

VOLATILITY OF PRIVATE CAPITAL FLOWS TO EMERGING MARKETS

Since 1990, private capital flows have far exceeded official loans and grants to become the dominant source of external funding for many emerging market countries. The terms and conditions under which these countries access international capital markets thus weigh heavily on economic performance. This chapter focuses on one key aspect of the relationship between emerging markets and international capital markets—namely, the degree of stability of access to international capital markets as measured by the volatility of capital flows. As discussed in Chapter III, volatility is an inherent feature of capital markets and is not necessarily undesirable. Some measured volatility in capital flows can be expected in the presence of, for example, a seasonal pattern in trade financing. However, there were periods in the 1990s when the volatility of capital flows was associated with a sudden loss of access to international capital markets by many emerging markets countries. This loss of access was at times associated with political and economic forces in individual emerging markets. Sometimes, however, it has been developments in mature markets that resulted in restricted market access for many emerging markets. An unexpected and sustained loss of market access can naturally impose high costs in terms of adjustments of policies and incomes.

The experience with volatility in private capital flows to emerging markets has raised a number of questions. Exactly how volatile have private capital flows been since 1990, and how does this volatility compare with that in other periods of large private capital flows? Which countries and regions have been most affected by such volatility, and how have emerging markets responded to it? What have been the key factors in both emerging and

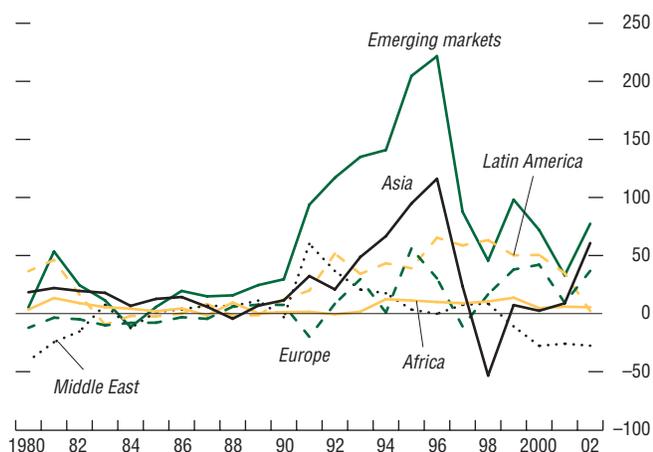
mature markets that have contributed to the volatility of capital flows? Are these factors likely to persist in the near term and how would they affect emerging markets as an asset class?

This chapter provides some answers to these questions. The chapter first characterizes the pattern and volatility of capital flows to emerging markets, showing the coexistence of low-frequency swings (or boom-bust cycles) in some components of flows with higher frequency fluctuations in other components. A notable feature of the behavior of the low-frequency analysis is the fact that emerging markets have become net capital exporters since 1999, and that the volatility of net flows in the 1990s has been much lower than that of the previous historical period of financial integration—the classical gold standard era. We also show that the high-frequency volatility of flows increased in the second half of the 1990s as compared to the first half. A second section of the chapter focuses on some of the key structural determinants of the boom-bust pattern and higher volatility of capital flows, in particular the changing role of international banks and the investor base for emerging market securities. The chapter concludes with an assessment of whether these structural changes in the behavior of the main suppliers of funds to emerging markets are likely to be permanent—hence causing the current bust phase of flows to persist—or transitory. It also discusses the main policies that borrowing countries have adopted to cope with the changing pattern and volatility of capital flows.

Pattern and Volatility of Flows

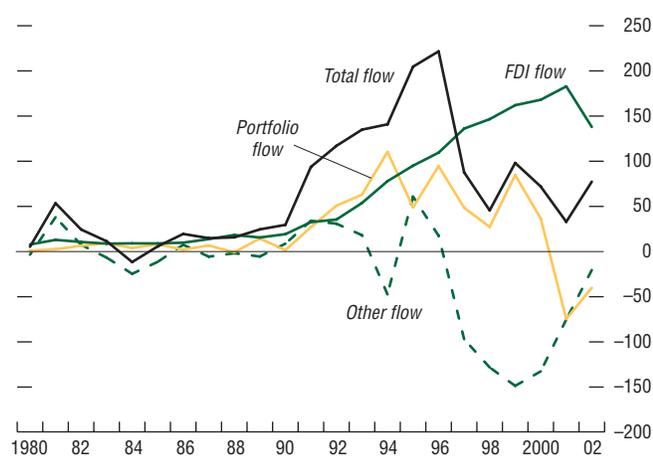
The pattern and volatility of private capital flows can be examined by using data on either

Figure 4.1. Net Private Capital Flows to Emerging Markets
(In billions of U.S. dollars)



Source: IMF, *World Economic Outlook*.

Figure 4.2. Emerging Markets: Net Private Capital Flows by Component
(In billions of U.S. dollars)



Source: IMF, *World Economic Outlook*.

net capital flows to emerging markets or gross issuance of international bonds, equities, and syndicated loans by these countries. Net capital flows are most representative of the net transfer of resources to emerging markets through the capital account of the balance of payments. However, the data on net capital flows from the IMF's *World Economic Outlook* are available only on an annual frequency. While such annual data can be used to identify major trends and cycles in capital flows, this data cannot be used to determine exactly when “sudden stops” in capital flows have occurred within any given year. Nevertheless, the analysis of such sudden stops can be undertaken using higher frequency, complementary data on gross issuance of international bonds, equities, and syndicated loans by emerging markets; these data are available on a weekly basis.

Net Private Capital Flows

The volatility of net private capital flows to emerging markets since 1990 can be examined from the perspective of the overall level of the flows, the various subcomponents (such as foreign direct investment), and the regional distribution of the flows. Starting from their lowest level of the 1990s, overall net private capital flows experienced a sharp cyclical upswing until 1996—peaking at about \$222 billion in that year. Subsequently, private flows declined and fluctuated around \$70 billion annually (Figure 4.1). Overall net private capital flows during 1990–96 were over five times the level of flows for the whole of the 1980s.

The hump-shaped pattern of overall flows, however, masked important differences in the volatility of the regional flows and of the various components of total flows. Asia received most of the capital inflows up to 1996 but then suffered a large decline after the financial crisis of 1997. Although inflows to Latin America were relatively stable during the Asian and the Russian crises, they declined sharply in 2002 following the Argentina default. While European emerging markets

Table 4.1. Changes in Bank Exposures to Emerging Markets*(In billions of U.S. dollars)*

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Developing countries	17.7	8.1	51.1	0.3	47.2	112.9	109.8	72.7	-53.2	-66.1	-33.0	-30.8	8.7
Africa and Middle East	3.6	-12.1	11.5	-10.8	5.9	-6.4	-3.3	18.3	25.5	-3.4	-10.6	8.6	2.2
Asia and Pacific	36.3	16.2	23.4	17.1	50.9	88.4	74.8	1.7	-81.7	-48.0	-36.3	-16.8	-3.3
Europe	2.5	1.6	3.8	-6.2	-13.7	13.3	11.4	22.6	9.5	-0.6	9.4	-18.2	21.1
Latin America/Caribbean	-24.7	2.4	12.4	0.1	4.1	17.6	26.9	30.0	-6.6	-14.2	4.5	-4.4	-11.3

Source: Bank for International Settlements (BIS).

had more limited but volatile inflows, Africa experienced the smallest inflows of any region. Inflows to the Middle East were strong in the beginning of the decade but then declined and, beginning in 1999, turned into a capital outflow, possibly because of the uncertain security situation in the region or the investment of oil revenues offshore.

The volatility of the individual components of net capital flows varied greatly (Figure 4.2). A prominent feature of flows in the 1990s was the resilience of foreign direct investment (FDI) even during periods of major crises. FDI to emerging markets rose from \$19 billion in 1990 to its peak of about \$183 billion in 2001. However, FDI fell by about 25 percent in 2002. Almost 70 percent of the decline was due to reduced flows to Latin America, where recessions plagued several countries and the pace of privatization slowed. Moreover, only a few countries (Brazil, China, the Czech Republic, India, and Mexico) accounted for more than half of total FDI flows between 1990 and 2002.

Net portfolio investment, consisting of net equity and bond flows, was the second most important source of financing for emerging markets from 1990 through 2002 but it too remained volatile. In contrast, net bank lending (the main component of “other flows” in Figure 4.2) has been contracting since the Asian crisis (Table 4.1). While the decline in net bank lending was most pronounced for Asia, owing to the retrenchment by Japanese

banks, it was evident in varying degrees in all other emerging markets as well.

Another notable feature of net flows between emerging markets and international capital markets is that emerging markets as a whole have become capital exporters since 1999 (Table 4.2). The reduced level of net private capital flows to emerging markets has resulted in a more than offsetting increase in current account surpluses, as countries increased their foreign exchange reserves (Figure 4.3). Indeed, only Latin America remained a capital-importing region, albeit on a much reduced scale. As a result of the net capital exports in 1999–2002, the net resources transferred to emerging markets throughout the period since 1990 have been rather limited. For example, if net resources invested are defined as equal to total net capital inflows to a country less any reserve accumulation, then the cumulative resource invested in emerging markets since 1990 totals about \$100 billion, about 1 percent of emerging markets’ GDP in 2002 (Figure 4.3).

