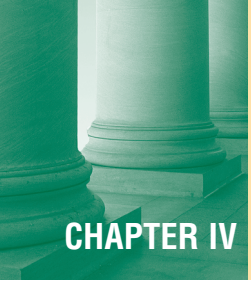


CHAPTER IV EMERGING MARKETS AS NET CAPITAL EXPORTERS

Emerging markets have become net capital exporters since 2000.[1] This development, which was highlighted in the September 2003 GFSR, has raised questions and concerns among market analysts and policymakers. Conventional wisdom suggests that capital should flow from capital-abundant mature markets to capital-scarce emerging markets. However, this general presumption does not hold for an individual country when it needs to adjust its international investment position as a result of a financial crisis, or when risk-adjusted returns shift global asset allocation away from emerging market assets. Moreover, when different types of risks and capital market imperfections are incorporated into the analysis, it is not unlikely that a particular emerging market country could become a net capital exporter—at least for a short period of time.

Macroeconomic policies are central to post-crisis adjustment in emerging markets, as well as to ongoing global current account imbalances.[2] While recognizing the importance of macroeconomic policies, and the difficulties in disentangling savings-investment gaps from financing issues, this chapter focuses mainly on capital account, or financial and balance sheet issues in the major emerging markets, as well as their interaction with global markets.[3] After an examination of the main stylized facts on capital flows over the last decade, the chapter argues that there are three key themes behind the perceived anomaly of emerging markets as net capital exporters: the overlapping adjustments to a sequence of crises in major emerging markets; the accumulation of reserves and a greater reliance on local financial markets; and the asset allocation implications of mature markets risk-adjusted returns and macroeconomic imbalances.

An examination of the stylized facts on capital flows suggests that the period in which emerging markets became net capital exporters (2000–04) can be divided into two subperiods, and that private (residents and nonresidents) and official sectors play different roles in each subperiod. In the first subperiod, 2000–01, there is a substantial reduction in nonresident inflows to emerging markets—the end of the sharp decline in flows that started in 1997—combined with an also relatively large outflow from emerging market residents. In the second subperiod, 2002–04, a rebound in private sector inflows is dominated by a considerable accumulation of net international reserves (NIR) by the official sector.

Most systemically important emerging markets were engulfed in a sequence of crises that involved large reversals in capital inflows, as well as deep and protracted balance sheet adjustments. The confluence of some of these adjustments, and a few new crises around the turn of the century, marked the trough of the pronounced cycle in capital flows to emerging markets of the 1990s. For this confluence of crises and adjustments to be quantitatively important, the restoration and strengthening of balance sheets had to be sufficiently long and profound. The chapter shows that this was indeed the case in some crisis countries, and argues for focusing on both sides of the

[1]For the purpose of this chapter, a country is a net capital exporter when its balance in the current (capital and financial) account is positive (negative), assuming all errors and omissions belong in the capital account.

[2]See, for instance, Ghosh and others (2002) on the role of IMF policies in capital account crises, and IMF (2003b) on global imbalances.

[3]Lane and Milesi-Ferretti (2003 and 2004) and Gourinchas and Rey (2004) argue that fluctuations in external accounts are better understood by focusing on financial markets rather than goods markets.

balance sheet adjustment, which reinforce each other in terms of their impact on emerging markets investment position. In particular, the chapter shows an important accumulation of net foreign assets by emerging market residents that coincided with the reduction in external liabilities. The depth and length of the external deleveraging process is also studied, and implications for bank and bond markets are discussed.

In the more recent subperiod 2002–04, an unprecedented accumulation of net international reserves (NIR) and increased borrowing from local securities markets to reduce reliance on external financing were the main factors that made emerging markets net capital exporters. In many cases the large accumulation of reserves has stemmed from attempts to prevent nominal exchange rate appreciation in the face of increasing capital inflows. However, while there has been much controversy about the adequacy of reserve levels and some empirical studies suggest that NIR levels are excessive (in particular, in Asia), precautionary or "self-insurance" arguments could be used to justify higher levels of international reserves relative to the level suggested in those studies. The chapter also argues that the desirable level of reserves depends on the degree of risk aversion of the monetary authorities, as well as on the development of local financial markets, which could provide an alternative mechanism to self-insure against sudden reversals in capital flows.

Finally, in an increasingly globalized capital market, flows to emerging markets cannot be dissociated from global factors stemming from developments in the mature markets. Despite the string of crises, emerging markets have become an established asset class in global portfolios, and the global asset allocation process of international investors involves a comparison of risk-adjusted returns across asset classes as well as across countries. In this context, events such as the bursting of the global equity bubble, the increasing role of China in global production and trade, and the persistance of global imbalances have a direct bearing on the supply of funds available for emerging markets and, hence, on whether they become net capital importers or exporters. The chapter shows that risk-adjusted returns favored allocations toward U.S. assets between 1996 and the early 2000s—facilitating the financing of increasingly large U.S. current account deficits—while emerging market securities became more attractive in 2003–04.

After an analysis of the stylized facts on capital flows, and of the key themes behind the emergence of emerging markets as net capital exporters, the chapter concludes with a discussion of a corresponding set of policy implications.

Stylized Facts

Emerging markets *as a whole* have become *net exporters* of capital since 2000. Prior to 2000, emerging markets were, in aggregate, *net importers* of capital, with financing largely driven by private sector inflows since the late 1980s.[4] This section focuses on key trends in capital flows to and from emerging markets, with particular emphasis on the differential behavior of residents and nonresidents. The differential behavior of private (resident and nonresident) and official sectors is manifest in two markedly different subperiods during which emerging markets became net capital exporters: 2000–01 and 2002–04. In the first subperiod, the nonresident private sector

[4]The main trends in net capital flows to emerging markets were reported in the September 2003 GFSR. Some differences across both chapters are due to different sets of countries included in the Emerging Markets group. In this chapter, the IMF's *World Economic Outlook* (WEO) data and definitions are used for most of the analysis, but the country classification is somewhat broader here; it also includes Bosnia and Herzegovina, Brunei, Cyprus, Eritrea, Israel, Serbia and Montenegro, and Timor-Leste.

flows completed the decline from emerging markets, with inflows reaching the trough in 2001, while resident outflows were at or above trend levels. In the second subperiod, the private sector (resident and nonresident) saw more normal levels of flows (moderate outflows and inflows, respectively), while the official sector became the key driver of emerging market outflows through an unprecedented level of NIR accumulation (see Figure 4.1).

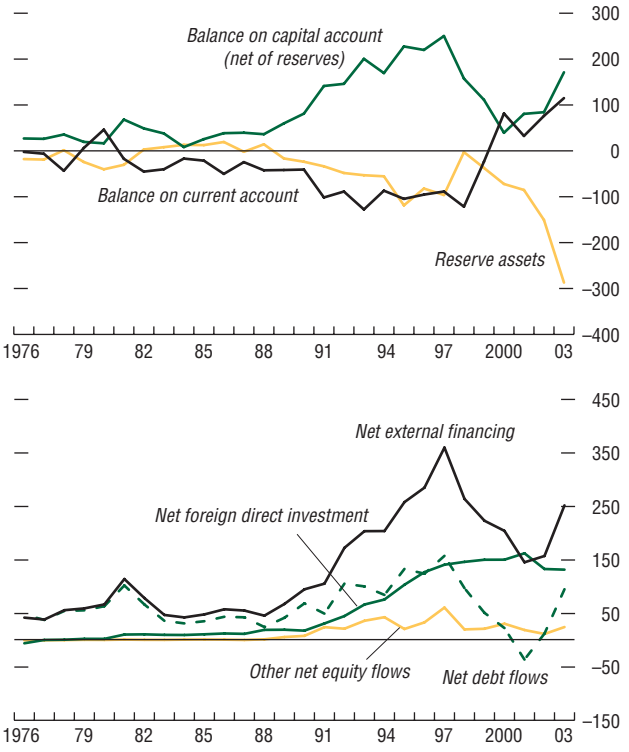
Resident and Nonresident Private Sector Flows

Nonresident private capital inflows rose sharply through much of the 1990s, peaking in 1997, before slowing significantly following the onset of several emerging market crises (see Figure 4.1). This trend was largely driven by foreign direct investment (FDI), which has been the dominant source of private external financing for emerging markets. Indeed, FDI in emerging markets remained relatively stable through the crisis and recovery years, before slowing somewhat in 2002 and 2003. In contrast, net debt flows to emerging markets fell markedly following the Asian crisis, driven mostly by a retrenchment in bank lending. Meanwhile, external bond financing has been more resilient as retrenchments by lenders have been more sporadic during the same period. Interestingly, the spike in debt inflows in 1997 is similar to that in 1981, in the lead-up to the 1980s debt crisis. The difference is in the steep decline in the late 1990s, which was also followed by a much sharper rebound in 2003–04.

At the same time that emerging markets experienced a surge in private sector (nonresident) inflows in 1994–97, there was a somewhat smaller increase in private (resident) outflows (see Figure 4.2).[5] This pattern is common across regions, albeit less pro-

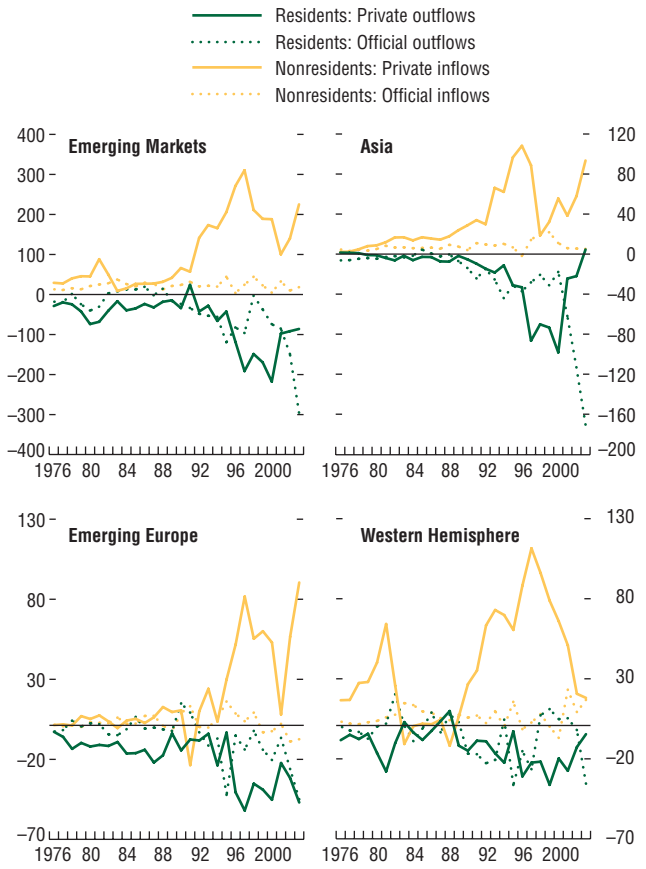
[5]This simultaneous surge in inflows and outflows is consistent with a sharp rise in gross foreign asset and liability positions for emerging markets (see Lane and Milesi-Ferretti, 2004).

Figure 4.1. Capital Flows to Emerging Markets



Source: IMF staff estimates based on data from the *World Economic Outlook*.

Figure 4.2. Private and Official Outflows/Inflows of Residents and Nonresidents in Emerging Markets
(In billions of U.S. dollars)



Source: IMF staff calculations based on data from the *World Economic Outlook*.
Note: Private resident outflows are defined as current account balance minus change in reserves minus external financing. Official nonresident inflows are defined as equity securities constituting foreign official assets plus net credit and loans from the IMF plus other official debt flows. Private nonresident inflows are defined as net foreign direct investment (excluding debt-creating liabilities) plus equity securities constituting foreign private assets plus net external borrowing from commercial banks plus net external borrowing from other private sources. Capital transfers are excluded from the calculation of nonresident inflows.

nounced in Latin America.[6] Indeed, the increase in resident outflows predates the reversal in nonresident inflows for all regions, and reinforces the latter between 1997 and 2000. These outflows are represented by recorded private investments offshore, as well as unrecorded capital flight (recorded as errors and omissions in a country's balance of payments), and reached almost $250 billion in 2000.[7] Portfolio investment in overseas markets made up an important component of outflows during this period. Moreover, despite the sharp slowing in total resident outflows since 2001, portfolio outflows have continued to increase, reaching $77 billion in 2003 from $16 billion in 1997. Meanwhile, direct investments abroad by residents of emerging markets increased from $19 billion in 1997 to $38 billion in 2003.

Regional Trends

There are, however, important regional differences observed during these two subperiods. In Asia, the pickup in nonresident private inflows started already in 1999, even as the resident private outflows increased before slowing markedly in 2001. Importantly, net FDI inflows into the region have remained relatively stable despite the crisis, with China being the most preferred destination of FDI among emerging markets, even

[6]However, Latin American countries were the largest recipients of capital inflows in the late 1970s and early 1980s, and they also experienced a large outflow from residents during the period of large inflows from nonresidents that preceded the 1980s debt crisis.

[7]A common definition of "capital flight" is that of funds fleeing across national borders in search of a safe haven (Brown, 1992). Dornbusch (1990) provides a distinction between two types of capital flight. The first is motivated by the fear of discrete losses as a result of expected major changes in the exchange rate, political risk, financial repression, and tax considerations. The second is "low-level capital flight," which is the steady outflow motivated by tax considerations or the inability to diversify a portfolio. See also Gunter (2004) for a discussion on different definitions and views of the capital flight issue.

Table 4.1. Emerging Markets: Balance of Payments Errors and Omissions
(In billions of U.S. dollars)

	1997	1998	1999	2000	2001	2002	2003
Emerging markets	−71.4	−41.0	−48.7	−46.6	−31.6	−4.3	10.2
Africa	−1.8	−1.3	−1.5	−0.5	0.4	−0.2	0.8
Asia	−44.7	−22.9	−23.4	−24.9	−8.7	4.5	7.0
Emerging Europe	−10.1	−13.2	−7.1	−12.4	−9.0	−10.3	−3.9
Middle East	−7.5	2.1	−9.6	−6.0	−7.8	7.6	5.9
Western Hemisphere	−7.4	−5.8	−7.2	−2.8	−6.5	−5.9	0.3

Source: IMF staff estimates based on the *World Economic Outlook*.

replacing the United States as the single largest recipient in 2003. In 2001, NIR accumulation in the region began its exponential growth, following a gradual increase after 1997. Overall, the net result is that short-term official outflows (in the form of NIR) from this region far exceed net private sector imports of capital.

While emerging Asia has been a large net capital exporter for the past six years, emerging Europe has been exporting capital since 2000 and Latin America only (and marginally) in 2003. In emerging Europe, nonresident private inflows slowed sharply in the first subperiod (2000–01), followed by an equally sharp rebound in subsequent years to a historic high in 2003. This rebound was driven by debt and FDI inflows on the back of EU membership expectations, as well as post-crisis recoveries in Russia and Turkey.[8] As in other episodes of sharp rebounds in capital inflows, resident private outflows have also increased in 2003, reaching almost 1997 levels. Meanwhile, nonresident private inflows to Latin America have slowed sharply since 1997, while resident private outflows have also moderated since then. The region's share of FDI, which surpassed that of Asia during the 1997 to 1998 period, slowed significantly since 2002 and has yet to pick up. The region continued to be a net capital importer until 2002, and aggregate NIR declined between 1999 and 2002, as the Argentina and Brazil crises unfolded. Both regions also experienced a marked increase in NIR in 2003, albeit smaller than Asia. In other regions, capital flows to Africa have followed similar trends to emerging markets as a whole, while flows in the Middle East have been somewhat more idiosyncratic (see Box 4.1).

The return to emerging markets of unrecorded resident capital outflows over the past year has been remarkable and has mitigated recorded outflows. Capital flight initially surged to $71 billion in 1997 and continued at high levels until 2000, but subsequently moderated and finally reversed to post a positive $10 billion in 2003. The pattern of errors and omissions is quite volatile and is largely driven by the trends in Asia, which represented almost two-thirds of the total during the Asian financial crisis period, and then became positive in 2002 and 2003 (Table 4.1). Much of this repatriation of residents' funds is said to be driven by the anticipation of an appreciation in the Chinese yuan. In Eastern Europe, errors and omissions outflows have been more volatile, and have largely coincided with the Russia and Turkey crises, although these outflows also slowed significantly in 2003. In Latin America, errors and omissions in the second half of the 1990s were at their highest levels since the second half of the 1980s, corresponding to the series of crises in the region.

