

Mutual Fund Investment in Emerging Markets: An Overview

Graciela L. Kaminsky, Richard K. Lyons, and Sergio L. Schmukler

International mutual funds are key contributors to the globalization of financial markets and one of the main sources of capital flows to emerging economies. Despite their importance in emerging markets, little is known about their investment allocation and strategies. This article provides an overview of mutual fund activity in emerging markets. It describes their size, asset allocation, and country allocation and then focuses on their behavior during crises in emerging markets in the 1990s. It analyzes data at both the fund-manager and fund-investor levels. Due to large redemptions and injections, funds' flows are not stable. Withdrawals from emerging markets during recent crises were large, which is consistent with the evidence on financial contagion.

One of the most remarkable characteristics of the financial crises of the 1990s is the speed at which they spread to other countries. The Mexican crisis in December 1994 prompted speculative attacks in Argentina and Brazil during the first quarter of 1995. The 1997 Thai crisis reached Malaysia, Indonesia, and the Philippines within days. Unlike these earlier crises, the 1998 Russian crisis was not confined to regional borders; it spread quickly to countries as distant as Brazil and Pakistan. Even developed countries were affected, with the default and devaluation reverberating in financial markets in Germany, the United States, and the United Kingdom.

The time clustering of crises in different countries has generated a vast literature on contagion (a term broadly understood as the cross-country spillover of

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crises).¹ Many of these studies focus on the role of financial links. There is evidence, for example, that banks were important in spreading the 1997 crisis, due to the “common-lender channel” (Kaminsky and Reinhart 2000; Van Rijckeghem and Weder 2000).² The role of portfolio investors (foreign and domestic) during crises has also been under scrutiny,³ with some researchers finding evidence of institutional panic and herding. This type of behavior might have helped spread crises even to countries with strong fundamentals. Kaminsky, Lyons, and Schmukler (2000b) note that individuals, too, can contribute to institutional panic by fleeing from funds—particularly mutual funds—forcing fund managers to sell when fundamentals do not warrant selling.

Although research on portfolio flows and the role of institutional investors has expanded dramatically in the late 1990s, information on the importance and evolution of institutional investors in emerging markets is still fragmented. Moreover, the role of mutual funds in capital-flow reversals during crises has not yet been documented. This article complements previous research in these two areas. First, it provides an overview of the importance and behavior of international mutual funds in emerging markets.⁴ Second, it examines whether mutual fund investment tends to be stable over time and during crises.

There are two key advantages—beyond growing importance—to studying mutual funds rather than other institutional investors. The first is data quality. U.S.-based mutual funds report holdings to the U.S. Securities and Exchange Commission (U.S. SEC) semi-annually. In addition, private companies compile mutual fund data at higher frequencies, typically quarterly, through surveys. These data enable both cross-sectional and time-series analysis. In contrast, other institutional investors, like pension funds and hedge funds, are not required to disclose holdings. (Nor do there seem to be sources that compile data for these investor types from voluntary disclosures.⁵) The second key advantage to studying mutual funds is that their allocations to emerging markets have grown considerably in scope and size. There are now specialized subcategories within the broader mutual fund category. Some funds specialize in a particular country, some within a region, and some specifically in emerging markets, whereas some invest in emerging markets as part of a global strategy.

1. Many of the papers are available at www.worldbank.org/contagion.

2. The common-lender channel refers to cases in which common international banks lend to different countries, which consequently become linked. When a crisis hits the common lenders, all countries tend to be affected by the crisis.

3. See, for example, Cumby and Glen (1990); Bekaert and Urias (1996); Brown, Goetzmann, and Park (1998); Eichengreen and Mathieson (1998); Frankel and Schmukler (1996, 1998, 2000); Levy Yeyati and Ubide (1998); Bowe and Domuta (1999); Borensztein and Gelos (1999); Kaminsky, Lyons, and Schmukler (2000a, 2000b); and Pan, Cham, and Wright (2001).

4. Mutual funds from developing countries are also becoming important in some countries, helping develop local capital markets. Those funds are not covered in this study, however.

5. To study the behavior of pension or hedge funds one would need estimates of portfolio changes. Brown, Goetzmann, and Park (1998) provide such estimates for hedge funds during the Asian crisis.

I. BRIEF HISTORY OF CAPITAL FLOWS

Private capital flows have become the main source of external financing for developing countries, far surpassing public funds and accounting for some 80 percent of all flows to developing countries.⁶ The first increase in capital flows occurred in the 1970s (see figure 1), triggered by the 1973–74 oil shock and amplified by the growth of the Eurodollar market and a spurt in bank lending during 1979–81. Latin America was the main recipient, with net flows peaking at \$41 billion in 1981. Flows in this episode took the form mainly of syndicated bank loans (figure 2). The pace of international lending came to an abrupt halt in 1982 with the increase in world real interest rates to levels not seen since the 1930s.

By the late 1980s, there was a revival of international lending, with capital flows to Latin America making a tremendous comeback. Capital flows to Asia also surged, increasing tenfold from their averages in the late 1980s. The composition of capital flows changed dramatically, with bank lending replaced by foreign direct investment and portfolio investment. Bank lending to both East Asia and Latin America declined from 70 percent of net private capital flows in the 1970s to about 20 percent in the 1990s (see figure 2). While foreign direct investment in East Asia and Latin America constitutes the largest share of capital flows, portfolio investment (bonds and equity) has also increased substantially, accounting for about 30 percent of capital flows in the 1990s. In absolute values, bond and equity flows to each region—excluding those counted as foreign direct investment—increased from \$1 billion in 1990 to \$40 billion in 1996, with bond flows exceeding equity flows in Latin America since 1994. (Reported equity flows are underestimated: Any equity flow meant to acquire more than 10 percent of a company's outstanding shares is recorded as foreign direct investment, which accounts for around 50 percent of total capital flows.)

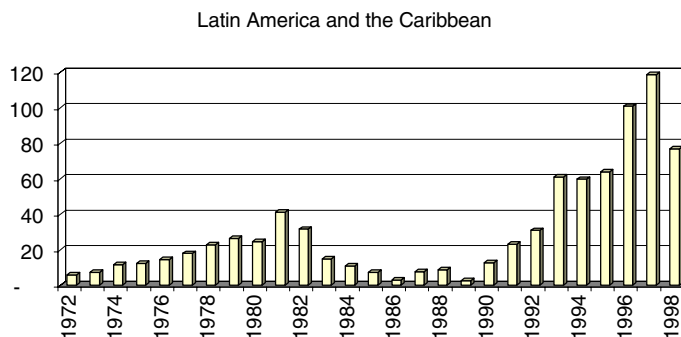
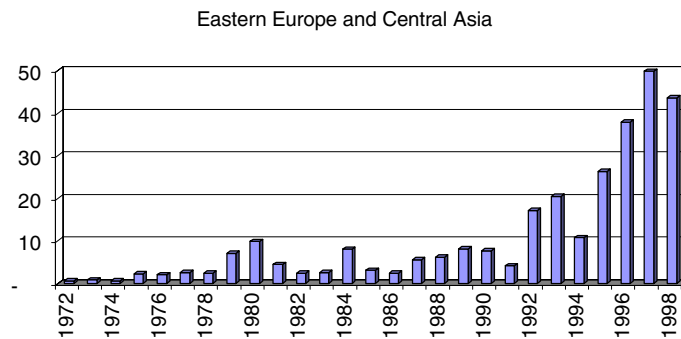
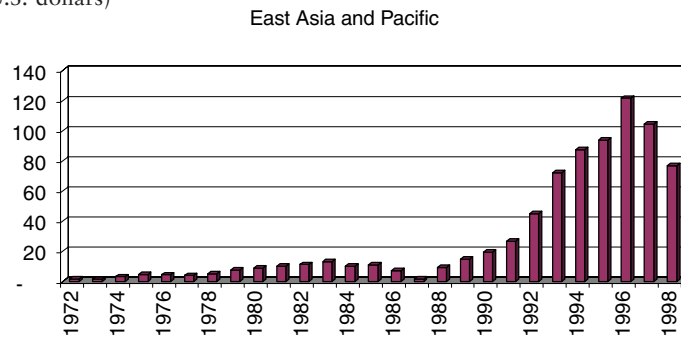
In the 1990s, as in the 1980s, booms were followed by a slowdown of capital inflows.⁷ The first episode occurred in the immediate aftermath of Mexico's currency crisis in December 1994. Capital inflows resumed for most countries within six months and returned to their peak values soon thereafter. The crisis was confined to a small number of Latin American countries. Capital flows to Asian economies were largely unaffected. The second, more severe slowdown came in 1997, during the Asian crisis. The Russian default in August 1998 accentuated this slowdown, as capital flows collapsed. The change in inflows was similar in magnitude to that after the 1982 debt crisis, with total capital inflows declining about 35 percent to both Latin America and Asia.⁸

6. The data on capital flows come from World Bank databases. For more detailed description of capital flows, see World Bank (1997, 2000).

