



## Safeguarding against crisis: the near-term agenda

**T**O REDUCE THEIR RISK OF CRISIS, DEVELOPING countries need to pursue financial safeguards that they can implement in the short term alongside their longer-term development initiatives. Internationally triggered financial crises became more frequent and more severe in the 1980s and 1990s. Although the susceptibility to crisis varies from country to country, studies suggest about a 10 percent average likelihood of crisis in any given year (Kaminsky and Reinhart 1999; Bordo and Eichengreen 1999).<sup>1</sup> Volatile international capital flows have also been associated with a greater number of costly domestic banking crises. Reforms of the international financial architecture, together with continued improvements in countries' macroeconomic policies and their banking systems, are the best protection against crises. Such reforms will also provide developing countries the foundation to benefit from international capital flows. But, in most countries, these international and domestic reforms will take time to become effective. Until then, banking and financial systems will likely remain susceptible to externally induced shocks and liquidity crises. That is why short-term safeguards are needed.

Proposals for domestically initiated near-term financial safeguards are of two types: controls on capital flows and measures that improve countries' access to international liquidity. The former are designed to dampen the volatility of capital flows and hence keep crises from occurring; the latter can help contain crises when they do occur. In assessing these proposals, this chapter first briefly examines the new sources of vulnerability to crises, namely, fragile banking systems exposed to sudden and rapidly reversible international capital flows. This is followed by an overview of the strengths

and weaknesses of specific measures that governments can use to prevent or contain crises. More detailed analysis begins with capital control measures—taxation of short-term capital inflows, prudential controls on capital inflows, and controls on capital outflows during crisis episodes, followed by liquidity-enhancing measures (higher foreign currency reserves and contingent access to international credit). The chapter's main conclusions are the following:

The proposed safeguards would impose costs on the domestic economy either by restricting the quantity of foreign borrowing or by raising its price. The costs, however, are likely to be less than the cost of a full-fledged financial crisis. Safeguard measures are valuable also because they help insulate the poor by reducing the likelihood of a deep recession and instead shift the burden of crises on to those who benefit more directly from foreign borrowing.

All safeguard measures have their limitations, and their applicability depends upon the conditions prevailing in the country in question. They should, therefore, be employed with care and in combinations suited to each country's circumstances:

- A Chilean-style reserve requirement on short-term capital inflows would place a portion of the externally acquired funds in non-interest-bearing reserves for a fixed period (e.g., a year). Such a requirement effectively acts as a tax, because the central bank rather than the borrower receives the interest on the funds held in reserve. The tax shifts a country's external liabilities toward longer maturities and reduces its vulnerability to sudden shifts in investor sentiment. It can also partly defray the govern-

ment's costs of holding additional reserves of its own. However, to be fully effective, implementation requires comprehensive coverage of all inflows. And a country's short-term repayment obligations can nevertheless become high as longer-term obligations approach maturity. Therefore, taxation of short-term inflows offers no panacea.

- Taxation of capital inflows may need to be combined with quantitative controls. The most important are prudential controls on the banking sector's international short-term liabilities. These are an extension of domestic prudential controls to an open economy setting. They are also prone to evasion and implementation problems.
- Restrictions on capital outflows are even more difficult to implement, but may be appropriate in certain circumstances, especially in a liquidity crisis and provided a country's fundamentals are relatively sound. The precise causes of a crisis, however, may not be evident while it is ongoing and opportunistic imposition of controls risks deterring long-term capital inflows.
- A larger cushion of reserves provides greater international liquidity to deal with sudden capital flow reversals. One proposal is that countries maintain reserves at least equal to expected debt servicing in the coming year. However, reserve needs are likely to exceed this rule of thumb when current account deficits are large, when the variability of the balance of payments is high, when the exchange rate is relatively fixed, and when underlying information on reserves and short-term debt is deficient. And because the yield on reserves is lower than a country's cost of funds, reserves are expensive to hold and can create a significant fiscal burden. Higher banking sector liquidity requirements can effectively shift the burden of holding reserves onto the private sector and also have potentially beneficial long-term effects through making banks safer.
- Privately contracted contingent credit lines provide, in the event of a liquidity crisis, optional access to foreign currency borrowing at predetermined interest rates. Such arrangements are attractive because of their relatively low fees. Their lower cost, however, reflects the fact that, unlike reserves, contingent credit lines can only be used under certain well-defined circum-

stances. Private contingent credit lines may also be offset by a decline in other flows, require expensive collateral, and may be available only to those countries perceived as relatively creditworthy. Multilateral institutions can support country risk-management strategies by offering new financial instruments such as contingent credit facilities and partial credit guarantees, but these, too, could reduce a country's access to other capital.

Finally, it bears reiterating that none of the proposed measures can protect against large fiscal deficits, imprudent external debt strategies, overvalued currencies, severe terms-of-trade shocks, or mismanaged financial sectors. Better macroeconomic management (including choice of appropriate exchange rate regimes), deep financial sector reforms, and continued innovations in the international financial architecture are required for safer and more productive capital flows.

### The new sources of vulnerability

As documented in a large and growing literature, developing countries are subject to new sources of vulnerability. Crises have increased in frequency and severity, and they have an especially large impact on the poor (box 5.1). Liberalized domestic banking sectors now intermediate a growing share of developing-country resources and are increasingly the counterparties to international financial transactions, which throughout the mid-1990s declined in maturity. These domestic and international factors, in combination, create a "combustible mix" (Eichengreen 1999). Thus, although traditional sources of vulnerability—large budget deficits, excessive international borrowing, and overvalued currencies—remain important in recent crises, but the focus of this chapter is on the new sources of vulnerability.

#### *Financial sector liberalization and capital account opening*

As domestic financial sector liberalization has proceeded in parallel with capital account liberalization, banking and balance of payments crises have become more closely intertwined. Since foreign capital is—directly or indirectly—leveraged by the domestic financial system, the sudden withdrawal of foreign funds contributes to systemic disruption

## Box 5.1 The frequency and severity of crises—and their implications for the poor

Increased openness to international capital flows has been associated with a high and increasing frequency of financial crises (Kaminsky and Reinhart 1999; Bordo and Eichengreen 1999). Kaminsky and Reinhart (1999) find, for 5 industrial and 15 major emerging market economies in the 1980–95 period, a 10 to 15 percent annual probability of a balance of payments crisis. A third of these crises are “twin” currency and banking crises, which have the most severe effects of all. Pure currency crises have declined in frequency as countries have moved to more flexible exchange rate regimes in the post-Bretton Woods era. However, banking crises, which had been few in number thanks to extensive capital controls and regulations introduced during the Bretton Woods era, have reasserted themselves, especially in the 1990s. The average cost of an emerging market currency crisis is estimated at 8 percent of cumulative forgone GDP, rising to 18 percent when a banking crisis occurs simultaneously (World Bank 1998, p. 127). The costs of banking-cum-currency crises can rise to more than 30 percent, as reflected in the cumulative, three-year shortfall in growth in the case of Mexico in 1982 and of Indonesia in 1997.

Crises cause large increases in poverty and have longer-term consequences for the country as a whole. They hurt both the poor and the nonpoor, but the decline in income is more devastating for the poor because of their typically meager savings and lack of access to social or market insurance. Risk-averse workers benefit less from the gains of capital account openness in good times than they lose during a crisis. The fact that the poor have limited access to capital markets for smoothing their consumption during bad times makes their situation even worse (Rodrik 1999). Lustig (1999) estimates that each percentage-point decline in growth from an adverse economic shock raises the poverty

rate by 2 percentage points. For the East Asian crisis countries, the increase in poverty was less than originally expected and varied significantly across countries, but it was far in excess of what one might have expected from the modest decrease in average consumption per capita (World Bank 2000, table 2.1). Lustig notes, moreover, that the measured increase in poverty understates the human cost, since rising poverty is associated with a deterioration in school attendance, and in health and nutrition indicators.

The key to reducing the social costs of crises lies in preventing crises through better economic management, and a propoor response. The 1990s witnessed significant progress in incorporating social protection in adjustment programs, for example in Argentina and Mexico after 1995 and in the East Asian crisis. These experiences offer several lessons for future crises. One is the need to protect government spending that benefits the poor, and especially spending on primary education, preventive health care, water and sanitation, rural infrastructure, and housing. Another need is to maintain general food subsidies on basic staples in the short run—even if their benefits leak to the nonpoor—unless they can be replaced by targeted programs. Finally, social programs put in place before a crisis strikes are of more value than ad hoc emergency measures. To be effective, safety nets should consider a wide range of programs: scholarships for poor children, public works programs, cash transfers, food-related transfers, food subsidies, social funds, and fee waivers for various essential services. The appropriate mix of safety-net programs will depend on the demographic and other characteristics of a country’s poor, on the type of crisis, and on the government’s institutional and administrative capacity. The international community can and is playing an important supportive and financing role.

