

CHANGES IN THE INTERNATIONAL INVESTOR BASE AND IMPLICATIONS FOR FINANCIAL STABILITY

Cross-border financial asset accumulation has tripled over the past decade. While some of this increase represents a continuation or resumption of trends that have been evident for some time, recent years have witnessed several new developments, notably the broadening of the investor base eager to hold international assets. Certain classes of investors, such as private institutional investors from mature market (MM) economies and official institutions from emerging market (EM) economies, have gained in importance in global financial markets.

Analyzing changes in the international investor base and investment allocation behavior is fundamental to understanding the buildup of strengths and weaknesses in international financial markets. Decisions that key investors make about where to allocate their assets not only affect the prices of financial assets, but also have wide-ranging implications for economic performance and welfare in various countries. The size of these cross-border flows and the rapid pace of financial innovation have given rise to concerns about financial stability, because in the past, booms in cross-border financial investment were followed by crises. Even if greater stability can be expected in the longer term, the process of transformation and the specific conditions under which it occurs may temporarily generate additional vulnerabilities.

The objective of this chapter is to enhance understanding of the globalization and diversification of the investor base as well as the implications of these trends. In particular, the following issues are addressed:

- What have been the key changes in the investor base for cross-border flows and investor behavior over the last decade?

Note: This chapter was written by a team led by Ceyla Pazarbasioglu and Daniel Hardy.

- How do these changes in the investor base and investor behavior affect the composition and volatility of capital flows and the pricing of financial assets?
- What are the key risks associated with these changes in the investor base and what are the factors that exacerbate or mitigate those risks?

The chapter reviews evidence on the accumulation of international financial assets and on the asset allocation behavior of institutional investors, and on this basis assesses implications for cross-border capital flows and global financial stability. The most comprehensive information available, especially for fast-growing portfolio investments, is used to analyze the key changes in investor behavior over the past decade. However, the complexities of links and networks of investors, which have intensified with the globalization of capital flows, along with the lack of information and data, make a comprehensive analysis a daunting task. This chapter concentrates on those forms of international capital flows that have achieved prominence over the past decade; it is expected that future *Global Financial Stability Reports* will examine specific issues in more depth.

The chapter identifies three key factors affecting the level and nature of cross-border financial flows: (1) the growth in assets under management of institutional investors; (2) changes in the asset allocation behavior of such investors, including a decline in home bias and increased investment in internationally oriented hedge funds; and (3) the rise of EM official sector and sovereign wealth funds as key players. In addition, traditional forms of cross-border asset accumulation such as bank lending and direct investment have regained momentum following the lull in the post-1990s crises period.

The diversity of assets, source countries, and investor types now involved in cross-border asset accumulation suggests that this form of globalization should, on balance, support financial stability. However, the sheer size of flows raises concerns about the increasing exposures of both source countries and recipients. Furthermore, investors have been encouraged by the generally benign global economic environment to venture into markets previously regarded as excessively risky. A deterioration in the economic environment may lead to unpleasant surprises.

The level of specificity in the information and data permit only broad policy recommendations to be set forth—namely, policies to help policymakers continue to reap the benefits of increased cross-border asset accumulation and protect themselves against rapid reversals. Information that would permit more precise analysis and policy conclusions is not yet available. Thus, one observation is that better and more timely information concerning global financial flows is needed to identify if and how public policy may be able to play a larger role.

From the analysis, some basic policy conclusions apply. Countries that wish to benefit from a global investor base have to continue to establish a track record of consistent and credible macroeconomic policies. Vulnerabilities can be reduced by promoting the effective regulation and efficiency of local capital markets. In some cases, facilitating capital outflows by allowing domestic investors to better manage their risks may also help mitigate the effects of strong inflows. Careful communication by the official sector regarding its strategy for the allocation of international reserves is also needed.

The next two sections of this chapter discuss the magnitude of asset accumulation by key sets of investors and their investment allocation behavior. The chapter then turns to analyzing the implications for financial stability, taking into account the potential benefits as well as risks. The last section draws some conclusions and presents a corresponding set of policy implications.

Asset Accumulation and Implications for Cross-Border Flows

Cross-Border Flows

The manifestation of financial globalization over the past decade can be seen in the growth of cross-border capital flows. Global cross-border flows—foreign purchases of equity and debt securities, cross-border lending and deposits, and foreign direct investment (FDI)—reached a record \$6.4 trillion in 2005. The increase in cross-border capital flows is well beyond the scope attributable to cyclical behavior (Battelino, 2006): the ratio between global cross-border capital flows and world GDP since 1995 shows an upward trend, combined with business-cycle-related swings, breaking away from its previous behavior of mean reversion (Figure 2.1).