Given this experience, one key issue is whether net private capital flows have been “excessively” volatile since 1990. As one means of explaining this issue, Table 4.3 provides the coefficients of variation for overall net private capital and the main subcomponents of total flows for four time periods.¹ The time periods are the “1990s” (1991–2002), the “1980s” (1980–1990), the “1970s” (1970–79), and the “classical gold standard period” (1880–1913).

¹The coefficient of variation equals the standard deviation of the flows during a given period divided by the mean level of the flows.

Table 4.2. Balance of Payments: All Emerging Markets*(In billions of U.S. dollars)*

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Emerging markets													
Current account	-24.9	-85.9	-70.2	-110.8	-73.3	-102.7	-94.8	-78.2	-47.4	44.8	134.5	96.1	132.7
Net private flows	29.6	93.7	117.0	135.0	140.9	204.7	221.6	87.7	45.6	98.1	72.0	32.9	77.4
Net official flows	28.5	35.8	25.2	47.7	5.4	28.4	-2.8	56.3	83.0	13.9	-3.9	38.7	25.8
Change in reserves	69.0	74.5	27.5	83.6	92.3	126.0	109.8	69.7	61.0	87.2	98.7	109.1	248.8
Africa													
Current account	-5.6	-6.9	-10.0	-10.8	-11.3	-16.6	-6.2	-6.4	-18.6	-15.6	5.1	-0.3	-8.0
Net private flows	1.3	1.5	-0.6	1.6	12.4	11.3	10.0	8.9	10.4	13.7	4.7	6.0	5.4
Net official flows	5.3	7.0	9.5	6.0	5.1	5.7	-2.2	3.2	4.2	2.0	3.0	1.6	2.2
Change in reserves	4.7	3.6	-3.1	1.5	4.9	2.7	5.4	11.7	-2.2	0.9	12.7	10.2	7.8
Asia													
Current account	0.4	0.7	0.5	-15.1	-5.7	-39.3	-41.5	16.0	115.3	106.3	88.3	90.1	121.0
Net private flows	11.5	32.3	20.8	48.8	66.7	94.9	116.1	23.6	-53.3	7.3	2.4	8.9	60.7
Net official flows	5.1	11.9	10.3	10.1	3.2	4.3	-12.7	17.2	26.1	4.2	3.2	-6.0	-10.1
Change in reserves	47.8	46.4	7.9	44.1	79.3	49.3	61.9	23.9	63.7	80.0	52.0	79.7	182.0
Europe													
Current account	-21.1	3.3	-5.0	-14.1	5.3	-6.2	-15.5	-29.1	-28.5	-4.1	14.1	14.9	8.1
Net private flows	7.5	-20.0	8.5	29.7	0.9	56.1	30.3	-11.1	16.6	37.9	42.1	9.3	36.8
Net official flows	8.2	11.2	2.0	-2.0	-12.3	-6.3	1.3	14.9	32.3	2.1	0.9	22.0	9.0
Change in reserves	2.7	0.8	-1.0	13.4	9.8	41.1	3.0	8.3	5.4	7.0	18.8	13.4	47.5
Middle East													
Current account	2.5	-66.0	-21.1	-24.7	-9.3	-3.2	8.2	8.3	-25.1	14.5	74.6	44.8	28.4
Net private flows	-3.1	60.0	36.7	20.6	17.5	3.4	-0.2	7.6	8.7	-11.0	-27.8	-25.9	-27.6
Net official flows	5.1	-2.0	0.1	2.1	4.4	4.6	6.8	6.4	4.8	5.1	-6.6	-2.5	6.2
Change in reserves	-1.6	5.8	1.0	4.3	2.6	7.8	12.8	11.9	2.7	6.5	12.4	3.5	9.4
Western Hemisphere													
Current account	-1.1	-17.0	-34.6	-46.0	-52.3	-37.4	-39.9	-67.0	-90.5	-56.2	-47.7	-53.3	-16.8
Net private flows	12.4	19.8	51.7	34.2	43.4	39.1	65.3	58.7	63.3	50.2	50.5	34.7	2.1
Net official flows	4.8	7.7	3.2	31.4	5.0	20.0	3.9	14.6	15.5	0.7	-4.3	23.7	18.4
Change in reserves	15.4	17.9	22.7	20.3	-4.2	25.0	26.7	13.8	-8.7	-7.2	2.8	2.3	2.1

Sources: IMF, *International Financial Statistics and World Economic Outlook*.

The 1970s represented the first period since World War II in which net private capital flows played an important role in the external financing of emerging markets. The syndicated bank loan was the principal financing instrument, and major international banks were heavily involved in the recycling of oil revenues. Capital flows during the 1980s were much more limited in scope than in either the 1970s or 1990s and were depressed by the lingering effects of the 1982 debt crisis. The classical gold standard, which lasted roughly from 1880 to 1913, is typically regarded as the longest period of high capital mobility

between a set of major capital exporting countries (the United Kingdom and to a lesser extent France and Germany) and a set of “emerging markets.”²

Owing to data limitations, the regional distribution of net private capital flows during the gold standard period in Table 4.3 is defined as Asia (Australia), the Western Hemisphere (Canada and the United States), and Europe (Italy, Norway, and Sweden). Bonds were the principal instrument of international finance during this period.

Our results suggest that the 1990s were not the most volatile period (Table 4.3). Indeed,

²There were two principal capital importing groups. One group—consisting of countries in North America, Latin America (primarily Argentina, Brazil, and Mexico), and Oceania (Australia)—received most of its capital from the United Kingdom. The other group, consisting of countries in central and eastern Europe, Scandinavia, the Middle East, and Africa, was financed by France and Germany.

Table 4.3. Coefficient of Variation of Net Private Capital Flows to Emerging Markets

	1880– 1913	1970– 1979	1980– 1990	1991– 2002
Total net private capital flows	1.71	0.29	0.94	0.52
Asia	1.65	0.67	0.65	1.27
Western Hemisphere	1.97	0.67	1.88	0.43
Europe	7.04	-1.12	-2.34	1.16
Africa and Middle East	n.a.	-7.50	-36.61	3.06
Net foreign direct investment	...	0.63	0.33	0.47
Net portfolio investment	...	0.88	0.88	1.33
Bank loans and other	...	0.41	67.51	-1.82

Sources: Bloomfield (1968); and International Monetary Fund, *World Economic Outlook*.

overall net private capital flows in the 1990s were only about one-third as volatile as flows during the classical gold standard era.³ A similar result holds for the regional flows. As for the subcomponents of net private capital flows, foreign direct investment was the least volatile inflow during both the 1980s and 1990s. A direct comparison with the gold standard era is not possible because of the absence of data. But anecdotal evidence suggests that most of the net private capital flows during that era were bond issues.⁴ Thus, to the extent that the volatility of total net private capital flows to emerging markets in the gold standard era can serve as a proxy for the volatility of net portfolio flows, the volatility of net portfolio flows in the 1990s was also less than that of the earlier era.

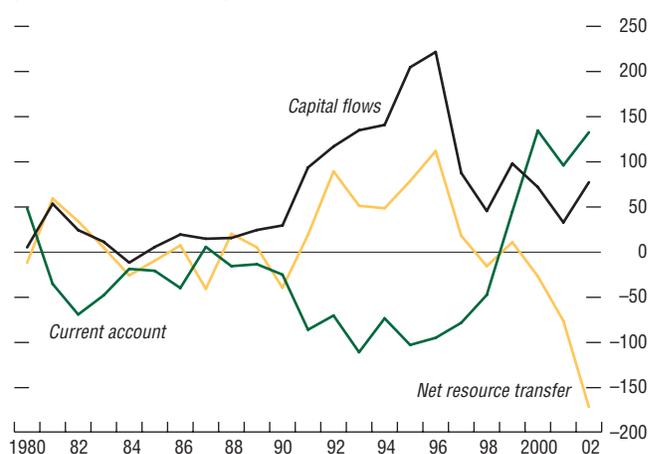
Volatility of Gross Capital Flows

While net private capital flows data can be used to analyze the general pattern and volatility of capital flows, their annual frequency does not allow for an examination of what many analysts regard as a key source of volatility during the 1990s—namely, that

³The same conclusions are reached if the coefficients of variation are calculated on the basis of capital flows relative to GDP.

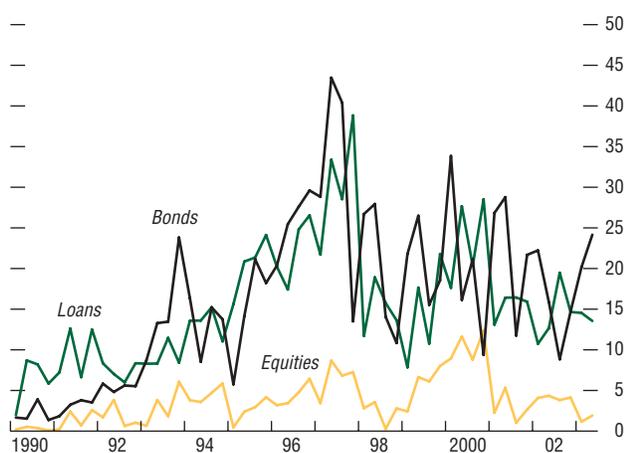
⁴Bloomfield (1968) reports that during 1870–1914, only 10 percent of U.K. foreign investments involved direct investments.