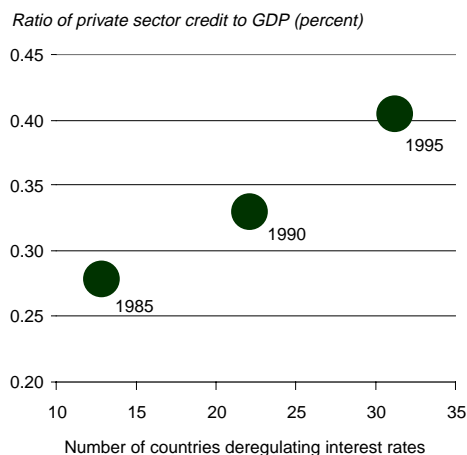
with a large and persistent impact on domestic investment and growth prospects.<sup>2</sup> Kaminsky and Reinhart (1999) show that of 23 domestic banking crises between 1980 and 1995, 18 were associated with balance of payments crises. Recent history in East Asia, Mexico, and Russia shows that the fragility of the domestic banking system can interact powerfully with volatile international capital flows. Causation may work in both directions: from balance of payments to domestic banking crises, or from domestic bank failures to balance

of payments crises. In Thailand, for example, the expansion of domestic credit led to a speculative boom in property prices, overvaluation of the baht, and eventual balance of payments pressures.

### *Short-term capital flows*

The interaction between the domestic financial system and external capital flows has been amplified by the rise in foreign currency denominated borrowing—much of it short-term—by financial institutions in emerging markets. The average maturity

**Figure 5.1 Interest rate deregulation and growth of credit to the private sector**



Note: Demirgüç-Kunt and Detragiache (1998) considered 33 emerging market countries that liberalized interest rates starting in 1980. The first observation on the horizontal axis refers to the number of countries that initiated deregulation between 1980 and 1985; the second and third observations refer to the cumulative number that liberalized by 1990 and 1995 respectively. The vertical axis presents the average ratio of private sector credit to GDP for all 33 countries in each of the three years. Source: IMF *International Financial Statistics*; Demirgüç-Kunt and Detragiache 1998.

of their international borrowing in the syndicated loan market is about two years (Eichengreen and Mody 1999); even shorter-term borrowing occurs directly, on the basis of ongoing relationships between banks (see chapter 4 for further discussion of short-term capital flows). Between the late 1980s and 1996, the foreign currency liabilities of domestic banks in the crisis countries of East Asia rose from relatively negligible levels to about 6 percent of GDP in Indonesia, 9 percent in Korea, 12 percent in Malaysia, and 27 percent in Thailand. Although in Korea's case these liabilities were matched by foreign assets, a mismatch of maturities (the liabilities were largely short-term, whereas the assets were mostly long-term) caused domestic banks to run short of liquidity in the second half of 1997, as foreign banks began to withdraw their credit lines.

The problem of short-term debt is tied most closely to interbank lending, but other short-term flows may also render the economy vulnerable to sudden shifts in investor confidence and withdrawal of capital. In Indonesia the recent crisis

was precipitated by the inability of the corporate sector to roll over its short-term debt. In Mexico the government's inability to roll over the short-term paper it had issued contributed to the severity of the 1994–95 crisis. Derivatives and other offsetting transactions can transform apparently longer-term liabilities into short-term liabilities (Garber 1998). In addition, foreign capital may be subject to rapid reversal even when the contracted maturity is not short. For example, Maxfield (1998) notes that mutual funds are subject to rules of operation that lead to rapid withdrawal even when the investors must absorb significant capital losses.

Because many financial crises have an international dimension—and because financial crises may extend beyond the country where the crisis originates—there is a justification for internationally coordinated actions. Under the rubric of the “new international financial architecture,” a number of proposals for action have been developed (Eichengreen 1999; Rogoff 1999). These proposals address the problem in different ways. Some would pursue a fundamental reduction of countries' vulnerability to crisis, for example, through higher standards for corporate governance and banking regulation and supervision. Others focus on prevention and containment of crises, through creation of an international lender of last resort and mechanisms to “bail in” the private sector. Still others would develop appropriate responses to crises, for example, through norms for international debt standstill agreements or “superbankruptcy” procedures. Recognizing that these international initiatives will take time to mature and become effective, a near-term agenda of domestic initiatives has also been proposed.

### Volatility management: the national agenda

Domestic policy options may be classified into two broad groups: those that limit certain types of capital flows, and those that provide liquidity to tide countries over periods of capital flow reversals. In Chile, for example, taxes on short-term inflows have been used to lengthen the average maturity of debt. The Argentine emphasis, in contrast, has been on a sophisticated liquidity management strategy.

Of the several proposals advanced, five are considered here in some detail. Three of them are

measures aimed at limiting capital flows: Chilean-style reserve requirements to contain short-term capital inflows, prudential controls on foreign borrowing by banks, and controls on capital outflows. The other two—increased reserves and private contingent credit lines—seek to manage liquidity. If a crisis that leads to a 20 percent loss in GDP is expected to occur once every 10 years on average, the expected cost is about 2 percent of GDP per year. The costs of the measures discussed here appear to be significantly less than that. Distributional considerations make the case for safeguard measures even more compelling. As discussed in box 5.1, the costs of crises fall heavily on the poor, whereas these safeguard measures shift these costs to the government (and hence to the taxpayer) or to borrowers in the form of higher costs of debt.

The various measures complement each other. Whereas Chilean-style reserve requirements operate to increase the maturity of outstanding debt, and hence reduce the country's vulnerability to short-term capital inflows that may be easily reversed, contingent credits and reserves create greater liquidity to manage those reversals that may nevertheless occur (table 5.1). Both of the liquidity-enhancing measures examined here are easier to implement than capital inflow taxes, but they also create greater costs for the government. In contrast, reverse requirements on inflows act as a tax, which by definition provides income to the government. In

principal, self-protection measures can be revenue-neutral. Revenues from capital inflow taxes can finance the liquidity measures. Indeed, the Chilean mechanism creates reserves directly, enhancing liquidity. Prudential capital controls are, as already noted, the open economy counterpart to domestic prudential regulations. Controls on capital outflows are the easiest to evade and, hence, the most difficult to implement on any sustained basis, but they may be useful in certain circumstances in countries facing massive crises.

A more general limitation of all these measures is that they can not substitute for better economic fundamentals or guarantee against large shocks to the fundamentals. Instead they are intended to insulate an economy from speculative attacks that are unrelated to—or that may magnify—fundamental economic shocks. For example, although Argentina's comprehensive program of risk management has succeeded in protecting the country's currency board arrangement, Argentina was unable to avoid a severe recession in 1999 when prices of its commodity exports fell and its major trading partner (Brazil) underwent a large depreciation of its currency. Chile, which has managed a relatively successful form of capital inflow taxation, also suffered a recession in the wake of the East Asian crisis as the prices of its export commodities, especially copper, fell and interest rates rose sharply.<sup>3</sup>

**Table 5.1 Advantages and disadvantages of selected short-term safeguards**

	Capital controls			Liquidity enhancement	
	Chilean-style reserve requirements	Prudential controls	Controls on outflows	Reserves to cover short-term debt	Contingent credit lines
Costs and their incidence	Raise domestic interest rates, but government obtains revenue and liquidity	Raise interest costs to domestic borrowers, as supply of funds is restricted	Lower interest costs but raise administrative costs	Fiscal costs are borne by taxpayers and can be quite high	Generally lower costs of commitment borne by government
Ease of implementation	Complex: require comprehensive coverage of all inflows to be effective	Complex: require careful monitoring to ensure compliance	Most complex: incentives to evade are strong, especially if controls are permanent	Require strategy for managing foreign reserves and spillover effects on domestic monetary policy	Easiest: market-based contractual undertaking but feasibility may depend on perceived credit-worthiness
Effectiveness	Increase maturity of outstanding debt but do not insulate economy from large international price and interest rate shocks	Directly reduce exposure to short-term debt and hence to vulnerability on account of currency mismatches	Have typically proved ineffective, although recent outcomes in Malaysia are consistent with stated goals	More effective than contingent credits but require active reserves management	Provide a liquidity cushion, which may, however, be partly negated if creditors take offsetting positions

### *Managing the capital account*

Capital accounts have become more open in most developing countries since the mid-1980s. The number of “liberalizing measures” has significantly exceeded the number of “tightening measures” (IMF 1999a, p. 16). These measures have facilitated capital inflows; outflows, typically, remain more restricted but are also on a liberalizing trend. Even Chile, whose reserve requirement is often held up as an example of a successful form of capital control, has over the 1990s dismantled several quantitative controls, especially those on outflows, making its economy more financially open.<sup>4</sup> This trend toward capital account openness can be expected to bring long-term benefits, even though the exposure to external shocks has increased. More open capital accounts facilitate portfolio diversification: risks in different projects can be offset and more risky projects therefore undertaken, leading to a potentially higher rate of investment and a higher average rate of return on projects (Obstfeld 1994). Klein and Olivei (1999) find that capital account openness provides long-term benefits in industrial countries with mature financial systems. But because developing countries do not similarly benefit—investment is not necessarily higher, longer-term growth is not necessarily greater, and the risks of crisis are higher—a more careful path toward that goal has to be traversed.<sup>5</sup>

Capital controls were motivated in the 1990s by concerns that rapid inflows lead to loss of autonomy in macroeconomic policy and that their reversals have significant follow-on effects throughout the economy. In the early and mid-1990s, the major concern with rapid capital inflows was inflationary pressure, generated by the creation of high-powered money through the direct or indirect transfer of foreign currency reserves into the banking system. However, since the Mexican crisis of December 1994, a more overriding concern has been the rapid outflow of capital and the inability to access new capital inflows. The reversibility of capital flows—and the “sudden stop” in new flows—has led to the consideration of policies that slow down inflows during boom times and restrict outflows during a crisis.