7. The term *reversal* is used in the literature in various ways. For some, a reversal is a shift from inflows to outflows. For others, a reversal is a reduction in inflows relative to what is expected.

8. During the debt crisis, capital inflows declined about 24 percent in the first year of the crisis and 53 percent in the second year.

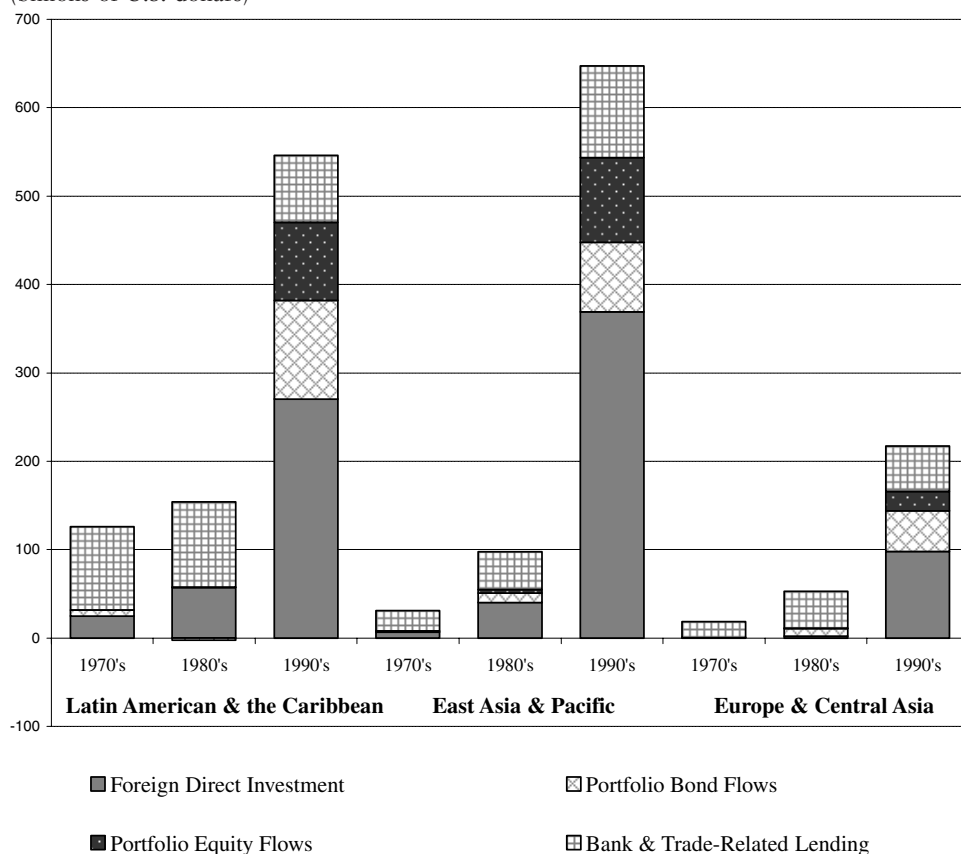
FIGURE 1. Total Net Private Capital Flows to Developing Countries, by Region 1972-98
(billions of U.S. dollars)



Notes: Net capital flows to developing countries include bank and trade-related lending, portfolio equity and bond flows, and foreign direct investment. The countries comprising Latin America and the Caribbean are Antigua and Barbuda, Argentina, Barbados, Belize, Bolivia, Brazil, Chile, Columbia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, and Venezuela. The countries comprising East Asia and Pacific are American Samoa, Cambodia, China, Fiji, Indonesia, Kiribati, Korea, Dem. Rep., Lao PDR, Malaysia, Marshall Islands, Micronesia, Fed. Sts, Mongolia, Myanmar, Palau, Papua, New Guinea, Philippines, Samoa, Solomon Islands, Thailand, Tonga, Vanuatu, Vietnam. The countries comprising Europe and Central Asia are Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Isle of Man, Kazakstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia FYR, Moldova, Poland, Romania, Russian Federation, Slovak Republic, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan, and Yugoslavia FR (Serbia/Montenegro).

FIGURE 2. Type of Net Private Capital Flows to Developing Countries, 1970s to 1990

(billions of U.S. dollars)



Notes: See Figure 1 for countries included in each region.

Source: World Bank data.

The decline of short-term portfolio flows (bonds, equities, and bank lending) was even more pronounced, with flows falling about 60 percent in Latin America in 1998. Overall, bond and equity flows to Latin America declined from about \$44 billion in 1996 to about \$15 billion in 1998. Bond and equity flows to Asia collapsed in 1998 to \$9 billion, from their peak in 1996 of \$38 billion.

In sum, portfolio flows have become an important source of external financing in emerging markets. These flows have been unstable, with booms followed by pronounced reversals, and they have been channeled mainly through institutional investors, particularly mutual funds.

II. MUTUAL FUND INVESTMENT

Different data sources are needed to study the role of institutional investors. Unlike data on capital flows, which the World Bank collects on a regular basis,

no agency has full detailed information on institutional investors. Institutions and companies like the Organisation for Economic Co-operation and Development (OECD), the U.S. SEC, the Investment Company Institute, Morningstar, Emerging Market Funds Research, Frank Russell, AMG Data Services, Lipper Analytical Services, and State Street Bank have partial information on institutional investors. The International Finance Corporation (IFC) has data on total market capitalization by country. Emerging Market Funds Research compiles data on dedicated emerging market funds. Morningstar and the U.S. SEC collect data on U.S. mutual funds. Data from the World Bank and the Bank for International Settlements (BIS) can be found elsewhere in the published literature in a similar format.

Getting an overall picture requires analyzing and combining data from various sources. This article contributes to the literature by compiling information from different sources and displaying it systematically and by presenting new evidence, though parts of the data are displayed elsewhere in a different format. The appendix summarizes the data sets used in this study and their sources.

Size of Mutual Funds and Institutional Investors

Institutional investors—including mutual funds, pension funds, hedge funds, and insurance companies—are a growing force in developed markets. Institutional investors held almost \$11 trillion in the United States alone in 1995 (table 1). U.S. institutional investors accounted for more than half the assets held by institutions across the world.

When individual investors choose to allocate part of their portfolios to emerging markets, they typically make their purchase through mutual funds. In actively managed funds, it is the fund manager who ultimately determines the portfolio allocation by choosing how the fund invests its assets (within the limits of the fund's defined scope). In index funds, the manager's role is passive, aimed at replicating a predetermined index.⁹

Mutual funds based in developed countries have become one of the main instruments for investing in emerging markets.¹⁰ The first funds, in the 1980s, were closed-end funds, which are well suited for investing in illiquid markets because their shares cannot be redeemed. As liquidity increased in emerging markets, the most widely used instrument became open-end funds. Mutual fund investors include other institutional investors as well as individual investors. For example, more than half of pension funds invest in emerging markets through existing mutual funds, for both liquidity and cost reasons (less expensive than giving specific mandates to fund managers). Therefore, in examining mutual funds, much of pension fund investment in emerging markets is covered as well. A World Bank (1997) survey estimates that pension funds hold around 1.5 to 2 percent of their portfolios (\$50–\$70 billion) in assets from emerging markets.