An examination of the official sector indicates a dichotomy in the trend of official capi-

[8]Accession countries have remained net capital importers since 1995.

Box 4.1. Capital Flows to Africa and the Middle East

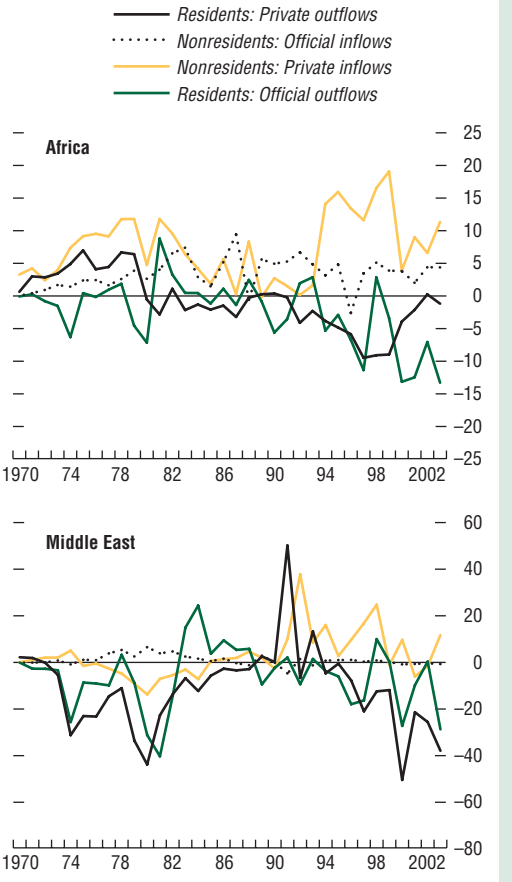
The trends in capital flows to Africa and the Middle East have been distinctly different (see the Figure). In Africa, net outflows in the official sector (nonresident inflows minus resident outflows) have tended to be less than private sector net inflows (nonresident inflows minus resident outflows), making the region a net importer of capital until 1996–97 and then again in 2000–01. Meanwhile, the Middle East has been a net exporter of capital through both the official and private channels.

Capital inflows to both Africa and the Middle East have exhibited different patterns through the 1990s. In Africa, nonresident private inflows—largely in the form of FDI—have become increasingly important for the region, surging sharply through the 1990s before moderating in recent years, in accordance with trends in other emerging markets. These flows have been *concentrated in the oil sector*, with the major oil-exporting countries receiving about half of the FDI flows into the region in 2003. Meanwhile, the sharp surge in portfolio equity flows into Africa—predominantly to South Africa—in the mid-1990s was followed by an equally sharp decline in the second half of the decade. The nascent recovery in 2002 and 2003 has been driven by the strong economic performance in South Africa. Meanwhile, debt flows into Africa—which had been the dominant means of financing in the 1980s—had become less important in the 1990s and have actually declined in recent years. In contrast, nonresident private flows to the Middle East have been somewhat flat since the late 1990s, as FDI flows to the region were among the lowest in emerging markets. Portfolio flows to the region have been unremarkable, while debt inflows have remained the most important source of financing for the most part of the 1990s. Debt flows to this region recovered slightly in 2003, following some retrenchment in the late 1990s and early 2000s.

Similarly, private outflows between the two regions have behaved differently. In Africa, resident private outflows increased through 1997, before slowing to almost negligible amounts in 2003. Interestingly, errors and omissions in the region's balance of payments had become slightly positive in the past year, following some capital flight in the 1990s. In the Middle East, *recorded* resident private outflows increased between 1995 and 2000, peaking at $50 billion in 2000. It has since moderated, with the errors and omissions data also indicating some repatriation of *unrecorded* capital back to the region.

Official flows to Africa have been more important than for the Middle East. Official flows to

Capital Flows to Africa and the Middle East
(In billions of U.S. dollars)



Source: IMF staff estimates based on data from the *World Economic Outlook*.

Africa in the second half of the 1990s were dominated by the IMF's and World Bank's Heavily Indebted Poor Countries (HIPC) Initiative, which led to the decline in debt stocks and debt service. As a result of this initiative, poverty-reducing expenditures were made possible and donor assistance increased. In 2002, gross official flows to 27 HIPC countries rose by 50 percent to almost $12 billion, from $8 billion in 1997. In contrast, nonresident official inflows into the Middle East have been almost negligible since the late 1980s.

tal flows relative to the private sector. While nonresident private capital inflows to emerging markets have been large through the 1990s, official sector flows have been significantly lower, except for minor spikes during periods of crises. In recent years, outflows of medium- to longer-term official sector capital from some regions have been largely offset by inflows of official sector capital to Latin America, from the IMF and other official sources. In contrast, Asia's official sector—led by the crisis-affected countries—is recording outflows in medium-to-longer term official capital, partly attributable to repayments of IMF loans. That said, short-term official capital—built up through favorable post-crisis adjustments in the current account and renewed private capital inflows—has been the main source of capital exports from emerging markets in the last two years.

Trends by Markets

Uncovering trends and turning points in international banking and securities markets is somewhat more difficult, owing to structural changes in the financial services industry as well as data limitations. It is generally acknowledged, however, that bank retrenchment was an important driver of the net exports phenomenon in the first subperiod (2000–01), but that banking flows appear to have returned to more normal levels in the second subperiod (especially in 2003–04; see Box 4.2). A more informative perspective can be obtained from changes in outstanding loans and bonds—rather than from flow figures.

In sharp contrast to the retrenchment in cross-border lending to emerging markets during 1997–2002, lending through the local subsidiaries of foreign banks increased quite rapidly in all regions (Table 4.2). While international bank lending to emerging markets—including both cross-border lending and lending by locally based foreign banks—continued to grow in 1997–2002, domestic bank lending remained stable over the same period. International bank lending to Asia fell after the financial crisis, while lending to Eastern Europe and Latin America actually increased—more than compensating for the slowdown in domestic bank lending.

In contrast to developments in banking markets, domestic bonds outstanding increased at a faster pace than external bonds in 1997–2002, while total bonds outstanding also slowed down relative to the pre-crisis period (1994–96, Table 4.3). The growth of external bonds slowed down to 4 percent (from 12 percent) in Latin America, and to 5 percent (from 33 percent) in Asia in the post-crisis period. In contrast, the growth of external bonds accelerated to 8 percent (from 5 percent) in Eastern Europe. Overall, the data suggest that the bond market has been more resilient for emerging market borrowers than bank lending, during the crisis years and after.

The stock market capitalization of emerging markets as a whole has risen by 25 percent

Table 4.2. Bank Lending in Emerging Markets

	Total Lending, 1996 *(Billions of U.S. dollars)*	Average Annual Growth, 1993–96[1] *(Percent)*	Total Lending, 2002 *(Billions of U.S. dollars)*	Average Annual Growth, 1997–2002 *(Percent)*
East Asia				
Domestic banks	769.5	18.1	876.1	2.4
Local subsidiaries of foreign banks[2]	29.8	15.4	84.9	21.2
Cross-border[3]	282.2	29.0	130.3	–11.6
Latin America				
Domestic banks	563.7	17.3	484.8	–2.7
Local subsidiaries of foreign banks	58.5	28.6	241.7	31.2
Cross-border	199.9	6.2	166.1	–2.8
Eastern Europe				
Domestic banks	242.5	9.4	252.8	0.8
Local subsidiaries of foreign banks	9.6	80.5	96.3	48.5
Cross-border	74.7	1.6	70.4	–0.6
All Emerging Markets				
Domestic banks	1,575.7	12.7	1,613.7	0.4
Local subsidiaries of foreign banks	97.8	24.4	422.8	29.4
Cross-border	556.7	14.5	366.9	–6.5

Sources: Bank for International Settlements (BIS); and IMF staff estimates.
[1]For domestic banks, the average annual growth rates for East Asia and Latin America are from 1990–96 and from 1991–96 for Eastern Europe and all Emerging Markets.
[2]"Local subsidiaries of foreign banks" includes local currency claims on local residents.
[3]"Cross-border" lending refers to external loans and deposits of BIS reporting banks vis-à-vis individual countries.

Table 4.3. Debt Securities in Emerging Market Countries

	Amount Outstanding, 1996 *(Billions of U.S. dollars)*	Average Annual Growth, 1994–96 *(Percent)*	Amount Outstanding, 2002 *(Billions of U.S. dollars)*	Average Annual Growth, 1997–2002 *(Percent)*
Asia[1]				
Domestic debt securities	558	16	1,170	14
Debt securities issued abroad	83	33	116	5
Total	641	19	1,285	13
Latin America[2]				
Domestic debt securities	385	70	401	2
Debt securities issued abroad	190	12	245	4
Total	575	51	646	3
Eastern Europe[3]				
Domestic debt securities	53	13	129	22
Debt securities issued abroad	15	5	18	8
Total	68	11	147	20
All Emerging Markets				
Domestic debt securities	996	28	1,699	10
Debt securities issued abroad	288	16	379	4
Total	**1,284**	**25**	**2,078**	**9**

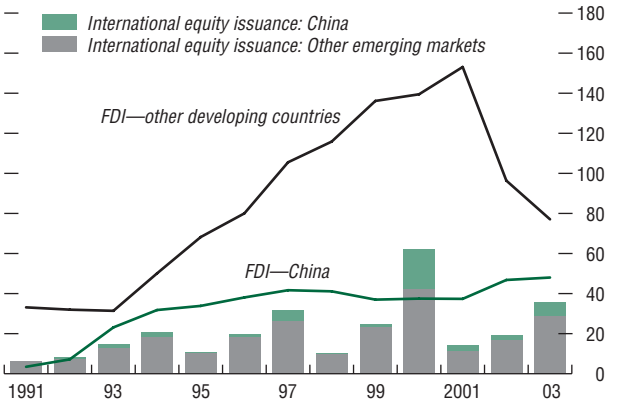
Source: Bank for International Settlements (BIS).
[1]China, India, Korea, Malaysia, Philippines, and Thailand.
[2]Argentina, Brazil, Chile, and Mexico.
[3]Czech Republic, Hungary, and Poland.

between 1996 and 2003, notwithstanding the crises experienced in several regions. However, given the weak trend in net portfolio equity flows into each region, this suggests that much of the improvement in market capitalization is likely attributable to local investor

activity.[9] In turn, international equity issuance collapsed with the string of emerging market crises, as well as the bursting of the global equity bubble in 2000, contributing to reduced capital inflows to emerging markets. That year, China's international initial public offerings (IPOs) dominated emerging market equity issuances, with almost one-third of total emerging market international IPOs. The subsequent recovery in equity issues in the second subperiod was notable for the large international IPOs in China in 2003, totaling almost one-fifth of all emerging market issuances (see Figure 4.3). This follows a drop to 19 percent of all international equity issuance by emerging markets in 2001 and to 13 percent in 2002. By comparison, FDI into China has continued to increase, even as FDI to other developing countries has fallen since 2001.

In sum, emerging markets became net capital exporters in 2000–04 as a result of a sharp decline in inflows and an increase in residents' outflows in 1997–2001, and because of an unprecedented increase in net international reserves in 2002–04. In the next sections, the chapter argues that both of these facts can be interpreted as a result of post-crisis behavior by the private and official sectors, as well as by determinants of investors' global asset allocation decisions.

Figure 4.3. International Equity Issuance and FDI in China vs. All Other Emerging Market Countries
(In billions of U.S. dollars)



Sources: IMF, *World Economic Outlook*; and Dealogic.

The Post-Crisis Balance Sheet Adjustment Process

The general presumption that capital flows from mature to emerging market countries does not hold when a country needs to adjust its international investment position as a result of a financial crisis. The emerging market crises of the late 1990s and of early 2000 were dubbed capital account crises because

[9]With the exception of Korea, which publishes data on the proportion of foreign holdings in local equities, there is little information available for the other emerging markets.

Box 4.2. Data Sources and the Trends in Bank Lending Flows to Emerging Markets

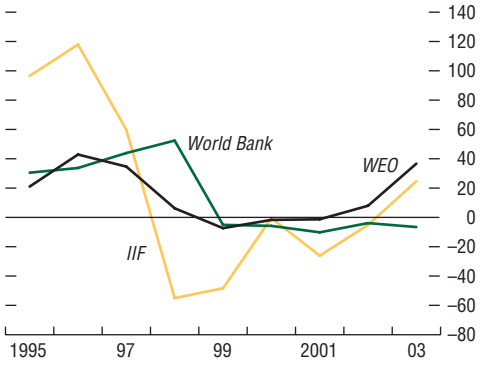
A comparison of the data sourced from the IMF, the World Bank, or the Institute for International Finance (IIF) on *bank lending flows*—specifically, the category "bank loans and other debt (net)"—suggests that the scope of these flows is relevant in determining the pattern and volatility of net flows to emerging markets.[1] This category of data is said to explain more than 80 percent of the differences in observed total inflows over the 1990s, depending on the data source. In the IMF data, bank lending includes items such as loans, trade credits, currency and deposits, and kindred assets and liabilities of banks and other financial institutions. Similarly, the IIF data also include transactions in debt securities, the financing portion of merger and acquisition (M&A) activity, and nongovernment trade finance, albeit by nonresident commercial banks only.

In addition to the composition of that category, IMF lending flows are reported on a net basis—that is, they are net of repayments and repatriations—while the IIF and World Bank do not record deposits of residents in other countries in calculating the flows for "bank loans and other debt (net)." This is in addition to the different sets of countries included in each data series, which manifest some differences in the data.[2]

[1]See Dobson and Hufbauer (2001) for a detailed discussion for the differences in capital flow data across the different sources.

[2]Korea is included only in the IIF set of emerging market countries.

Banking Flows to Emerging Market Countries
(In billions of U.S. dollars)



Sources: IMF, *World Economic Outlook*; World Bank, *Global Development Finance*; Institute of International Finance.

Thus, it is not surprising that the different sources of data show different trends in bank lending flows.

The resulting differences in the data are shown in the Figure. The IMF figures are less volatile than the IIF numbers, presumably due to the net nature of loans and repayments. They show that banks have resumed net lending to emerging markets since 2002, while the World Bank data suggest that net retrenchments are still occurring. This is probably due to the World Bank's exclusion of short-term loans, which picked up substantially in 2003.

they were triggered by sudden reversals of capital inflows and were propagated by financial factors. In this context, this section argues that post-crisis balance sheet adjustments explain, to a large extent, why emerging markets became net capital exporters in 2000–01.

The section characterizes the pattern of adjustment for the main crisis and non-crisis countries following two avenues. First, the aggregate behavior of crisis and non-crisis countries is analyzed, with the second group acting as a benchmark that captures aggregate trends in international capital markets. Second, the section analyzes the pattern of balance sheet adjustments followed by the major crisis countries. In particular, the depth, length, and composition of the external deleveraging process and other balance sheet adjustments are studied, in connection with the size of the original financial shock and the behavior of different segments of the debt markets.