But do capital account controls achieve their intended objectives of affecting the volume and composition of capital flows and making countries less vulnerable to crises? An overall assessment of the efficacy of capital controls has proved difficult

because of measurement problems (quantitative measures of controls are difficult to construct) and because of the need to control for other policy changes that are typically undertaken at the same time (IMF 2000). Reinhart and Smith (1997) have proposed examining the effects on certain key indicators before and after the imposition of controls. Extending their analysis, table 5.2 presents the effects on capital flows following five episodes of capital *inflow* controls (Brazil in August 1994, Chile in June 1991, Colombia in September 1993, the Czech Republic in August 1995, and Malaysia in January 1994) and one episode of capital *outflow* controls (Malaysia in September 1998). Bearing in mind the earlier caveats, three conclusions are possible:

- Capital inflow controls do not seem to affect the level of flows: aggregate capital inflows fell immediately following the imposition of controls, but rose soon thereafter.
- Inflow controls do seem to affect the composition of flows by extending their maturity structure. Short-term inflows declined sharply in the year controls were imposed—the negative sign implies that the *stock* of short-term debt fell in the majority of the cases after the imposition of controls—and tended to rise much more slowly thereafter compared with other flows.<sup>6</sup>
- Protection against liquidity crises is likely to be stronger where capital controls are combined with measures to increase reserves relative to short-term debt (as in the case of Chile, Malaysia in the most recent episode, and Brazil earlier).

### *Chilean-style reserve requirements*

In June 1991 the Chilean government imposed a requirement that 20 percent of all newly entering portfolio capital be deposited with the central bank in a non-interest-bearing account for up to one year. This in effect imposed a tax, which fell particularly heavily on inflows of short maturity. This unremunerated reserve requirement has been modulated several times since its introduction. The requirement was raised to a peak of 30 percent in August 1992. However, in June 1998, during the worst of the global financial crisis, the requirement was lowered to 10 percent, and in September it was lowered again to zero in order to attract capital into the country.

Table 5.2 Capital flows and reserves before and after implementation of capital controls

	Period <sup>a</sup>			
	$t - 1$ year	$t$	$t + 1$ year	$t + 2$ years
<i>Capital account balance (percent of GDP)</i>				
Brazil (August 1994)	1.7	1.5	4.2	4.3
Chile (June 1991)	9.4	2.8	7.5	6.7
Colombia (September 1993)	0.4	5.3	4.3	5.1
Czech Republic (August 1995)	11.0	15.8	7.3	2.1
Malaysia (January 1994)	16.8	1.8	8.7	9.4
Malaysia (September 1998)	2.2	-3.5	-3.6 <sup>b</sup>	..
<i>Short-term flows (percent of GDP)</i>				
Brazil (August 1994)	1.1	-0.8	1.0	1.4
Chile (June 1991)	0.0	-2.6	4.2	0.6
Colombia (September 1993)	2.1	0.9	2.0	0.8
Czech Republic (August 1995)	..	4.2	1.6	1.2
Malaysia (January 1994)	5.2	-1.1	1.5	3.3
Malaysia (September 1998)	3.4	-7.4	-1.8 <sup>b</sup>	..
<i>Change in reserves (billions of U.S. dollars)</i>				
Brazil (August 1994)	8.1	6.5	12.7	8.6
Chile (June 1991)	2.5	1.0	2.1	0.5
Colombia (September 1993)	1.3	0.2	0.2	0.4
Czech Republic (August 1995)	2.4	7.7	-1.5	-2.7
Malaysia (January 1994)	10.0	-1.8	-1.6	3.2
Malaysia (September 1998)	-6.2	4.8	4.2 <sup>c</sup>	..
<i>Ratio of reserves to short-term debt</i>				
Brazil (August 1994)	1.0	1.5	1.6	1.4
Chile (June 1991)	1.5	2.2	1.9	1.9
Colombia (September 1993)	2.4	2.2	1.5	1.4
Czech Republic (August 1995)	3.8	3.6	2.6	1.8
Malaysia (January 1994)	3.7	3.9	3.0	2.4
Malaysia (September 1998)	1.4	2.8	3.8 <sup>b</sup>	..

a. Period  $t$  refers to the year in which controls were imposed.

b. World Bank staff estimate.

c. As of November 1999.

Sources: IMF, *International Financial Statistics*, various issues; Bank for International Settlements; Ministry of Finance, Government of Malaysia. Based on Reinhart and Smith (1997).

The more important changes have occurred in the increasing range of inflows covered by the tax. Gallego, Hernandez, and Schmidt-Hebbel (1999) argue that the tax periodically lost its effectiveness as loopholes were discovered. Investors were able in the earlier years to evade the tax by relabeling the inflows, for example characterizing portfolio flows as trade credits or loans supporting foreign direct investment (Edwards 1999). The coverage of flows to which the tax applied was therefore steadily increased, and by 1995 virtually all forms of inflows were subject to the tax. In August 1997 the unremunerated reserves-equivalent was \$2.3 billion, or 30 percent of the year's capital inflows.<sup>7</sup> The Chilean authorities' vigilance in detecting evasion and enforcing more comprehensive coverage may not be easily replicated in countries with less administrative capacity.

The impact of the Chilean policy been extensively analyzed, most recently by Gallego, Hernandez, and Schmidt-Hebbel (1999) and by Edwards

(1999). On the level and maturity of capital flows, the various studies reach similar conclusions: the total value of capital flows typically fell immediately after the tax was raised or made more effective, but the long-term impact on aggregate flows has been minimal. However, the taxes were effective in lengthening the contracted maturity of capital inflows. Once comprehensive coverage was achieved, the average maturity of *newly contracted debt* rose significantly: the share of debt with a contracted maturity of one year or less fell from 96.3 percent in 1988 to 28.9 percent in 1992 and to 2.8 percent in 1997.

However, Chile's short-term debt *repayment* obligations, although declining, remain high (Edwards 1999). Here the distinction between short-term debt defined by originating maturity and by remaining or residual maturity is important. Even though loans may be contracted at maturities of greater than a year, these loans eventually become due, and it is the amount to be repaid within the

coming year that is relevant. Chile's short-term debt by remaining maturity stood at 50 percent of all the country's international bank debt at the end of 1997. This was lower than in Indonesia (61 percent), Korea (63 percent), Malaysia (53 percent), or Thailand (66 percent), but higher than in Mexico recently (44 percent), despite the absence of capital controls there. Also, Chile maintained a high level of reserves relative to its short-term debt (two to three times higher than in East Asia, for example), partly as a built-in feature of the unremunerated reserve requirement. Gallego, Hernandez, and Schmidt-Hebbel (1999) note that, during the period, Chile maintained a high level of foreign currency reserves partly because of concern that the periodic loss of effectiveness of the implicit tax on inflows would render the economy vulnerable to speculative inflows. Although these authors conclude that the controls and the accumulation of reserves reduced Chile's vulnerability to spillover effects from the crisis of 1997–98, they note that the cost of holding reserves was high (about 0.5 percent of GDP annually).

Other limitations of the Chilean system have been noted. The reserve requirement tends to raise domestic interest rates, for example, and this cost may have fallen disproportionately on small- and medium-size firms, which are least able to bypass the capital controls. In 1997 the cost of capital to small- and medium-size firms was 19 percent per year in dollar terms (Edwards 1999). Gallego, Hernandez, and Schmidt-Hebbel (1999) conclude that the higher interest rates lowered Chile's growth rate by about half a percentage point every year, principally by lowering investment.