9. In all cases, but particularly for of index funds, fund managers tend to be evaluated against some benchmark indices. As a consequence, the behavior of managers is likely affected by these evaluations.

10. See New York Stock Exchange (2000) on U.S. investors in emerging market shares.

TABLE 1. Share of Global Assets Held by U.S.- and European-Based International Institutional Investors, 1995 (percent)

Institutional investor	U.S.-based	European-based
Pension funds	66	24
Insurance companies	37	37
Life insurance	35	36
Non-life insurance	45	37
Mutual funds	59	33
Open-end	65	34
Closed-end	57	41
Aggregate	52	32
Assets (billions of U.S. dollars)	10,994	6,666

Source: BIS 1998.

Hedge funds are a newer type of institutional investor. Still small relative to other institutional investors, hedge funds held estimated total assets of \$81 billion by year-end 1997, only a small fraction of which is invested in emerging markets.¹¹ Like other institutional investors, insurance companies likely invest only a small proportion of their assets in emerging markets. However, unlike hedge funds, their asset holdings are large. More evidence on the investment allocation of this industry is needed.¹²

Of course, institutional investors in developed countries invest internationally not only in emerging markets but also in other developed economies. These broader, international portfolios are more concentrated in equities than in bonds (figure 3). Banks, for their part, tend to invest a bit more of their own assets and some of their clients' in foreign bonds. Despite the broader, international diversification of institutional investors, their portfolios still exhibit a strong home bias. For example, according to the World Bank (1997), U.S. equity pension funds held less than 9 percent of their assets in international instruments and around 2 percent in emerging markets (in 1994).

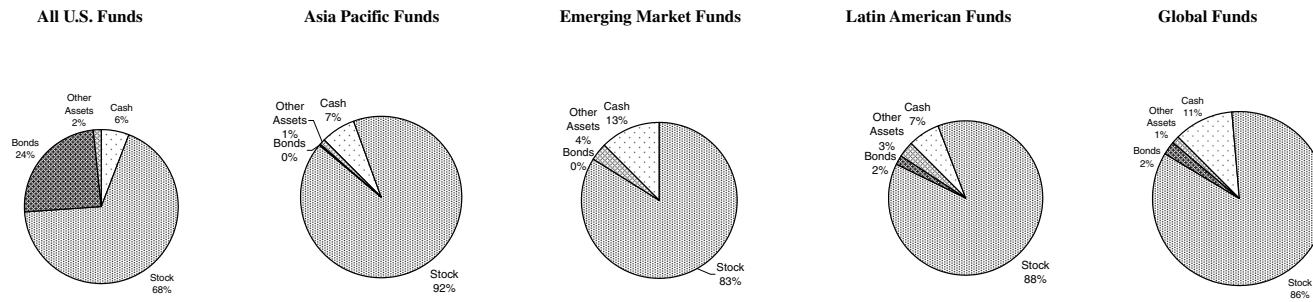
Even when international institutional investors hold only a small fraction of their portfolio in emerging markets, they have an important presence in these economies, given the relatively small size of their capital markets. Funds dedicated to emerging markets alone hold on average between 4 and 15 percent of the Asian, Latin American, and transition economies' market capitalization (table 2). By comparison, holdings of U.S. mutual funds accounted for 15 percent of the U.S. market capitalization in 1996 (see table 3). In Japan and the United Kingdom, domestic mutual funds held 4 and 8 percent of the local market capitalization that same year.

11. See Eichengreen and Mathieson (1998) for a detailed study of hedge funds.

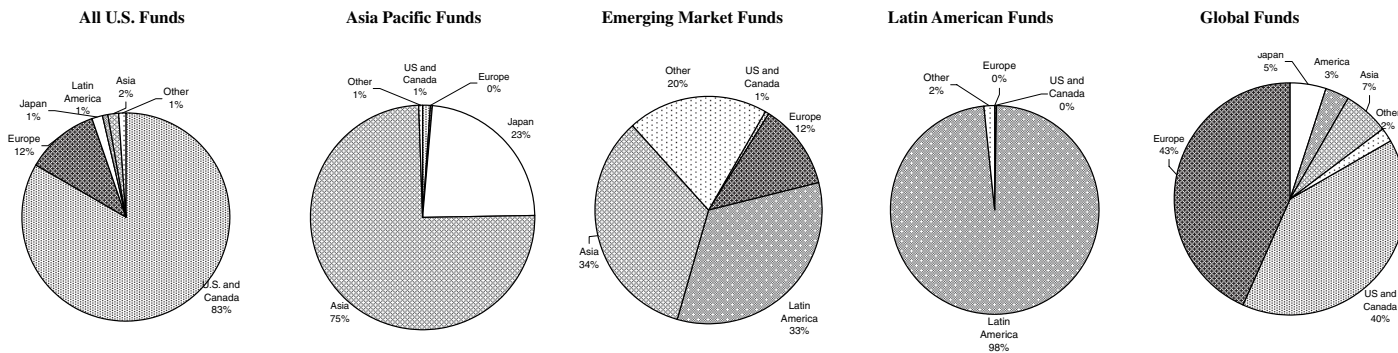
12. Beyond institutional investors, it is difficult to determine the direct holdings of individual investors. No regulatory agencies (like the U.S. SEC or the BIS) or private companies (like Morningstar or Lipper Analytical Services) keep such records.

FIGURE 3. Distribution of U.S. Mutual Fund Assets by Fund Type as of December 31, 1998

Distribution by instrument



Distribution by country or region



Notes: Morningstar classifies the assets as being invested in one of six countries or regions: United States and Canada, Japan, Asia (excluding Japan), Europe, Latin America, or other. Holdings are classified in one of four asset classes: cash, stocks, bonds, or other. The Morningstar universe includes all types of mutual funds except money market funds. Funds that invest primarily outside the United States are mostly equity funds.

Source: Morningstar.

The estimates of the importance of mutual funds in emerging markets are quite conservative because they include only the holdings of dedicated emerging market equity funds.¹³ Excluded are the holdings of global funds, which account for a substantially larger share of the stock market capitalization of emerging markets. Even though global funds hold only a small share of their assets in emerging markets, they are substantially larger than dedicated emerging market funds giving them a stronger presence.¹⁴ Moreover, some of the outstanding equity in emerging markets—as well as in many developed countries—is not publicly traded because it belongs to families or corporations that control the companies. So international mutual funds hold a large and significant proportion of the publicly available equity, even though the total amount is not known.

The importance of mutual funds varied substantially during the 1990s (see table 2). Though net equity flows declined from their 1993 peak—about \$27 billion to Latin America and \$21 billion to Asia—the relative importance of mutual funds increased until 1997. For example, dedicated emerging market equity funds held \$22 billion in Latin American stocks at the end of 1995 and nearly double that, \$40 billion, by December 1997. Though mutual fund growth was less pronounced in Asia, mutual funds are still important in many countries. Overall, dedicated emerging market mutual funds held \$77 billion in Asia at the onset of the crisis (December 1996). While the absolute amount of mutual fund investment in transition economies is not comparable to that in Asia and Latin America, fund growth in these transition economies has been remarkable. In market capitalization terms, mutual funds have become big players in these markets, with especially large positions in markets in Hungary and Poland.

The mutual fund industry specializing in emerging markets has a very concentrated portfolio by economies. At least half their total portfolio is invested in just six markets: Brazil, Hong Kong (China), Republic of Korea, Malaysia, Mexico, and Taiwan (China). Country shares have varied, sometimes substantially, in the 1990s. For example, Malaysia attracted about 12 percent of all the funds allocated to Asia in 1995 but only 4 percent after the crisis. In contrast, the share allocated to Indian assets increased from 7 percent to 14 percent. The proportion of assets allocated to countries in Latin America has been less volatile, with Brazil's share of the funds allocated to the region holding at about 40

13. Data on dedicated funds come from Emerging Market Funds Research, which collects aggregate data of emerging market mutual funds. They track the net cash flows of nearly 1,400 international emerging market equity funds, with an average position of about \$120 billion in 1996. The data cover both U.S.-registered and offshore funds as well as funds registered in Luxembourg, the United Kingdom, Ireland, Cayman Islands, Canada, and Switzerland. It includes both open- and closed-end funds. The data set used in this article starts with the Mexican crisis of 1995 and ends in March 1999; it therefore includes observations on the major currency crises of the 1990s.