Figure 4.3. Emerging Markets: Net Private Capital Flows and Current Account Balance
(In billions of U.S. dollars)



Source: IMF, *World Economic Outlook*.

Figure 4.4. Emerging Markets Gross Financing: Bonds, Equities, and Loans
(In billions of U.S. dollars)



Source: Dealogic.

Table 4.4. Coefficient of Variation of Private Gross Issuance to Emerging Markets

	1980–1990	1991–2002
Total Gross Issuance	0.31	0.42
Asia	0.38	0.48
Western Hemisphere	0.66	0.49
Europe	0.86	0.47
Africa and Middle East	0.57	0.53
Bonds	0.57	0.46
Equities	1.34	0.61
Loans	0.26	0.41

Sources: Dealogic; and IMF staff estimates.

primary issuance markets for emerging market bonds, equities, and loans were characterized by an “on-off” cycle (see IMF, 2001a, Appendix III; and IMF, 2003). One way to examine the nature of this cycle is to use data on gross issuance of international bonds, equities, and syndicated loans, which are available on a weekly basis (Figure 4.4).⁵ As with net private capital flows, gross issuance of international bonds and syndicated lending exhibited a boom-bust cycle, with large increases in issuance before the Asia crises and a secular downturn thereafter. Moreover, the large spikes upward and downward are suggestive of the “on-off” nature of market access. In addition, overall gross issuance was more volatile in the 1990s than in the 1980s (Table 4.4), with bonds and equities less volatile and syndicated loans more volatile.

The pattern of spikes in gross issuance of international bonds and loans also suggests that emerging markets may have experienced periods of high and low volatility. This possibility can be examined using an econometric model that identifies when issuance of international bonds and equities falls into either a high- or a low-volatility regime.⁶ The estimations are done for two different sample periods: 1980–2002 and 1991–2002. For the

⁵These data capture only syndicated bank loans and do not include other types of short-term credits.

⁶Hamilton (1994) describes a Markov-switching regime econometric model that endogenously identifies recurring regimes of heightened volatility.

Table 4.5. Average Probability of High-Volatility Regime of Gross Issuances to Emerging Markets¹
(In percent)

	1980–2002		1991–2002	
	1980–1990	1991–2002	1991–1995	1996–2002
Total Gross Issuance				
Asia	0	50	38	53
Western Hemisphere	0	66	22	56
Europe	2	88	0	40
Middle East	13	67	10	11
Africa	5	31	18	30
Bonds	0	85	0	25
Equities	41	75	8	17
Loans	0	86	0	33

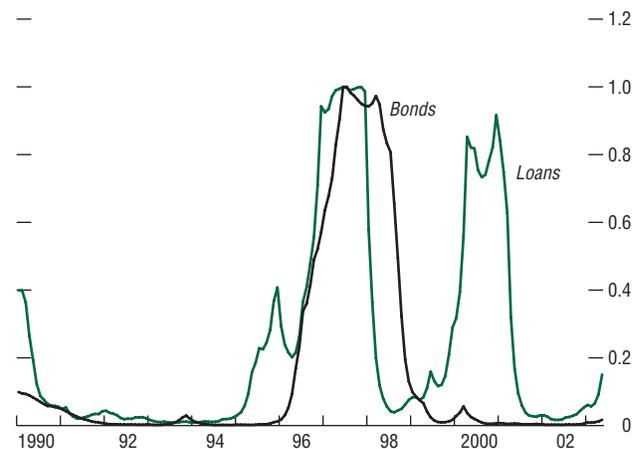
Sources: Dealogic; and IMF staff estimates.

¹For each one of the sample periods (1980–2002 and 1991–2002), the model assumes two states: one of high volatility and one of low volatility. The model estimation delivers monthly probabilities of being in a high-volatility regime. The numbers in this table reflect the frequency of high-volatility months for each subperiod.

period 1980–2002, the model identifies the decade of the 1990s as more volatile than the 1980s (Table 4.5, first two columns). For the 1990s, our estimation results suggest that international issuance of bonds and syndicated loans was much less volatile in the first half of the 1990s than the second half (Table 4.5, last two columns). Moreover, the probability of being in the high-volatility regime for international bonds and syndicated loans peaked with the crises in 1997 and 1998 and the Argentine default in 2001 (Figure 4.5).

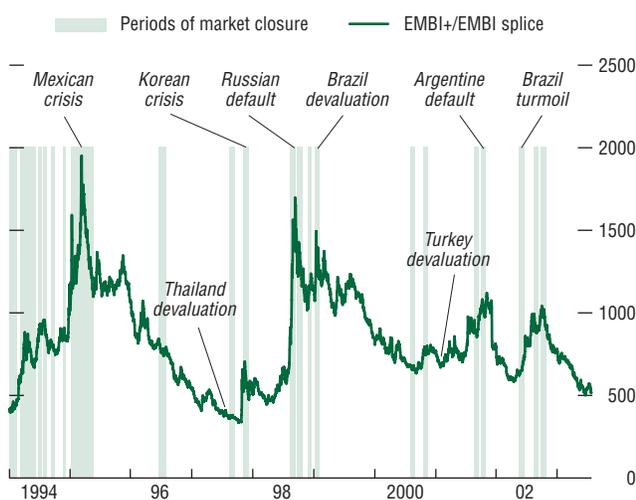
The coefficients of variation and regime switching models help characterize the nature of the volatility in the issuance of international issuance of bonds, equities, and syndicated loans by emerging markets, but they do not fully capture the “tail events”—market closures—that have been of most concern to many analysts. To examine this issue, we must first define what constitutes a market closure. Two recent IMF staff studies have used slightly different definitions of a market closure. One study defined a closure as a period of either a single week or two weeks when issuance is less than 20 percent of a 52-week moving average level of issuance (see Appendix III of IMF, 2001a). The other study (IMF, 2003) used the criteria of two weeks or more. Using the two-

Figure 4.5. Probability of Being in a High-Volatility State



Sources: Dealogic; and IMF staff estimates.

Figure 4.6. EMBI+ with Periods of Opening and Closure
(In basis points)



Sources: J.P. Morgan Chase; and IMF staff estimates.

weeks-or-more definition with data from 1994 to 2002, for example, led to the identification of 21 bond market closures with an average length of 22 days (Figure 4.6).

These analyses identified certain common characteristics of market closures. While some closures were associated with developments or anticipated developments in emerging markets, others were a result of extreme uncertainty in international markets. Moreover, the analyses suggested that primary market closures had become more linked to developments in mature markets, especially in the period since 1997.⁷ The duration of closures primarily attributable to uncertainty in international markets tended to be shorter than those caused by events in emerging markets. In those cases where the closures did not involve adverse developments in emerging markets, a number of closures were preceded by a rise in the volatility of U.S. equity markets or rising interest spreads on U.S. high-yield (“junk”) bonds. While the most severe market closures occurred immediately before and during the Mexican crisis of 1995, many other market closures also coincided with many of the major crises in emerging markets (Figure 4.6) and when yields on emerging market bonds rose sharply.

Determinants of the Pattern and Volatility of Capital Flows

The welfare consequences of the boom-bust pattern and volatility of capital flows have led some analysts to question the desirability of countries’ integration into international capital markets. Answering this question requires first a better understanding of the determinants of that pattern. We now review the main studies on the issue, combining them with

⁷Even if the market closure is primarily driven by a shift in the supply of funds, issuer demand could also vary markedly over such short windows—as good credits choose to postpone issuance when facing very high spreads.

market participants' views on key financial market determinants.

Most studies rely on a standard dichotomy between “push,” i.e., external factors, and “pull,” or domestic factors, and tend to focus on macroeconomic determinants and consequences of the level and volatility of capital flows.⁸ Typical domestic factors are financial liberalization and privatization, while external variables include business cycles and the behavior of asset prices and interest rates in mature markets.⁹ Most studies find that both domestic and external variables are important in affecting capital flows, with the more dominant factors changing over time. Some studies have argued, for instance, that external factors are most important in the first half of the decade, while recently domestic factors have become more significant.¹⁰

The important determinants of the boom-bust pattern and volatility of capital flows, as identified by analysts, are:

- capital account liberalization and financial deregulation in emerging markets;
- large-scale privatization that attracts large FDI inflows;
- a string of crises and contagion effects that propagate financial turbulence across countries and increase the correlation across markets and asset classes;
- international banks' retrenchment in lending to emerging markets in the context of an ongoing shift in business strategy; and
- changes in the composition and broadening of the investor base for emerging market securities.