Table 4.4. Capital Flows in Crisis and Non-Crisis Countries
(In billions of U.S. dollars)

	1996	1997	1998	1999	2000	2001	2002	2003
All Emerging Markets								
Nonresidents: private inflows	271.2	310.4	211.4	189.0	188.1	100.2	140.1	225.1
Nonresidents: official inflows	3.7	24.5	44.3	22.8	4.7	32.7	9.9	18.3
Total nonresident flows	**274.9**	**334.9**	**255.7**	**211.8**	**192.8**	**132.9**	**150.0**	**243.4**
(In percent of GDP)	***4.6***	***5.4***	***4.3***	***3.6***	***3.1***	***2.1***	***2.3***	***3.4***
Residents: private outflows	–118.4	–191.3	–148.6	–169.4	–217.6	–97.7	–91.7	–86.1
Residents: official outflows	–82.2	–96.3	–2.8	–37.2	–74.2	–85.2	–148.8	–295.1
Total resident flows	**–200.5**	**–287.6**	**–151.5**	**–206.6**	**–291.9**	**–182.9**	**–240.5**	**–381.1**
(In percent of GDP)	***–3.4***	***–4.6***	***–2.5***	***–3.6***	***–4.6***	***–2.9***	***–3.7***	***–5.3***
Total net flows	**74.4**	**47.3**	**104.2**	**5.2**	**–99.1**	**–49.9**	**–90.5**	**–137.7**
(In percent of GDP)	***1.3***	***0.8***	***1.7***	***0.1***	***–1.6***	***–0.8***	***–1.4***	***–1.9***
Crisis Countries[1]								
Nonresidents: private inflows	139.0	114.9	58.3	50.0	53.7	–26.4	21.1	37.7
Nonresidents: official inflows	–0.3	14.0	17.9	0.8	–5.2	20.0	–7.3	–1.9
Total nonresident flows	**138.8**	**128.9**	**76.2**	**50.8**	**48.6**	**–6.3**	**13.7**	**35.8**
(In percent of GDP)	***6.3***	***5.7***	***4.0***	***3.1***	***2.7***	***–0.4***	***0.9***	***2.0***
Residents: private outflows	–67.0	–73.8	–55.1	–56.8	–72.4	–34.5	–51.7	–46.8
Residents: official outflows	–18.2	9.7	–2.4	–15.6	–10.1	10.4	–19.7	–61.0
Total resident flows	**–85.2**	**–64.1**	**–57.5**	**–72.4**	**–82.5**	**–24.1**	**–71.4**	**–107.8**
(In percent of GDP)	***–3.9***	***–2.9***	***–3.0***	***–4.5***	***–4.6***	***–1.5***	***–4.6***	***–5.9***
Total net flows	**53.6**	**64.8**	**18.7**	**–21.6**	**–33.9**	**–30.4**	**–57.6**	**–72.0**
(In percent of GDP)	***2.4***	***2.9***	***1.0***	***–1.3***	***–1.9***	***–1.8***	***–3.7***	***–3.9***
Non-Crisis Countries								
Nonresidents: private inflows	132.2	195.5	153.0	139.0	134.4	126.6	119.0	187.4
Nonresidents: official inflows	4.0	10.5	26.4	22.0	9.8	12.7	17.3	20.2
Total nonresident flows	**136.2**	**206.0**	**179.5**	**161.0**	**144.2**	**139.3**	**136.3**	**207.6**
(In percent of GDP)	***3.7***	***5.2***	***4.4***	***3.8***	***3.2***	***3.0***	***2.8***	***3.8***
Residents: private outflows	–51.3	–117.6	–93.5	–112.7	–145.2	–63.2	–40.0	–39.3
Residents: official outflows	–64.0	–105.9	–0.4	–21.5	–64.1	–95.6	–129.1	–234.1
Total resident flows	**–115.3**	**–223.5**	**–93.9**	**–134.2**	**–209.4**	**–158.8**	**–169.1**	**–273.4**
(In percent of GDP)	***–3.1***	***–5.6***	***–2.3***	***–3.2***	***–4.6***	***–3.4***	***–3.5***	***–5.1***
Total net flows	**20.9**	**–17.5**	**85.5**	**26.8**	**–65.2**	**–19.5**	**–32.8**	**–65.8**
(In percent of GDP)	***0.6***	***–0.4***	***2.1***	***0.6***	***–1.4***	***–0.4***	***–0.7***	***–1.2***

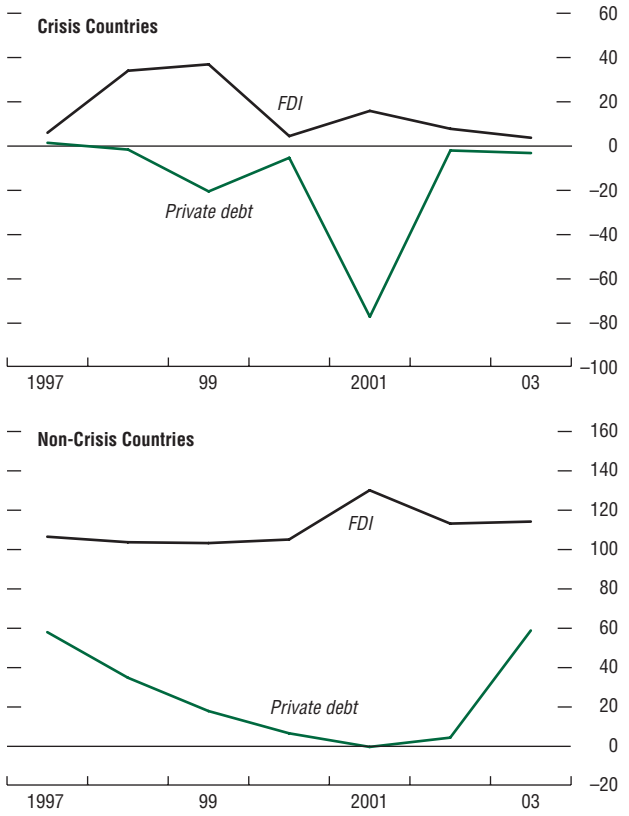
Source: IMF staff estimates based on the *World Economic Outlook*.
[1]Crisis countries include Argentina, Brazil, Indonesia, Malaysia, Philippines, Russia, Thailand, and Turkey.

The Confluence of Overlapping Adjustments

The string of capital account crises in the late 1990s and early 2000s led to strong adjustments in the external position of the affected countries and, to a lesser extent, of the non-crisis countries as well. Although countries that did not experience crises were also net capital exporters during the period under study, crises countries are the driving force behind emerging markets' status as net capital exporters in 2000–04 (see Table 4.4). Despite their smaller size, crisis countries had an average outflow of $48.5 billion during 2000–04, compared to an average outflow of $45.8 billion for the non-crisis countries.[10] Moreover, crisis countries' net outflows are larger in

[10]Crisis countries are Argentina, Brazil, Indonesia, Malaysia, the Philippines, Russia, Thailand, and Turkey. Their aggregate GDP for 2003 was $1.8 trillion, compared to $5.4 trillion in the rest of the emerging market universe in our sample.

Figure 4.4. Capital Flow Trends for Crisis and Non-Crisis Countries
(In billions of U.S. dollars)



Source: IMF staff calculations based on *World Economic Outlook* data.

absolute size in all the years—except for 2000.[11] The fact that non-crisis countries also became net capital exporters, even if to a lesser extent than crisis countries, suggests that the former group also became more cautious in its borrowing behavior and that global factors also had an impact during this subperiod. The outflows from both crisis and non-crisis countries were driven by post-crisis balance sheet adjustments that involved both a reduction in external liabilities—external deleveraging—and an increase in foreign assets.

A notable feature of private flows to emerging markets is the sizable reduction in overall inflows by nonresidents from 1997 to 2001, which was driven mostly by the countries that experienced financial crises during that period (Table 4.4). Nonresident private inflows to all emerging markets declined by $210 billion from their peak in 1997 to their trough in 2001; the corresponding decline in crisis countries is $140 billion, exactly two-thirds of the total amount. Also, private inflows to non-crisis countries are much more stable and resilient than those to crisis countries, and they never become negative.

The behavior of residents' outflows—that is, their accumulation of net foreign assets—is more difficult to gauge, in part because of data limitations. Resident private outflows were above average during most of the period in crisis countries, in particular in 2000. However, these outflows were also above average in 2000 for non-crisis countries. The trends for the non-crisis group, in particular for this component of outflows as well as for official outflows, is dominated by outflows from China.[12] Also, it is likely that attractive risk-adjusted returns in the mature markets have pulled capital away

[11]Private outflows in non-crisis countries are unusually large in 2000; should they have been at average levels, crisis countries would have also dominated the overall result in 2000.

[12]See Gunter (2004) for a thorough discussion of capital flight from China in 1984–2001.

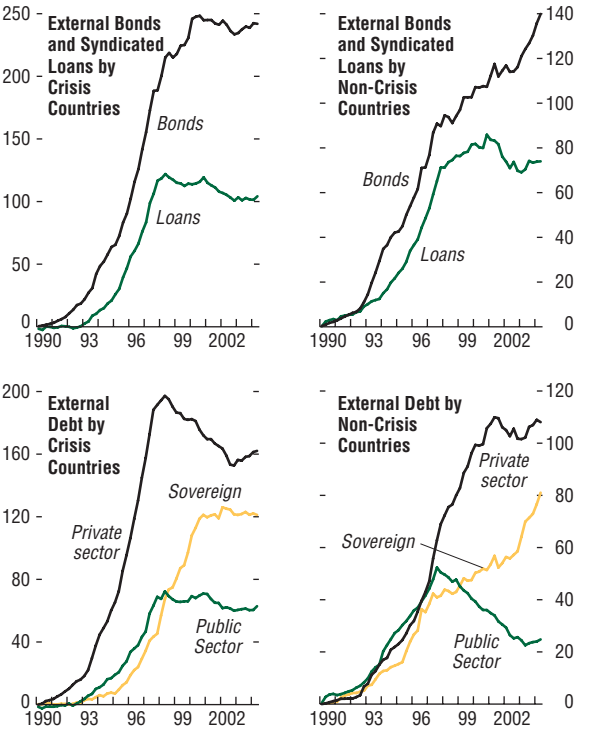
from emerging markets at the peak of the global equity market bubble.

Before turning to the deleveraging process, it is important to note the differential trends in FDI versus debt flows. Whereas FDI flows to non-crisis countries remained resilient throughout 1997–2001, showing an overall tenuous upward trend, FDI in crisis-countries exhibited significant volatility (see Figure 4.4). As noted in the Capital Markets Consultative Group Report, or CMCG (2003, pages 5–6), crisis episodes heighten perceptions of regulatory, taxation, and expropriation risks, thus undermining FDI flows. Moreover, the relatively long time horizon of FDI serves as an automatic stabilizer in response to short-term developments. Indeed, the fact that FDI flows and private debt flows to crisis countries appear to have been moving in opposite directions during 1997–2001 meant that FDI inflows were in part mitigating the impact of debt outflows set off in crisis periods.[13]

The pattern exhibited by bond flows also differed markedly between crisis and non-crisis emerging markets during 1997–2003. Cumulative net bond issuance by crisis countries declined slightly since early 2000, while issuance by non-crisis countries continued to rise steadily (Figure 4.5). The fact that growth in net issuance by non-crisis sovereigns continued unabated throughout the entire sample period suggests that an increase in global risk aversion encouraged investors to become more selective and to move up the credit spectrum, instead of pulling out from all high-risk assets. Sovereign bond issuance was also more resilient than corporate bond issuance.

In contrast with FDI and bond flows, the swings in bank lending appear to have been more synchronized between crisis and non-crisis countries. As noted in the stylized facts section, cross-border lending fell in all regions

Figure 4.5. Cumulative Net External Debt Issuance: Crisis vs. Non-Crisis Countries
(In billions of U.S. dollars)



Sources: Dealogic; and IMF staff estimates.

[13]Froot and Stein (1991) note that sharp depreciations make domestic assets very attractive in post-crisis depreciation episodes, which could be manifested in a negative correlation between FDI and debt flows.

during 1997–2002. As discussed in IMF (2003c), the retrenchment in commercial bank lending was associated with weak balance sheets and earnings, greater risk awareness, consolidation, and an ongoing shift in business strategies.[14] Moreover, the cumulative net issuance of syndicated loans by all emerging markets countries was virtually flat during 1998–2003, with a brief recovery in late 2000 led by the technology, media, and telecommunications (TMT) sector (Figure 4.5). The fact that there was almost no new net syndicated loan issuance from crisis countries throughout the entire sample period suggests that the Asian crisis may have triggered a structural shift in the syndicated loans market for emerging markets, with both global factors and crises in Brazil and Argentina contributing as well.[15]

The Depth and Length of Post-Crisis External Deleveraging

The process of external deleveraging—the post-crisis reduction of external liabilities—is thus a key determinant of the fact that emerging markets became net capital exporters in 2000–01. The process started in 1997 in some Asian countries and is still ongoing in some of them. It was reinforced by other crises in major emerging markets thereafter. The fact that there was a confluence of adjustment processes from different crises is related to the issue of how long and profound the adjustments had to be. Thus, the determinants of the depth and length of this deleveraging are analyzed in this section.

The post-crisis deleveraging process depends on a number factors, including individual countries' *financial market conditions*, the extent of *official support* received from international financial institutions (IFIs), and local *economic fundamentals and policies*.[16] The focus here is mostly on financial conditions, which are particularly relevant because they were among the main causes and propagation mechanisms of the crises. Indeed, the hallmark of recent emerging market crises has been a sudden stop or reversal of capital inflows, generally associated with "twin" banking and balance of payments crises.[17] The sudden stop triggers a sharp fall in asset prices (including the exchange rate) and a collapse in economic activity. The persistence of the effects of the initial shock depends on the specific financial market initially hit by the sudden stop. In principle, an associated banking crisis may give rise to a more protracted adjustment given the inherent procyclicality of bank credit. This procyclicality is, in turn, driven by the fall in asset prices that reduces the value of collateral and forces a further (endogenous) reduction in foreign liabilities.[18]

The size of the initial sudden stop and the persistence in the decline in GDP, associated with the fall in asset prices, are illustrated in Figure 4.6 for a sample of crisis countries. The mechanism described above is particularly evi-

[14]Ferrucci and others (2004) show that factors specific to creditor countries ("push" factors) and those specific to debtor countries ("pull" factors) are equally important in explaining bank flows to emerging markets.

[15] During 1994–97, emerging Asia was the largest recipient of syndicated loan flows in the emerging markets universe. Also, a large share of syndicated loan issuance by emerging market entities was from the TMT sector and also driven by M&A activity. See IMF (2001).

[16]The focus here is on the financial aspects of the adjustment. Reference to macroeconomic conditions and/or IMF programs is made only when it may be directly relevant to financial market developments and conditions. For a thorough discussion of macroeconomic policies and IMF programs in capital account crises, see Ghosh and others (2002).

[17]See Calvo (1998) and Kaminsky and Reinhart (1999).

[18]Kiyotaki and Moore (1997) show how the existence of collateral constraints amplifies the impact of an exogenous shock through declines in the value of collateral pledged by borrowers in order to access imperfect credit markets. Christiano, Gust, and Roldos (2002) extend their analysis to a small open economy and quantify the effects on external deleveraging in a prototypical Asian crisis country.

dent for the Asian countries—with the exception of the Philippines. A rather large capital outflow, amounting to 20–25 percent of quarterly GDP in Indonesia and Thailand and 15 percent of GDP in Korea, was followed by a more protracted decline in quarterly GDP.[19] Moreover, the decline in stock prices accompanied further capital outflows, as corporates were forced to deleverage by even larger amounts over time. Stock market indices rebounded in late 1999–early 2000, as a result of spillovers of the global TMT bubble, while real estate price indices suffered a larger and much more persistent decline. The pattern of adjustment was somewhat different in the other crisis countries. In Russia and Turkey, sizable initial outflows had a lesser impact on GDP and asset prices, owing to a reduced role of banks in the financial intermediation process. In Brazil, smaller outflows and a resilient banking system resulted in a smaller contraction in GDP and asset prices.