14. For example, estimates for the mutual fund industry more broadly suggest that international funds hold between 60 percent and 70 percent of the market capitalization in Hungary, in contrast to the estimates in table 3, which are all below 30 percent. We thank Jonathan Garner, from DLJ, for this information.

TABLE 2. Holdings of Dedicated Emerging Market Fund Assets and Their Share of Market Capitalization, by Country and Region, 1995–98

Economy	1995		1996		1997		1998	
	End-of-year holdings (billions of U.S. dollars)	Share of market capitalization ^a (percent)	End-of-year holdings (billions of U.S. dollars)	Share of market capitalization ^a (percent)	End-of-year holdings (billions of U.S. dollars)	Share of market capitalization ^a (percent)	End-of-year holdings (billions of U.S. dollars)	Share of market capitalization ^a (percent)
China	1.9	4	2.3	3	3.1	2	1.9	1
Hong Kong	12.6	n.a.	20.4	n.a.	13.2	n.a.	9.4	n.a.
India	4.5	3	6.1	4	7.4	5	5.6	5
Indonesia	4.5	9	5.5	7	1.9	2	1.3	7
Korea, Rep. of	10.3	6	7.7	5	2.5	2	7.3	11
Malaysia	8.2	4	12.0	4	2.4	1	1.5	2
Pakistan	0.6	6	0.5	5	0.8	7	0.2	3
Philippines	3.4	6	4.2	6	1.7	3	1.9	6
Singapore	5.1	n.a.	5.3	n.a.	3.0	n.a.	3.8	n.a.
Sri Lanka	0.2	9	0.1	5	0.2	10	0.1	7
Taiwan, China	4.6	2	7.2	3	5.9	2	5.7	2
Thailand	9.8	7	5.9	4	2.2	4	3.1	10
Total Asia	65.7	6	77.2	5	44.2	4	41.7	5
Argentina	3.1	9	3.3	8	4.6	9	3.1	6
Brazil	8.1	5	11.5	6	15.4	6	8.3	4
Chile	3.4	5	2.9	4	3.4	4	2.6	4
Colombia	0.4	2	0.6	4	0.6	3	0.3	2
Mexico	5.5	6	7.8	7	13.4	10	7.9	7
Peru	0.7	7	0.9	7	1.1	6	0.7	5
Venezuela	0.3	6	0.7	12	1.2	9	0.5	5
Total Latin American	21.5	6	27.7	7	39.7	7	23.2	5
Czech Republic	0.5	3	1.0	6	1.0	6	0.7	6
Hungary	0.4	25	1.2	29	2.3	26	2.2	16
Poland	0.7	18	1.5	20	1.9	17	2.2	14
Russia ^b	1.0	n.a.	2.6	10	7.5	7	1.7	3
Slovak Republic	0.1	n.a.	0.1	4	0.1	5	0.1	8
Total transition economies	2.7	15	6.4	14	12.8	12	7.0	10

n.a. is not available.

Note: Data cover only the holdings of the dedicated emerging market funds (based inside and outside the United States). Thus the importance of all foreign mutual funds in each country is significantly larger in most cases. The International Finance Corporation database does not contain market capitalization for some countries (shown as n.a. in the table).

^aShare of country's stock market capitalization.

^bIncludes other members of the Commonwealth of Independent States.

Source: Emerging Market Funds Research and International Finance Corporation.

TABLE 3. Share of Total Mutual Fund Assets Held by Selected Developed Country-Based Funds, by Asset Type, 1996 (percent)

	United States	Japan	United Kingdom	France
Money market funds	25	29	0	45
Bond funds	22	45	5	29
Equity funds	49	24	88	11
Balanced funds	3	2	6	14
Share of total	76	9	4	11
As percent of GDP	46	9	16	34
As percent of market capitalization	15	4	8	18

Source: BIS 1998.

percent. Among transition economies, five countries account for most mutual fund investment: the Czech Republic, Hungary, Poland, Russia (and other members of the Commonwealth of Independent States), and the Slovak Republic. Again, the shares of crisis countries in the mutual fund portfolio swing substantially; Russian holdings varied from 25 percent to 59 percent of mutual funds' portfolios in transition economies.

Mutual funds also hold large positions in American and Global Depository Receipts, (ADRs and GDRs), typically traded on the New York Stock Exchange, NASDAQ, and the American Stock Exchange. Therefore, mutual funds often do not trade in the local stock markets when investing abroad.¹⁵

Holdings of U.S.-Based Mutual Funds

U.S.-based mutual funds accounted for almost 60 percent of world mutual funds in 1995 (see table 1). The U.S. mutual fund industry expanded significantly during the 1990s (table 4). From 1991 to 1998 the number of bond and stock funds increased from 2,355 to 10,144 net assets rose from \$705 billion to \$3.6 trillion. The 20 largest U.S. mutual funds capture only a small proportion of all the assets of the U.S. mutual funds industry (not more than 4 percent).

The exposure of U.S. mutual funds to emerging markets increased substantially during the 1990s (see table 4). U.S.-based, open-end mutual funds (including Asia Pacific, Latin American, and emerging market funds) had around \$35 billion by the end of 1996, up from about \$1 billion at the end of 1991. As Asia Pacific funds grew from 11 funds in 1991 to 154 in 1998, their net assets rose from \$1 billion in 1991 to \$16.4 billion in 1996 and then fell to \$6.5 billion in 1998 following the Asian crisis. Mutual funds specializing in emerging markets increased from 3 funds in 1991 to 165 funds in 1998, with total net assets rising

15. See Karolyi (1998) for a broad-based survey of global cross-listings. Also see Smith and Sofianos (1997) for a study of the effects of depository-receipt listing in the New York Stock Exchange.

TABLE 4. Size of Mutual Fund Universe, as of December 31, 1991–98

	1991	1992	1993	1994	1995	1996	1997	1998
All U.S. funds								
Net assets (billions of U.S. dollars)	705	933	1,338	1,428	1,838	2,335	2,954	3,570
Number of funds	2,355	2,522	3,422	5,594	6,937	7,746	8,655	10,144
Net assets of 20 largest funds as percentage of all U.S. funds	2	2	3	4	3	4	4	3
Asia Pacific funds								
Net assets (billions of U.S. dollars)	1.1	1.4	8.4	11.9	12.1	16.4	9.0	6.5
Number of funds	11	14	27	59	79	106	127	154
Net assets of 20 largest funds as percentage of all Asia Pacific funds	100	100	97	94	94	93	90	82
Emerging market funds								
Net assets (billions of U.S. dollars)	0.1	0.5	3.7	8.7	8.5	15.6	16.9	13.5
Number of funds	3	7	10	32	64	94	119	165
Net assets of 20 largest funds as percentage of emerging market funds	100	100	100	92	89	72	71	67
Latin American funds								
Net assets (billions of U.S. dollars)	0.04	0.2	1.3	3.9	2.5	2.9	4.1	1.8
Number of funds	1	3	5	15	25	28	35	47
Net assets of 20 largest funds as percentage of Latin American funds	100	100	100	100	73	95	97	95
Global funds								
Net assets (billions of U.S. dollars)	16.1	18.3	28.1	45.4	58.1	82.0	108.1	125.4
Number of funds	52	56	78	143	180	198	223	273
Net assets of 20 largest funds as percentage of world funds	81	80	74	73	71	76	79	77

Source: Morningstar.

from \$142 million in 1991 to \$13.5 billion in 1998 (after peaking at \$17 billion in late 1997). The number of Latin American funds increased from 1 to 47, and their net assets rose dramatically from \$44 million to \$1.8 billion. Global funds increased from 52 to 273, with total net assets rising from \$16 billion to \$125 billion. With the exception of mutual fund investment in U.S. assets, the mutual fund industry is highly concentrated, with the largest 20 funds holding about 80 percent or more of all assets.