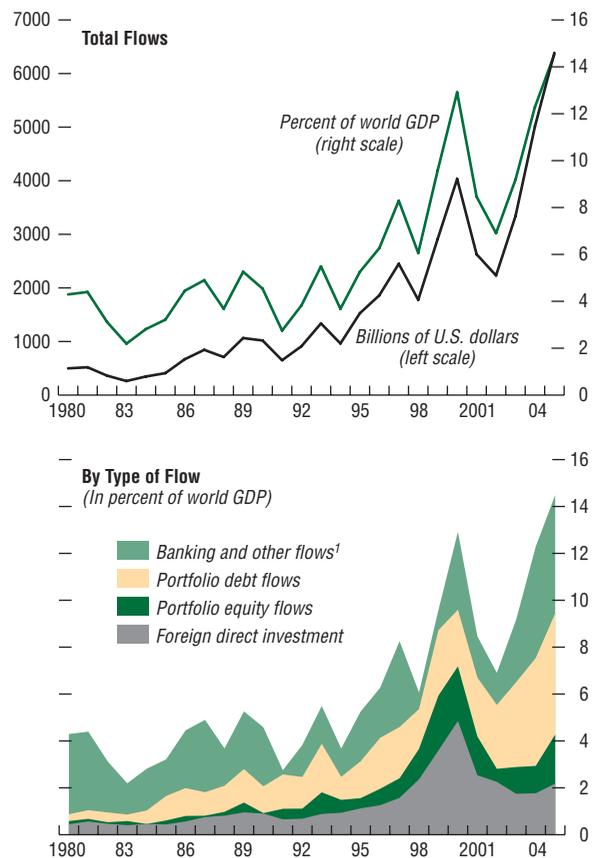
Both cyclical and structural factors have contributed to this trend. Part of the increase reflects “pull factors” such as robust and diverse growth opportunities and the opening of economies, including financial sectors, to foreign investors. But “push factors” such as the low level of interest rates in many mature markets are also present. Demographic changes, changes in accounting and regulatory frameworks, and windfall gains accruing to commodity producers have led to a rapid growth of assets under management and a sharp increase in demand for financial instruments. In some countries, particularly in emerging markets, the increase in demand has outpaced the availability of domestic assets, therefore contributing to heightened cross-border flows. These developments have been aided by technological advances that enable greater price transparency and a wider range of agents to participate in the global marketplace, as well as by the use of complex financial instruments that allow the unbundling and re-allocation of risk. Financial liberalization has also enabled or prompted institutional investors to diversify into new markets. With informational, technological, and regulatory barriers declining, the internationalization of asset allocation has gained traction. The operation of these factors can be seen in the types of

assets that are exchanged internationally, the regional pattern of capital flows, and the types of investors who are now engaged in investing internationally.

All financial asset classes have exhibited strong growth in international flows. The most significant growth has been in portfolio debt flows and in cross-border banking, which together accounted for about three-quarters of total international capital flows (Figure 2.1). Cross-border investments in debt securities have surged, largely in sovereign debt and more recently into corporate debt, both in developed countries (mainly the United States) and EM countries. FDI has increased as well, but its share as a percentage of gross flows has fallen (Box 2.1).¹

The banking sector remains a key intermediary for the supply of cross-border capital (McGuire and Tarashev, 2006), although capital markets have gained ground as the preferred mode of such flows (see Chapter III). Total cross-border bank claims almost doubled from 2001 to end-2005, when they reached \$17.6 trillion, driven mainly by European banks, followed by banks in the United States and Japan. Much of the total consists of intra-European money market transactions. Moreover, Bank for International Settlements (BIS) reporting banks have been large net recipients of deposits from EM countries, including oil exporters. Among EMs, emerging Europe has been the largest recipient of bank claims over the past several years. However, a clear trend seems to have emerged whereby the BIS reporting banks have moved away from their traditional lending business to become an important investor base in the securities market. These banks now hold a significant amount of outstanding government debt, mainly in triple-A rated sovereigns (with the exception of Italy and Japan), partly

Figure 2.1. Total Global Cross-Border Inflows



Source: IMF staff calculations based on data from IMF, *International Financial Statistics* and *World Economic Outlook*.

¹Other flows include derivative transactions.

¹In the financial account of the balance of payment statistics, all transactions are recorded on a net change basis. However, in this chapter, “gross” capital flows refer to either the credit (gross inflows) or debit (gross outflows) entry of such a transaction, while the “net” capital flows refers to their difference.

Box 2.1. Foreign Direct Investment Flows

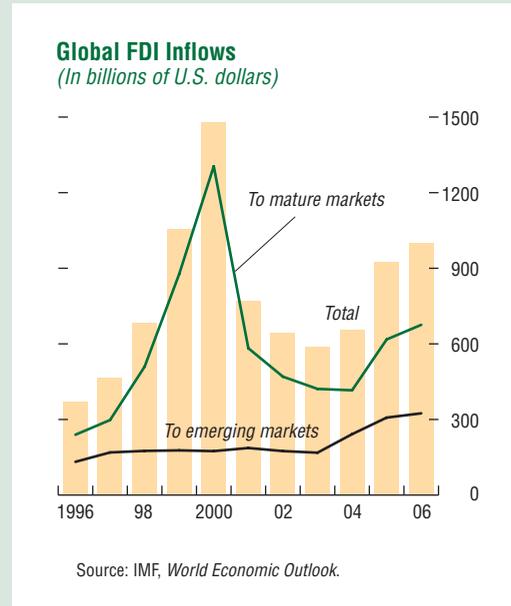
Global foreign direct investment has fluctuated over the past decade, with mature market FDI exhibiting greater variability than FDI to emerging markets (see first figure). The size and growth prospects of domestic markets are a large determinant of FDI inflows. The main source of FDI has been Europe, and EMs have increased substantially their FDI over the past three years.

Total FDI flows to EMs are estimated to have increased by about 5 percent in 2006, fueled by strong global growth, higher commodity prices, continued improvements in the business and investment climate, perceptions of reduced risks in EMs, and more mergers and acquisitions in EMs. The largest increases in FDI to EMs in 2006 were to emerging Europe and the Middle East. Flows to Africa and Latin America are estimated to have remained stable, while those to Asia declined slightly. Globalization is now encompassing EM firms. Outward FDI from EMs has continued to boom (see second figure). Some large FDI recipient EMs have become sources of outward FDI. For example, in 2006 Brazil's outward FDI is estimated to have exceeded inward FDI (see IMF, 2006a; World Bank, 2006, Chapter 4).