Financial Deregulation and Capital Account Liberalization

The global trend of deregulation and liberalization of the financial sector in industrial

and many developing countries, together with capital account liberalization, catalyzed a vast increase in the volume and speed of capital flows in the boom-phase of the early 1990s. Many developing countries engaged in financial deregulation already in the late 1980s and early 1990s, even before embarking on capital account liberalization (Williamson and Mahar, 1998). Capital account liberalization in the first half of 1990s was closely associated with the surge in capital flows (Figure 4.7).

The surge in capital inflows to Asia, driven by a partial financial liberalization and the supposed implicit guarantees of stable exchange rates, fueled an expansion in banks' balance sheets that led to large increases in lending and asset price bubbles. In Thailand, for example, the establishment of the Bangkok International Banking Facility in 1993 led to a substantial increase in short-term borrowing that was channeled, to a large extent, to finance real estate and stock purchases. In several countries in the region, feedback effects from asset values to domestic lending magnified the expansionary effects of the initial surge in capital inflows.

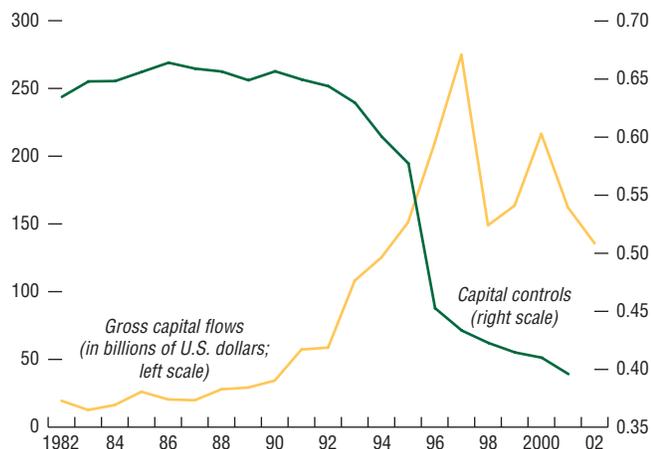
Stock market liberalization also helped boost portfolio flows during the boom-phase of the first half of the 1990s, as well as increased the transmission of the technology, media, and telecom (TMT) bubble and the increased volatility of the second half of the decade. A recent study (Edison and Warnock, 2003) shows that stock market liberalization has proceeded quite rapidly in many emerging market economies. The authors construct an index of liberalization that demonstrates the depth and persistence of the process, and Figure 4.8 shows how the increased liberalization is associated (albeit weakly) with increased volatility in the emerging equity market.

⁸See Calvo, Leiderman, and Reinhart (1996) for an early contribution and Prasad and others (2003) for a more recent summary of the theoretical and empirical evidence of the benefits of capital flows to emerging markets.

⁹These factors are the main underlying determinants of risk-return differentials between emerging and mature market assets, which are the ultimate drivers of cross-border flows.

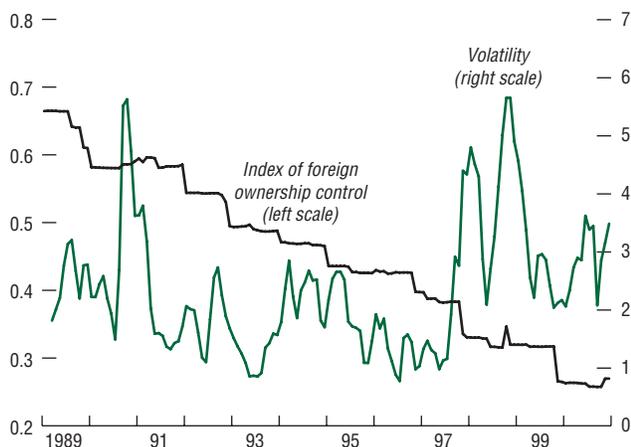
¹⁰Montiel and Reinhart (1999) present a good discussion on the literature.

Figure 4.7. Capital Controls and Flows to Emerging Markets



Sources: IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*; and *World Economic Outlook*.

Figure 4.8. Volatility of Weekly Returns in Emerging Equity Markets and Index of Capital Control¹



Sources: S&P IFC EMD; Edison and Warnock (2001); and IMF staff estimates.
¹Rolling 13-week standard deviation of the S&P IFC Investable Composite Index.

Privatization and Mergers and Acquisitions

The surge in FDI flows to emerging markets in the 1990s mirrored global trends in FDI and was driven to a large extent by the privatization measures undertaken by a number of countries. Most studies find that FDI is most stable among different types of capital flows (Osei, Morrissey, and Lensink, 2002), and this has contributed to the overall stability of flows until recently. Countries in Latin America and Eastern Europe—including Argentina, Brazil, Czech Republic, Hungary, Mexico, and Poland—undertook extensive privatization of state-owned assets during the 1990s, and the FDI flows to both regions accelerated in the second half of the decade (Figure 4.9). In a study that relates the driving forces of FDI to the observed increased integration of capital markets, Albuquerque, Loayza, and Servén (2002) show that the share of FDI variance explained by global (“push”) factors has increased notably in the last 15 years, from less than 10 percent to around 50 percent. The authors also show that the development of local financial markets contributes significantly to the growth in FDI, that measures designed to control the level and volatility of international flows act as deterrents to FDI, and that the occurrence of privatization constitutes a strong and statistically significant determinant of FDI. Other studies also suggest that important pull factors appear to be political and economic stability, the size and growth of the domestic market, the proximity of other large markets, predictable rules for investment and a sound legal framework, the ease of profit repatriation, and the availability of skilled labor and infrastructure. Analysts cited three major trends in the recent surge of FDI to emerging markets.

First, FDI has been increasingly directed to the service sector, while it traditionally had concentrated in the natural resources and manufacturing sectors. This shift was led by the progress in privatization of state-owned assets and the large investments needed to keep up with innovations in the information

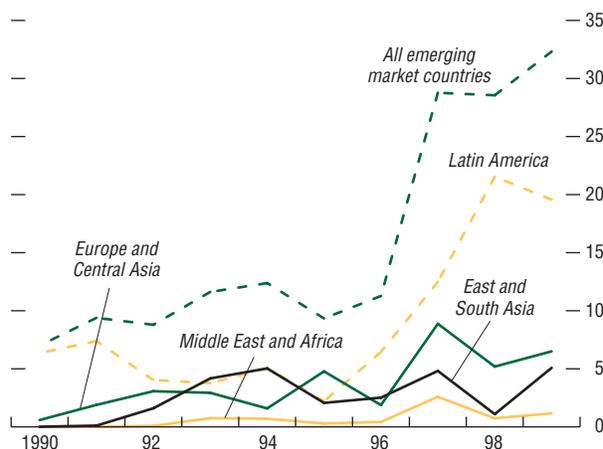
and telecommunication industry. For example, during the second half of 1990s, FDI into the services sector in Brazil accounted for 12 percent of the total FDI into all emerging markets. By the end of the decade, almost 40 percent of the FDI stock in emerging markets was in the services sector (World Bank, 2003).

Second, while traditionally FDI in emerging markets was to a large extent of the “green-field” variety,¹¹ mergers and acquisitions (M&As)—which used to be the main mode of foreign entry in industrial countries—have played a growing role in developing countries and accounted for a significant part of the privatization programs (Figure 4.10). This was driven not only by investments in the TMT sectors, but also in the financial sectors. The share of investment in the financial industry in the total FDI stock of central and eastern Europe reached 13.6 percent in 1999, the highest sectoral share for that region. The comparable figure for Latin America was 12.3 percent (second only to business activities in the tertiary sector; see Roldos, 2002). Following the Asian crisis, the acquisition of distressed banking and corporate assets in several Asian economies also surged, contributing to an important rise in the value of cross-border M&A in that region during 1998–2000.

Third, FDI has remained relatively resilient during the string of emerging market crises, but a full assessment of the contribution of FDI to the stability of flows would have to consider funding, hedging, and other activities of multinational enterprises. FDI continued to grow steadily after the Mexican crisis and slowed down only marginally after the Asian crises. However, some analysts have noted that hedging activities of multinational enterprises contributed to foreign exchange pressures during the period of financial turbulence leading to the 2002 presidential election in Brazil. Also, some analysts have expressed con-

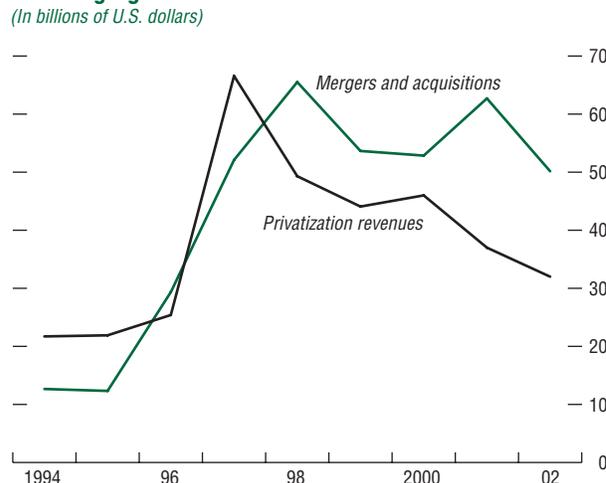
¹¹A “green-field” investment involves the setting up of new units or facilities by foreign firms—as opposed to the purchase of existing ones.