Until 1993 bonds constituted the largest share of mutual fund portfolios. After that, equities began to predominate. By 1998, for mutual funds overall, about 68 percent of their portfolio was allocated to stocks; most of the rest (between 24 and 40 percent) was allocated to bonds (see figure 3). The proportion of assets held in stocks is substantially larger for mutual funds specializing in emerging markets (including Asia Pacific and Latin America), varying from 83 percent to 92 percent. Global funds also hold a large share of their assets in stocks (86 percent).

The country or regional composition of the total U.S. mutual fund portfolio in 1998 was 83 percent U.S. and Canadian stocks, 12 percent European stocks, 1 percent Japanese assets, 2 percent Asian assets, and 0.9 percent Latin American assets. Although the percentage dedicated to emerging markets is small, the large size of the U.S. mutual fund industry implies that the dollar amount held in assets from emerging countries is significant.

III. BEHAVIOR OF MUTUAL FUNDS DURING CRISES

The financial crises of the 1990s spread beyond the country and even the region of origin. Financial disruption spread to countries as far apart as Argentina, the Czech Republic, and South Africa. Crises before 1990 had also led to contagion—witness the debt crisis in 1982—but that contagion had tended to be regional until recently (with some exceptions). That changed in the 1990s. The East Asian crisis triggered financial disruption as far away as Argentina, Mexico, and Chile. The speculative attack on the Hong Kong dollar in October 1997 also spilled over into other markets. Even the U.S. stock market suffered sizable losses after the Hang Seng index fell 15 percent. The cross-country effects became more widespread following the Russian default in August 1998, with stock prices in all industrial countries declining between 20 percent and 50 percent. Contagion in these recent crises has been partly attributed to global financial links.

Studies have shown that the behavior of mutual funds and contagion may be linked, either because funds generate cross-country spillovers or because funds engage in feedback trading (trading in response to past returns, such as selling when past returns are low). International mutual funds can contribute to the spread of crises across countries through spillover effects if, for example, investors holding fund shares decide to sell their Asian funds when Russia devalues its currency. Or if managers of Latin American funds sell assets in Brazil when a crisis hits Mexico. These need not be irrational responses: New models of rational herding explain

the transmission of crises through financial links. These models involve asymmetric information and cross-market hedging.¹⁶ If mutual fund investors or managers also engage in feedback trading, their behavior can appear consistent with contagion even though mutual funds may not be the main force driving the spillovers.

Institutional investors, such as mutual funds, can also be a stabilizing force. If investors buy mutual fund shares for long-run gains, they might not withdraw their investments during a crisis. Marcis, West, and Leonard-Chambers (1995) and Rea (1996) find that shareholders did not redeem shares during crises periods. They find that net inflows to emerging markets are usually steady, and crisis-period outflows are small and short lived (at least during Mexico's crisis). Froot, O'Connell, and Seasholes (2001) present a related picture, but without focusing on institutional investors. Though net flows into individual emerging markets decreased during the Mexican and Asian crises, Froot, O'Connell, and Seasholes find little evidence of net outflows.¹⁷

This section provides evidence on the stability of mutual fund investment and the behavior of mutual funds following speculative attacks, distinguishing where possible between the behavior of mutual fund managers and underlying investors.¹⁸

Mutual Fund Flows

On balance, flows of dedicated emerging market mutual funds to Asia, Latin America, and transition economies (data from Emerging Market Funds Research) since 1995 have been muted, reaching about \$20 billion, with booms in capital inflows followed by pronounced outflows (figure 4). Outflows from Latin America reached about \$4 billion in 1995, but mutual funds increased their positions in Latin America by about \$2 billion in the first half of 1996. The Mexico crisis did not spill over to Asia or the transition economies. In fact, flows to Asia ballooned to almost \$11 billion, whereas flows to transition economies remained stable throughout 1995–96.

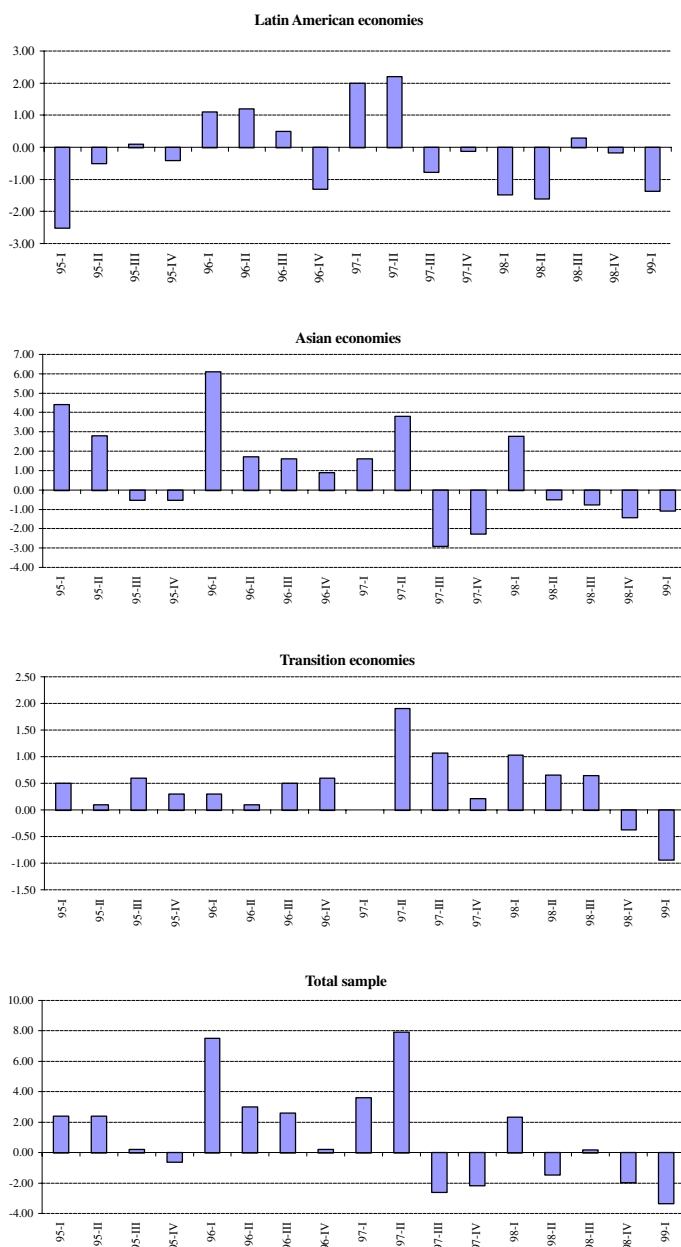
The picture changes during the currency turmoil in Asia in the second half of 1997. This time, mutual funds pulled out not only from Asia but from Latin

16. For example, in the Calvo and Mendoza (1998) model, the costs of gathering country-specific information induce rational investors to follow the herd. In the Calvo (1998) model, uninformed investors replicate selling by liquidity-squeezed informed investors, because the uninformed investors mistakenly (but rationally) believe that these sales are signaling worsening fundamentals. Kodres and Pritsker (1999) focus on investors who engage in cross-market hedging of macroeconomic risks. They find that international market co-movement can occur in the absence of any relevant information, even in the absence of direct common factors across countries. For example, a negative shock to one country can lead informed investors to sell that country's assets and buy assets of another country, increasing their exposure to the idiosyncratic factor of the second country. Investors then hedge this new position by selling the assets of a third country, completing the chain of contagion from the first country to the third.

17. Froot, O'Connell, and Seasholes (2001) and Choe, Kho, and Stulz (1999) are able to study the dynamics of capital flows during crises using higher-frequency data. But their data are aggregated across types of investors, so they cannot focus on the role of different kinds of institutional investors, as is done here.

18. This section examines data sets from various sources, including the Emerging Market Funds Research, Morningstar, the U.S. SEC, and the BIS.