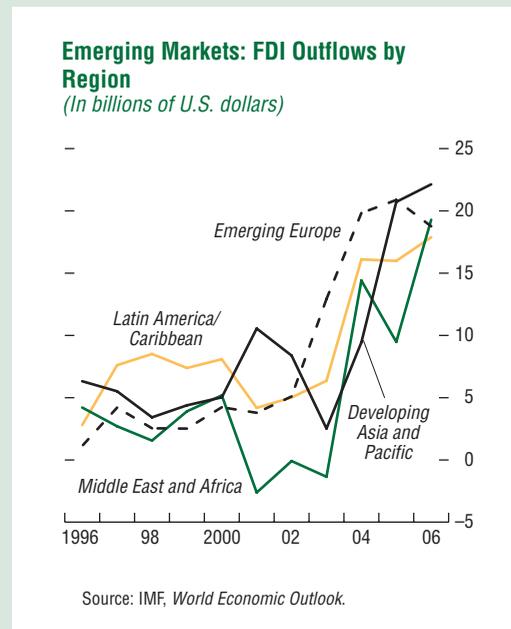
To collect information on the allocation of foreign investment, the Association of Financial Professionals (AFP) and IMF staff conducted a survey that included 31 multinational corporations. The responding companies are headquartered in the Asia-Pacific region, Europe, Latin America, and North America, and are active in the construction, energy, manufacturing, retailing, telecommunications, and transportation sectors.

The survey asked about the motivation for FDI, the rate of return on it, and its allocation and financing, as well as about infra-

Note: The main author of this box is Paul Ross. The box is based on ongoing work of an IMF-World Bank-IFC Foreign Direct Investment Group (IMF, 2006a) and relies on a survey conducted by AFP (see www.afponline.org).



structure issues. The responses indicated that FDI is part of globalization in the world economy, that it is procyclical, and that it has been buoyed by structural reforms that



improve the investment climate in recipient countries. Direct investment is aimed at establishing a solid market presence in faster growing markets (linked closely to world economic growth). Most companies considered cross-border investment in mature markets as similar in risk to investment in their home countries; EM investments were viewed as higher risk. Factors identified by investors as important in attracting FDI were low political risk, a moderate tax burden, and good investor protection.

The survey found that inward FDI flows are determined by growth prospects and in large part financed by the parent company. Profit and dividend remittances are primarily determined by taxation and controls on remittances. Financial instruments are used to manage risks, but high costs associated with such instruments deter a more active use of hedging. These responses confirm earlier work on FDI, including findings that FDI is expected to be procyclical and flow to large and fast-growing markets with good investment climates.

because these bonds can be used as collateral in other financial transactions. The net stock of debt securities held by BIS reporting banks has more than quadrupled over the past decade, which partly reflects increased exposure to local currency debt markets in the EM countries (IMF, 2006a).

Regarding portfolio capital flows, the main focus of this chapter, the following findings are especially pertinent:

- The growth in assets under management of institutional investors (pension funds, insurance companies, and mutual funds), which increased from \$21 trillion to \$53 trillion between 1995 and 2005;
- Changes in the asset allocation behavior, most notably a decline in home bias and increased investments into alternative vehicles such as hedge funds; and
- The growing importance of the official sector in asset management, in particular by EM official sector and sovereign wealth funds, managing assets estimated to have totaled more than \$6 trillion at end-2005.

Growth in Assets Under Management of Traditional Investors

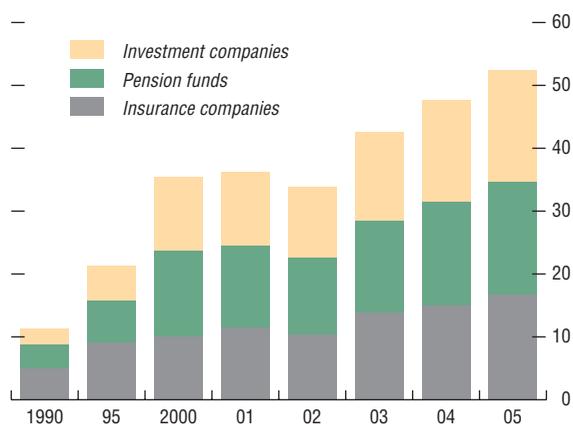
Assets under management of mature market institutional investors more than doubled over the past decade, reaching about \$53 trillion

in 2005 (Figure 2.2).² U.S. institutional investors accounted for about half of the share and continental Europe over a quarter, followed by Japan and the United Kingdom. Within conventional investment management, pension fund assets managed by institutional investors have expanded significantly, especially in countries such as the Netherlands, Switzerland, the United Kingdom, and the United States, where pension reforms through private pension plans were introduced at a relatively early stage. More recently, pension fund assets of several European countries such as Norway and Spain have been growing rapidly. Mutual funds and insurance companies also constitute a sizable share of the investor base in Europe, Japan, and the United States.

The implication of this rapid growth in assets under management is that, even if the share of portfolios invested internationally had remained unchanged, the absolute stock of cross-border claims would have increased significantly, resulting in a larger flow each year. The international role of these institutions has increased more than that, however, because they are increasingly willing to invest outside their respective home countries.

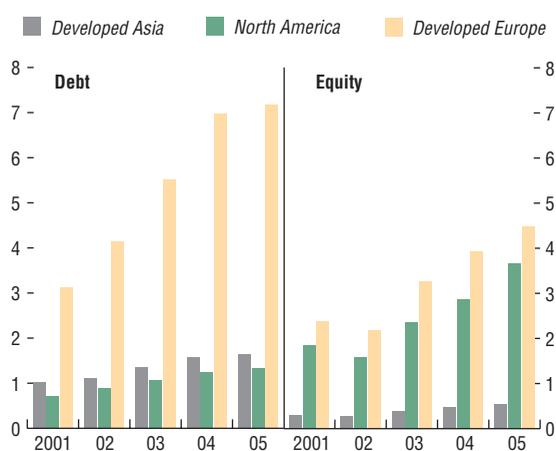
²Large nonbank institutional investors are comprised of pension funds, insurance companies, and mutual funds.