Figure 4.9. Regional Equity Flows Through Privatization
(In billions of U.S. dollars)



Source: World Bank.

Figure 4.10. Mergers and Acquisitions and Privatization in Emerging Markets
(In billions of U.S. dollars)



Source: World Bank.

cerns that the events in Argentina may have undermined investor sentiment toward the region and that a generalized “sudden stop” in FDI to Latin America could further complicate the region’s external financing prospects. However, a number of investors remain committed to FDI in emerging markets notwithstanding slowdowns in Latin America and in global financial conditions. There is little evidence to support worst-case fears of a major pullout from the region or emerging markets as a whole.¹²

Crisis and Contagion

The string of financial crises that first struck Asia in 1997 marked the beginning of the bust phase of capital inflows to emerging markets. The causes of these crises have been widely studied and include, to different degrees, a combination of weak fiscal and financial fundamentals, together with abrupt losses of access to international markets (sometimes referred to as “sudden stops”; see Calvo, 1998). A key feature of these financial crises has also been the fact that, like epidemics, they appear to be contagious. Contagion in financial markets has since been seen as a key source of volatility in capital flows to emerging markets. Recent experience and research in the area have proven, however, that the spillovers across countries are to a large extent due to financial linkages and that these are, in turn, integral to the operation of international financial markets.

The spread of the financial crisis from Thailand to several other countries in Asia

and elsewhere in 1997 and the global financial turmoil triggered by the Russian devaluation and default in 1998 are widely attributed to contagion effects. A broadly accepted definition of contagion is the propagation of shocks in excess of what can be explained by fundamentals. Since there are several ways of quantifying and analyzing fundamentals, however, studies on contagion have been quite controversial.¹³ Studies have, nonetheless, shown that trade and financial linkages are important elements in the international propagation of shocks; and, in particular, that financial linkages related to the existence of common creditors in international markets appear to be critical, especially for the immediate volatility that follows the crisis in the source country.¹⁴ Many studies have also found evidence of excess comovement in a variety of asset returns, but correlations are time-varying and there is less consensus on whether this comovement increases during crises.

The recent crises in Brazil (February 1999), Turkey (February 2001), and Argentina (December 2001) have demonstrated a much lower degree of contagion, though financial linkages were clearly at work in these episodes. Analysts attribute the lower incidence of contagion to four factors: the crises were to some extent anticipated; they occurred when capital flows had already subsided; leverage in the system had declined; and investors had increased their ability to differentiate among countries.¹⁵ In the case of Argentina, four main financial linkages transmitted the crisis in the region and globally:

¹²This assessment is based on an upcoming report of the Working Group of the Capital Markets Consultative Group (CMCG, forthcoming).

¹³For a detailed discussion on the different mechanisms of contagion and definitions, see Forbes and Rigobon (2000), Moser (2003), and Kaminsky, Reinhart, and Végh (2002).

¹⁴Countries that share a common lender with another one that suffers a financial crisis could suffer cuts in credit lines as banks reassess exposures in the region and globally (Kaminsky and Reinhart, 2000; Van Rijckeghem and Weder, 2000). Similarly, global investors that suffer losses in one market may hedge by shorting assets that are highly correlated to the affected country (Kodres and Pritsker, 2002; Schinasi and Smith, 2000) or, if they face liquidity pressures, they may sell assets of other less-affected countries.

¹⁵See, for instance, IMF (2002) and Kaminsky, Reinhart, and Végh (2002).

- Argentina had a 20 percent weight in the EMBI+ and this initiated spillovers to the bond markets of other constituents of the index.
- Some Spanish banks and corporates had large exposures in Argentina and the deterioration in their subsidiaries had a significant impact in the Spanish stock market (Figure 4.11).
- Some of the banks operating in the region saw the spillovers of the crises affecting Brazilian financial assets and, given the difficulty of shorting some of those assets, took short positions in the Chilean peso.¹⁶
- Uruguayan banks, which had for years been host to Argentine depositors, suffered large deposit runs after those depositors saw their deposits in Argentina frozen by the authorities in December 2001.

A higher degree of investor discrimination, however, helped to offset these linkages and to contain financial spillovers to these and other countries.

One particular feature of investor behavior that could potentially generate excess volatility and comovement across markets is herding behavior. Herding occurs when information is costly and investors follow sporadic and imperfect signals to change their portfolio allocations. Uninformed investors may follow the behavior of informed specialists or may trade blindly to mimic some benchmark or mechanistic trading rule. The empirical evidence concerning investors' herding behavior and momentum trading at the international level is mixed. Although there is some evidence that the correlation among assets increases during crisis periods, it is unclear whether herding behavior is more pronounced during such periods. Froot, O'Connell, and Seasholes (2001) find evidence of momentum trading in portfolio flows. Borensztein and Gelos (2000) find only

Figure 4.11. EMBI+ Argentina Spread and MSCI Spain



Sources: Bloomberg; and J.P. Morgan Chase.

¹⁶Proxy hedging was one of the factors behind the depreciation of the peso in 2001.

weak evidence of herding behavior among emerging market mutual funds and report that herding did not seem to worsen during crises. Kaminsky, Lyons, and Schmukler (2001) reported some evidence of momentum trading among U.S. mutual funds investing in emerging markets, which appeared to intensify during crises. In particular, the authors find that funds engaged in contagion trading, which they define as systematic selling of assets from one country when asset prices begin to fall in another.¹⁷ This contagion trading is attributable primarily to (underlying) investor activity, however, and not to the actions of fund managers.

The correlation of returns across markets varies also with the degree of financial integration, and this pattern could make crises more likely when capital flows are at their peak. Goetzmann, Li, and Rouwenhorst (2001) show that long-term correlations of returns in the major world equity markets are highest during periods of economic and financial integration, as in the late nineteenth and twentieth centuries. Although this higher correlation reduces the gains from global portfolio diversification, the authors also find that investors gain from an expansion in the opportunity set—that is, from the availability of additional markets and instruments. A negative implication of the expansion of markets during periods of globalization is that investors may have reduced incentives to pay for fixed country-specific information costs (Calvo and Mendoza, 2000). This might have heightened volatility but could have been countered by the increased availability of information at lower costs during the last decade.

Common lender effects and global portfolio investors are having an increasingly important influence on capital flows to emerging markets. To better understand capital flow volatility, a more thorough study of the structural

determinants of the behavior of international banks and the investor base for emerging market asset is required.

Shift in Business Strategy of International Banks

International banks, the main source of external finance for emerging markets during the 1970s and early 1980, saw their role greatly diminished in the 1990s. After a resumption in lending prior to the Asian crises, a massive retrenchment in international lending has been a major cause of the bust phase of capital flows in the past five years. This retrenchment in commercial bank lending can be traced to weak balance sheets and earnings, greater risk awareness, consolidation, and an ongoing shift in business strategies and product lines, among other things. Given that the causes of such changes are likely to have a permanent impact on the banking industry, the role of bank lending in emerging markets may remain diminished going forward.

The string of emerging market crises, spillovers from the bursting of the TMT bubble, and slow growth in the mature markets weakened the balance sheets of many money center banks, leading to a sustained retrenchment in lending activities. Low interest rates in the G-3 countries in the 1990s encouraged banks to seek out higher returns from lending to emerging economies. In Japan, sustained low interest rates gave rise to the attractiveness of the “yen carry” trade. The large interest rate differential and optimism about the growth of Asian economies caused banks to lend aggressively in the region. Subsequent crises quickly reversed the trend and the exodus by Japanese banks from Asia initiated the collapse in international bank lending to emerging markets. The reduction in exposures of European banks to Latin America after Argentina’s default and the

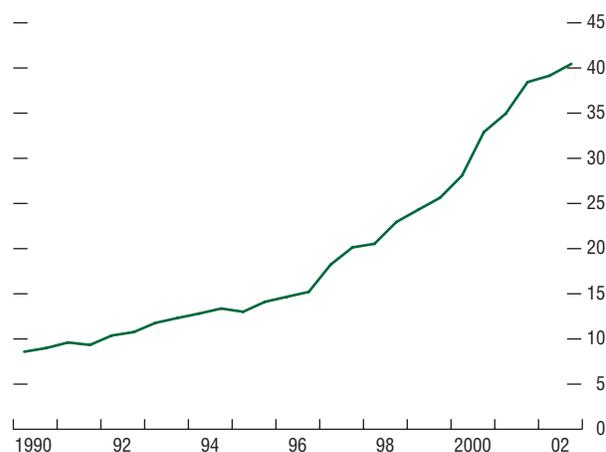
¹⁷This kind of contagion trading may also be capturing cross-border hedging activities—that is, financial linkages.

turbulence in Brazil reinforced this trend. As a result, the outstanding loans of international banks to emerging markets have fallen by about 5½ percent a year since the Asian crisis.