FIGURE 4. Mutual Fund Quarterly Flows to Emerging Market Economies (billions of U.S. dollars)



Notes: Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. Asia includes China, Hong Kong, India, Indonesia, Republic of Korea, Malaysia, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan (China), and Thailand. Transition economies include Czech Republic, Hungary, Poland, Russia and other members of the Commonwealth of Independent States, and the Slovak Republic.

Source: Emerging Market Funds Research.

America as well, with net outflows from Latin America reaching about \$1 billion in the six months following the collapse of the baht. In Asia, flows rebounded briefly in the first quarter of 1998 but declined thereafter. Overall in 1998, mutual fund withdrawals took a turn for the worse, reaching about \$4 billion in Asia, with substantial outflows from Latin America and transition economies.

A closer look at the spillover effects surrounding the Mexican, Thai, and Russian crises shows how a crisis in one country triggers withdrawals in other countries. To isolate the behavior of mutual funds in crisis times, the average quarterly mean flow (as a percentage of funds' initial positions) during the entire sample period (1995–99) is subtracted from net buying or selling (see figure 5).¹⁹ For example, following the Mexican devaluation, mutual funds sold about 5 percent of their Brazilian positions relative to their average quarterly buying and selling during 1995–99. Thus Brazil experienced unusual withdrawals of about 5 percent in the aftermath of the Mexican devaluation. Looking at country data according to the severity of the outflows conveys more clearly the extent of contagion across regions following the initial speculative attack. Thus, for example, Malaysia was most affected in the aftermath of the Russian crisis, with abnormal outflows of approximately 30 percent.

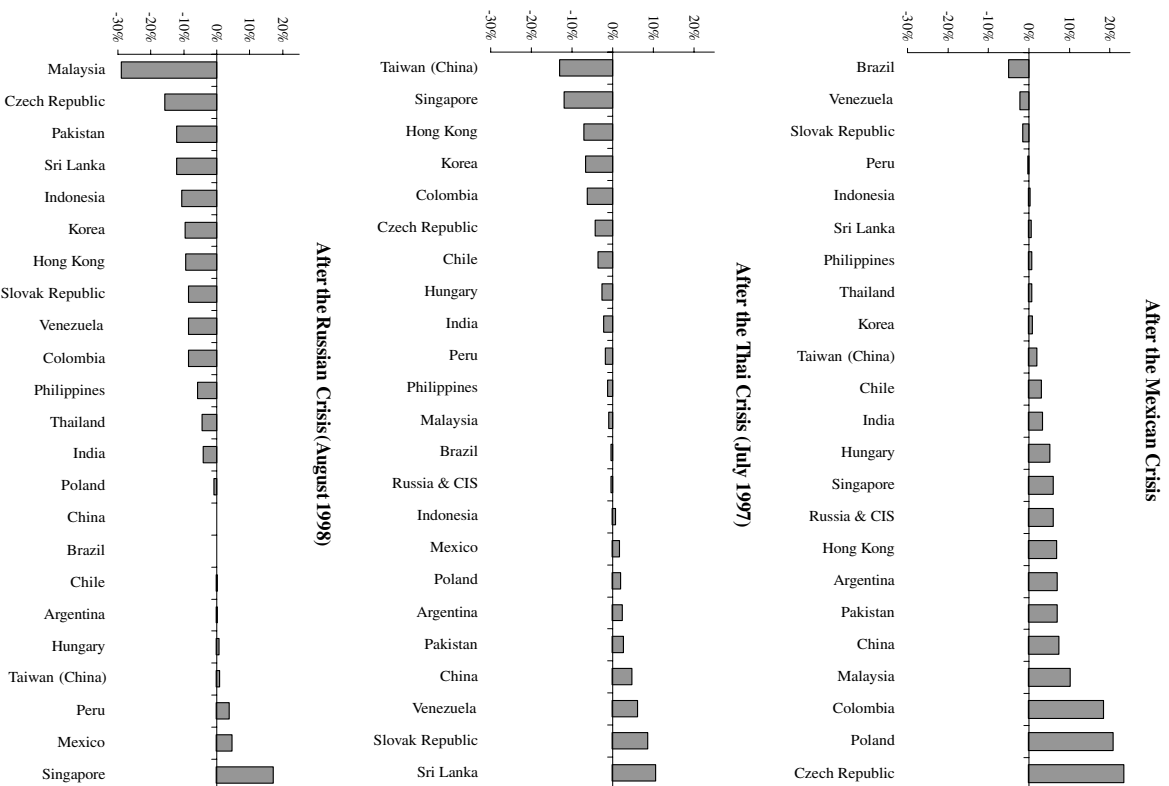
The repercussions of the three crisis episodes were dramatically different. The Mexican crisis was concentrated in Latin America and was confined to a handful of countries. Only Brazil and Venezuela—in addition to the crisis country, Mexico—suffered abnormal average withdrawals (of 5 percent and 2 percent) in the two quarters following the devaluation. Mutual funds increased their exposure to Asian countries and transition economies, with (above-trend) flows of around 4 percent for Asia and 11 percent for the transition economies.

The aftermath of the collapse of the Thai baht presents a different picture, with signs of a more general retrenchment of mutual funds in emerging markets. Mutual fund flows to Asian economies were basically all well below trend in the two quarters following the collapse of the Thai baht, except for flows to China, Pakistan, and Sri Lanka, which were above average. Withdrawals were also substantial from Hong Kong (12 percent), Singapore (7 percent), and Taiwan, China (12 percent). This time the retrenchment also reached Latin America and the transition economies, with average quarterly withdrawals reaching about 6 percent for Colombia and 4 percent for the Czech Republic during the two quarters following the outbreak of the Thai crisis. Colombia, the Czech Republic, Hungary, and Peru were most affected in this episode, with outflows of 3 percent or more above average.

Even more pronounced was the flight away from emerging during the Russian crisis. About half the countries in the sample experienced abnormal withdrawals of 10 percent or more. In some cases, withdrawals were massive: 30 percent in Malaysia and 16 percent in the Czech Republic. Some Latin American countries were also dramatically affected. Colombia and Venezuela suffered

19. Models of asset trade (such as microstructure finance models) provide a theoretical basis for focusing on changes in flow relative to what is expected, which here is proxied by average flow.

Figure 5. Mutual Fund Net Buying or Selling Following Recent Crises, by Country



Notes: The figures show the spillover of crises to other developing countries. The figures display average mutual fund flows (net buying or selling as a percentage of the end of the preceding quarter holdings) in the two quarters following the outbreak of the crisis, after subtracting the sample average for the study period.

Source: Emerging Market Funds Research.

average quarterly outflows of about 8 percent. Only Mexico and Peru did not suffer following the worldwide financial disruption triggered by the Russian default. In fact, inflows to Mexico were 5 percent above average flows.

Several different factors seem to affect the varied pattern of responses in mutual fund flows across countries after a crisis erupts, including economic vulnerability and liquidity of financial markets.²⁰ Other risk factors—such as a possible change in political authority, severe new restrictions on purchases and sale of assets, or a debt moratorium—might also affect mutual fund investment behavior.

Not surprisingly, analysis shows that economic vulnerability matters. For example, the Czech Republic and Russia suffered severe outflows in 1997 and 1998, when both countries were in economic distress. Kaminsky, Lyons, and Schmukler (2000a) find that other factors also influence investors' withdrawals from emerging markets. In the case of China, for example, devaluation fears were widespread among investors and the vulnerability of its financial system was widely known, yet it did not suffer from the Asian crisis. In contrast, Singapore, Taiwan (China), and Hong Kong—the most liquid markets in Asia—suffered pronounced capital-flow reversals, even though their economies looked far healthier than China's. Though less important, risk factors, such as attacks against foreign investors and political instability, helped explain the outflows in Pakistan and Malaysia during the Russian crisis. Moreover, the crises that began in Mexico, Thailand, and Russia also showed increasing degrees of spillover, pointing to systemic factors in addition to country-specific factors.

Investors and Managers

Though mutual funds are commonly included among institutional investors, they differ from hedge funds, pension funds, and insurance companies in how much control underlying investors have over portfolio size. Fund behavior is thus determined by the decisions of both managers and investors.²¹ This hybrid nature affects mutual fund flows to countries and regions.