Figure 2.2. Assets Under Management of Institutional Investors in Mature Markets
(In trillions of U.S. dollars)



Sources: International Financial Services, London; OECD; and IMF staff estimates.

Figure 2.3. Portfolio Cross-Border Assets Held by Mature Markets
(In trillions of U.S. dollars)



Source: IMF staff calculations based on the Coordinated Portfolio Investment Survey.

Decline in Home Bias

The increase in assets under management of mature market institutional investors has been accompanied by a trend decline in home bias—defined as portfolio allocations being biased toward the home country—evident both in portfolio equity and debt holdings (Figure 2.3). Investments from continental Europe and Japan have traditionally been more tilted to debt instruments, while those of the United Kingdom and the United States have remained more “equity centric,” although there has been an increase in the share of investments in debt.

Europe saw the most significant decline in home bias. Cross-border claims increased by \$6.1 trillion during 2001–05, mainly in debt instruments and within continental Europe and the United Kingdom (Box 2.2).

The international portfolio assets of the United States grew from \$2.3 trillion to \$4.6 trillion over the same period, with large equity investments in offshore financial centers and other MM countries, including Japan and the United Kingdom. An analysis of portfolio trends indicates that the institutional investor base in the United States has shifted in favor of a more internationally diversified allocation (Box 2.3).

Cross-border portfolio claims from Japan almost doubled between 2001 and end-2005, reaching \$2.1 trillion. This growth was led mainly by investments by Japanese mutual funds into sovereign and agency bonds in liquid mature markets, and more recently, into EM assets.

In contrast with the MM countries, domestic institutional investors in EM countries invest primarily within their own national boundaries, despite rapidly growing assets under management in a number of those countries. In Latin America, for example, assets under management of funded pension funds stood at over \$200 billion, compared with less than \$75 billion in 1995. Assets under management of EM mutual funds more than doubled between 2000 and 2005, reaching about \$800 billion. However, regulatory restrictions on asset managers

Box 2.2. Shifting from Home Bias to “Intra-European” Bias?

The process of European integration has had the largest impact on capital flows. Developed Europe’s share in both global capital outflows and inflows jumped to around 70 percent by 2005 from 50 to 55 percent a decade earlier (see figure below). There seem to be three elements contributing to this phenomenon.

First, intra-European cross-border capital movements have surged, fueled by adoption of the euro as common currency and the removal of foreign currency risk, regulatory harmonization, and the integration of markets for goods. About 50 percent of the cross-border capital flows originating from the euro area countries are redistributed among the countries themselves. There is considerable empirical support for euro-area bias in bond portfolios, as European Monetary Union member countries disproportionately invest in one another relative to other country pairs (Lane, 2006).

Second, euro area countries’ and U.K. capital movement has been fueled by the increasing

importance of London as an international financial center. London effectively acts as a hub of the intra-European interbank market. According to the European Central Bank’s balance of payments statistics for the consolidated euro area, about one-half of the area’s cross-border capital outflows during 2005Q4–2006Q3 was directed to other European Union (EU) countries that do not belong to the euro area, with the United Kingdom accounting for 90 percent of it. U.K. investors are also turning to the euro market.

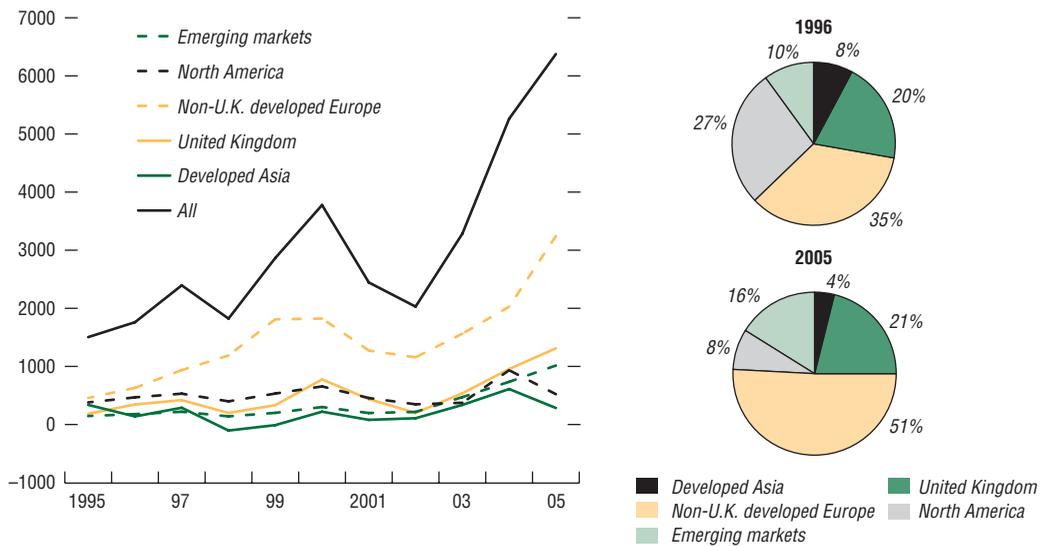
Third, western European banks and other financial institutions have been providing large amounts of financing to emerging Europe in connection with the integration of those economies into Europe (see Chapter III).

The dominance of intra-European flows is likely to persist at least for a while, as EU integration is still widening and deepening. This may have ramifications on financial stability because the increased intra-European flows may lead to more rapid and severe transmission of adverse shocks among European countries.

Note: The authors of this box are Mangal Goswami and Jack Ree.

Regional Breakdown of Gross Outflows

(In billions of U.S. dollars)



Source: IMF, International Financial Statistics.