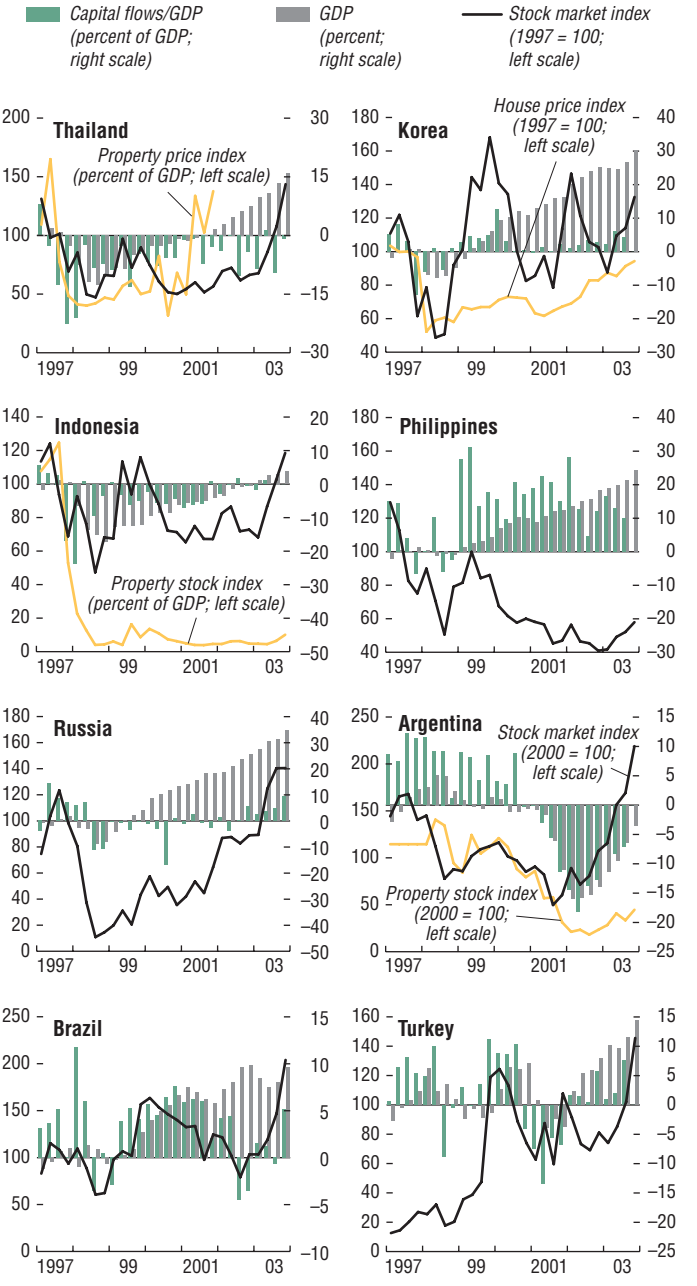
The length of the deleveraging process can be measured as the peak-to-trough in the total external debt stock of a particular country.[20] Based on the length of deleveraging in the financial market, the sample of crisis countries can be broken down into two groups: *"long-adjustment"* countries (over two years), including Indonesia, Korea, Malaysia, Philippines, Russia, and Thailand; and *"short-adjustment"* countries (less than two years), including Brazil and Turkey (see Table 4.5).[21]

[19]The persistence of the negative effect of the financial crisis on GDP is best described by the time it took for quarterly GDP to recover to its pre-crisis level: 15 quarters in Thailand, 20 in Indonesia, and only 6 quarters in Korea.

[20]Note that the "peak" may not always coincide with the currency devaluation or debt default that follows the pullout of external capital. Instead it may either precede or lag the latter by a few months. Also, for the Philippines, which did not experience a pronounced decline in total external debt stock (unlike other Asian emerging markets), the peak-to-trough in Table 4.5 refers to the stock of foreign bank loans.

[21]Malaysia's external debt was much lower than other "long adjustment" countries, when measured relative to GDP (see Ghosh and others, 2002).

Figure 4.6. Selected Emerging Market Crisis Countries: Sudden Stops, Asset Prices, and GDP



Sources: IMF, *International Financial Statistics*; Bloomberg L.P.; CEIC database; and Standard & Poor's, Emerging Markets Database.

Table 4.5. The Post-Crisis External Debt Adjustment in Selected Emerging Markets

(In billions of U.S. dollars, unless otherwise noted)

Country	External Debt Financing	External Debt Structure at the Peak (Percent)	Peak	Trough	Change	Percent Change	Length of Decline in Private Financing (Number of years)
Crisis Countries/Long Adjustment							
Thailand (1997:Q2–2003:Q2)	Private financing	***92***	107	26	−81	−76	**5+**
	Official financing	*8*	9	16	7	71	
	Total		116	42	−75	−64	
Indonesia (1997:Q4–2003:Q2)	Private financing	***63***	69	29	−39	−57	**5+**
	Official financing	*37*	40	59	19	46	
	Total		109	88	−21	−19	
Korea (1997:Q2–2001:Q4)	Private financing	***97***	149	93	−56	−38	**4.5**
	Official financing	*3*	5	16	11	214	
	Total		154	108	−46	−30	
Russia (1998:Q3–2002:Q3)	Private financing	***63***	71	45	−26	−36	**4.0**
	Official financing	*37*	42	16	−26	−61	
	Total		113	61	−52	−46	
Malaysia (1997:Q3–2000:Q3)	Private financing	***92***	42	29	−12	−30	**3.0**
	Official financing	*8*	4	4	0.4	12	
	Total		45	33	−11.9	−26	
Philippines (1997:Q4–2000:Q3)	Private financing	**59**	25	28	3	14	**2.75**
	Official financing	*41*	17	21	4	22	
	Total		42	50	7	17	
Crisis Countries/Short Adjustment							
Argentina (2001:Q2–2003:Q2)	Private financing	**84**	133	117	−16	−12	**2+**
	Official financing	*16*	26	33	6	24	
	Total		159	149	−10	−6	
Brazil (1998:Q2–1999:Q3)	Private financing	**91**	180	137	−43	−24	**1.25**
	Official financing	*9*	19	28	10	52	
	Total		199	166	−33	−17	
Turkey (2000:Q4–2001:Q4)	Private financing	**84**	65	54	−12	−18	**1.0**
	Official financing	*16*	12	23	11	91	
	Total		77	77	−1	−1	

Source: Joint BIS-IMF-OECD-WB external debt database.

Notes:

"Peak" refers to the peak in the stock of foreign debt (bank loans and debt securities issued abroad. and "trough" refers to the inflection point. The exact dates for each country are presented in the parentheses. For Argentina, Thailand, and Indonesia, the 'trough' is the end of the sample period.

Bank loans data are from the BIS location banking statistics, which are based on the country of residence of reporting banks.

Debt securities issued abroad include Brady bonds.

These figures may sometimes differ from those obtained from local sources due to differences in methodology. Trade credits are not included.

The length of the adjustment period is positively correlated with the depth of the decline of external debt, and both the depth and length of the adjustment are related in turn to the size of the initial shock, the financial market most affected by the crisis, and the level of development of alternative financial markets. Countries that suffered a large sudden stop (i.e., more than 10 percent of GDP) and had a major banking crisis experienced a deleveraging process that lasted from three (Malaysia) to five years (Indonesia and Thailand). Countries displaying a large share of securitized external debt recovered relatively faster than those issuing primarily bank debt. Finally, countries where domestic bond markets were relatively underdeveloped (Thailand, Indonesia, and Russia) and hence could not serve as an alternative source of funding for local banks and corporates exhibited longer periods of adjustment.

In particular, the length—and efficiency—of the deleveraging process depends on the speed of the banking sector cleanup process

Box 4.3. Distressed Debt Markets: Recent Experiences in Mature and Emerging Markets

Well-functioning distressed debt markets are an essential ingredient for an efficient corporate sector deleveraging process, and they can reduce the depth and length of such a process following a crisis. While many analysts stress the legal and cultural aspects of corporate restructuring, there are capital market features that are critical to the efficiency of the process. In particular, a secondary market for trading (and pricing) of nonperforming loans, the existence of a debtor-in-possession (DIP) facility under bankruptcy proceedings, and a market for exit finance are essential to an efficient restructuring. The investor base of these markets has grown, especially in the United States after the Savings and Loan crisis in the 1980s, and comprises two types of investors—speculators who buy debt only for trading purposes and corporate turnaround/private equity specialists who invest in "fixable" companies to restructure the balance sheet.

Distressed debt investors realize the lengthy periods of time that they may be locked into situations with significant market-to-market risk and their investments require a special kind of risk capital that is not benchmarked to any index. These investors typically invest in issues that trade significantly below par, roughly in the 20 to 40 cent range. Distressed funds have provided sizable capital to mature markets; in fact, the U.S. distressed debt market, including defaulted debt, is estimated at $100 billion to $150 billion, or about a quarter of the U.S. high-yield market of roughly $600 billion.

Although mature markets (especially the United States) have attracted risk capital since 1980, only during the early 1990s, in the aftermath of the Brady plan, did emerging markets begin to attract distressed debt investors. This box illustrates how risk capital continues to facilitate corporate restructuring in the mature markets and discusses the increasing role of distressed debt investors in emerging markets during post-crisis periods, including balance sheet adjustments in corporate and financial sectors.

Mature Markets

United States and Europe

The legal framework for corporate restructurings is instrumental in the structure and evolution of a distressed debt market and varies significantly on either side of the Atlantic. Some analysts agree that the U.S. distressed debt market under the umbrella of Chapter 11 legislation has allowed for a superior and faster restructuring than in other jurisdictions. In addition, the sizable risk-capital available in this market allows for unparalleled and innovative capital market structures. Debtors filing for bankruptcy in the United States, in contrast to Europe, continue to have access to credit via the DIP facility under bankruptcy (or, Chapter 11) proceedings. The DIP facility offers a number of legal inducements, including, in exceptional cases, super-priority status to the new lenders, giving them a first call over collateral assets. However, other analysts suggest that the easy access to new funding and suspension of some obligations during bankruptcy often encourages distressed corporates to file for Chapter 11. In Europe, banks remain the primary source for corporate funding and laws have been designed to protect the banking system. European policymakers view that companies in U.S. bankruptcy proceedings often continue to incur losses at the expense of the creditors and are forced into liquidation anyway; in fact, about 30 percent of all companies that have reorganized under U.S. Chapter 11 go into liquidation, merge in distress, or file for bankruptcy, again, within five years (LoPucki and Kalin, 2000).

Both frameworks have their pros and cons, as they are designed to protect different sets of creditors. However, with the globalization of capital markets and the development of new asset classes (subordinate debt and asset-backed securities), analysts estimate that legal frameworks and market structures will begin to converge.

Japan

The market for corporate restructuring (i.e., "turn-around" business) is presently in its

Box 4.3 *(concluded)*

infancy and remains illiquid, especially for a mature market. Market participants suggest banks view their claims (in particular nonperforming loans) as perpetual debt and book them in line with optimistic valuations of the underlying collateral, often as high as 60 cents to 80 cents on the dollar. Distressed debt investors presently view their investments as equity stakes that are valued in terms of cash flows; their bids for nonperforming loans usually range from about 20 cents to 35 cents on the dollar. The asymmetry in the two valuation methods is likely to result in fewer nonperforming loans to be cleared by the market, especially with collateral prices increasing on the back of an economic recovery in Japan (Ohashi and Singh, 2004). However, recent transactions, including Shinsei's turnaround and successful initial public offering by a distressed debt investor, continues to buoy the incipient distressed debt market.

Emerging Markets

Although in the mid- to late 1980s, intermarket dealers and major international banks traded in defaulted sovereign loans, high-net-worth individuals from emerging market countries were some of the first investors that had an appetite for distressed debt. Major international banks that still had commercial operations in Latin America were limited by regulations to trade in external debt that made it difficult to unwind their exposure. In addition, the accounting regulations were conducive to allowing banks to provision at their discretion.[1] The concentration of a country's debt with a few large banks—and not distressed debt investors—provided support to the debt prices in early to mid-1980s (Fernandez and Ozler, 1991). Only toward the late 1980s, high-net-worth individuals started repatriating their funds buying distressed assets, which in turn triggered a steady recovery in these assets. The balance between banks, the original holders, and traders had shifted over time. Subsequently the larger banks, who initially held Brady bond positions in minimum lots of $250 million, sold their holdings to institutional investors and the retail sector in smaller denominations.

The post Brady plan era was the first time that distressed assets attracted sizable risk capital. Distressed debt investors were instrumental in facilitating and concluding the Brady agreements (Collyns and El Erian, 1993). Distressed debt investors have continued to provide a "floor" to emerging market debt prices by investing at sub-par prices. The increasing role of distressed debt traders continues to gain importance, as was evident from the recent distressed episodes, including Ukraine (2000), Moldova (2002), Brazil (2002), Uruguay (2003) and in the Asian (1999–present) and Argentine corporate workouts (2002–present).

Unlike the 1980s, the Asian crisis sparked an intrinsic desire for risk capital that provided a floor to distressed asset prices. In a region where foreign investors historically were prevented from holding a majority interest, the crisis altered the cultural inhibitions toward them. However, corporate restructuring required immediate reform—a novelty that was initially opposed by the local entrepreneurs. By 1999, just two years after the crisis, the regional nonperforming loans attracted distressed debt investors. With the bursting of the TMT bubble and the equity slowdown in 2001, buy-side firms also showed interest in distressed assets in the region and were soon joined by the regional banks that had recapitalized and were investing in nonperforming loans along with hedge funds. About six years after the crisis, at the end of 2003, about a trillion dollars of distressed loans had been removed from the banking sector (Ernst and Young, 2004).

Recent experience from Asia suggests that although asset management corporations

[1]The guidelines for the Federal Accounting Standards Board (FASB) allowed that restructured debt, under certain conditions, could be carried on the books at the original face value even though it traded at submarket interest rates—an important regulatory niche exploited by many banks when undertaking debt-conversion and/or the Brady bonds with submarket interest rates.

(AMCs) have removed a substantial amount of distressed corporate assets from the banking system, there is insufficient evidence to suggest if these restructured loans are resolved. Market participants and analysts suggest that "resolution—in its purest form—is realized only when the nonperforming loans is in some way converted to cash" (e.g., Fung and others, 2004). Only the Korean and Japanese AMCs (Korean Asset Management Company and Reconstruction and Collection Corporation, respectively) and, to some extent, Malaysia's Danaharta, have resorted to sizable recovery in the form of cash.

Market participants acknowledge that a sound legal infrastructure along with governmental support for efficient market resolution and realistic asset pricing were fundamental factors that attracted cash from distressed investors. Recent experience with Argentine corporate and quasi-sovereign workouts (e.g., City of Buenos Aires) also suggests that swift restructurings with corporate creditors, in cash or equity, is possible even if the sovereign is stalled in protracted negotiations. Investors with risk capital, if not crowded out by the official sector, will likely cushion balance sheet adjustments due to interest rate or commodity price shocks in the near future.

and the existence of a relatively well-functioning distressed debt market. Market participants have noted that the asset management corporations (AMCs) set up in the aftermath of the Asian crisis were efficient in carving out nonperforming loans from the banking system, but that they were slow in disposing of the assets. Although distressed debt markets are a relatively new development even in mature markets, analysts have noted that Korea has made substantial progress in this area and this has contributed to a smoother and more efficient adjustment process (see Box 4.3). Illiquid asset markets in other crisis countries have allowed the pre-crisis owners of small and mid-size Asian corporates to deleverage by buying back their debts at extremely low prices, while retaining corporate control. Market participants have also noted that the persistence of weak corporate governance, combined with insufficient structural reforms to improve investment returns, contributes to the persistence of savings-investment gaps and the fact that local entrepreneurs prefer to export their capital rather than invest it locally.

Finally, the external deleveraging process was accompanied by a simultaneous increase in domestic currency–denominated debt, resulting in marked changes in the liability structure of both crisis and non-crisis countries. The shift from foreign to local financing was driven by several factors: first, the need to reduce balance sheet mismatches; and, second, by supportive expansionary monetary policies in many mature and emerging market countries that have kept interest rates at historic lows over the past five years. Examples of the interaction of these balance sheet and macroeconomic factors are provided in the next section.

Balance Sheet Adjustments and Macroeconomic Stability

The external deleveraging process was an important component of the balance sheet adjustment in crisis countries. However, as noted above, the private sector also increased the accumulation of net foreign assets as part of such adjustment—and, perhaps, even before the crises. Adjustments in both sides of the balance sheet underlie the process that led emerging markets to become net capital exporters. However, the achievement of macroeconomic stability has also contributed to a more resilient balance sheet picture in these countries.

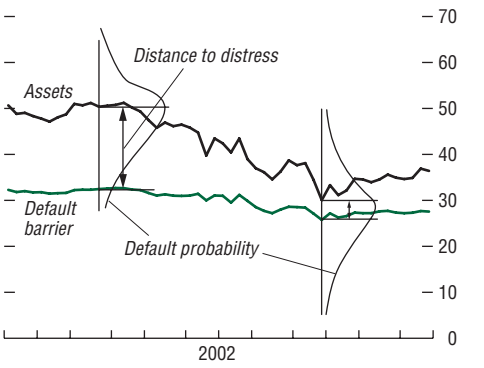
Box 4.4. Distance to Distress as a Measure of Balance Sheet Vulnerability

The distance to distress is a default risk indicator, based on the contingent claims analysis, that captures corporate balance sheet vulnerabilities. This indicator essentially combines asset value, leverage, and business risk into one single measure of default risk. In the case of a firm financed with both debt and equity, this measure is equal to the implied market value of the firm's assets minus the distress barrier, scaled by the implied asset volatility. The result produces the number of standard deviations (in terms of asset values) that the firm is from distress, which can also be used to derive a default probability. In other words, the higher the asset value, the lower the leverage and the asset volatility, the larger the distance to distress (i.e., the farther away the firm is from distress and the less likely the firm is to default).