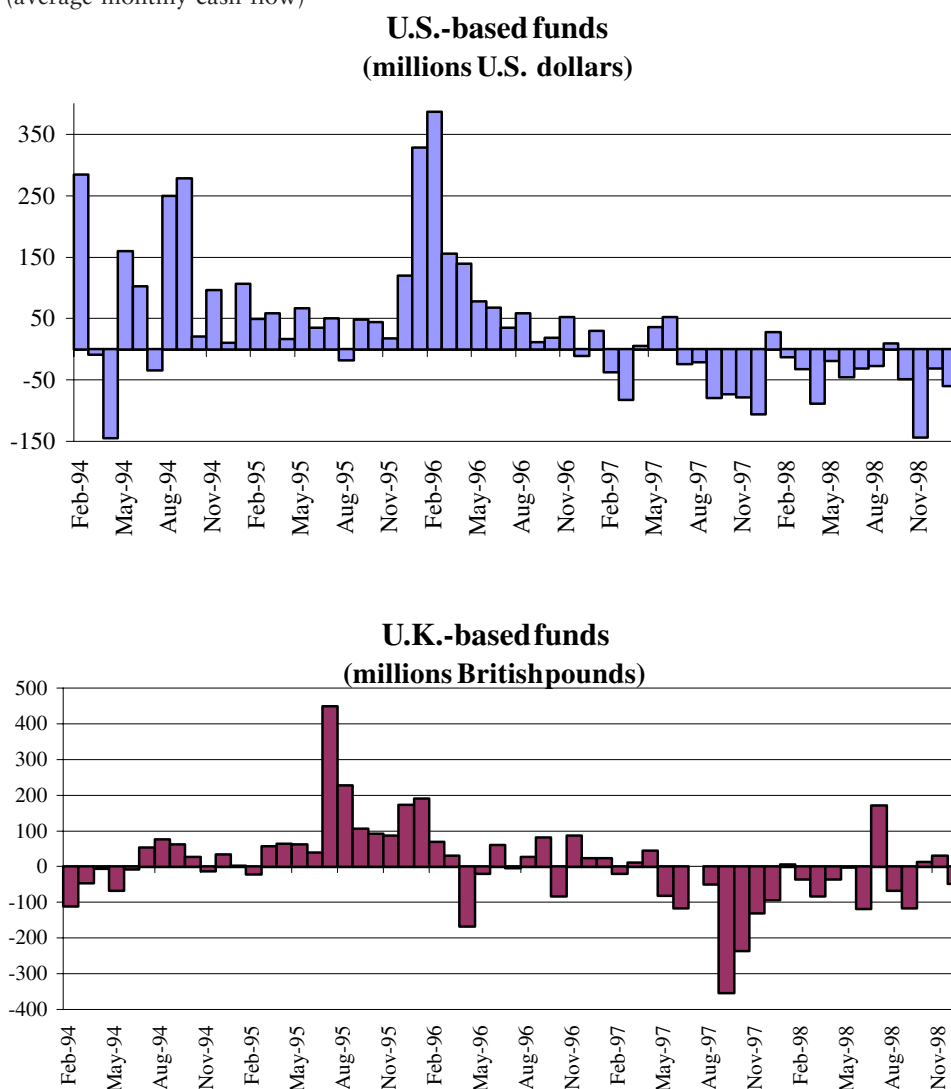
This characteristic provides an opportunity to study in detail the behavior of these two groups of agents. Kaminsky, Lyons, and Schmukler (2000b) focus on whether the trading strategies of these two groups are driven by current and past returns (positive-feedback trading—the buying of past winners and selling of past losers). This section provides additional evidence on the influence of each group, using detailed data from the BIS and the U.S. SEC, which help isolate the behavior of the two groups.

20. See Kaminsky, Lyons, and Schmukler (2000a) for more detail on the probable determinants of mutual fund behavior in crises.

21. *Mutual funds* here means open-end, nonindex funds, which account for most of the funds that invest in emerging markets. In closed-end funds, investors do not control portfolio size. In index funds, managers have little control over portfolio holdings.

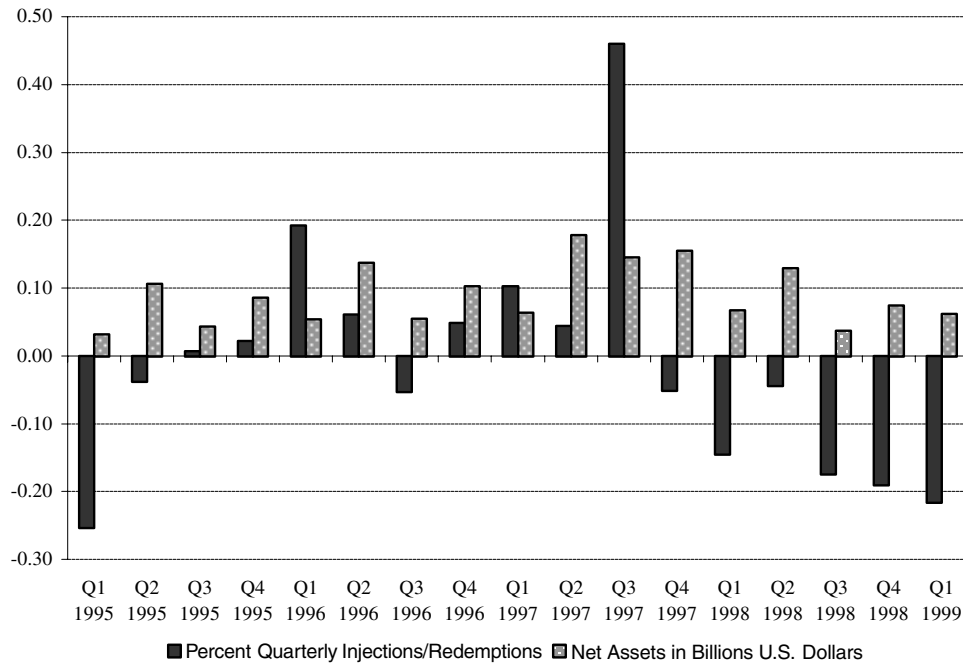
INVESTORS. The behavior of underlying investors is described in figures 6 and 7. Cash flows to Asian mutual funds (from U.S.- and the U.K.-based funds), a decision belonging to investors, were high before the Asian crisis, particularly in 1995–96. After the Thai devaluation of 1997, large outflows began and continued in 1998. Outflows were particularly large for U.S.-based funds after the Russian crisis.

FIGURE 6. Injections and Redemptions in U.S.- and U.K.-Based Asian Equity Mutual Funds (average monthly cash flow)



Note: Positive figures are injections; negative figures are redemptions.
 Source: BIS 1998.

FIGURE 7. Net Assets and Injections and Redemptions in U.S.-Based Latin American Funds



Note: All funds are open-end. The figure reports net assets and aggregate values (across funds) of quarterly injections or redemptions. Injections reflect percentage increases in the number of outstanding shares; redemptions reflect net decreases. For injections and redemptions, a value of 0.1 stands for 10 percent. For net assets (in billions of U.S. dollars) a value of 0.1 stands for \$100 million.

Source: Morningstar and U.S. Securities and Exchange Commission.

Injections and redemptions for 13 Latin American mutual funds,²² again, part of the investors' decision set, show a pattern of inflows and outflows consistent with the broad features of the recent crises reviewed above (see figure 7). Injections are measured by the percentage increase in the number of shares held by each mutual fund and redemptions by the percentage decrease, to control for fund-size changes due to capital gains and losses. Large redemptions from Latin American funds accounted for 25 percent of the outstanding shares in the first

22. The data come from Morningstar and the U.S. SEC. The sample here includes holdings of the largest 13 Latin-America equity funds (open-end) from April 1993 to January 1999 (24 quarters): Fidelity Latin America, Morgan Stanley Dean Witter Institutional Latin America, Van Kampen Latin America (formerly Morgan Stanley), BT Investment Latin America Equity, TCW Galileo Latin America Equity, TCW/Dean Witter Latin America Growth, Excelsior Latin America, Govett Latin America, Ivy South America, Scudder Latin America, T. Rowe Price Latin America, Merrill Lynch Latin America, and Templeton Latin America. These funds did not all exist from the beginning of our sample; on average we have about 10 quarters of data (out of a possible 24) per fund.

quarter of 1995 during the Mexican crisis. Thereafter, injections resumed to Latin American funds until the last quarter of 1997, during the Asian crisis. Redemptions continued during 1998, increasing during the Russian crisis, reaching 20 percent in late 1998 and early 1999. Fluctuations in injections and redemptions influence the funds' net assets, which are also determined by movements in underlying stock prices.