Box 2.3. Evolution of the Home Bias in U.S. Equity Portfolios

The International Capital Asset Pricing Model (ICAPM) of portfolio allocation holds that, in the absence of significant transaction costs or information asymmetries, portfolios are well diversified internationally and capital flows to markets with the most favorable risk-return profiles. In reality, investors allocate far less to international markets than the model suggests, thereby creating a “home bias” in investment holdings (French and Poterba, 1991; Aurelio, 2006).

We analyze the changes in the home bias of U.S. equity investors, as this segment represents one of the largest groups of global equity investors. The measure of home bias is based on the ICAPM, which holds that the share of equity investments in a specific market should be equivalent to its weight in world market capitalization. The U.S. portfolio is estimated as [U.S. market capitalization + total U.S. holdings of foreign securities – total foreign holdings of U.S. securities]. This methodology has been extensively used in the literature—for example, see Kho, Stulz, and Warnock (2006). Any deviation of the share of foreign assets in the investor portfolio from the “world portfolio” is indicative

Note: The authors of this box are Silvia Iorgova and Andreas Jobst.

of bias. By this standard, values of the home bias measured close to 1 indicate strong home bias, while lower ratios suggest that observed portfolio allocations are closer to market capitalization-based weights, pointing to lower levels of home bias.

Estimates of home bias need to be treated with caution. Divergence in international legal systems, poor information about particular markets, or high transaction costs may be good reasons for global investors to prefer the domestic markets. Also, at times of lower equity market volatility, cross-country correlations of equity markets tend to decline, inducing investors to seek diversification gains abroad. Such changes in investor behavior might indicate responsiveness to cyclical factors, rather than a structural change in investor behavior and lower home bias.

The *aggregate* measure, presented in the table below, shows a systematic decline in the home bias of U.S. equity investments across most regions since 2001, decreasing by 8 percent relative to total non-U.S. market capitalization. The increased international diversification of U.S. holdings has been concentrated in MM countries, developing Asia, and Latin America, the regions with highest market capitalizations, supporting the idea that there might be an evolving investment preference to certain regions on the part of U.S. equity investors.

Evolution of the Home Bias in U.S. Equity Investment—ICAPM Framework*(In percent)*

	Weight in the U.S. Portfolio (A)		Weight in World Market Portfolio (B)		Home Bias (1-A/B)		Change 2001–05
	2001	2005	2001	2005	2001	2005	
Developed Europe	6.52	9.21	26.94	26.20	0.76	0.65	–0.11
Other developed countries	2.68	5.89	15.14	22.39	0.82	0.74	–0.09
Developing Asia	0.26	0.84	4.18	5.67	0.94	0.85	–0.09
Emerging Europe	0.07	0.24	0.67	2.38	0.89	0.90	0.01
Latin America	0.37	0.78	2.18	2.54	0.83	0.69	–0.14
Middle East	0.10	0.19	0.37	0.60	0.74	0.69	–0.05
Africa	0.05	0.19	0.59	1.51	0.92	0.87	–0.04
All Countries	10.04	17.35	50.07	61.29	0.80	0.72	–0.08

Source: IMF staff estimates based on data from IMF, Coordinated Portfolio Investment Survey; International Finance Corporation, Emerging Markets Database; and Bloomberg.

and pension funds, and the underdevelopment of their domestic insurance markets, have reduced the scope of EM countries to diversify their portfolios internationally (IMF, 2004; Chan-Lau, 2004).

Increased assets under management combined with the relaxation of regulatory restrictions and technological advances have made it possible for more pension funds to diversify their portfolios internationally (Table 2.1). Pension fund investment in foreign markets has traditionally been hampered by regulations limiting or prohibiting investment abroad or by factors that encourage home bias more generally (such as asymmetry of information and greater transactions costs). Furthermore, initiating investment abroad and into new asset classes usually involves certain costs, creating a threshold effect: the investor must first become familiar with the behavior of prices for the new asset and how they relate to other items in the portfolio; trading mechanisms and relationships with trading partners need to be established; the regulatory environment of the new market must be investigated; and entry might require the completion of a licensing process. Some of these barriers have been overcome through regulatory liberalization and technological advances.

With both institutional investors, such as pension funds, and individual investors looking to increase their foreign asset allocations, the asset management industry in turn has also become more geographically diversified. The increasing allocation to EM assets is another indication of the decline in home bias. Dedicated U.S. EM mutual funds have been growing rapidly, from \$27 billion in late 2000 to about \$230 billion as of mid-2006, albeit with some periods of volatility. In an asset management survey of 175 global financial services executives, around two-thirds of the respondents said globalization would be the main profitability driver going forward (Deloitte Touche Tohmatsu, 2006). In Europe, for example, cross-border fund registration accounted for half of all funds in 2005, and in some countries, such as Germany, the number

Table 2.1. Pension Fund Asset Allocation in Selected Countries

(In percent of pension fund portfolios)

	Equities		Bonds		Other
	Domestic	Inter-national	Domestic	Inter-national	
United States					
1994	41	7	42	1	9
1999	55	10	27	1	7
2005	48	15	32	1	4
Japan					
1994	24	6	55	6	9
1999	40	19	32	7	2
2005	30	18	24	13	15
United Kingdom					
1994	54	23	9	4	10
1999	51	24	13	4	8
2005	34	32	22	3	9
Netherlands					
1994	10	13	62	4	11
1999	12	38	22	19	9
2005	6	43	5	33	13
Australia					
1994	35	12	30	3	20
1999	39	16	22	3	20
2005	32	27	14	5	22
Canada ¹					
1994	32	13	48		7
1999	34	17	45		14
2004	30	26	36		8
Spain ¹					
1994	4	1	57	3	35
1999	11	14	40	13	22
2004	6	16	18	28	32

Sources: UBS Global Asset Management (2005); and OECD (2006a).
¹OECD (2006a).

of foreign funds available to investors exceeded that of domestic funds. The demand for foreign assets is reflected in the league tables of the top-selling mutual funds in Europe in 2005 (Figure 2.4).