#### *Prudential capital controls*

New analysis of the dynamics of capital flows provides some support for a prescription of quantitative controls on capital inflows on prudential grounds (Calvo and Mendoza 1999; Krugman 1999). Capital inflows may be driven by considerations other than the economic fundamentals of the economy and, indeed, may sometimes be attracted for the wrong reasons. International investors are often unwilling to incur the costs of investigating the economic basis for the country's external borrowings and may be driven more by market psychology. Furthermore, where investors perceive implicit guarantees on the returns on their investment, the lack of due diligence may be reinforced, leading to poor

usage of the funds received. For these reasons, prudential controls on capital inflows may be needed to limit foreign borrowing by banks (especially where they are ineffectively regulated and supervised) and by domestic corporations. Also, governments themselves may do well to limit their exposure to short-term foreign debt.

The rationale for prudential controls on capital flows arises when excessive international borrowing by a few banks or companies has negative spillover effects on others within the economy. For example, risky and imprudent borrowing (or on-lending) decisions by one bank or firm may lead to a sudden loss of investor confidence about the safety and soundness of the domestic banking system as a whole, and this may trigger a much broader panic. In such a situation, even domestic residents may determine it wise to take their funds offshore. That, in turn, can sharply reduce domestic liquidity and trigger a systemic banking crisis. The rationale for prudential regulations on international transactions is thus essentially the same as for domestic prudential regulations. Since the systemic disruption following a banking crisis has huge social costs and control through market-based incentives is difficult, most countries place prudential limits on domestic banking activities. These limits take the form of capital adequacy standards, provisioning for bad loans, limits on lending to a single borrower or to particular sectors, and deposit rate ceilings (for recent discussions see Hellman, Murdock, and Stiglitz 1998; Barth, Caprio, and Levine 1988; Rossi 1999).

*Banks.* Several prudential measures are possible. It may be appropriate to place limits on short-term flows, particularly short-term external borrowing by domestic banks, since market-based approaches such as the Chilean-style reserve requirement may not be fully effective (Stiglitz and Bhattacharya 1999). Similarly, limits (or disincentives such as higher capital and reserve requirements) may also be imposed on the net foreign exposure (including swap transactions) of banks and financial institutions. Finally, tighter supervision may be required where banks are believed to employ inadequate risk management techniques, especially with respect to borrowers who have significant foreign currency liabilities. Box 5.2 presents some examples of prudential controls and their value in stemming crises. However, Garber (1996), citing the example of Mexican banks following lib-



## Box 5.2 Examples of prudential capital controls on short-term flows

India applied and reinforced extensive controls during the East Asian crisis, particularly on short-term debt held by banks. Together with other policies such as flexible exchange rates and ample foreign reserves, these measures may have helped protect the country from contagion (IMF 2000). Similarly, Indonesia's use of tight limits on external commercial borrowing by its banking system in the early 1990s also helped stem and successfully manage a surge in external borrowing during that period. The repeal of this prudential control may have been a factor in the subsequent surge of short-term borrowing. The prudential capital control measures that Malaysia introduced in 1994—including ceilings on banks' net foreign liability positions—were also apparently effective in sharply reducing the volume and increasing the maturity of flows.

On the other hand, in the early 1990s, Brazil's complex system of prudential safeguards was easily circumvented by well-developed financial markets and over-the-counter derivatives. In addition, the Brazilian safeguards, which included restrictions on or outright bans on certain transactions and narrow entrance taxes and other fiscal disincentives (differentiated taxes on certain investments) were not directed specifically at the banking system. The experience of most countries shows that capital controls used for purposes other than prudential banking safeguards—such as for protecting fixed exchange rates or macroeconomic imbalances—were less successful and often distortionary (IMF 2000). In a break from the past, during its recent currency crisis, Brazil did not impose any additional capital controls.

eralization in the early 1990s, cautions that banks can evade such requirements through the use of derivative instruments where prudential controls have not yet been extended to cover derivative positions.

In addition to direct controls on foreign exchange exposures, stronger prudential regulation may be required on overall exposures. Risks to the banking sector's solvency may be reduced either by limiting the range of activities undertaken (such as lending to real estate or highly leveraged firms) or by increasing the amount of capital required as a cushion against the possibility of default on loans made. For Central and Eastern Europe, for example, Tally, Giugale, and Polastri (1999) argue that although the countries in the region comply with the European Union's guidelines, these are insufficient given their—direct or indirect—exposure to volatile international capital flows. In Latin America, several countries have raised capital adequacy requirements above the 8 percent required by the Basel guidelines. In Argentina, banks are also required to issue a certain proportion of their liabilities in the form of uninsured subordinated debt. Unlike insured depositors, holders of this debt have an incentive to monitor the bank's lending. This arrangement thus creates additional market discipline for banks.

*Controls on corporations.* Foreign currency-denominated borrowing by corporations may be controlled indirectly through restrictions on domestic banks, as described above, or through direct

approaches (Stiglitz and Bhattacharya 1999). For example, limits may be placed on the tax deductibility of foreign currency debt. Offshore funding may be restricted to firms deemed to meet a minimum creditworthiness requirement, as reflected in their credit ratings. More intrusive—and hence more controversial—controls would limit external borrowing on the basis of the financial characteristics of firms, such as their overall leverage or their ratio of foreign to domestic borrowing.

*Controls on the public sector.* Public sector external borrowing can also be usefully subjected to quantitative constraints. Again, an extreme proposal would have governments contract no external debt (Dooley 1998). A more conservative proposal would require, for example, a minimum three-year contracted maturity for public borrowing. Recent bond offerings of the Argentine government have had maturities in excess of 15 years, compared with average maturities of less than five years a decade ago. However, as discussed above, this would not avoid higher short-term debt repayment obligations as the maturity dates draw closer.

More generally, a government should not choose a borrowing strategy that simply minimizes short-term costs, but should also be sensitive to re-funding risk, view its asset and liability management on a consolidated basis, and take into account the potential of contingent liabilities that might arise from the inability of the private sector

to honor some of its obligations. In the process of consolidated asset and liability management, policymakers have several traditional tools to limit risk, including the amount, maturity, and currency composition of the country's liabilities and reserves. But modern financial engineering can provide policymakers with additional tools to hedge risk, in effect purchasing insurance by buying or selling options, arranging contingent lines of credit, including call provisions in debt, and using regulatory and tax policies to encourage equity, as opposed to debt, financing. Modern financial engineering also suggests that authorities should perform stress tests to gauge residual exposure to risk. Continued work is required to determine if simple rules provide useful benchmarks for good debt and reserve management. Proposals made by Greenspan (1999) and Guidotti (1999) for reserve holdings, which are discussed in the next section, should be viewed in this broader context.

#### *Restrictions on capital outflows*

Studies of capital outflow restrictions (Edwards 1999; Khan and Reinhart 1994; Edison and Reinhart 1999) have been skeptical of this form of controls because they are prone to evasion and tend to outlive their usefulness. Moreover, the evidence suggests that investor concerns about capital flight can be self-fulfilling. The imposition of outflow controls increases the incentive to evade, but when controls on outflows are relaxed, net inflows may actually increase, as investors perceive greater flexibility in their decisions to bring money in and take money out of the country.

The possibility of useful temporary controls on capital outflows has, however, been revived following their use by Malaysia in the recent crisis.<sup>8</sup> In September 1998, nonresidents were prohibited from repatriating investments in ringgit-denominated financial assets for a 12-month period. These quantitative controls were largely replaced in February 1999 with graduated exit levies. At least some academic opinion has been cautiously supportive of their deployment (Krugman 1998; Barro 1998; Edison and Reinhart 1999). A key objective of capital controls was to close the offshore ringgit market in Singapore, which was offering much higher interest rates for ringgit deposits than those prevailing in Malaysia.

Malaysian-style taxes on outflows can be justified if the analysis shows that the outflows are not

due to a deterioration in fundamentals but represent speculative flight. With a limited supply of ringgit offshore (as a result of the policy change in August 1997), the interest rate differential between offshore and onshore markets had been very high since early 1998, at around 11 percent. Such a large interest rate differential intensified speculative activities, which the Malaysian authorities sought to curtail by means of capital controls. Malaysian capital controls also followed from the traditional aim of achieving greater autonomy in domestic policy. Faced with rapid capital outflows, the Malaysian government's alternatives included raising domestic interest rates, allowing the ringgit to depreciate, or imposing capital controls. Higher domestic interest rates risked aggravating corporate and financial sector distress; similarly, a major devaluation would have added to the problems of the banking sector, which had considerable foreign currency-denominated liabilities (equivalent to 12 percent of GDP in 1996).