The patterns in figures 6 and 7 are closely associated with those in figure 4 on average quarterly flows. During the Mexican crisis, as investors pulled out of Latin American funds, there was a large outflow from Latin American countries. Then investors and flows returned to Latin American countries until the last quarter of 1997, when the Thai crisis expanded to other countries. In Asia, there are no signs of fund outflows or investor redemptions during the Mexican crisis, but there are large effects during the Asian crisis. This pattern suggests that investors' decisions influence fund flows.

MANAGERS. Managers cannot control the injections or redemptions of underlying investors. What they can control is the use of cash or short-term positions (for example, U.S. Treasury bills), which help buffer portfolios from the effects of redemptions. Holding assets that are highly liquid allows managers to meet redemptions without selling less liquid assets. In principle, this can mute the volatility caused by investment outflows. However, managers can also reinforce investors' actions and amplify volatility if they increase their liquidity positions in times of investor retrenchment. In multiple-country portfolios, managers make the decision about which country to withdraw from.²³

Interestingly, managers' choices about short-term positions do not change as funds experience redemptions or injections (table 5). On average, the funds in the sample hold 5 percent of their assets in liquid positions. Examining short-term positions in more detail by size of the fund shows that large funds hold a larger share of their positions in liquid assets. This finding is somewhat unexpected because large funds are likely to have better access to bank credit lines than smaller funds and thus not to need to hold large liquid positions. Both large and small mutual funds hold smaller liquid positions in times of redemption, indicating that fund managers' behavior helps smooth the effects of investors' withdrawals on equity markets in Latin America. By contrast, medium-size funds hold more liquid assets in times of redemption, thus magnifying investors' withdrawals from emerging markets.

23. Investors obviously determine the withdrawal country in the case of single-country funds. There are two drawbacks to this data set. First, the data are only from Latin American funds. In the future, it will be interesting to study the behavior of managers by considering a broader set of mutual fund types. Second, the data do not provide a complete picture of managers' responses to liquidity squeezes because information on funds' credit lines with banks is lacking. Funds facing large redemptions may have resorted to using such credit lines.

TABLE 5. Average Short-Term Positions of U.S.-Based Latin American Funds, 1995–98
(percentage of total net assets)

	All times	Injection times	Redemption times
All funds	4.44	4.57	4.37
Large funds	6.97	8.40	5.22
Medium funds	3.81	2.24	4.40
Small funds	4.16	4.48	3.61

Note: Injection times are defined as periods when the number of the fund's outstanding shares increases; redemption times as periods when the number decreases. See appendix table for list of companies in each fund size category.

Source: U.S. SEC.

IV. CONCLUSIONS

The increasing globalization of financial markets and the crises of the 1990s have spawned a vigorous literature on financial integration, international financial architecture, and contagion. A central element of the debate is the behavior of financial markets. In particular, many have argued that financial markets are volatile and prone to contagion. Most of the literature has focused on market imperfections and how they lead to herding behavior and financial cycles that are unrelated to market fundamentals.

Though studies have covered several dimensions of foreign investors' role in emerging markets, this article provides an overview of a missing dimension—the behavior of international mutual funds. Institutional investors are the main channel of financial flows to emerging markets, and mutual funds are a large part of institutional investors. They are the only class of institutional investors for which reliable data are available on an ongoing basis.

Several general findings emerged. Equity investment in emerging markets has grown rapidly in the 1990s. A significant proportion of that equity flow is channeled through mutual funds. Collectively, these funds are large investors and hold a sizable share of market capitalization in emerging markets.

Among mutual funds, Asian and Latin American funds achieved the fastest growth. Their size remains small, however, compared with domestic U.S. funds and global funds.

When investing abroad, U.S. mutual funds hold mostly equity rather than bonds. Global funds invest mainly in developed nations (the United States, Canada, Europe, and Japan), with just 10 percent of their investment devoted to Asia and Latin America. Mutual funds generally invest in a subset of countries within each region. In Latin America, they invest primarily in Brazil and Mexico, then in Argentina and Chile. In Asia, the largest shares are in Hong Kong, India, Korea, Malaysia, Taiwan (China), and Thailand. In transition economies, mutual funds invest most of their assets in the Czech Republic, Hungary, Poland, and Russia (and other members of the Commonwealth of Independent States).

Mutual fund investment was very responsive during the crises of the 1990s. The Mexican crisis affected mostly Latin America, and the Asian and Russian crises had a large impact on Asian and Latin American funds. These findings are consistent with previous findings on contagion and with reports by industry analysts.

Investment by underlying investors of Asian and Latin American funds is volatile. Injections and redemptions are large relative to total funds under management. The cash held by managers during injections and redemptions does not fluctuate significantly, so investors' actions are typically reflected in emerging market inflows and outflows.

Many questions remain that could be addressed in future research. To test theories of financial crises, it would be valuable to examine the link between institutional investor behavior and country and market characteristics. It would also be useful to compare the behavior of different fund types—such as global, emerging market, and regional funds—to provide evidence for discussions of international financial architecture. These are areas that we are currently researching. Beyond studying institutional investors, it would also be interesting to analyze the behavior of banks' proprietary trading in emerging markets. This is an area where hard evidence is almost completely lacking.

APPENDIX. Data Sets and Sources

Data set	Source	Use	Description
Net private capital flows	World Bank	Figure 1 Figure 2	Net capital flows to developing countries, including the so-called emerging economies, typically middle-income developing countries. The amounts include bank and trade-related lending, portfolio equity and bond flows, and foreign direct investment. The countries included in each region are detailed in the figures.
International institutional investors	BIS, <i>68th Annual Report</i>	Table 1, Table 2, Figure 6	Distribution of institutional investors between the U.S. and Europe in 1995. Monthly averages of cash to and from Asian funds in the United States and the United Kingdom. Size of the mutual fund industry in the United States, Japan, the United Kingdom, and France.
Dedicated emerging market funds	Emerging Market Funds Research	Table 3, Figure 4, Figure 5	Country holdings of dedicated emerging market funds, based inside and outside the United States. The data are aggregate, tracking nearly 1,400 international emerging market equity funds, with an average position of about \$120 billion in 1996. The data set covers both U.S. registered and offshore funds as well as funds registered in Luxembourg, United Kingdom, Ireland, Cayman Islands, Canada, and Switzerland. It includes both open- and closed-end funds.
Market capitalization	International Finance Corporation Morningstar	Table 3	Total market capitalization by country.
U.S. mutual funds	Morningstar	Table 4, Figure 3	Net asset value and number of U.S.-based mutual funds. The funds are divided in five categories by investment allocation: all funds, Asia Pacific funds, emerging market funds, Latin America funds, and world funds.
Latin American mutual funds	Morningstar and U.S. SEC	Figure 7	Aggregate values (across funds) of quarterly injections / redemptions and the net asset values of U.S.-based Latin American mutual funds. Injections reflect percentage increases in the number of the funds' outstanding shares; redemptions reflect decreases.
Short-term positions of Latin American funds	U.S. SEC	Table 5	Average short-term positions (mostly in cash) held by Latin American mutual funds. Large mutual funds are Merrill Lynch Latin America, Fidelity Latin America and Scudder Latin America. Medium mutual fund is TCW/Dean Witter Latin America Growth. Small mutual funds are BT Investment Latin America Equity, Excelsior Latin America, Govett Latin America, Ivy South America, Morgan Stanley Dean Witter Institutional Latin America, TCW Galileo Latin America Equity.

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