-group countries.

Lastly, sound policy requires reliable, timely information. The South African authorities are slowly phasing out the remaining exchange controls, but are making sure that sound monitoring systems are in place and will remain in place once the controls are fully phased out. Scrapping exchange controls and then discovering half a year later that key sets of balance of payments data can no longer be compiled is a trap that should be avoided. Nevertheless, some areas of information remain problematic, such as hedge fund activities, repurchase transactions and scrip lending; these require further brainstorming and hard work.

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