How effective were the controls? Malaysia's risk premium in international bond markets widened substantially after the introduction of initial blanket capital controls in September 1998, but it then improved significantly after the February 1999 policy shift to exit taxes. Indeed, Malaysia's risk premium was almost comparable to Korea's when it issued sovereign bonds in May 1999. A recent analysis concludes that of all the episodes of capital outflow controls studied, the outcomes following the recent Malaysian controls come closest to the stated objectives of lowering interest rates, achieving interest rate and exchange rate stability, and ensuring greater policy autonomy (Edison and Reinhart 1999). Although these achievements have not been judged against a counterfactual (what would have happened in the absence of controls), it is evident that some earlier predictions of massive costs have not been borne out. The comprehensive design of the controls and their strict implementation did succeed in closing all loopholes, making implementation more effective (IMF 1999b). Two and a half years after the onset of the East Asian crisis, it is evident that the fall in Malaysian output was less than in the other crisis countries. Moreover, Malaysia's recovery has occurred at a more rapid pace than in Indonesia, and about the same as that in Thailand, although more slowly than in Korea (World Bank 2000, chapter 3). In judging the pace of recovery, how-

ever, it should be noted that the Malaysian economy (like Korea's, and more than Indonesia's or Thailand's) has been helped by rapid growth in world trade in electronics products.

Malaysian capital controls were employed to contain an ongoing massive crisis. As noted above, controls of a permanent nature are likely to be evaded, especially in the presence of poor fundamentals. But with good fundamentals, some prevention may be achieved if a government imposes specific constraints on certain types of large outflow transactions that, for example, are directed at tax avoidance, and those that require improved reporting and disclosure by the banking system. Even industrial countries routinely employ such controls and reporting requirements. Volatile, short-term outflows for the purpose of tax avoidance or other inefficient objectives may then be deterred. However, such a policy runs risks. If imposed opportunistically, capital controls may deter new long-term inflows.<sup>9</sup>

### Managing national reserves

The traditional view on reserve adequacy focuses on the current account and recommends that reserves should be sufficient to finance three to six months of imports. More recently, however, as capital account transactions—trade in assets rather than in goods and services—have become more important, monetary authorities are being advised to maintain adequate reserves to protect against the withdrawal of short-term liabilities that may not be rolled over. Guidotti (1999) and Greenspan (1999) suggest that reserves should at least equal the amount of foreign capital that may contractually leave within a year. Lenders and investors, thus reassured by the cushion of reserves, would then be less inclined during periods of turmoil to take their money out as a preemptive measure.

Although such rules of thumb can provide a useful benchmark, they can sometimes be widely off the mark. A country's optimal reserve level will vary as a function of various factors (Roger 1993). For example, in addition to short-term debt, other factors to be considered include the size of the current account deficit, the exchange rate regime, the variability of the balance of payments, and the uncertainty associated with the measurement of the country's short-term debt and its reserves. It is im-

portant, moreover, not to abandon the traditional concern with reserve adequacy in relation to imports, although when reserves are adequate from a short-term debt point of view, they tend to provide sufficient cover for imports as well.

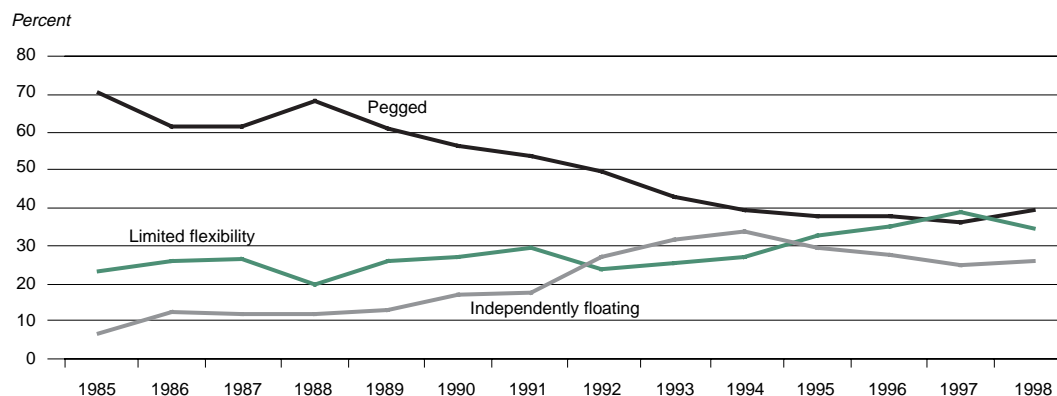
Taking all these considerations into account, for some countries the appropriate level of reserves—and hence the costs of holding them—may be considerably higher than simple rules would dictate. Such countries may need to take innovative approaches to reserves management to reduce the fiscal costs. Of special importance may be increased liquidity requirements in banks, with an emphasis on the holding of high quality foreign assets. The government's costs of holding reserves decline and so would the moral hazard arising from the imbalance between rising private short-term debt and growing government reserves.

*Reserves and the current account deficit.* Reserves may be required not just to repay maturing debt that is not rolled over but also to meet obligations from a large current account deficit. In an empirical analysis, Bussiere and Mulder (1999) show that the Greenspan-Guidotti rule of reserves equal to short-term debt will work best to limit crises when the country also runs a current account surplus of about 2 percent of GDP.<sup>10</sup> However, where the current account is just in balance, the level of reserves required to avert a crisis rises to about twice the level of short-term debt. With higher current account deficits, the required reserves may rise nonlinearly to very high levels. The estimates of additional reserves needed, taking into account the current account deficit, vary considerably across countries. For several countries, the adjustment required by the current account deficit would lead to additional reserves of between 10 and 20 percent of GDP. These estimates, however, should be treated as illustrative, since they may be offset by other factors discussed below.

*Reserves and the exchange rate regime.* In general, a fixed exchange rate regime will require a higher level of reserves than one that is flexible. The trend toward greater flexibility in exchange rate regimes (figure 5.2) should therefore reduce the required level of reserves.

However, most currencies are not fully flexible. "Fear of floating" has led many central banks to maintain nominal exchange rates within bands (Calvo and Reinhart 1999). Such arrangements represent an uneasy compromise in achieving the

Figure 5.2 Trends in exchange rate regimes



Source: IMF Annual Report on Exchange Arrangements and Exchange Restrictions.

goal of domestic policy independence. Traditionally, the policy autonomy discussion has centered around the incompatible “trinity” or the “trilemma.” If capital is mobile, then a fixed exchange rate precludes monetary independence. However, Frenkel and Mussa (1981) and Frenkel (1983) point out that floating the exchange rate may not be enough, since the true limitation to achieving domestic policy goals arises from the openness of the economy. A floating exchange rate itself may impose constraints if, for example, a nominal depreciation of the domestic currency leads to real effects on account of sticky domestic prices. If such externally generated influences go against domestic policy objectives, policymakers will wish to contain movements in nominal exchange rates. This explains the continued existence of regimes intermediate between floating and fixity. But such regimes, in turn, require safeguards such as sufficient international reserves to defend the exchange rate.<sup>11</sup> Frenkel (1983) finds, however, that the demand for international reserves remained unchanged after the shift from the fixed exchange rates of the Bretton Woods period to more flexible exchange rates.<sup>12</sup>

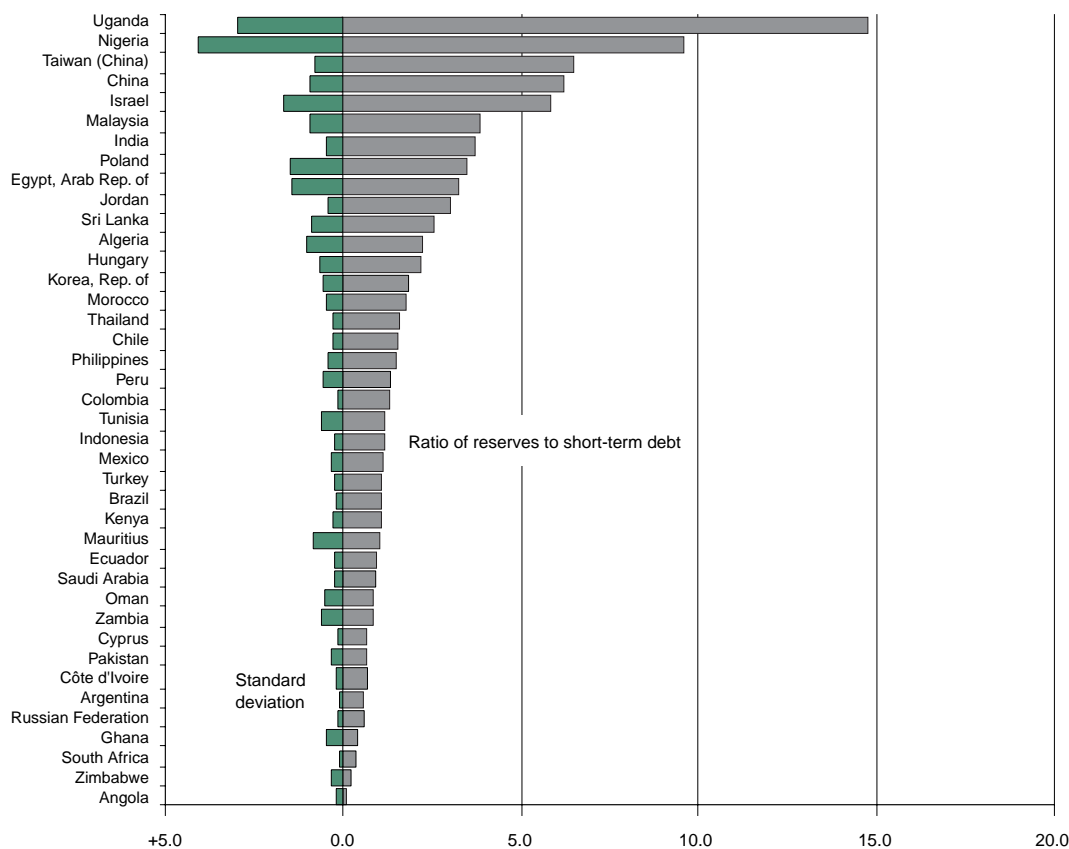
*Reserves to manage variability.* A traditional reason for holding reserves is to deal with variability in the balance of payments (excluding the change in reserves). Indeed, empirical studies (Frenkel 1983; Frenkel and Jovanovic 1981) find that the higher this variability, the greater the observed level of reserves. In these empirical studies