Hedge Fund Growth Driven by Institutional Demand

Institutional investors are increasingly relying on hedge funds as a vehicle to achieve higher risk-adjusted returns, including through international exposures. Lower returns from conventional investments have induced a change in the investment behavior of institutional investors, making them more attracted to absolute return investments and leading them to actively seek “alpha”—the excess return on a particular

Figure 2.4. Globalization of the Asset Management Industry



Source: Van Steenis (2006).

asset.³ This shift has enabled investments in hedge funds and alternative assets to gradually enter mainstream portfolio allocations, through which asset managers gain access to more aggressive investment strategies such as the use of leverage (including through derivatives), short sales of securities, and exposures to new asset classes (e.g., commodities) and less liquid assets (e.g., private equity and real estate) in order to enhance the risk/return characteristics in their portfolios.⁴

Pension funds and funds of hedge funds have become increasingly important investors in hedge funds (European Central Bank, 2006). According to market estimates, assets under management of the hedge fund industry, though small compared with other institutional investors, grew from \$30 billion in 1990 to more than \$1.4 trillion as of end-2005. The number of hedge funds (excluding funds of funds) multiplied from only 530 in 1990 to more than 6,700 by 2005. Global institutional investors' capital allocated to hedge funds was estimated at \$360 billion as of end-2005, representing 30 percent of total hedge fund assets under management (Figure 2.5). U.S. institutional investment in hedge funds more than doubled to \$136 billion from 2003 to 2005, much of which came from pension fund allocations (Bank of New York and Casey, Quirk and Associates, 2006). U.K. pension funds increased their allocation to hedge funds from 2 percent of their portfolio in 2001 to almost 5 percent in 2004 (JPMorgan Fleming Asset Management, 2005).

Emergence of New Players—Emerging Market Official Sector and Sovereign Wealth Funds

Gross official international reserves have increased dramatically in recent years, more

³For the period 1990–2005, the Equal Weighted Hedge Fund Index had a higher return (15.1 percent) and higher Sharpe ratio (1.58)—the ratio of returns to risk—than other stock and bond portfolio benchmarks (Center for International Securities and Derivatives Markets, 2006).

⁴Recent trends in the hedge fund industry and growth in private equity funds are examined in Annex 1.4 in Chapter I.

Table 2.2. Accumulation of Official Foreign Exchange Reserves of Selected Countries

(In billions of U.S. dollars)

Country	Level of Official Reserves ¹		Change
	End-1999	End-2006	
China	158	1,068	910
Japan	287	880	593
Russia	8	296	288
Korea ²	74	234	160
India	33	171	138
Singapore	77	137	60
Brazil	35	86	51
Malaysia	31	82	51
Algeria	5	78	73
Mexico	32	76	44
Turkey	23	61	38
Libya	7	59	52
Nigeria ²	5	42	37
Total	775	3,270	2,495
<i>Memorandum:</i>			
All countries, total reserves (excluding gold) ³	1,882	5,072	3,190
All countries, total reserves (including gold) ^{3,4}	2,163	5,624	3,461

Source: IMF, *International Financial Statistics (IFS)*.

¹Excluding gold.

²End-November 2006.

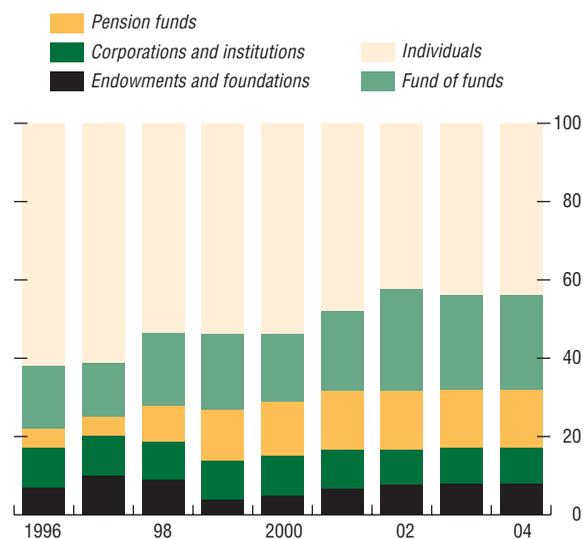
³Country coverage conforms with the *IFS* world table on total reserves.

⁴Including gold at market prices.

than doubling since 2002 to reach nearly \$5 trillion by end-September 2006 (Table 2.2). Generally, countries with large current account surpluses have also been those with the largest accumulations. The sheer volume of foreign exchange reserves held by surplus countries, currently in excess of \$3 trillion for developing Asia and Japan, and another \$700 billion in oil-exporting developing countries, has led to an unprecedented concentration of funds within the official sector. China's reserves exceed \$1 trillion.

More recently, the governments of commodity-producing countries, especially oil producers, have become large investors in financial instruments, in particular in bonds and equities. These investments are made by sovereign wealth funds directly or through the placement of funds with external investment managers. Market estimates indicate that these funds manage over \$1.4 trillion,

Figure 2.5. Global Hedge Funds, Investor Base
(In percent)



Source: Hennessee Group LLC.

Table 2.3. Top Sovereign Wealth Funds

Country	Sovereign Wealth Funds	Assets Under Management (In billions of U.S. dollars)	Source
United Arab Emirates ¹	Abu Dhabi Investment Authority	250–500	Oil
Norway	Government Pension Fund	263	Oil
Singapore	Government of Singapore Investment Corporation	>100	Non-commodity
Kuwait ¹	Kuwait Investment Authority	160–250	Oil
Russia	Oil Stabilization Fund	89	Oil
<i>Sovereign external assets</i>			
Saudi Arabian Monetary Agency and government institutions		276	Oil

Sources: Norges Bank; Saudi Arabian Monetary Agency; Ministry of Finance of Russia; Government of Singapore Investment Corporation; Pacific Management Investment Company (PIMCO); and Toloui (2007).