The distance to distress is a useful measure of balance sheet vulnerability, not just for firm-level analysis, but also for sectoral analysis (see Gray, Merton, and Bodie, 2003). This is shown in the Figure derived from an example on the utility sector in Brazil (see Gapen and others, 2004). The market value of assets in that sector follows a stochastic path, and when there is a negative shock to the sector, its asset value may fall relative to its distress barrier. Therefore, the distance to distress shrinks, indicating the sector is moving closer to default. This became rather clear when the Brazilian utility sector was exposed to the financial turbulence of the summer of 2002.

The utility industry in Brazil operates primarily in the local market, with revenues collected in local currency and some liabilities denominated in foreign currency. It raised large amounts of funds during 1998–99 in dollar loans largely related to privatization efforts. The subsequent devaluations in the currency in 1999 and 2002 along with the rationing of power in 2001 resulted in balance sheet weaknesses. Prior to the financial market volatility, the difference between the asset value and the distress barrier in the sector reached $18 billion and the asset volatility was at 22 percent, which yielded a distance to distress of about 2 standard deviations in March 2002. The subsequent mapping of this distance to distress into probability of default indicated that the aggregated industry had a one-year-ahead probability of default equal to 5 percent.

Brazil Utility Sector: Assets Relative to Distress Barrier
(In billions of reais)



The turbulence in Brazilian financial markets during the summer of 2002 took its toll on the balance sheet of the sector, which has recovered thereafter. As illustrated in the Figure, the distance to distress in the sector narrowed steadily and hit its trough in September 2002. At that time, the difference between the asset value and the distress barrier declined by $15 billion because of the slump in the market value of the assets, while the implied asset volatility surged to 40 percent as a result of the currency depreciation. Therefore, the distance to distress for the sector dropped to a bottom level of 0.2, which was equivalent to a one-year-ahead probability of default of around 30 percent for the sector as a whole. Following the successful political transition, the utility sector has recovered—together with the rest of the Brazilian corporate sector (see Figure 4.7 in text).

Hence, the distance to distress has proven to be a powerful measure to gauge corporate balance sheet vulnerability. The analysis has also shown to be rather useful in predicting bank ratings downgrades (Chan-Lau, Jobert, and Kong, 2004).

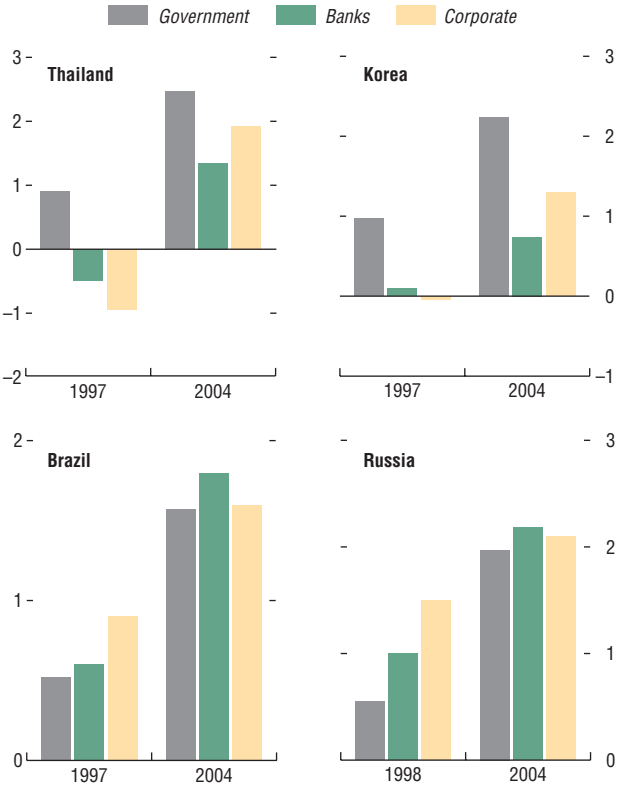
An efficient way to summarize the impact of balance sheet adjustments and improved macroeconomic stability on the financial strength of different sectors of the economy is through the use of the "distance to distress" measure. Distance to distress is a measure of assets minus liabilities, divided by the volatility of assets. While the value and volatility of assets are obtained from market values, the measure of liabilities is the book value of short-term debt plus one-half of long-term debt (see Box 4.4). Hence, an increase in the distance to distress signals a combination of an increase in assets, and a decrease in liabilities (or in the share of short-term debt), as well as a reduction in the volatility of the value of assets—including exchange rates.

A comparison of the distance to distress indicator during and after crises for a sample of crisis countries illustrates the degree of balance sheet (and macro) adjustment achieved by these countries (see Figure 4.7). The cases of Thailand and Korea show that the government and the corporate sectors have improved their balance sheets substantially, while banking sectors have lagged behind in relative terms. In contrast, Brazil and Russia show major improvements in the government and banking sectors, but the corporate sector lags behind in relative terms. In all cases, a higher value of assets relative to liabilities is boosted by a decline in the volatility of assets—attributed mostly to a decline in exchange rate volatility.

Accumulation of Reserves and Reliance on Local Markets

The severity of crises and associated adjustments, combined with the fact that almost all systemically important emerging markets suffered some sort of crisis during the last decade, has increased policymakers' risk aversion, and led many countries (both crisis and non-crisis) to self-insure against future capital account crises. These efforts to self-insure are one of the factors behind the large net inter-

Figure 4.7. Distance to Distress in Selected Emerging Market Crisis Countries



Source: Moody's/MfRisk estimates.

national reserves accumulation during 2002–04, and explain, to some extent, why emerging markets continue to be net capital exporters even after relatively sizable adjustments in the private sector.

The increase in reserves is undoubtedly a result of efforts to prevent exchange rate appreciation and pursue export-led growth policies, especially during the resumption of private nonresident inflows in 2003–04. However, some analysts have argued that self-insurance vis-à-vis financial crises continues to be a relevant consideration in many policymakers' objective function, especially in the absence of adequate market instruments for such purpose. Indeed, both motivations can be viewed as complementary: the exchange rate is managed to stimulate exports and discourage imports, thereby allowing for the accumulation of net foreign assets (and a reduction in external vulnerabilities). However, too much reserve accumulation could also be destabilizing, as it may lead to excess liquidity and quasi-fiscal deficits—as a result of costly sterilization efforts—as well as encourage poor lending decisions. This section follows up the analysis in IMF (2003b), which stresses macroeconomic aspects of net international reserves accumulation—including efforts to maintain competitiveness and its implications for inflation and macroeconomic stability—and assesses the plausibility of the self-insurance argument in relation to other self-insurance mechanisms—in particular the development of local financial markets.

Central banks usually attempt to restore reserves to pre-crisis levels, but in the current adjustment period they have gone beyond such levels. For some countries, including Indonesia, Malaysia, and Korea, pre-crisis reserve levels were restored in less than two years. Reserve levels have exceeded not only their pre-crisis levels, but also several "rule-of-thumb" ratios used to measure their adequacy—such as the one that states that net international reserves should cover one year of external debt amortization (Table 4.6). These developments are even more significant given the adoption of more flexible exchange rate regimes in many of these countries.

Reserve levels are subject to considerable debate even now, when most empirical studies suggest current levels may be excessive. An optimal level of reserves should trade off the opportunity costs of holding reserves versus the macroeconomic costs incurred in the absence of reserves. Recent empirical studies suggest that starting in 2002 countries accumulated reserves well beyond the levels justified by economic fundamentals.[22] These studies have found that international reserves are correlated with indicators of economic size, capital account vulnerability (financial openness and the ratio of broad money to GDP), and current account vulnerability (ratio of imports to GDP and export volatility). Current account vulnerabilities appear to be more important in explaining reserve levels than capital account vulnerabilities, and opportunity costs do not appear to be important determinants of reserve levels. It is unclear, however, whether capital account vulnerabilities—or more precisely the benefits of insuring against them—are adequately captured in the specified regressions.

Opportunity and sterilization costs are relatively low and they have not deterred countries from building up substantial reserve levels. Emerging market countries' borrowing costs exceed the yields earned on mature market government securities, the assets most commonly held as reserves by central banks.[23] Since bond spreads are positive, countries accumulating reserves are paying an opportunity cost, as they could alternatively use the reserves to repay external debt rather than

[22]See Edison (2003) and references therein for further details.
[23]See McCauley and Fung (2003) for recent trends in reserves management and composition.

Table 4.6. Reserves and Related Ratios for Selected Countries as of End-2003

	Reserves (Billions of U.S. dollars)			Reserves/GDP (In percent)	Spreads* Reserves/GDP[2]	Reserves/ Short-Term Debt	Reserves/Bank Deposits[3] (In percent)
	1996	2003	Most recent[1]				
Asia							
China	107.0	408.2	463.1	28.9	0.17	14.2	n.a.
India	20.2	98.9	115.4	17.2	n.a.	6.4	31.1
Indonesia	18.3	36.2	34.9	17.4	n.a.	1.5	34.4
Korea	34.0	155.3	166.5	25.7	0.19	3.4	34.7
Malaysia	27.0	44.5	53.6	43.2	0.43	5.4	46.2
Philippines	10.0	13.5	13.4	17.0	0.70	1.6	34.5
Thailand	38.7	42.1	44.2	29.5	0.20	2.1	32.0
Eastern Europe							
Czech Republic	12.4	26.8	26.4	31.3	n.a.	4.7	42.3
Hungary	9.7	12.7	13.1	15.4	0.04	1.3	35.0
Poland	17.8	32.6	35.3	15.6	0.12	1.7	40.8
Russia	11.3	73.2	81.8	16.9	0.43	3.1	77.4
Turkey	16.4	34.0	33.4	14.2	0.44	1.8	60.4
Latin America							
Argentina	18.1	14.2	16.2	10.9	5.98	1.2	47.5
Brazil	58.3	49.1	50.4	9.9	0.45	1.8	34.9
Chile	15.0	15.8	16.1	22.0	0.20	1.5	53.5
Colombia	9.8	10.8	11.2	13.9	0.59	3.8	56.8
Mexico	19.4	59.0	60.3	9.4	0.19	2.2	39.3
Venezuela, Rep. Bol.	11.8	16.0	18.9	18.9	1.11	5.1	103.4

Sources: IMF staff estimates based on *International Financial Statistics;* Bank for International Settlements; and J.P. Morgan.
[1]As of May 2004 for all countries, except for Indonesia (as of June 2004).
[2]EMBI Global spreads as of December 31, 2003.
[3]Bank deposits include demand, time, savings, and foreign currency deposits.

invest in lower interest rate securities.[24] Illustrative calculations of this opportunity cost in Table 4.6 suggest that it seldom exceeds 0.5 percent of GDP. However, since NIR increases are often sterilized, the relevant marginal cost may be the domestic interest rate paid in such operations. This is likely to increase the opportunity costs of reserve holdings.[25] For instance, in Brazil the spread between the three-month domestic interest rate and the three-month U.S. treasury bill was 14½ percent or the equivalent to a cost of 1.4 percent of GDP for sterilizing an increase of reserves equal to 10 percent of GDP in the absence of an exchange rate depreciation. Central banks normally do not mark to market their NIR holdings, but the opportunity cost should also include potential losses due to exchange rate and interest rate fluctuations. As most NIR are held in U.S. dollar assets, these are likely to be large in the event of a U.S. dollar depreciation.

These results suggest that the precautionary (or self-insurance) and other motives for holding reserves may outweigh the financial costs of accumulating reserves. Reserves play an important role as a first line of defense against sudden stops in capital inflows (Tweedie, 2000). Moreover, when a financial crisis actually strikes, costs are substantial; holding net international reserves helps to deflect these costs. To the balance sheet adjustment costs discussed in the previous section, sharp declines in economic activity, increased unem-

[24]This argument would have to be qualified by the fact that net international reserves are usually of lower duration than external debt, and that a liquidity premium has to be paid for the liquidity service that they provide.

[25]However, in some cases, such as China currently, yields on U.S. securities exceed the interest rate paid on bills sold by the People's Bank of China.

ployment, and the inability of banks and financial markets to function effectively, among other things, would have to be added. Some analysts estimate that the net cost to Asian governments of the banking crises of 1997–98 ranged from 23 percent of GDP in Korea to 52 percent in Indonesia (Hoelscher and Quintyn, 2003). Others estimate the cost of the crises as the output loss relative to potential GDP (IMF, 2000). In this case, the maximum cost for a typical emerging market with a slow recovery from crisis would be 18.9 percent of GDP. It is likely, however, that central banks would want to be ready to have the necessary cash flow to finance—in a noninflationary way—the transfers needed to prevent the output costs. If this is the case, the stock of reserves needed to self-insure vis-à-vis a crisis would be closer to the first estimates. Other authors have suggested that since most balance-of-payment crises are associated with banking crises, reserves should cover a nontrivial fraction of bank deposits (in particular, if they are dollarized): in most emerging markets, NIR cover more than one-third of bank deposits, a relatively safe coverage.[26,27]

Smoothing capital flow volatility and preventing associated balance-of-payment and banking crises appear to be important determinants of a desirable level of reserves, especially when monetary authorities' preferences are characterized by "loss aversion." If a crisis increases the volatility of shocks and/or the authorities' loss aversion, it will greatly increase the demand for international reserves.[28] Using a framework that incorporates these features, Aizenman and Marion (2003) are able to rationalize, to a large extent, the recent accumulation of NIR in Asian countries.[29] They show that, in the aftermath of crisis, countries that face higher perceived sovereign risks and costs of higher fiscal liabilities—including for preserving financial stability—opt to increase their demand for reserves. The authors also show that higher discount rates, political instability, or corruption could explain why other countries decide to hold smaller precautionary NIR balances.

In this vein, large holdings of international reserves have an important role in reducing the likelihood of a financial crises. Macroeconometric models of currency crisis, such as the IMF's two core early warning system models, have shown that higher ratios of NIR to short-term debt, which ensure that countries can meet external cash flow needs and avoid rollover problems, reduce the probability that a country experiences a *currency* crisis.[30] Similarly, Chan-Lau (2004) shows that a higher level of reserves reduces the probability of a *debt* crisis.[31] In particular, the crisis probability is affected not only by the level of reserves but also by their volatility since for the same level of reserves, higher volatility makes liquidity problems more likely. More important, Figure 4.8 shows that further reductions in default probabilities require

[26]Blejer and Schumacher (1998) suggest that the role of central banks as guarantors of financial stability, and their commitment to prevent systemic banking crises, should be explicitly taken into account in the assessment of the vulnerability of central bank balance sheets.

[27]Bank runs in Uruguay affected around 50 percent of deposits, but this was due to the (regional) offshore center nature of the banking system and the close connection to Argentina.

[28]Loss aversion refers to the tendency of agents to be more sensitive to negative shocks that reduce their consumption than to positive ones. The optimal level of reserves in the case of increased volatility and loss aversion is hence larger than the level needed to smooth short-term, high-frequency fluctuations in exchange rates. On the latter, see BIS (2004) and Hviding, Nowak, and Ricci (2004).

[29]However, a large enough degree of loss aversion could rationalize *any* level of reserves. It is questionable whether such high levels of risk aversion would be realistic.

[30]See IMF (2002).