the past variability in reserves is used as a proxy for the variability in the balance of payments. Figure 5.3 shows the level (right-hand side) and standard deviation (left-hand side) of the ratio of reserves to short-term debt for a group of 20 countries. The levels are those of June 1999, and the standard deviations are calculated over the period from June 1994 to June 1999. As earlier studies suggested, the two measures are highly correlated across this sample of countries, with a correlation coefficient of 0.85.

*Other issues in determining the adequacy of reserves.* Implementation of the Greenspan-Guidotti rule also raises some practical questions, which imply that liquidity protection may require higher reserves than proposed.

- Adequate measures of short-term debt—that is, of all debt that has to be repaid in the coming year—are not always readily available. Short-term debt reported by the Bank for International Settlements (BIS) covers only debt owed to BIS-reporting banks and hence does not cover other short-term liabilities—supplier credits, bonded debt, and equity outflows—that create demand for the country’s foreign exchange earnings and reserves. Though equity holders face severe losses when they withdraw funds during a crisis, large holders such as mutual funds are driven to move money by predetermined rules that can cause a mass exit (Maxfield 1998).

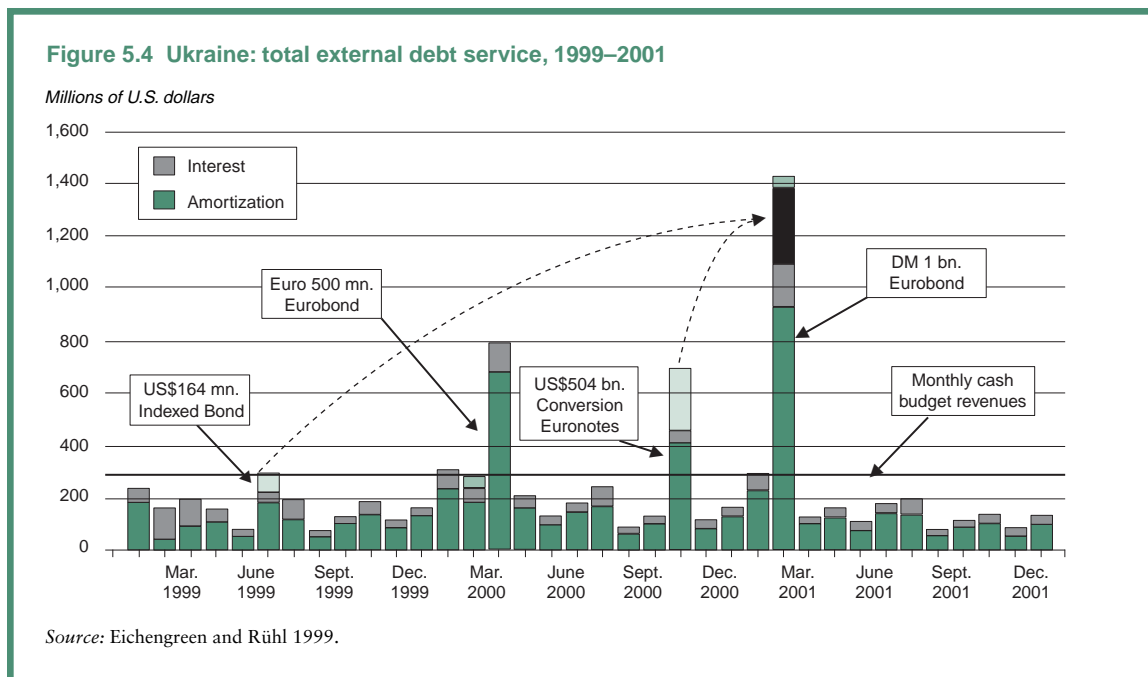
Figure 5.3 The level and variability of reserves/short-term debt



Source: IMF, *International Financial Statistics*; BIS, *Consolidated International Banking Statistics*.

- Short-term obligations can fluctuate sharply, for example when the principal repayment on a bullet bond comes due.<sup>13</sup> Ukraine's debt repayment schedule, for example, calls for large repayments in certain years (figure 5.4). This implies either the continued ability to roll over the debt, or a large holding of reserves against these peak requirements, which is expensive, or a rapid build-up of reserves just before repayment, which may not be feasible.
- Reserves can deplete rapidly. For example, Korea's reserves, already relatively low in the early part of 1997, fell sharply just before the crisis in November, when the Korean central bank began using its foreign exchange reserves to provide liquidity to the foreign branches of Korean banks. Similarly, the level of Thai reserves had been implicitly precommitted, since the Thai authorities had undertaken forward contracts to buy baht at a fixed exchange rate.
- For reserves to serve as a buffer, a conservative approach is also desirable because of possibly adverse market reactions. If perceptions develop that reserves are insufficient, that view can become self-fulfilling. Lenders and investors alike may be tempted to withdraw funds in anticipation of others making the same decision. Since the withdrawal of funds is most feasible when the country still holds reserves, a rapid withdrawal may occur when reserves are still modestly high, but not high enough to instill confidence that repatriation of funds will be feasible later.

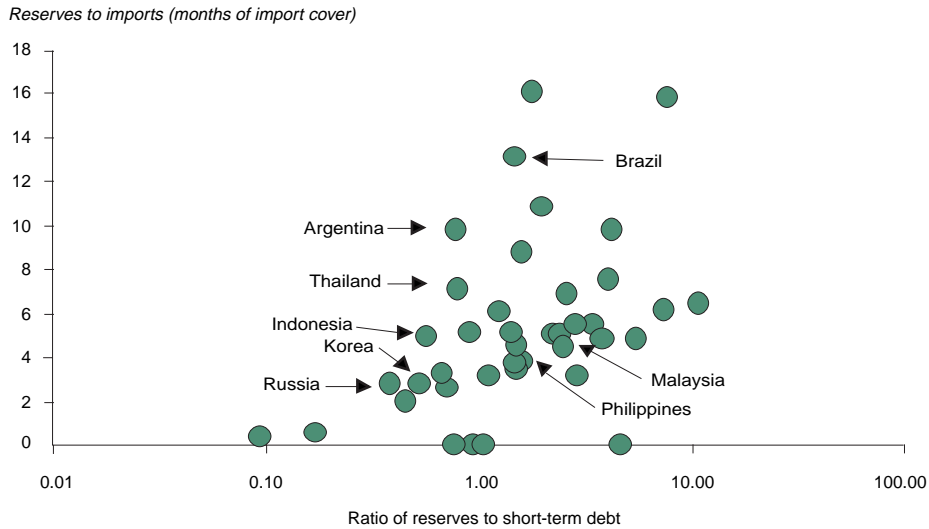
*Other indicators of reserve adequacy.* Although the recent policy focus has been on the adequacy of



reserves to meet debt payment obligations, the traditional concerns with maintaining sufficient liquidity to finance imports remain important. The reserves-to-imports ratio is also more precisely measured and available in a more timely manner than the ratio of reserves to debt repayments in the coming year. However, since these two ratios are correlated across countries (figure 5.5), the reserves-to-imports ratio can also serve as a leading proxy for the ratio of reserves to short-term debt. The axes in figure 5.5 intersect at a reserves-to-imports ratio of four months and a ratio of reserves to short-term debt of unity. Thus, any point to the right of the vertical axis represents reserves in excess of a year's repayment of outstanding short-term debt, and any point above the horizontal axis represents import coverage greater than four months. Using these two widely accepted benchmarks as a reference, any point in the upper right quadrant represents adequate reserves, and any point in the lower left quadrant represents inadequate reserves. Of the 36 countries represented in the figure, 27 are in either the upper right or the lower left quadrant. In addition to its role as a proxy, the reserves-to-imports ratio has independent relevance where countries drive down short-term debt through, for example, capital controls. This will raise the level of reserves to short-term debt, but reserves may be insufficient in relation to imports.