¹Based on market estimates (PIMCO).

the bulk of which is in oil-related funds, with the remainder belonging to investment and public pension funds of export-oriented countries or non-oil commodity funds (Table 2.3).

As a result of these developments, the official sector has become a key player in cross-border asset allocation and has contributed to the financing of global imbalances. EM countries as a group are now a net supplier of capital to MM countries, largely mirroring the U.S. external financing gap, through portfolio debt flows (Figure 2.6). Importantly, this movement of capital from EMs to MMs is primarily channeled through central banks and sovereign wealth funds, mainly of oil exporters in the most recent period.

Data Constraints

More disaggregated data is needed to carry out further analysis of the asset allocation behavior of different types of investors and implications on asset prices and volatility of capital flows. However, the statistics on international capital flows and positions are not comprehensive. For example, the Coordinated Portfolio Investment Survey (CPIS) data on cross-border portfolio investments are limited by the number of countries and the spectrum of investors that participate in the survey. While this applies mainly to position data, the country cover-

age of the statistics has significantly improved in recent years (Box 2.4). Furthermore, the complexity and comingling of new financial instruments with traditional instruments and the intermediation nature of financial markets make it difficult to map ultimate capital flows to the investor base. As such, data may not always represent actual exposures, mainly because they could well reflect only one leg of the positions taken by a market participant that also takes an offsetting position through its access to the offshore derivatives and/or the nondeliverable forward market. Market participants indicate that a multitude of reverse trades and protection mechanisms complicate the identification of the ultimate investor in a certain asset.

Bearing in mind these caveats, the analysis in the next section uses the available data to discern the asset allocation behavior of the investor base and its implications for asset prices and volatilities.

Asset Allocation Behavior and Implications for Asset Prices

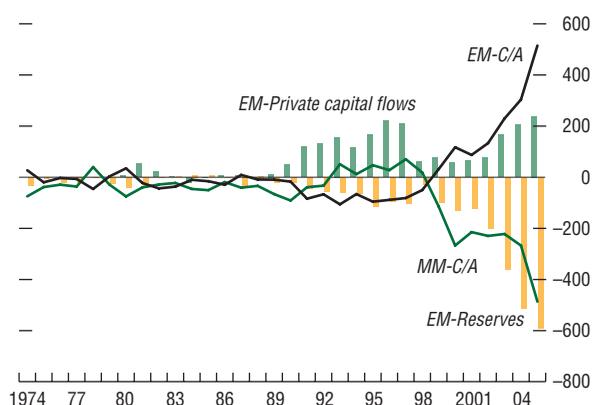
Investment Strategies

Different types of investors—individuals, banks, insurance and pension funds, hedge funds, public sector institutions, etc.—have different objectives and face varying constraints that also affect their investment allocation

decisions, including the regulatory environment and their liability structures, time horizons, internal governance, and “investment cultures.” The frequency of strategic changes in asset allocation, in particular, varies substantially across institutions. At one extreme, proprietary trading desks at banks (including investment banks) and certain hedge funds may focus on rapidly changing (sometimes within a single day) relative value strategies. In contrast, life insurance companies tend to implement more medium-to-long-term strategic asset allocation, usually reviewing such strategies on a semi-annual or annual basis. Similarly, defined-benefit pension funds typically conduct a full asset and liability review only every one to three years, and generally rely more on external advice and expertise, such as that from investment advisory companies. For defined-contribution pension funds and investment companies, asset allocation processes and strategies can be very diverse, reflecting the specific investment needs and styles of the individual investor (e.g., benchmarking vs. absolute return focus).⁵

Central banks also have long horizons but are generally required to maintain high liquidity, and their investment policies are relatively conservative. Typically they hold investment-grade, short-term, liquid sovereign assets in major currencies. However, with the pace of reserve accumulation outpacing the issuance of short-term government bonds, reserve managers are increasingly choosing to move outside of their “preferred habitat” (Figure 2.7). With a projected reduction in fiscal deficits, the supply of government bonds in major currencies could further decelerate, with possible implications for the sustainability of these trends. Thus, investment authorities are increasingly allocating reserve assets with risk-return considerations and diversifying into new asset classes—for example, away from their investments in U.S. Treasury securities into U.S. mortgage-backed securities,

Figure 2.6. Current Account, Capital Flows, and Reserve Accumulation
(In billions of U.S. dollars)

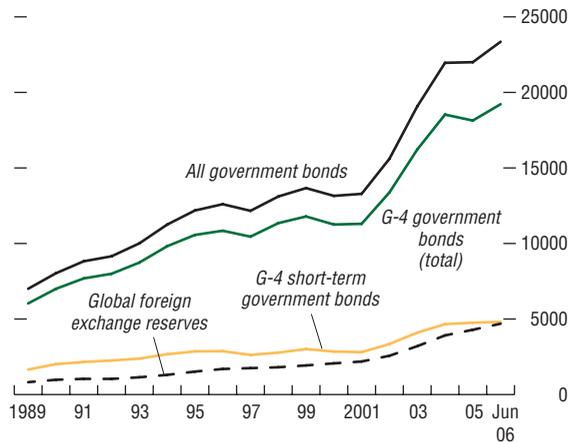


Source: IMF, *World Economic Outlook* database.

Note: EM = emerging market; MM = mature market; C/A = current account. Reserve building, as a capital outflow item, is shown as a negative entry.

⁵See previous issues of the *Global Financial Stability Report* (IMF, 2004, 2005a, and 2005b).