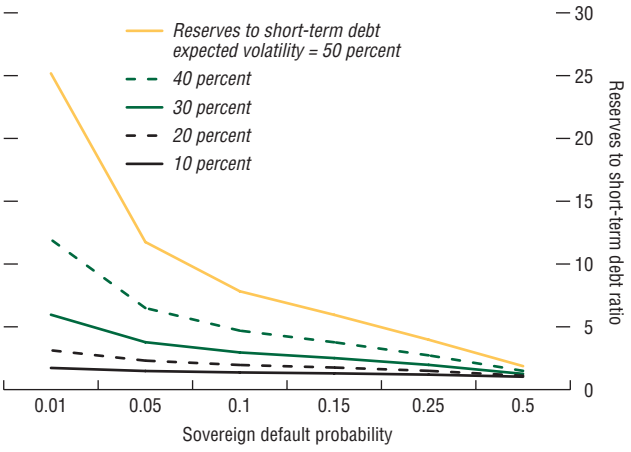
[31]In normal times, high levels of NIR also lower borrowing costs by lowering perceptions of sovereign risk, as shown by Kamin and von Kleist (1999), Eichengreen and Mody (1998), and Ferrucci (2003).

more than proportional increases in reserves, and that the ratios increase with the volatility of NIR to short-term debt ratios.[32]

Adequate reserve ratios would be lower if market-based insurance mechanisms were more widely available (see Box 4.5 for a description of market-based insurance mechanisms). A recent study by Lee (2004) suggests that optimal reserve ratios could be lower than traditional estimates if countries could insure themselves against crises using put options. Under this assumption, the optimal reserve to GDP ratio is bounded and between 20–40 percent. These figures are roughly consistent with those observed in industrial countries, as well as in most emerging markets (Table 4.6). Furthermore, if contingent credit lines or other market-based insurance mechanisms are available, optimal reserve ratios can be further reduced.[33]

Developed local securities markets could also reduce the adequate level of international reserves. Countries with underdeveloped local securities markets need higher levels of reserves for at least two reasons. First, underdeveloped local securities markets result in inefficient intermediation of local savings and many times fail to provide a meaningful alternative source of funding to external debt. Second, corporates facing highly imperfect local markets tend to underestimate the insurance value of domestic currency debt against an exchange rate depreciation and, as a result, issue excessive foreign currency debt

Figure 4.8. Reserves to Short-Term Debt Ratios and Sovereign Default Probabilities



Source: Chan-Lau (2004).

[32]The relationship between reserves to short-term ratios and default probabilities was estimated using a structural model of default risk. The model assumes that reserves to short-term ratios are constant but subject to random shocks. The volatility of the random shocks for each country analyzed was obtained by calibrating the model using average credit default swap prices for the first half of 2004. See Chan-Lau (2004) for details.

[33]Official insurance mechanisms are discussed elsewhere. In particular, the role of the IMF's recently expired Contingent Credit Lines as a precautionary line of defense vis-à-vis capital account crises and alternative official mechanisms for crisis prevention are discussed in IMF (2004a).

Box 4.5. Market-Based Insurance Mechanisms

In principle, insuring partially or fully against drastic declines or sudden reversals of capital flows can be achieved through market-based mechanisms. These mechanisms include the use of contingent credit facilities and other alternative insurance initiatives.[1]

Contingent Credit Facilities

Private provision of contingent credit facilities could potentially help sovereign borrowers to cope successfully with short-lived liquidity problems (Feldstein, 2003). For instance, in December 1996 the Central Bank of Argentina established a $6.7 billion contingent credit line with a number of private banks. The contract allowed the central bank to sell Argentina public bonds for dollars subject to a bond repurchase. The contract duration was two years with an "evergreen" clause allowing an extension of the credit line for another three months every three months. Banks, however, could walk out of the contract if Argentina defaulted on its international bonds (Gonzalez-Eiras, 2002).

Privately provided contingent credit facilities have some drawbacks. For instance, there are opportunity costs similar to those incurred by holding reserves because countries need to post collateral with the lending banks. Credit made available to large countries with substantial external financing needs may not be enough to cushion them adequately against a sudden stop in capital flows. Hence, privately provided contingent credit facilities may suit small countries' needs better. Also, banks extending contingent credit lines may well choose to cut other financing to offset the contingent credit exposure (Kletzer and Moody, 2000). Finally, markets may interpret the use of the credit facility as a bad signal and require a premium, thereby driving up the country's borrowing costs, including those associated with the roll of the contingent credit facility.

Alternative Insurance Initiatives

Buiter and Sibert (1999) have proposed that foreign currency debt should have attached a universal debt rollover with a penalty (UDROP) provision. This provision entitles the borrower to extend the maturity of performing debt for a period of three to six months at a penalty rate negotiated between debtor and creditor. The UDROP provision allows debtors to increase the maturity of their foreign currency debt and could help them cope with liquidity crises. Because the maturity is extended only for a short period of time, the UDROP would protect only countries facing liquidity crises rather than solvency crises. As with contingent credit lines, there are concerns that there could be a creditor run if the country triggers the UDROP provision.

An international insurance corporation could also insure investors against sovereign debt defaults (Soros, 1998). The insurance cost would be paid in advance by borrowing countries at the time they issue bonds or arrange loans, with borrowing limits set up by institutions like the IMF. To prevent moral hazard, mechanisms to ensure that uninsured debt is not bailed out in case of default would need to be established. In practice, establishing an international insurance corporation faces many obstacles since determining the insurance fee and maximum borrowing amounts are not trivial issues. Also, there is no guarantee that countries would not be bailed out for strategic or political reasons (Rogoff, 1999).

Structuring parallel loan agreements among countries with imperfectly correlated business cycles and growth trends has been proposed by Shiller (2003). These loan agreements would allow countries to insure themselves against underperforming economic growth vis-à-vis the other countries participating in the agreement. Caballero (2003) proposes that emerging market countries issue bonds with payoffs contingent on economic and financial variables correlated with a country's economic activity but not easily manipulated by a country's authorities. Private sector participation in insuring against economic slowdowns using these instruments may be possible if structures such as collateralized debt obligations (CDOs) are used. As pointed out by Mendoza (2004), though, implementing these initiatives requires international cooperation, which may be better coordinated by international financial institutions, such as the IMF.

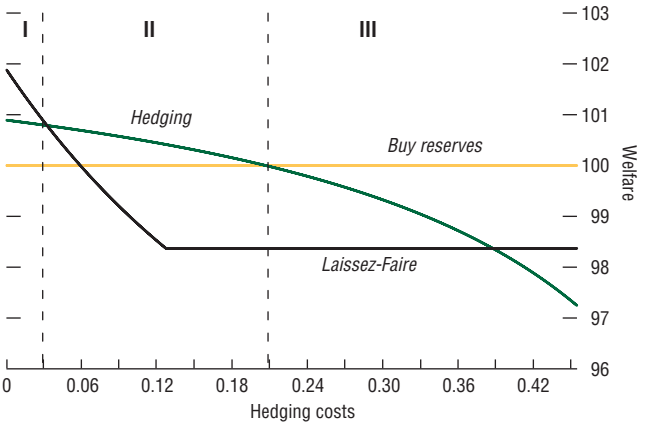
[1]See Espinosa-Vega and Vera-Martín (2004) for an analysis of market-based mechanisms.

(Caballero and Krishnamurthy, 2003). Under such circumstances, it may be necessary for the authorities to provide some degree of insurance by holding a higher level of NIR.

A careful assessment of self-insurance policy options suggests that emerging markets with different levels of local market development may have to resort to different policy mixes. In a recent study, Solé (2004) develops a framework to analyze the question of whether and how central banks should insure their economies against the risk of default caused by large exchange rate depreciations. In particular, the author compares the welfare implications of three policies.[34] Under a laissez-faire policy, the decision to hedge foreign exchange risk is costly and is left to private firms. If firms decide not to hedge, their creditors perceive them as riskier and charge higher interest rates, which, in turn, reduce the level of economic activity and social welfare (this is represented by a solid line in Figure 4.9). Under a policy of intervention in foreign exchange forward markets, the government bears the cost of hedging activities—measured on the horizontal axis—and charges higher taxes (with the level of welfare falling more smoothly, as in the dotted line). Finally, a policy of stocking reserves involves the use of current tax revenues to acquire foreign currency, and since this is independent of the cost of hedging, it is represented by the flat line in Figure 4.9.

If local securities and derivatives markets are highly underdeveloped, self-insurance has to be done by accumulating international reserves. This is represented by region III in Figure 4.9. As local markets develop and hedging costs decline, the authorities intervene in the forward market to finance a future

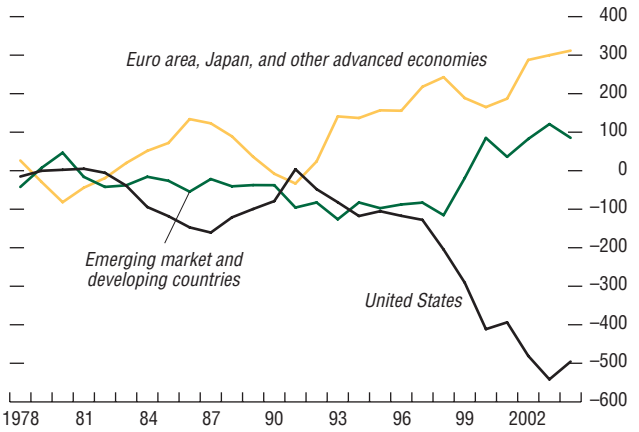
Figure 4.9. Welfare Effects of Self-Insurance Policy



Source: Solé (2004).

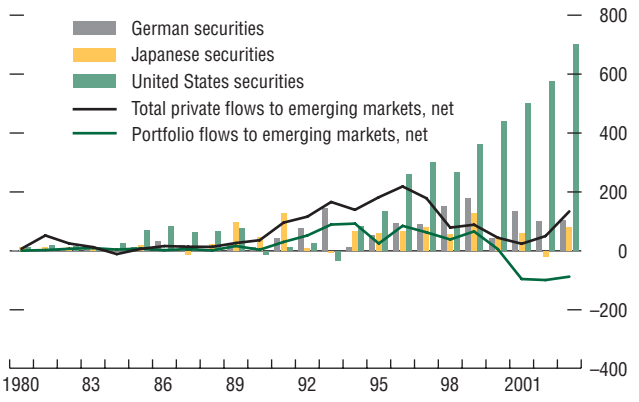
[34]The policies studied are (1) buying and holding foreign reserves as a buffer stock; (2) intervention in the foreign exchange forward market to acquire contracts that deliver foreign currency at a future date; and (3) a laissez-faire policy in which no bailout takes place.

Figure 4.10. Global Imbalances
(In billions of U.S. dollars)



Source: IMF, *World Economic Outlook.*
Note: Summary of balances on the current account.

Figure 4.11. Net Private Capital Flows to Emerging Markets and Foreign Purchases of G3 Bonds and Stocks
(In billions of U.S. dollars)



Sources: Bloomberg; and IMF, *World Economic Outlook.*

bailout of partially hedged corporates (region II). Finally, in highly developed financial markets, welfare is maximized by no government intervention (i.e., a laissez-faire regime in region I, where there is no need to accumulate NIR).

Reserve accumulation may be a desirable self-insurance policy and it may also have a positive impact on the development of local bond markets, suggesting that both policies complement and reinforce each other. Sterilization is required to contain the inflationary pressures associated with the rapid accumulation of reserves, and sterilization operations in several emerging markets are conducted by issuing central bank debt—rather than government bonds. Substituting government debt for central bank debt can help accelerate the development of local government bond markets by increasing market size and liquidity (McCauley, 2003a). In turn, a well-developed government bond market can facilitate the development of corporate fixed-income markets, and hence reduce a country's dependence on external capital (IMF, 2002). Special care should be taken, though, to avoid government bond issuance from crowding out corporate bond issuance.

In sum, self-insurance provides a number of arguments to rationalize a higher-than pre-crisis level of reserves—and, hence, a transitional period of emerging markets as net capital exporters. However, it is unclear to what extent self-insurance has been an important motivation behind the large NIR accumulation. Indeed, monetary authorities seem to have been driven by a desire to prevent nominal exchange rate appreciation in the pursuit of export-led growth policies—especially in Asia and after the increase in inflows in 2003–04. While both motivations are likely to be valid and co-existing, several analysts have argued that economic development considerations involve keeping the real exchange rate undervalued in order to bias domestic investment toward export industries. Others have argued that these policies may cause inflation-

ary pressures and that they may also delay the implementation of structural changes needed to reduce future crises (Bird and Rajan, 2003).

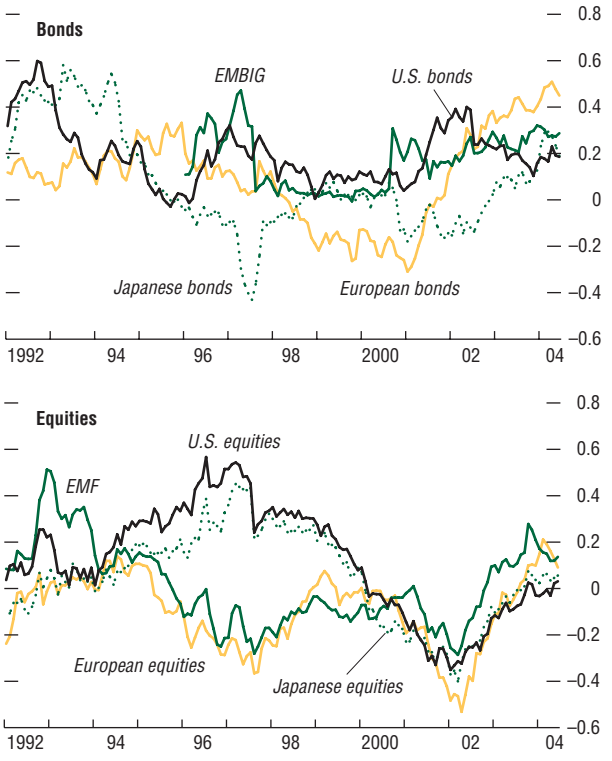
Global Factors

In an increasingly globalized capital market, global factors—such as the bursting of the global equity market bubble, the increasing role of China in global trade and production, and global imbalances among the mature markets—are having a progressively more important impact on capital flows to emerging markets. As the emerging market asset class becomes more mainstream, determinants of the global asset allocation process—in particular, risk-adjusted returns across asset classes and countries—become more relevant for emerging markets. Combined with increased geopolitical risks and an increased perception of emerging markets as a risky asset class, these factors have increased investor risk aversion and contributed to a reduction in the supply of funds available for emerging markets in international capital markets—which, in turn, contributes to the emerging markets as capital exporters phenomenon, especially in 2000–02.

In particular, increasing current account deficits in the U.S. have absorbed an increasing share of capital flows.[35] In contrast to the first half of the 1980s, when U.S. deficits were financed mostly by outflows from the euro area, Japan, and other advanced economies, the current episode shows emerging markets also contributing to finance such deficits (see Figure 4.10). Moreover, large increases in international gross asset and liability positions over the past decade are likely to change the international financial adjustment process (see Lane and Milesi-Ferretti, 2003 and 2004; and Gourinchas and Rey, 2004).

[35]The United States' current account deficit represents 71.6 percent of global capital imports (see the Statistical Appendix, Figure 1).

Figure 4.12. Risk-Adjusted Rates of Return (Sharpe ratios)[1]



Source: IMF staff estimates based on Bloomberg.
[1]Sharpe ratios are monthly excess returns divided by rolling volatilities.

These underlying macroeconomic imbalances have affected global fixed-income and equity markets, which, in turn, have repercussions on capital flows to emerging markets. The sharp increase in foreign purchases of U.S. securities since 1999 is negatively correlated with private (and especially) portfolio flows to emerging markets—and also with foreign purchases of German and Japanese securities (see Figure 4.11). This is, however, justified by risk-adjusted returns: Sharpe ratios for U.S. bonds dominate ratios for emerging market, European, and Japanese bonds from 1996 to 2003 (see Figure 4.12). The same can be said about Sharpe ratios for equities, where the dominance of risk-adjusted returns runs from 1994 until 2001.[36] Capital has been flowing to where returns are higher or, perhaps more relevant in these uncertain times, where risks are relatively lower. Over the past 18 months, better risk-adjusted returns have supported a resumption of flows to emerging market assets. However, the beginning of the tightening cycle in the major financial centers could have an impact on flows to emerging market countries (see discussion in Chapter II).