These series of shocks have heightened risk awareness in the major banks, which has, in turn, prompted a more cautious approach to lending to emerging markets. Banks are exerting greater scrutiny over the credit quality of their clients and are seeking greater diversification of exposures across sector and countries. They are also increasingly using structured products and credit default swaps (CDS) to shift in part their credit risks off their balance sheets. While these changes may ultimately lead to better-managed balance sheets and hence more ability to take risk, so far they appear to have led to a more cautious lending environment, especially toward emerging markets.

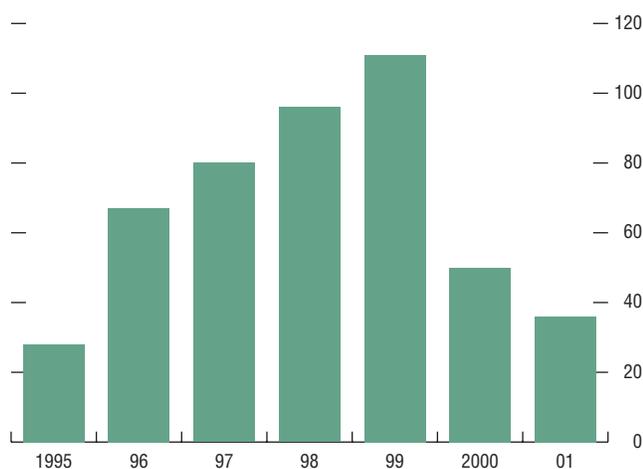
Moreover, the collapse in cross-border bank lending to emerging markets masked other important structural changes in international bank lending: global banks have consolidated, and have increasingly emphasized lending from local subsidiaries and fee-based businesses. Some analysts have argued that the wave of global banks' mergers has reduced the amount of capital dedicated to underwriting and market-making in emerging markets, but the evidence is unclear (see IMF, 2001a, Box 5.1 in particular). Also, the ratio of local currency claims of BIS reporting banks' foreign affiliates with local residents to total foreign claims has been increasing steadily (Figure 4.12), suggesting that banks have redistributed their emerging market portfolios from traditional cross-border lending to in-country lending. The changing business strategy has been one facet of the ongoing consolidation of banking systems in both mature and emerging markets. It has been motivated, among other things, by increasing competition that lowered the margin on lending, a desire for more diversified sources of income, and the incentive to exploit econo-

Figure 4.12. Local Claims and Total Foreign Claims Ratio
(In percent)



Source: Bank for International Settlement.

Figure 4.13. Most Active Pro Rata Investors
(In numbers)



Source: Standard & Poor's.

mies of scale and scope.¹⁸ Lending in local currency eliminates the inherent currency mismatch in cross-border lending and facilitates penetration in the local retail market. Many emerging market economies have encouraged the entry of foreign banks to improve their domestic banking system by introducing better banking practices and increasing transparency. They also believe that foreign banks' commitment to the local market could help reduce the volatility of capital flows.¹⁹

The traditional syndicated loan market shrank in the second half of 1990s, owing to low profit margins attributable to intense competition. The role of the "lead bank" has shifted in recent years from that of the agent for the lending group to the "underwriter" of the deal. This means that the lead banks are increasingly motivated by the up-front fee received for syndicating the deal rather than by revenues associated with interest rate spreads. The traditional "buy-and-hold" lenders have seen their spread lending revenue shrink because of competition from new underwriters, many of which sharply reduced the spread on loans to capture market shares. The number of the pro rata investors, the "buy-and-hold" lenders, has dwindled (Figure 4.13). These structural changes have also affected the supply of syndicated loans to emerging markets and contributed to a decline in net private flows.

The response of emerging markets to the string of crises has also contributed to the reduction in bank lending. Prudent liability

¹⁸IMF (2000) and Mathieson and Roldos (2001) offer detailed analyses of the reasons for the increased role of foreign banks in emerging markets and its implications for efficiency and financial stability.

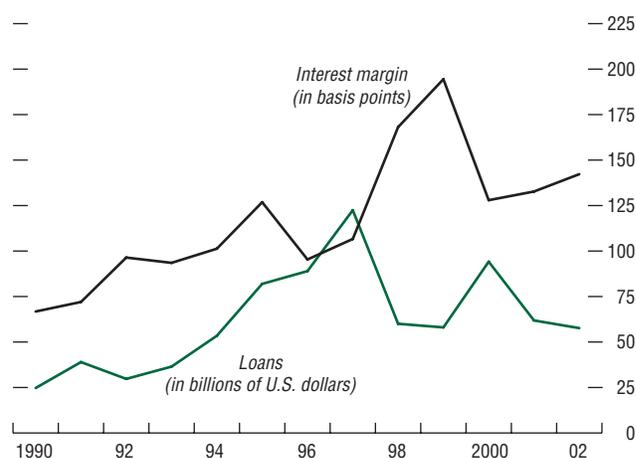
¹⁹Empirical evidence on whether the presence of foreign banks reduces the volatility of capital flows to emerging markets is mixed. Kono and Schuknecht (1998) find supporting evidence, while Beck (2000) finds that penetration of foreign banks tends to increase the volatility of capital flows. Kireyev (2002) finds that liberalization of trade in financial services is conducive to banking sector stability.

management of sovereigns, corporates, and domestic banks has also meant a reduction in short-term external borrowing, especially bank loans, to avoid excessive maturity mismatches. Before 1997, the bank loan market was driven largely by strong demand from emerging markets, as both the interest margin and the loan amount climbed steadily in tandem (Figure 4.14). Immediately after the crisis in 1997, however, the shrinking supply of syndicated loans dominated the market, as higher margins were met with lower loan volumes. Since 1999, falling margins and lower loan volumes suggest that the demand for loans by emerging market borrowers has also decreased in tandem with the bank retrenchment.

Market participants also note that risk management practices and herding behavior by commercial banks have been the main causes of the collapse in trade finance in recent crises. Typically, during a crisis, a bank reduces its overall country exposure following a decision by its management to cap the institution's country limit, including trade finance. Also, since domestic banks intermediate an important share of trade finance in emerging markets, concerns about their credit quality—especially if they are exposed to the sovereign (as happened in Brazil last year)—may increase during crises. Even in more tranquil periods, risk management practices have reportedly changed in the trade finance industry. Indeed, trade finance operations have evolved from being loss-leader operations, established in the context of relationship banking activities, to stand-alone operations. As a result, trade finance has been priced more appropriately and the associated risks are being better managed, with the implication that the stability of relationship lending has been diminished.

Some analysts argue that the combination of consolidation and herding, with the increased use of market-sensitive risk management tools, has led to a decline in market liquidity and to an increase in the volatility of

Figure 4.14. Emerging Markets: Interest Margin and Syndicated Loans



Sources: Dealogic; and IMF staff estimates.

capital flows. Persaud (2000 and 2002) shows that there has been a persistent decline in equity market liquidity (both in mature and emerging markets) since 1998. He attributes the decline to a reduction in the diversity of behavior of market participants, which owes in turn to the decline in information costs, the consolidation of major players, and the wider use of similar market-sensitive risk-management tools—such as Value-at-Risk (VaR) models. Persaud argues that VaR models caused banks to herd and that this herding is not offset by longer-term investors' buying in the wake of "forced" bank selling because investors are increasingly using the same VaR models. While he does not provide evidence on the latter, he then calls for regulators to encourage the adoption of a variety of risk-management models and practices that would allow long-term investors to follow trading strategies that are less sensitive to the short-term risk-management models used by the major banks.

Investor Base Change

The secular withdrawal of international banks from lending to emerging markets is part of a global trend and has contributed to the securitization of international finance. The trend began with the restructuring of bank debts to Brady bonds in the early 1990s, together with the liberalization of investment in equity markets. Emerging market securities have evolved into a more mainstream asset class (Box 4.1). The trend was associated with the boom phase of portfolio flows that reinforced other types of flows in the first half of the 1990s. More important, an active secondary market for emerging market bonds was developed and the behavior of the investor base in this market became crucial for the pricing and volatility of flows. In particular,

the increasing dominance of "mark-to-market" investors has prompted an increased sensitivity to market prices but has also encouraged more transparency and a more diverse investor base. As the market for emerging market securities matures, changes in the investor base for such securities have been, and will continue to be, critical determinants of the volatility of capital flows to emerging markets.

The string of crises and the volatility of capital flows over the last decade were associated with important changes in the investor base for emerging market securities. These changes included a sharp drop in the participation of banks and hedge funds and an increase in the participation of crossover and local investors. The behavior of hedge funds and their impact on volatility and contagion have received a substantial amount of attention in both the academic and official communities, especially after the Asian, Russian, and Long-Term Capital Management (LTCM) crises. An early study (Eichengreen and Mathieson, 1998) finds little evidence linking hedge fund strategies to excess market volatility and only some evidence regarding similar position-taking ("herding") among hedge funds of the same investment style.²⁰ The study also finds little evidence that hedge funds took short positions against Asian currencies in 1997 earlier than other investors. This study concludes that hedge funds appear to have followed, rather than led, other investors during both the 1994–95 and the 1997 crises in emerging markets. More recent studies in hedge fund performance find mixed results in terms of their risk-adjusted returns.²¹ The regulatory response has included strengthening risk-management practices by hedge funds and their counterparties, enhanced regulatory oversight of hedge fund credit providers, enhanced public

²⁰Fung, Hsieh, and Tsatsaronis (2000) confirm that evidence.