In addition, it would be prudent also to track reserves in relation to measures of the domestic money stock (M2). The reserves-to-M2 ratio is not highly correlated with reserves to short-term debt. Hence, prudence on one of the measures does not necessarily imply prudence on the other. For instance, prior to the 1997 crisis, Malaysian reserves were substantially larger than the country's short-term debt but were only about one-third of M2. The importance of reserves to M2 is greatest where domestic capital flight is a possibility, where domestic banking systems are weak, or where the credibility of a fixed exchange rate system is likely to be tested. However, the costs of holding reserves are likely to be especially high when the benchmark is M2 rather than just the country's short-term debt or four months of import cover.

*Costs of holding reserves.* The costs of holding reserves can be substantial. For example, if additional reserve requirements are about 20 percent of GDP, and a 5 percentage-point premium (over the risk-free rate at which reserves are typically invested) is required to hold them, the cost of holding these additional reserves is 1 percent of GDP annually. Fortunately, methods exist to contain these costs. Feldstein (1998) has proposed one such strategy. At present, most countries are liable to take extreme positions: they either hold significant reserves

**Figure 5.5 Reserves to short-term debt vs. reserves to imports, 1996**

Source: Bank for International Settlements; International Monetary Fund.

that are then invested in low-return but risk-free and highly liquid assets, or they hold inadequate reserves. An intermediate solution is possible: where a higher level of reserves is desirable, costs may be reduced by investing them in higher return and higher risk securities. The added risk is likely to be less than that of having inadequate reserves.

Another approach is to require the private sector (especially the banking sector) to hold more liquid foreign assets. The government's costs of holding reserves are thus reduced—and so is the risk that the private sector may accumulate short-term debt, creating crisis-like conditions, which then have to be contained through the use of the government's reserves. This imbalance could be addressed in part by limiting, in the first place, the acquisition of short-term debt by the banking and corporate sectors, as discussed in the previous section. In addition, reserve requirements for banks could be increased in a procyclical manner (more reserves during periods of rapid capital inflows). The burden of holding reserves is then shifted from the government to depositors and borrowers. Reinhart and Reinhart (1999) caution that deposit rates fall and lending rates rise when reserve requirements are increased. This creates incentives

to bypass the banking system and use other means of financial intermediation.

Despite possible drawbacks in implementation, increased banking sector liquidity—especially the reliance on high quality foreign assets—merits serious consideration because of its other significant advantages. Liquid assets are easier to supervise than bank capital, and thus liquidity requirements economize on the need for prudential regulation. Banks become safer when they hold more liquid assets that are of high quality (such as foreign currency assets) and that maintain their value even when domestic currency loans fail to perform. Although greater liquidity might reduce the extent of intermediation, safer banks are likely to attract more resources, so in fact intermediation may increase. Table 5.3 shows that, in select countries, a shift has occurred in bank liquidity to greater reliance on foreign assets, while at the same time claims on governments (which often subsidize government borrowing) are low or declining. A reinforcing trend is greater foreign ownership of banks, which potentially increases financial stability through the ability of domestic institutions to draw on the deeper pockets of foreign owners. Foreign participation, by increasing competition, is

**Table 5.3 Banking sector liquid assets in select emerging markets***(percentage of outstanding liabilities)*

		1991	1995	1999
Argentina	Reserves	7.5	3.5	2.4
	Foreign assets	7.2	8.3	15.0
	Claims on government	27.3	21.1	20.7
Chile	Reserves	5.6	5.0	2.2
	Foreign assets	3.3	1.4	11.6
	Claims on government	0.4	0.6	0.6
Korea, Rep. of	Reserves	6.1	5.8	2.0
	Foreign assets	6.0	8.9	9.4
	Claims on government	4.0	2.2	4.4
Thailand	Reserves	2.9	2.5	1.6
	Foreign assets	3.5	4.9	9.7
	Claims on government	4.0	0.8	3.9

*Source: IMF, International Financial Statistics.*

also seen to improve the efficiency of the domestic banking sector (Claessens and Glaessner 1998).

### Contingent lines of credit

An alternative to incurring the substantial fiscal cost of holding reserves is to negotiate contingent lines of credit from private sector lenders. Under this arrangement, international lenders commit to lend to a country (or to specific borrowers, such as banks, in the country) a predetermined amount under certain contingencies. Thus, in an emergency, countries have the option of drawing on an additional—and potentially cheaper—source of liquidity if their reserves prove inadequate. However, costs may be higher or access more difficult to obtain after the recent crisis events.

*Benefits.* Contingent credit lines, which have been contracted by Argentina, Indonesia, and Mexico in recent years, can be cheaper than borrowed foreign reserves on three counts: countries realize an efficiency gain, a contractual gain, and a transactional gain. First, when contracted, a contingent credit line incurs a commitment fee (for the right to borrow under specified circumstances) that is typically less than 1 percent of the contracted amount and, thus, much smaller than the cost of holding reserves, which, as noted above, is approximated by the sovereign spread on the borrowed reserves. This large difference reflects an efficiency gain. By holding the money on behalf of the potential borrower, the international lender does not incur sovereign risk during the holding

period; also, the money can be invested in a diversified portfolio that can be optimized continually.

The contractual gain comes about as follows. If the contingent credit is triggered, the borrower pays a precontracted interest rate, which, in practice, has had a lower spread over the relevant risk-free rate than sovereign bond borrowings. This reflects the fact that contingent credit lines have been arranged with commercial banks, which may charge a lower rate than bondholders, or that the agreement was arrived at in more “tranquil” times rather than during a crisis.

The transactional gain arises because a contingent credit agreement specifies only the maximum amount that the country may borrow in the event of an emergency. But in an emergency the country may need to borrow only a fraction of that maximum. Indeed, if the maximum amount is set large enough, the knowledge that this large pool of liquidity exists may be sufficient to avert a crisis, and the facility may need never be drawn upon. This is not only cheaper than holding reserves but also reduces the risk that the (expensive) reserves may, in the end, prove insufficient. However, recent crises events may lead banks to reprice access to such contingent credit lines.

Argentina established a \$6.1 billion contingent credit line with 13 banks in December 1996. This was a substantial amount in comparison with Argentina’s \$18.1 billion in foreign exchange reserves and its \$23.0 billion in short-term debt to BIS-reporting banks. Thus the contingent line took Argentina over the Greenspan-Guidotti threshold, at least if short-term debt is measured only in terms of commercial bank debt. The line of credit has not been utilized to date, and since the original negotiation it has been rolled over once, with an increase in the commitment fee from around 30 to 60 basis points. This increase reflected heightened risk aversion on the lenders’ part in the wake of the East Asia crisis. The line of credit backstops liquidity to the domestic banking sector in the event of a crunch. In effect, the Argentine government acts as an intermediary, channeling reserves into the banking system, with the timing, extent of usage, and cost determined by need.<sup>14</sup>

The Mexican and Indonesian lines of contingent credit were smaller both in absolute amount and in relation to the two countries’ reserves and short-term debt than in the Argentine case. The Mexican facility (\$2.5 billion) was exercised in



## Box 5.3 The role of multilateral institutions in contingent credit lines and credit guarantees

Multilateral institutions have been sometimes criticized for providing large financial rescue packages to countries in time of international crisis. These packages, it is argued, increase moral hazard, and hence the probability of future crises, by providing incentives for imprudent risk-taking behavior among both lenders and borrowers. One way to reduce moral hazard is to charge penalty rates for emergency funding. But another approach is to develop new financial products—and augment old ones—that can help either prevent crises or restore market access following a crisis. Prevention is achieved when resources provided in “normal” rather than in turbulent times help create a liquidity cushion. Restoration of market access by leveraging multilateral resources can reduce the fallout from crises. However, these new instruments are not without their drawbacks. Three examples illustrate their strengths and their limitations.

*Contingent credit lines.* In April 1999 the International Monetary Fund (IMF) announced its contingent credit facility. The intent of this facility is to provide members with protection against “circumstances that are largely beyond the member’s control and stem primarily from adverse developments in international capital markets consequent upon developments in other countries” (IMF 1999d, p. 1). To be eligible to access the facility, member countries are required to follow sound policies and maintain “constructive” relations with private creditors (to facilitate private sector participation in maintenance of liquidity). Commitments under the contingent credit line are not subject to IMF general access limits but are likely to be in the range of 300 to 500 percent of the member’s quota. No country has used the contingent credit facility thus far, possibly because of such factors as the eligibility requirements, the fee structure, and the present state of financial markets.

*Collateral for private contingent lines of credit.* Rather than provide a contingent credit line of their own, multilateral institutions can facilitate the private contracting of such liquidity. In November 1998, as a component of a Special Structural Adjustment Loan to Argentina, the World Bank provided a contingent loan of \$505.05 million to support the contingent credit line that Argentina had contracted with private lenders. The loan may be drawn only if the private contingent facility itself is triggered. The proceeds would then be made available to the central bank (and invested in highly liquid securities when

not needed) or be used only to meet margin calls, that is, to provide collateral should the market value of the original collateral fall below certain thresholds. The intent of the loan was to reduce the probability of default by Argentina on its contingent borrowing, thereby making the private contingent credit facility more attractive to lenders and lowering costs.