The post-crisis balance sheet adjustments have been accompanied by an important pattern of international risk transfer, which links these adjustments to global imbalances. As noted in previous sections, the strengthening of balance sheets in emerging markets has involved a substantial reduction in external debt and an increase in liquid reserves. Toward the end of this process, emerging markets—particularly in Asia (see McCauley, 2003b)—have been receiving risky equity capital while investing in safe interbank deposits and U.S. treasury and agency securities.[37] Although there is a cost involved in the process, the risk transfer from emerging to mature markets is likely to contribute to improve the resilience of emerging markets' balance sheets and to a better allocation of risk worldwide. McCauley (2003b) notes that in this process the U.S. economy is playing the role of a global financial intermediary, providing international risk absorption and maturity transformation, and, as such, the U.S. net international investment position can be interpreted as the intermediary's capital base. McCauley also notes that, while there is a latent conflict between the deteriorating net international investment position of the United States and its role in international financial risk intermediation, this conflict appeared to be far from pressing.

Heightened uncertainty and global risk aversion have had a major impact not just on the level of flows to emerging markets but also on the geographical distribution of portfolio investments. Results from the IMF's *Coordinated Portfolio Investment Survey* (CPIS) suggest that there has been a retrenchment of U.S. investors from both crisis and non-crisis countries between 1997 and 2002 (see Table 4.7). This is likely to have been determined by a decline in risk-adjusted returns in emerging markets, compared to returns that could be earned in mature markets, especially in the United States (see Figure 4.12), as well as by the reduction in risk capital allocated to emerging markets by opportunistic investors (hedge funds and the proprietary trading desks of major banks) in the aftermath of regional and global crises. During the same period, the total value of emerging market assets held by European and Asian mature market investors appears to

[36]Although Sharpe ratios are a widely used measure of risk-adjusted returns, some asset managers also consider correlations with market portfolios and benchmarks as guides for their asset allocation decisions. See IMF (2004b) for an analysis of institutional investors' allocation decisions vis-à-vis emerging market assets.

[37]There was a similar exchange of risk between the United States and the euro area in the late 1990s, with the latter absorbing risk while issuing short and low-risk liabilities in order to buy risky equity shares (see McCauley, 2003b).

Table 4.7. Derived Portfolio Investment Liabilities by Nonresident Holder: Equity and Debt Securities
(In millions of U.S. dollars)

	Investment from						
	Industrial Countries			Emerging Markets			
Investment to	North America	Europe	Asia	Latin America	EM Europe	EM Asia	Total
			1997				
Crisis Countries	**153,486**	**72,963**	**32,794**	**7,885**	**0**	**4,826**	**271,955**
Brazil	52,968	22,198	2,572	2,592	0	67	80,397
Argentina	38,648	16,668	3,097	1,439	0	245	60,097
Russia	12,223	12,717	346	3,130	0	984	29,399
Turkey	7,046	861	4,100	18	0	132	12,157
Indonesia	4,532	2,555	1,249	164	0	1,170	9,669
Korea	15,596	8,059	8,665	134	0	18	32,472
Malaysia	9,288	4,919	9,510	157	0	1,011	24,885
Thailand	5,784	2,699	2,239	98	0	647	11,467
Philippines	7,402	2,287	1,018	154	0	552	11,413
Non-Crisis Countries	**105,369**	**39,543**	**15,213**	**2,510**	**0**	**1,085**	**163,719**
Mexico	65,004	19,709	3,773	1,559	0	328	90,374
Chile	8,231	1,359	42	79	0	0	9,712
Colombia	4,147	988	382	22	0	93	5,632
Peru	3,687	763	101	37	0	0	4,588
Czech Republic	869	2,035	448	9	0	1	3,360
Hungary	5,021	4,167	3,425	29	0	53	12,695
Poland	4,531	3,152	145	157	0	21	8,006
China	5,523	3,555	5,038	370	0	306	14,792
India	8,356	3,815	1,857	249	0	283	14,560
Total	**258,855**	**112,506**	**48,007**	**10,395**	**0**	**5,910**	**435,673**
			2002				
Crisis Countries	**87,906**	**110,938**	**46,539**	**9,638**	**1,386**	**4,024**	**260,433**
Argentina	234	8,454	1,855	675	1	5	11,224
Brazil	21,181	23,144	4,331	8,159	42	34	56,890
Russia	11,579	18,217	285	142	1,302	6	31,530
Turkey	1,905	14,932	1,460	34	31	12	18,374
Indonesia	2,777	2,387	2,469	34	0	2,962	10,629
Korea	39,532	30,444	17,805	343	4	154	88,282
Malaysia	4,028	5,746	11,027	73	0	509	21,384
Thailand	2,697	4,385	4,646	58	2	225	12,014
Philippines	3,974	3,230	2,659	120	5	117	10,106
Non-Crisis Countries	**67,569**	**68,062**	**15,045**	**5,658**	**691**	**7,947**	**164,971**
Mexico	43,268	20,472	2,180	4,309	15	79	70,323
Chile	4,371	2,924	70	100	0	2	7,467
Colombia	1,165	2,242	375	735	0	2	4,520
Peru	2,019	835	25	138	(5)	2	3,014
Czech Republic	885	2,382	17	0	33	0	3,318
Hungary	2,002	17,061	780	83	320	4	20,250
Poland	3,013	11,399	108	36	327	1	14,884
China	2,986	5,811	10,684	164	1	485	20,130
India	7,860	4,935	807	91	0	7,372	21,065
Total	**155,475**	**179,000**	**61,584**	**15,296**	**2,078**	**11,970**	**425,404**

Source: IMF staff estimates based on Coordinated Portfolio Investment Survey (CPIS) data.
Note: Shaded areas highlight the largest holdings of securities of a particular emerging market.

have increased substantially, contributing to a more balanced investor base for emerging market assets.[38]

Moreover, investments in non-crisis countries, and to a lesser extent those in crisis countries, show a clear trend toward increas-

[38]This last statement should be interpreted with some caution, as it could also be due to improved coverage of these regions in the 2002 survey.

Table 4.8. Derived Portfolio Investment Liabilities by Nonresident Holder: Short- and Long-Term Debt Securities

(In millions of U.S. dollars)

	Investment from						
	Industrial Countries			Emerging Markets			
Investment to	North America	Europe	Asia	Latin America	EM Europe	EM Asia	Total
			1997				
Crisis Countries	**75,360**	**49,404**	**24,644**	**5,699**	**0**	**4,605**	**159,711**
Brazil	20,280	12,543	2,271	1,822	0	67	36,983
Argentina	25,338	13,465	2,993	1,264	0	245	43,305
Russia	3,680	11,195	331	2,246	0	959	18,411
Turkey	995	100	4,018	0	0	132	5,245
Indonesia	1,881	1,489	786	107	0	1,150	5,413
Korea	10,961	6,769	8,512	111	0	18	26,370
Malaysia	4,320	1,289	3,683	77	0	884	10,252
Thailand	3,464	1,277	1,489	68	0	636	6,934
Philippines	4,440	1,277	561	5	0	515	6,798
Non-Crisis Countries	**46,391**	**23,697**	**12,911**	**1,514**	**0**	**1,056**	**85,569**
Mexico	29,003	12,207	3,554	1,293	0	325	46,383
Colombia	3,423	596	382	13	0	93	4,506
Chile	3,530	238	5	30	0	0	3,802
Peru	1,263	375	53	5	0	0	1,696
Czech Republic	46	1,476	410	0	0	0	1,932
Hungary	1,364	2,637	3,353	8	0	53	7,415
Poland	2,868	2,380	108	144	0	21	5,521
China	3,160	2,524	4,195	20	0	293	10,192
India	1,734	1,264	851	2	0	271	4,122
Total	**121,751**	**73,100**	**37,555**	**7,213**	**0**	**5,661**	**245,280**
			2002				
Crisis Countries	**23,571**	**56,629**	**33,252**	**8,681**	**842**	**1,643**	**124,618**
Argentina	216	7,509	1,844	609	1	5	10,185
Brazil	5,083	17,069	4,094	7,703	42	34	34,024
Russia	6,518	10,248	212	76	760	6	17,820
Turkey	1,286	9,045	1,452	34	31	12	11,860
Indonesia	221	687	1,008	24	0	933	2,872
Korea	5,793	7,507	14,614	17	3	85	28,019
Malaysia	1,301	1,470	5,907	62	0	439	9,180
Thailand	46	347	2,032	43	0	40	2,507
Philippines	3,107	2,746	2,088	114	5	90	8,151
Non-Crisis Countries	**29,031**	**42,575**	**7,589**	**5,275**	**635**	**265**	**85,370**
Mexico	20,315	13,084	1,998	4,089	15	71	39,573
Colombia	988	2,229	375	689	0	2	4,283
Chile	3,625	946	64	70	0	2	4,707
Peru	1,632	594	15	104	(5)	2	2,342
Czech Republic	114	1,186	12	0	20	0	1,332
Hungary	37	14,167	763	33	307	4	15,311
Poland	1,943	8,925	101	35	298	1	11,303
China	377	1,195	3,848	163	1	61	5,644
India	1	247	414	91	0	121	875
Total	**52,603**	**99,203**	**40,841**	**13,956**	**1,476**	**1,908**	**209,988**

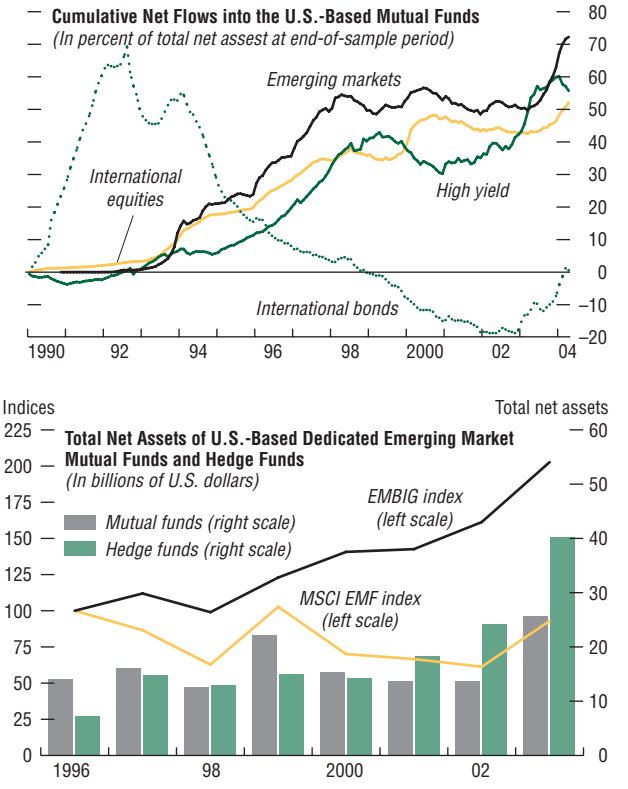
Source: IMF staff estimates based on Coordinated Portfolio Investment Survey (CPIS) data.
Note: Shaded areas highlight the largest holdings of securities of a particular emerging market.

ing regionalization of asset holdings. This is quite noticeable for the pattern of debt holdings (Table 4.8; note the shaded areas that form a diagonal in the lower panel of the table), but holds to a large extent also for holdings of debt and equity securities (Table 4.7). Furthermore, emerging markets in Asia and Latin America have increased substan-

tially their holdings of regional assets, in part owing to the development of local institutional investor bases.[39] This stronger "regional bias" is likely to be due to the fact that higher uncertainty has led investors to purchase more securities in countries where geographic proximity ensures better knowledge of institutional and other fundamental determinants of risk and return profiles.

In retrospect, emerging market securities have remained relatively well-supported by international investors. To the extent that U.S. investors can be considered representative of the mature market investor base in general, this can be seen by examining the main trends in the retail and institutional investor flows into the U.S.-based emerging market, international equity, and international bond mutual funds. As the upper panel of Figure 4.13 shows, during 1998–2002 cumulative net inflows into the U.S.-based emerging market equity funds, which manage both retail and institutional money, remained relatively stable, before picking up sharply in 2003. The dynamics of total net assets of the U.S.-based emerging market equity funds essentially mirrored the performance of the MSCI EMF index. Similarly, total net assets of the U.S.-based emerging market hedge funds, which invest in emerging market equity and debt securities, remained resilient during 1997–2000, and moved more in line with the EMBI Global index (see lower panel of Figure 4.13).[40] Thus, while it may be regrettable that there was no notable pickup in inflows into dedicated emerging market funds during the time of retrenchment in international bank lending, it is encouraging that these funds did not experience major outflows despite a string

Figure 4.13. Emerging Market Mutual and Hedge Fund Assets



Source: Investment Company Institute (U.S.).

[39]See IMF (2004b).

[40]In contrast, the capital under management of global macro hedge funds and proprietary trading desks of international banks—and, therefore, their allocations to emerging markets— were significantly reduced during the same period, but recovered in 2003.

of emerging market crises and increased global risk aversion. Although this asset allocation trend may not be identical to that of other institutional investors, the fact that pension funds and insurance companies are investing in emerging market and alternative securities at the margin, suggests that they may be rather close.[41]

In sum, emerging markets appear to have faced a reasonable supply of foreign funds, despite the turbulence in international markets and the string of crises and costly adjustment processes faced over the last decade or so.

Conclusions and Policy Issues

The perceived anomaly of emerging markets as net capital exporters appears to be less of an anomaly when the bust phase of the 1990s cycle in capital flows is studied in detail. The confluence of ongoing, deep, and long balance sheet adjustments in some emerging markets, with concomitant crises in other emerging markets at the turn of the century, goes a long way in explaining the collective position of emerging markets as net capital exporters in 2000–01. Reserves accumulation was the largest capital outflow associated with emerging markets as net capital exporters in 2002–04, despite increased private capital flows. Global uncertainties and imbalances are likely to have reduced the amount of capital available for emerging markets, but these countries were simultaneously reducing their external financing needs: in all, the reduction of flows to emerging markets is understandable in the context of developments in international capital markets.

Despite the depth and length of the last capital flows cycle, the phenomenon of emerging markets as net capital exporters may be mostly a cyclical, thus temporary, phenomenon. There are a number of institutional factors and capital market frictions that restrict the level of capital flows to emerging markets, and some of them have become more apparent during the crisis episodes.[42] However, the recent pickup in private capital inflows to emerging markets over the past 18 months is likely to be the beginning of a moderate resumption of flows to emerging markets. The strength and persistence of the recovery in flows to emerging markets will depend, among other factors, on how exchange rate policies and global imbalances evolve in the medium term. In particular, emerging markets have already accumulated enough reserves, and some market participants argue that the costs of accumulating more international reserves—including macroeconomic instability—are going to come to the fore and could reduce such accumulation in the near future.[43] However, analysts also argue that some emerging markets (especially, but not exclusively, in Asia) are likely to continue to be net capital exporters for some time, as the massive reallocation of production toward China has left corporates in these nations extremely uncertain about which sectors would be profitable in this new environment. This would reduce investment levels below trend and contribute to net capital exports.

The analysis of the phenomenon of emerging markets as net capital exporters raises several policy issues. The three key reasons behind emerging markets' position as net capital exporters suggest, in turn, three sets of policy issues. In particular, some policy measures and institutional arrangements could facilitate faster and more efficient balance sheet adjustments in both the private and public sectors in emerging markets; also, an

[41]See IMF (2004b).

[42]Alfaro, Kalemi-Ozcan, and Volosovych (2003) study the main structural impediments to larger flows to emerging markets and conclude that institutional quality is the most important determinant of the so-called Lucas paradox, which describes why capital does not flow to emerging markets in larger volumes.

[43]See, for instance, Fernandez and Malcolm (2004).

orderly resolution of global imbalances in the mature markets appears to be critical to a sustained resumption of flows to emerging markets.

The first set of policy measures would involve policies aimed at making shorter and more efficient the post-crisis balance sheet adjustments, such that emerging markets can resume growth soon after a major financial shock. The recovery, and the associated resumption of flows, would also be faster if structural reforms improve the environment for investment in general and, in particular, FDI—the largest component of capital flows to emerging markets, and one that tends to behave in a countercyclical fashion. As noted in CMCG (2003), sound macroeconomic policies, improvements in the investment climate, and the development of local financial markets are critical elements for the attraction of FDI. In particular, the removal of regulatory, legal, and tax impediments for FDI would pave the way for a faster recovery after crises. Also, a consistent track record of respect of property rights, a stable and transparent regulatory framework, local sources of finance, and continuous dialogue with the private sector would facilitate the resumption of FDI flows.