²¹See, for example, Ackerman, McEnally, and Ravenscraft (1999) and Edwards (1999).

Box 4.1. The Demise of Brady Bonds

Brady bonds were issued by some emerging market countries, particularly in Latin America, as part of a restructuring of defaulted commercial bank loans in the 1980s. The initiative was launched by U.S. Treasury Secretary Nicholas Brady in 1989. It was supported by lending from the IMF, the World Bank, and the Japan Bank for International Cooperation (JBIC), with the goal of reducing the heavy debt burdens faced by these countries. Probably to make the deals more attractive to investors, the bonds were tailor-made in all sizes and carried a mind-boggling array of covenants, conditions, warrants, and other complex features, such as collateral.

Bradys jump started the emerging bond market and facilitated capital market access by the emerging markets. Since the first Brady deal by Mexico in March 1990, the total amount of Brady bonds outstanding rose to \$154 billion as of the end of 1994, representing 85 percent of the Latin American debt market—at which point, Mexico accounted for 19 percent of the outstanding amount, second only to Brazil (with 35 percent). Many non-Latin countries, such as Bulgaria, Poland, the Philippines, Nigeria, and Côte d'Ivoire, also issued Brady bonds.

Brady bonds became more expensive to the issuers and less liquid over time, however, because of their exotic structures. As emerging market countries gained more access to capital markets in the 1990s with the surge in capital inflows, their borrowing costs were

lowered and borrowing covenants weakened. In most cases, Bradys became the most expensive liability a country could have.

Since 1995, led by Argentina, many countries that issued Brady bonds started to retire them through exchanges for cheaper Eurobonds, buybacks, calls, and warrant exercises, among other means, exemplifying the concept of sovereign liability management. The stellar performer in this regard is Mexico, which managed to reduce its share of the market from its high of 19 percent in 1994 to almost zero now. The most recent deal, “Adios Bradys,” by Mexico wiped its plate clean of dollar-denominated Brady bonds. Many other countries also significantly reduced their Brady bonds, including Brazil, Argentina, the Philippines, Poland, and Vietnam. As a result, the outstanding stock of Brady bonds dropped from \$154 billion in 1994 to about \$50 billion recently, a decline of 67 percent! Furthermore, many of the exchanges have resulted in net present value savings for the sovereigns, the release of resources that were tied as collateral, and expanded the investor base for the asset class.

Market participants view the retirement by many emerging market issuers of their Brady bonds as a signal that the sovereigns are entering a more mature phase of managing their liabilities. As Brady bonds disappear, mainstream Eurobonds are overtaking them as the liquid bonds. This is gradually leading to a greater institutional and retail acceptance of the asset class and its inclusion in broader global fixed-income portfolios.

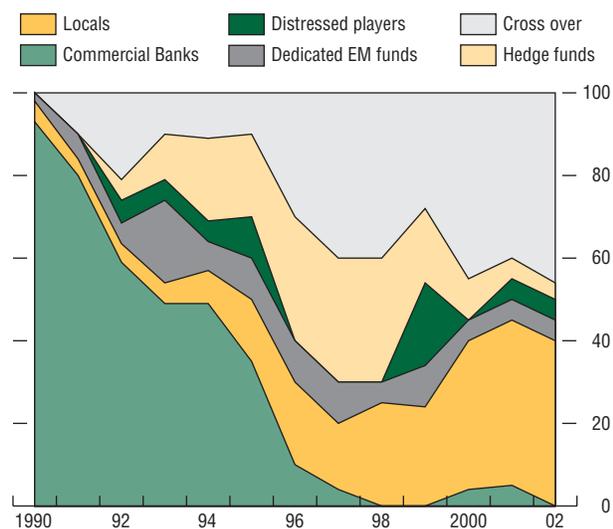
disclosure, and guidelines on good practices for foreign exchange trading and a firmer market infrastructure.²² While some analysts

argue that the withdrawal of hedge funds after 1998 reduced liquidity in emerging market securities,²³ others maintain that their absence

²²See, for example, the President's Working Group on Financial Markets (United States, 1999), and Financial Stability Forum (FSF) recommendations.

²³By 2002, the share of emerging market assets accounted for by hedge funds shrunk to about 5 percent from about 20 percent in 1995, while the market share of other crossover investors rose to about 48 percent from about 10 percent in 1995.

Figure 4.15. Changing Market Share of Emerging Market Investors
(In percent)



Source: PIMCO.

has contributed to the easing of contagion and volatility in the more recent crises (see Figure 4.15 for an illustration of the changing investor base for emerging market securities during the past 13 years).

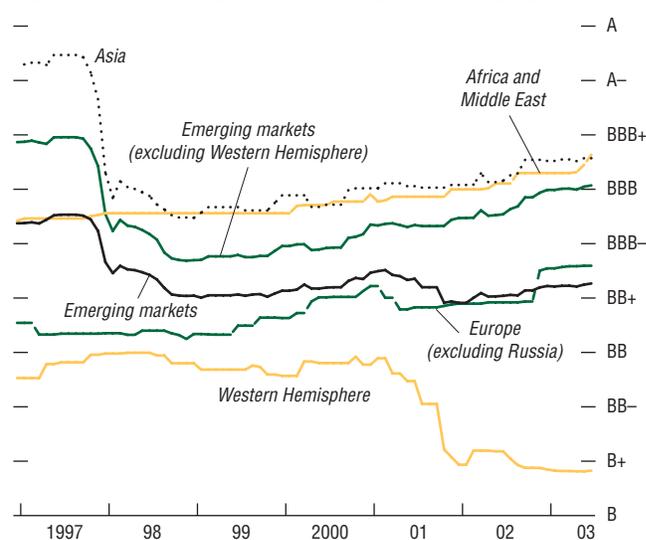
Another important change in the investor base for emerging market securities has been the relative decline in “dedicated” relative to “crossover” investors. A dedicated investor is one whose performance is measured against an emerging market asset benchmark, such as the EMBI or MSCI emerging market index. Crossover investors are the main institutional investors and managers of investment-grade debt and mature market high-yield securities. Crossover investors are usually not measured against any emerging market benchmark; hence they only invest in emerging market assets to improve returns. Their investment decisions thus tend to be more opportunistic and susceptible to developments in competing and complementary asset classes. As a result, fund flows to emerging market assets by crossover investors tend to be more volatile as they go in and out of the asset class, while dedicated investors usually trade within the asset class.

Although the increased importance of crossover investors may have increased volatility in the asset class, it has also led to a broader and more diversified investor base—which could strengthen the asset class. The increased susceptibility of the asset class to developments in competing and complementary asset classes has been demonstrated by the impact of volatility in mature markets in the periods immediately preceding the episodes of closure of emerging bond markets. Some analysts (Bayliss, 2003; and El-Erian, 2003), however, argue that a more diverse investor base contributes to lower volatility, among other things, because it moves investors’ focus from narrow benchmarks toward blended benchmarks that combine emerging market securities with more established credit products.

Toward the end of the last decade, the investor base for emerging market bonds widened with the addition of European institutional investors and local investors in emerging market countries (IMF, 2000). While demand for emerging market bonds in Europe is traditionally retail, institutional demand has grown more recently, fueled by the growth in European high-yield funds. These European investors tend to be more buy-and-hold than their U.S. counterparts, exhibit greater willingness to cross over into emerging market securities, and have fewer holding restrictions based on credit ratings. In addition, emerging market local investors have increasingly invested in foreign-currency-denominated local assets. Market participants cited this trend in some of the largest emerging markets—such as Argentina, Brazil, Mexico, Russia, and Turkey—as well as in smaller countries, such as Kazakhstan and Lebanon. In particular, the growth of pension funds has increased the stability of returns in emerging market bonds, as there is evidence that local investors seem to buy into the asset class when there is a global sell-off (Roldos, 2003). The widening of the investor base for emerging market securities is likely to help reduce volatility in those assets going forward.

The broadening and diversification of the investor base has been reinforced by a broadening and diversification of investment opportunities. Despite the relative stability of the dedicated investor base for emerging market debt, the number of emerging market debt mutual funds has increased from 22 in 1994 to 80 in 2002. Also, the number of countries in the industry's more important benchmark, the EMBIG (a broader version of the EMBI), has increased from 15 in 1993 to 30 in 2002, with an even larger number of new issuers. More important, a number of members of the asset class have graduated to the investment grade. This, combined with an improvement in the credit fundamentals, especially outside South America (Figure 4.16), has provided additional support to,

Figure 4.16. Average Credit Ratings in Emerging Markets¹



Sources: IMF staff calculations based on data from Moody's, Standard and Poor's, and Capital Data.

¹Includes all major emerging markets with credit ratings as of December 1996. Weighted average by bond issuance from 1995 to 1999.

and enhanced the attractiveness of, the asset class.