*Partial credit guarantees.* Partial credit guarantees are another mechanism that multilateral institutions can use to improve a government’s liquidity position in a “normal” period or to restore market access following a crisis. In April 1999 the World Bank approved the issuance of policy-based guarantees to extend the existing partial credit guarantee program beyond investment projects to sovereign borrowing. The objective is to facilitate access to private capital markets for sovereign borrowers that have a strong track record of performance and a strategy for gaining or regaining access to international markets. In September 1999 the Bank extended a rolling partial credit guarantee to support a \$1.5 billion borrowing by Argentina. Significant leverage of World Bank resources was achieved by structuring the borrowing into six series, each equal to \$250 million. The rolling feature in the guarantee caps the World Bank’s exposure at any given time to repayments on only one of the series. It is in this sense that the guarantee is partial. However, if Argentina continues to service the debt, the guarantee is rolled forward. The guarantee, although only partial, pushed the credit rating of the entire debt above the Argentine sovereign ceiling, and hence brought down the cost of funding to the government.

The resources of the multilateral institutions are limited, however, and the preferred creditor relationship they enjoy with borrowing governments needs to be carefully preserved for high-priority and high-impact lending. For this reason, these instruments are likely to be used in select and strategic operations where such instruments bind policy commitments and, thereby, signal reduced vulnerability. Litan (1999), however, has cautioned that contingent multilateral instruments could also send the wrong signals. Both when countries enter into such agreements and when they exercise them, markets may perceive weakness, which private actions may then amplify. Ultimately, the role of signaling policy soundness to private investors is probably best left to private agents, including credit rating agencies—despite their less-than-exemplary performance in recent years.

September 1998 (IMF 1999c, p. 33). The participating banks objected, as there was no emergency in Mexico at the time. Arguably, the action conformed to the letter of the agreement. The action also conformed to the spirit of such arrangements, since by adding to the country's liquidity, the government was further able to signal its commitment to meeting its foreign payments obligations. A total of \$1.9 billion of the country's debt was converted to a combination of five-year floating rate notes and two-year commercial paper, and a further \$0.5 billion was repaid from the proceeds of a \$1 billion, 10-year bond issued in February 1999. The Indonesian facilities were fully drawn down following that country's crisis in the second half of 1997.

*Potential drawbacks.* The uses of contingent credits, although important, are contractually limited. Whereas reserves can be used for transactions, contingent credit lines can be used only for specified precautionary purposes. In addition, there are some other drawbacks: two of these are the possibility of offsetting cutbacks in other credit and the high cost of collateral necessary to back the credit line.

Contingent credit lines may not represent an increase in the overall availability of credit to a country because foreign banks may choose to limit their exposure by cutting back on other forms of lending to compensate. Creditors can reallocate their asset portfolios at the time that a contingent fund is drawn upon, so that their net exposure to the country does not change. For example, a bank can reduce its holdings of bonds issued by a country in crisis by the same amount that it lends through the contingent facility. Hedging against the contingent liability—taking short positions on other credits to that country, or so-called dynamic hedging—may also reduce the net new provision of credit. For instance, in the case of Mexico, participating banks warned against exercising the credit line because that could reduce bank lending to Mexican corporations (IMF 1999c, p. 33).

But the fact that contingent credit lines may be offset by a reduction in other lending does not negate their most important purpose, which is to inhibit a sudden contraction of credit. In any case, it is not evident that the incentives exist for lenders to take offsetting positions *at the same time* as they enter into the contingent agreement. And if the offsetting position is taken as a crisis

approaches, lenders may incur significant costs in doing so. Moreover, participation by private financial institutions in contingent facilities limits the ability of these institutions to reduce their exposure to the country during a crisis. As the private sector seeks to reduce its net lending to the country in crisis, the contingent loans may offset the reduction in other claims against the country. A private run is met, therefore, to the extent of private participation in contingent funds, by the new private loans they provide rather than by the sale of central bank foreign reserves or by loans from multilateral institutions.

The provision of collateral to back the credit line has the effect of precommitting certain resources for repayment of the debt. In the case of Argentina's \$6.1 billion contingent credit, the agreement commits participating banks to purchase Argentine government securities from the central bank as collateral; the value of the collateral, which is marked to market, has to be maintained above the level of the contingent credit line. Since the collateral held by the beneficiary banks consists of Argentine government securities, the government is under an obligation to repay following the triggering of the credit. The credit risk of such a repayment has led to the Argentine Government obtaining backstop funding from the World Bank (box 5.3). Feldstein (1998) has suggested the use of export receivables as collateral. The amount of steady receivables (such as international receipts of the telephone company) that can be precommitted is, however, typically small. Moreover, their use as collateral may tie up valuable export earnings and limits the broader uses to which they could be put.

## Notes

1. This would imply that over a 10-year period the probability of **not** having a crisis is  $(0.9)^{10}$ , or only 35 percent.

2. The claims of BIS-reporting banks on Thailand decreased by 14 percent in 1998 compared to 1997 and by between 5 and 7 percent for the other three Asian crisis countries (Indonesia, Korea, and Malaysia). Investment in these countries fell by an average of 30 percent over the same period. See Dadush, Riordan, and Wolfe (1999).

3. Moreover, where capital markets work reasonably efficiently, sudden shifts in sentiment are unpredictable, by definition. As a result, measures to prevent crises may not always work, because they fail to anticipate the new forces driving the crises.

4. See Gallego, Hernandez, and Schmidt-Hebbel (1999) for a comprehensive discussion.

5. See World Bank 1999, Collins and Bosworth 1999, and Rodrik 1998, which provide analyses and evidence on measuring the benefits of capital account openness in developing countries. A technical problem with both the Klein and Olivei and the Rodrik studies is that they measure capital account openness as a binary variable (open or not) when in practice the measure needs to be more nuanced. As a result of measurement error, the estimated benefit from openness may be biased downward.

6. However, even for short-term flows, the effects may tend to be temporary (see the description of the Chilean controls by Gallego, Hernandez, and Schmidt-Hebbel 1999). In the Malaysian episode of capital outflow controls, aggregate net capital outflows, as well as short-term outflows, continued following the imposition of controls, although at a slower pace. A significant current account surplus, made possible by import compression, led to a large accumulation of reserves.

7. The term “reserves-equivalent” reflects the fact that those who did not want to be subject to unremunerated reserves were allowed to pay an equivalent tax. The reserves-equivalent, therefore, is the measure of reserves that would have been held if the tax option did not exist and all were subject to the reserves requirement.

8. Thailand also imposed controls on capital outflows following its crisis in mid-1997. However, these controls proved easy to bypass and were abandoned and the baht was allowed to float.

9. Although a full analysis has yet to be undertaken, foreign direct investment (FDI) into Malaysia, which has traditionally been high, fell in the aftermath of the crisis, unlike in Korea and Thailand, where it expanded significantly (World Bank 2000, chapter 3). According to Bank Negara Malaysia (1998, p. 40), FDI decreased from RM19.1 billion in 1997 to RM11.6 billion in 1998. One factor, according to BNM, was the controls: “. . . although the imposition of selective exchange control regulations did not affect FDI, foreign investors had adopted a cautious approach towards new investment.”

10. They construct a crisis index that combines, over a given period, the change in reserves, currency depreciation, and the rise in interest rates. When the current account balance has a surplus of 2 percent of GDP and the ratio of reserves to short-term debt equals 1, then the crisis index is predicted to be zero.

11. Frenkel and Mussa (1981, pp. 254–5, emphasis added) note: “Under a flexible exchange rate, a government regains control over the *nominal money supply*. However, international capital mobility still limits the *effectiveness* of monetary policy: Any increase in aggregate demand induced by lower domestic interest rates is partially dissipated in increased expenditures on imported goods, financed by international capital flows; and exchange rate adjustments that occur rapidly in response to perceived changes in monetary policy are likely to lead to rapid adjustments of domestic prices and wage rates, thereby limiting the effect of monetary policy on output and employment.”

12. In his comment on Frenkel’s paper, Komiya (1983) notes that this diagnostic need not apply to countries that have truly integrated their domestic financial systems with

international financial markets. The level of Japanese foreign exchange reserves, for example, fell to a small fraction of imports and short-term liabilities even as early as the mid-1970s.

13. A bullet bond is structured to require interest payments during the life of the bond and the entire principal repayment at the very end, creating a spike in the debt repayment profile.

14. By thus arranging for additional resources for banks, the Argentine government is, in Fischer’s (1999) terminology, taking on the role of crisis manager rather than crisis lender.

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The word *processed* denotes informally produced works that may not be commonly available through libraries.

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