In this vein, the chapter has also highlighted the need to improve markets for distressed debt to make less costly and disruptive the period of post-crisis deleveraging. This involves improving not only bankruptcy laws and the enforcement property rights, but also the market infrastructure that allows for a more rapid disposition of and trading of distressed assets. This would have the double benefit of making the adjustment less severe for local corporates and attracting foreign risk capital to contribute to the restructuring process.[44] The lengthy period of time needed to complete a corporate turnaround and realize the associated capital gains also requires assurances that taxation and repatriation policies are consistent over relatively long periods of time.[45] Moreover, deep and liquid equity and property markets would reduce the overshooting of asset prices and cushion the value of collateral after a sudden stop, stabilizing credit flows to some extent.[46] Also, they would facilitate the transfer of ownership and control, and result in a better allocation of resources.

The second set of policies has to do with what countries can do to self-insure against sudden stops in capital inflows. The pursuit of strong policies that promote macroeconomic stability is a necessary condition for financial stability in the face of sudden stops, but it may not be sufficient. Several emerging markets have been accumulating large amounts of international reserves in part to self-insure, but this may be rather costly and conspire against macroeconomic stability. Hence, the development of local securities markets, as well as other market mechanisms to self-insure, would allow emerging markets to protect themselves against financial crises with a lower reliance on NIR. The optimal policy mix to self-insure depends on the level of development of local securities and derivatives markets, and the development of local markets not only improves the efficiency of the

[44]The amounts involved may be substantial, as a recent survey by Ernst and Young (2004) indicated that while Asia (including Japan) has disposed of $1 trillion in bad loans, the region also has another $1 trillion to manage.

[45]Market participants have noted that, as foreign funds cashed out of investments made in distressed assets in some Asian countries, tax authorities then audited and penalized investors with retroactive taxes on funds that were seen to have made "exorbitant" returns. Since the investor base for these distressed assets is small and very specialized, these policies can have negative "spillovers" across countries and inhibit the supply of risk capital when it is most needed.

[46]Analysts have also noted that some banks that had sold loans to AMCs in the Asian crisis countries, were reluctant to lend again to such corporates despite improvements in their balance sheets. This was in part due to lack of changes in ownership and control of the companies.

allocation of financial capital but also has the added benefit of reducing the cost of self-insurance and leaving it more in the hands of the private sector (see IMF, 2003a).

In the same vein, countries could do much more in terms of improving the management of international reserves. The authorities in emerging markets need to incorporate risk management practices into both sides of their balance sheets, and refine the estimation of the costs and benefits of their holdings of NIR. Several emerging markets have conducted effective liability management operations to improve their debt profiles, and many of them are also becoming more sophisticated managers of their NIR. However, only a few incorporate the trade-offs implicit across both sides of the national balance sheets. Moreover, estimation of the opportunity costs of holding reserves would have to incorporate potential market risks (in particular, relative to exchange rate fluctuations) and macroeconomic risks (such as the inflationary consequences of nonsterilized intervention). The benefits of NIR accumulation are more difficult to estimate as they are related to more elusive precautionary needs—even though this might be reflected in lower borrowing costs.

In particular, some analysts have argued that countries may want to hold a larger but better diversified—perhaps held in an equity fund—level of reserves, rather than a smaller level of liquid reserves (Feldstein, 2003). In other words, that countries may be better off substituting some investment risk for less risk of a speculative attack. As several emerging markets have already accumulated large stocks of NIR, they may want to consider more sophisticated approaches to investing their reserves. For instance, some central banks are managing reserves according to three tranches: one for standard intervention/liquidity needs; another for self-insurance vis-à-vis major shocks; and a third one for trading/asset management purposes.[47] In Singapore, for example, the Government of Singapore Investment Corporation operates as a professional asset manager and invests in a wide set of mature and emerging market securities. Other countries in the region are also considering the adoption of such a model. However, some analysts have questioned the wisdom of having the official sector manage "excessive" reserves and suggested outsourcing that activity to the private sector.

The final set of policy issues relates to the entrance of emerging market assets into the mainstream in global portfolios. This development puts emerging markets into competition with other asset classes for risk capital. The recent experience has shown that emerging markets have to establish a track record of consistently strong macroeconomic policies and structural reforms, to ensure they can deliver attractive risk-adjusted returns to global investors, thus ensuring a steady flow of capital. Individual countries are competing for global capital not just vis-à-vis their "peer group," but also the universe of assets that participate in the global asset allocation process. And this demands a constant updating and upgrading of structural and macro policies.

Finally, a key issue for a more solid resumption of inflows to emerging markets has to do with the resolution of global macroeconomic imbalances, but is very difficult to predict the outcome and implications for emerging markets. Most analysts argue that a large and disruptive correction in the value of the U.S. dollar vis-à-vis other currencies would disrupt flows to emerging markets. However, some analysts (Gourinchas and Rey, 2004) argue that the large cross-holdings of foreign assets and liabilities means that the asset valuation channel of exchange rate adjustments has grown in importance. This would mean that

[47]Recent trends in reserves management show increasing exposure to market and credit risks, as well as currency diversification (McCauley and Fung, 2003).

the imbalances would be resolved by a relatively large U.S. dollar depreciation that would effect large transfers of wealth, without large changes in net exports of goods and services (see, however, Lane and Milesi-Ferretti, 2004, for a somewhat more skeptical view on the role of the valuation channel in the international adjustment process). An orderly resolution of these imbalances is probably the best outcome for a steady flow of capital to emerging markets.

References

Alfaro, Laura, Sebnem Kalemli-Ozcan, and Vadym Volosovych, 2003, "Why Doesn't Capital Flow from Rich to Poor Countries? An Empirical Investigation," (unpublished; Boston: Harvard Business School).

Aizenman, Joshua, and Nancy Marion, 2003, "The High Demand for International Reserves in the Far East: What is Going On?" *Journal of the Japanese and International Economies 17*, pp. 370–400.

Bank for International Settlements, 2004, *74th Annual Report* (Basel: Bank for International Settlements).

Bird, Graham, and Ramkishen Rajan, 2003, "Too Much of a Good Thing? The Adequacy of International Reserves in the Aftermath of Crises," *The World Economy*, Vol. 26, pp. 873–91.

Blejer, Mario I., and Liliana Schumacher, 1998, "VAR for Central Banks," *Risk*, October, pp. 65–69.

Brown, B., 1992, "Capital Flight," *The New Palgrave Dictionary of Money and Finance*, ed. by Peter Newman, Murray Milgate, and John Eatwell, Vol. 1 (New York: Stockton Press), pp. 294–96.

Buiter, William, and Anne Sibert, 1999, "UDROP: A Small Contribution to the New International Financial Architecture," CEPR Discussion Paper No. 2138 (London: Centre for Economic Policy Research).

Caballero, Ricardo J., 2003, "On the International Financial Architecture: Insuring Emerging Markets," NBER Working Paper No. 9570 (Cambridge, Mass.: National Bureau of Economic Research).

———, and Arvind Krishnamurthy, 2003, "Excessive Dollar Debt: Financial Development and Underinsurance," *Journal of Finance*, Vol. 58, pp. 867–94.

Calvo, Guillermo A., 1998, "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops" (unpublished; University of Maryland).

Capital Markets Consultative Group (CMCG), 2003, "Foreign Direct Investment in Emerging Markets" (Washington, September).

Chan-Lau, Jorge A., 2004, "Reserve Holdings and Sovereign Default Risk," (unpublished; Washington: International Monetary Fund).

———, Arnaud Jobert, and Janet Kong, 2004, "An Option-Based Approach to Bank Vulnerabilities in Emerging Markets," IMF Working Paper No. 04/33 (Washington: International Monetary Fund).

Christiano, Lawrence, Christopher Gust, and Jorge Roldos, 2002, "Monetary Policy in a Financial Crisis," NBER Working Paper No. 9005 (Cambridge, Mass.: National Bureau of Economic Research).

Collyns, Charles, and Mohamed A. El-Erian, 1993, "Restructuring of Commercial Bank Debt by Developing Countries: Lessons from Recent Experience," IMF Paper on Policy Analysis and Assessment No. 93/7 (Washington: International Monetary Fund).

Crosbie, Peter J. and Jeffrey R. Bohn. 2003, "Modeling Default Risk." Moody's KMV [online]. Available via the Internet at *http://www.moodyskmv.com*.

Dobson, Wendy, and Gary Clyde Hufbauer, 2001, "World Capital Markets: Challenge to the G-10," (Washington, DC: Institute for International Economics).

Dornbusch, Rudiger, 1990, "Capital Flight: Theory, Measurement and Policy Issues," Occasional Paper No. 2 (Washington: Inter-American Development Bank).

Edison, Hali, 2003, "Are Foreign Exchange Reserves in Asia Too High," in the *World Economic Outlook* (Washington: International Monetary Fund, September), pp. 78–92.

Eichengreen, Barry, and Ashoka Mody, 1998, "What Explains Changing Spreads on Emerging Market Debt?" NBER Working Paper No. 6408 (Cambridge, Mass.: National Bureau of Economic Research).

Ernst and Young, 2004, "Global Nonperforming Loan Report."

Espinosa-Vega, Marco A., and Mercedes Vera-Martín, 2004, "On Chile's Holding of Foreign Reserves" (unpublished; Washington: International Monetary Fund).

Feldstein, Martin, 2003, "An Overview of Prevention and Management," in *Economic and Financial Crises in Emerging Market Economies*, ed. by Martin Feldstein (Chicago and London: The University of Chicago Press), pp. 1–29.

Fernandez, David G., and James Malcolm, 2004, "An Asian Intervention Reader," *Economic and Foreign Exchange Research* (New York: J.P. Morgan, March).

Fernandez, Raquel, and Sule Ozler, 1991, "Debt Concentration and Secondary Market Prices," World Bank Working Paper No. 570 (Washington: World Bank).

Ferrucci, Gianluigi, 2003, "Empirical Determinants of Emerging Market Economies' Sovereign Bond Spreads," Working Paper No. 205 (London: Bank of England).

———, Valerie Herzberg, Farouk Soussa, and Ashley Taylor, 2004, "Understanding Capital Flows to Emerging Market Economies," *Financial Stability Review*, Vol. 16 (London: Bank of England, June), pp. 89–97.

Froot, Kenneth A., and Jeremy C. Stein, 1991, "Exchange Rates and Foreign Direct Investment: An Imperfect Capital Markets Approach," *The Quarterly Journal of Economics*, Vol. 106 (November), pp. 1191–217.

Fung, Ben, George Jason, Stefan Hohl, and Guonan Ma, 2004, "Public Asset Management Companies in East Asia," BIS Occasional Paper No 3 (Basel: Bank for International Settlements, February).

Gapen, Michael T., Dale F. Gray, Cheng Hoon Lim, and Yingbin Xiao, 2004, "The Contingent Claims Approach to Corporate Vulnerability Analysis: Estimating Default Risk and Economy-wide Risk Transfer," in *Corporate Restructuring: International Best Practices*, ed. by Michael Pomerleano and William Shaw (Washington: World Bank).

Ghosh, Atish, Timothy Lane, Marianne Schulze-Ghattas, Ales Bulir, Javier Hamann, and Alex Mourmouras, 2002, *IMF-Supported Programs in Capital Account Crises*, Occasional Paper No. 210 (Washington: International Monetary Fund).

Gonzalez-Eiras, Martin, 2002, "The Effect of Contingent Credit Lines on Banks' Liquidity Demand" (unpublished, Buenos Aires: Universidad de San Andres).

Gourinchas, Pierre-Olivier, and Hélène Rey, 2004, "International Financial Adjustment" (unpublished; Princeton University Department of Economics).

Gray, Dale F., Robert C. Merton, and Zvi Bodie, 2003, "A New Framework for Analyzing and Managing Macrofinancial Risks of an Economy," M*f*Risk Working Paper No. 1–03. Available via the Internet at *http://www.moodys-mfrisk.com*.

Gunter, Frank R., 2004, "Capital Flight from China: 1984–2001," *China Economic Review*, Vol. 15, pp. 63–85.

Hoelscher, David S., and Marc Quintyn, 2003, *Managing Systemic Bank Crises*, IMF Occasional Paper No. 224 (Washington: International Monetary Fund).

Hviding, Ketil, Michael Nowak, and Luca Antonio Ricci, 2004, "Can Higher Reserves Help Reduce Exchange Rate Volatility?" (unpublished, Washington: International Monetary Fund).

International Monetary Fund, 2000, *World Economic Outlook: Supporting Studies* (Washington).

———, 2001, "Emerging Market Financing," *Quarterly Report on Developments and Prospects* (November 14).

———, 2002, *Global Financial Stability Report*, World Economic and Financial Surveys (Washington, March).

———, 2003a, *Global Financial Stability Report*, World Economic and Financial Surveys (Washington, March).

———, 2003b, *World Economic Outlook* (Washington, September).

———, 2003c, *Global Financial Stability Report*, World Economic and Financial Surveys (Washington, September).

———, 2004a, "The IMF's Contingent Credit Lines (CCL): A Factsheet," (Washington, March). Available via the Internet at *http://www.imf.org/external/np/exr/facts/ccl.htm*.

———, 2004b, *Global Financial Stability Report*, World Economic and Financial Surveys (Washington, April).

Kamin, Steven, and Karsten von Kleist, 1999, "The Evolution and Determinants of Emerging Market Credit Spreads in the 1990s," BIS Working Paper No. 68 (Basel: Bank for International Settlements).

Kaminsky, Graciela, and Carmen Reinhart, 1999, "The Twin Crisis: The Causes of Banking and

Balance-of-Payments Problems," *American Economic Review*, Vol. 89 (June), pp. 473–500.

Kiyotaki, Nobuhito, and John Moore, 1997, "Credit Cycles," *Journal of Political Economy*, Vol. 105 (April), pp. 211–48.

Kletzer, Kenneth, and Ashoka Mody, 2000, "Will Self-Protection Policies Safeguard Emerging Markets from Crises" (unpublished; Washington: World Bank).

Lane, Philip R., and Gian Maria Milesi-Ferretti, 2003, "International Financial Integration," *IMF Staff Papers*, International Monetary Fund, Vol. 50 (Special Issue), pp. 82–113.

———, 2004, "Financial Globalization and Exchange Rates," paper presented at the international conference organized by the Banco de España and the International Monetary Fund, "Dollars, Debt, and Deficits—60 Years After Bretton Woods," Madrid, June.

Lee, Jaewoo, 2004, "The Insurance Value of Reserves: An Option Pricing Approach," (unpublished; Washington: International Monetary Fund).

LoPucki, Lynn M., and Sara D. Kalin, 2000, "The Failure of Public Company Bankruptcies in Delaware and New York: Empirical Evidence of a "Race to the Bottom," *Vanderbilt Law Review* (July 22). Available via the Internet at *http://ssrn.com/abstract=237029*.

McCauley, Robert, 2003a, "Unifying Government Bond Markets in Asia," *BIS Quarterly Review* (Basel: Bank for International Settlements, December), pp. 89–98.

———, 2003b, "Capital Flows in East Asia Since the 1997 Crisis," *BIS Quarterly Review*, (Basel: Bank for International Settlements, June), pp. 41–55.

———, and Ben S.C. Fung, 2003, "Choosing Instruments in Managing Dollar Foreign Exchange Reserves," *BIS Quarterly Review* (Basel: Bank for International Settlements, March), pp. 39–46.

Mendoza, Ronald U., 2004, "International Reserve-Holding in the Developing World: Self Insurance in a Crisis-Prone Era?," *Emerging Markets Review*, Vol. 5, pp. 61–82.

Ohashi, Kazunari, and Manmohan Singh, 2004, "Japan's Distressed Debt Market," IMF Working Paper No. 04/86 (Washington: International Monetary Fund).

Rogoff, Kenneth, 1999, "International Institutions for Reducing Global Financial Instability," *Journal of Economic Perspectives*, Vol. 13, pp. 21–42.

Shiller, Robert J., 2003, *The New Financial Order: Risk in the 21st Century* (Princeton and Oxford: Princeton University Press).

Solé, Juan, 2004, "Should Central Banks Hedge Foreign Exchange Risk?" (unpublished; Washington: International Monetary Fund, International Capital Markets Department).

Soros, George, 1998, *The Crisis of Global Capitalism* (New York: Public Affairs).

Tweedie, Andrew, 2000, "The Demand for International Reserves—A Review of the Literature" (unpublished; Washington: International Monetary Fund).