Concluding Remarks and Policy Issues

The pattern and volatility of capital flows to emerging markets in the 1990s does not seem to differ markedly from other historical periods. Indeed, the volatility of these flows—as measured by the coefficient of variation of aggregate net flows—in the last decade has not been as large as that in some earlier periods. However, data limitations suggest some degree of caution in the conclusions derived from a comparison of very distant historical periods.

The most stable capital flow has been foreign direct investment. Much of the volatility in capital flows in the 1990s can be attributed to a sudden loss of access by many emerging markets to the primary issuance markets for international bonds, equities, and syndicated loans. While this loss of access was at times associated with political and economic developments in individual emerging markets, developments in mature markets sometimes restricted the access of many emerging markets.

The boom-bust pattern and the volatility of capital flows to emerging markets was the result of several factors, many of which are likely to continue to affect flows going forward. The winding down of the process of liberalization and privatization in emerging markets means that these “pull” factors are likely to be less important in the near future, with the exception perhaps of some countries—for example, FDI to China. FDI will be supported, however, by the long-term strategies of major corporations operating on a global scale and prospects will be linked to host country factors with likely regional variations. The retrenchment in bank lending to

emerging markets is likely to persist, reflecting a deep structural change in the way the industry operates. It is not possible to rule out, however, some recovery of bank lending to emerging markets once the structural changes run their full course.

The securitization of international finance means that portfolio flows are going to continue to be an increasingly important part of emerging market financing, and a certain degree of volatility will inevitably persist. Equity flows are likely to remain subdued, especially in those countries where the increase in volatility is related to global trends toward a concentration of issuance and trading in major regional financial centers.²⁴ The pattern of volatility of issuance for bond flows will be determined by the interaction of two opposing forces. On the one hand, changes in the investor base—the relative importance of crossover investors and, perhaps, a return of hedge funds—are likely to continue to impart some volatility to issuance and prices. On the other hand, a broadening of the investor base and the investable universe—including countries and instruments—together with a strengthening of the asset class is likely to increase the stability of flows somewhat. Among the factors contributing to a strengthening of the asset class, as analysts have noted, is that most of the major emerging markets have already suffered severe financial crises and are now improving their fundamentals and adopting a series of “self-insurance” policy measures.

The experience with the volatility of capital flows during the 1990s appears to have convinced the authorities in many emerging markets that such volatility is likely to be a feature of the increasingly integrated international financial system. As a result, most emerging markets have adopted measures—or “self-insurance policies”—to reduce their depend-

²⁴IMF (2001a) and Mathieson and Roldos (forthcoming) discuss the drying up of liquidity in the major emerging market stock exchanges and its implications for international investors.

ence on international borrowing.²⁵ Although some of these measures could lead to increased capital flows and lower volatility for the countries adopting them over the medium term, they have contributed to a general fall in the demand for flows—and hence to the fall in capital inflows toward the end of the 1990s—that is likely to persist for a while. While establishing sound macroeconomic policies has been one obvious element in strengthening perceived creditworthiness and helping to sustain access to international capital markets, many emerging markets have taken additional measures designed to “self-insure” against volatile capital flows and asset prices. These measures have centered on:

- changes in external asset and liability management practices;
- adapting exchange rate arrangements to the degree of capital account openness;
- strengthening domestic financial institutions and enhancing prudential supervision and regulation in order to increase resilience to volatility; and
- developing local securities and derivatives markets to provide an alternative source of funding for the public and corporate sectors and to facilitate the management of the financial risks associated with periods of high asset price volatility.

After the Asian crisis of 1997, a number of commentators suggested that emerging markets increase their holdings of international reserves to provide a degree of self-insurance against a sudden reversal of capital flows.²⁶ Indeed, holdings of foreign exchange reserves by emerging markets more than doubled between the end of 1995 and the end of

2002.²⁷ Reserve accumulation was particularly notable for some countries that experienced “sudden stops” (or reversals) of capital flows (such as Korea, Taiwan Province of China, and Mexico).

Emerging market borrowers have also adapted to the volatile nature of market access. In part, this has involved greater transparency in data and policies (as demonstrated by the increasing number of countries subscribing to the IMF’s Special Data Dissemination Standards, or SDDS, and undertaking Financial Stability Assessment Programs, or FSAPs), as well as other initiatives such as the adoption of Reviews of Standards and Codes (ROSCs), to help reduce the volatility of capital flows by reducing the scope for herding behavior and increasing differentiation of credit quality. In addition, they have attempted to develop access to the retail and institutional bond markets denominated in euros and yen when the U.S. dollar bond market has been closed.²⁸ They have also employed staff in debt management agencies with extensive investment banking and trading experience, and have exploited “windows of opportunity” to prefund their yearly financing requirement. Moreover, they have engaged in debt exchanges to extend the maturity of their external debt and avoid a bunching of maturities, established benchmark external bond issues both to improve secondary market liquidity and to facilitate the pricing of external corporate debt issues, and made greater use of local debt markets.

While changes in public sector external asset and liability practices have been key elements of the self-insurance response to the

²⁵See IMF (2003) for a more detailed description of these policies, with emphasis on the development of local securities markets.

²⁶See Feldstein (1999) and Greenspan (1999). The IMF’s approach to international reserves adequacy, which is now focused on the role of potential capital account pressures, can be found at <http://www.imf.org/external/np/pdr/resad/2001/reserve.htm>, <http://www.imf.org/external/np/pdr/debtres/index.htm>, or IMF (2001b).

²⁷Moreover, the ratio of emerging markets foreign exchange reserves to nominal GDP at the end of 2002 was at the highest levels since 1990. Similar results hold for the ratios of reserves to imports and reserves to broad money (M2).

²⁸In the period since the Argentine default, accessing these alternative markets has proved difficult.

volatility of capital flows, the authorities in many countries have continued to use capital controls in part to affect the private sector's external asset and liability position. Indeed, the evidence for the period 1998–2001 shows that there was also a slowdown in the removal of capital controls by countries that have had restricted capital accounts (Figure 4.7).²⁹ These *de jure* capital controls do not necessarily provide a measure of possible changes in the *de facto* level of capital market integration. But they do provide a measure of the relative unwillingness of the authorities to undertake further capital account liberalization in an environment of volatile capital flows and global asset prices.

Although external asset and liability management techniques can provide a buffer against volatile capital flows and asset prices, emerging markets have also been adapting policies and the strength of their financial institutions to the degree of openness of their capital account. These adaptations have been most noticeable in the nature of exchange rate arrangements and in efforts to strengthen the ability of banking systems to withstand volatile capital flows and asset prices.

While the accumulation of larger foreign exchange reserves could create more scope for the authorities to fix the exchange rate, countries have generally moved away from pegged but adjustable exchange rate arrangements since the mid-1990s, especially those with access to international capital markets. For countries with access to international capital markets, the move to either a flexible exchange rate or a hard peg represents an alternative solution to the well-known problem of trying to maintain a fixed exchange

rate and an independent monetary policy with a high degree of capital mobility. Moreover, it reflects the difficulties that a number of emerging markets experienced in attempting to defend a fixed exchange rate during periods of sudden stops or reversals of capital flows.

While the changes in exchange rate arrangements removed some of the incentives for banks to borrow abroad—a major cause of the emerging market crises in the second half of the 1990s—country authorities still faced the difficulties of restructuring and recapitalizing the banks (and heavily indebted corporates), as well as ensuring that banks improve their risk management techniques amid volatile capital flows and asset prices (IMF, 2003). In short, in the period since 1997, the results have been mixed. Asia, for example, has shown a slow but steady improvement in its soundness indicators. In contrast, Latin America presents a more differentiated picture—with countries such as Mexico and Chile continuing to improve while Argentina and Uruguay deteriorated until recently. Central Europe has achieved the sharpest improvement in bank soundness.

Finally, the efforts to develop local securities and derivatives markets have been motivated in large part by the desire to provide an alternative source of funding for both the sovereign and corporate sectors in order to self-insure against a reversal in capital flows. In addition, it has been argued that the development of local markets will help improve the intermediation of domestic savings and attract foreign investors.³⁰ This has become particularly important as a greater number of emerging markets have privatized their pension systems. In central Europe, foreign investors

²⁹Habermeier and Ishii (2003) report, for example, that during 1998–2000, the number of countries maintaining controls on both current and capital account transactions remained relatively unchanged (falling from 74 percent to 70 percent of all IMF members). Moreover, although the overall use of capital controls did not change, a growing number of countries began to regulate selected transactions. In particular, the number of countries maintaining controls on institutional investors rose sharply.

³⁰In Asia, this has also involved efforts to develop a regional market through the establishment of the Asian Bond Fund (in June 2003).

have provided a steady source of demand for local currency sovereign bonds. Moreover, local derivatives markets have been seen as providing a vehicle for managing financial risks, especially those related to exchange rates and interest rates. Despite the rapid expansion of local securities markets, it remains unclear whether they will be able to offset future losses of access to international markets. Continued efforts to develop markets will nevertheless buffer “sudden-stops” and contribute to reduced volatility in capital flows.

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