Figure 2.7. Foreign Exchange Reserves and the Short-Term Government Bond Market
(In billions of U.S. dollars)

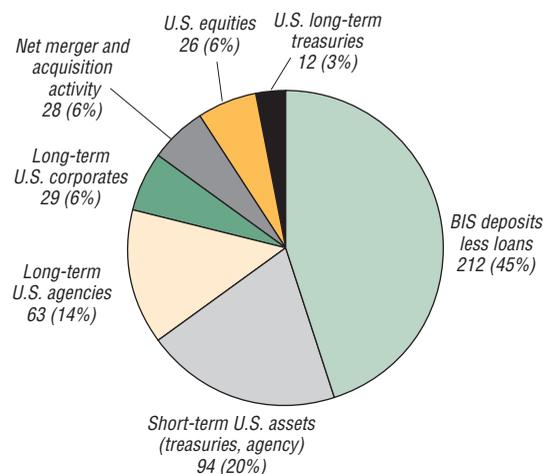


Sources: IMF, *International Financial Statistics*; and Bank for International Settlements, securities statistics, 2006.

U.S. agency debt, and other dollar-denominated debt like high-grade corporate bonds and investment-grade sovereign external debt in EMs (Carver, 2006).

Sovereign wealth funds have more latitude in their investment policies than central banks. For example, the Norwegian Government Pension Fund and the Government of Singapore Investment Corporation both operate as professional asset managers and invest in a wide set of mature and emerging market securities (more recently, other countries such as Korea have adopted a similar model). Estimates of oil exporters' official asset accumulations of about \$464 billion between 2003 and 2006 are barely reflected in reported purchases in U.S. securities markets (Figure 2.8).⁶ Anecdotal evidence, however, suggests that oil exporters' purchases of U.S. securities are intermediated by institutions in the United Kingdom and offshore centers.

Figure 2.8. Leading Oil Exporters: Major Asset Purchases, 2002–06
(In billions of U.S. dollars and in percent)



Source: Pacific Investment Management Company.
Note: BIS = Bank for International Settlements.

Implications for Asset Prices

The increasing supply of international capital and the widening of the investor base have been reflected in, and are affected by, the pricing of financial assets. As the demand for international assets has expanded, the premia incorporated in their yield have tended to fall. The combination of rising volumes for many asset classes and falling returns confirms that the major change has been in the demand for these assets, especially for fixed-income assets, rather than their supply. The effects of the broadening investor base on the volatility and pricing are illustrated with two specific asset classes: U.S. Treasury securities and EM bonds.

U.S. Treasury Securities

The share of U.S. Treasury securities held by foreigners has almost tripled over the past decade, and the acquisition by foreign official institutions of U.S. long-term securities (long-

⁶For an analysis on petrodollar recycling, see McGuire and Tarashev (2005).

Box 2.4. The Importance of Internationally Comparable Bilateral Statistics

As a high priority, the International Monetary Fund undertakes multilateral surveillance to analyze and monitor the growing financial linkages among economies and their external financial vulnerability from a market perspective. Accordingly, the focus of the analytical framework is increasingly shifting to metrics of financial positions, which capture financial exposures to partner countries in a consistent manner. Several initiatives are under way in the IMF's Statistics Department (STA) to meet these statistical needs.

In addition to balance of payments flows statistics, the IMF has been encouraging countries to compile and disseminate international investment position (IIP) data. From 37 countries in 1998, there are now more than 100 countries that report IIP statistics. Reporting on external positions was further promoted by the decision to include the IIP data as a prescribed category of the IMF Special Data Dissemination Standard as of December 31, 2001.

In the mid-1990s, STA launched the Coordinated Portfolio Investment Survey (CPIS), which provides bilateral information on countries' holdings of portfolio investment securities—equities and debt securities—by partner country. The CPIS results also help countries that issued securities to identify the counterpart countries holding their securities.

In March 2006, the BIS, IMF, the Organization for Economic Cooperation and Development (OECD), and the World Bank jointly launched the Joint External Debt Hub (JEDH) to provide more information on external debt. The JEDH brings together countries' external debt data (national data) with data from creditor/market sources, facilitating compari-

sons between the issuing and creditor countries.¹ For example, the national data provide quarterly data (liabilities) by issuing countries, whereas, from a creditor perspective, the BIS International Banking Statistics provide quarterly information of countries' bank claims on other countries, and the CPIS on countries' holdings of debt and equity securities of other countries.

Moving forward, STA is investigating the feasibility of conducting a Coordinated Direct Investment Survey for an end-2009 reference year. Like the CPIS, the survey is intended to provide harmonized partner country data that could be used to derive measures of a country's foreign direct investment liabilities (i.e., equity and loans received from foreign direct investors) as well as similar data series on a country's direct investment assets (i.e., equity and loans provided to affiliated enterprises). The data from a Coordinated Direct Investment Survey, together with the data in the JEDH, would provide bilateral information on the most significant components of the IIP.

An important aspect of current and future efforts is the compilation of data according to common standards in order to ensure cross-sectoral consistency. The update to the *Balance of Payments Manual*, currently under way, will expand on the standard components of the sectoral allocation of flows and positions. The four-sector breakdown in the current manual (namely, monetary authorities, general government, banks, and other sectors) will be expanded to the full sector classification used in the *System of National Accounts*. Moreover, for the purposes of the standard components, the other sectors category is to be split into financial and nonfinancial sectors.

Note: The authors of this box are Lucie Laliberté and John Motala of the IMF Statistics Department.

¹See http://devdata.worldbank.org/sdmx/jedh/jedh_home.html.

term U.S. Treasury and U.S. government agency securities) has contributed significantly to this buildup (Table 2.4). The size and depth of U.S. financial markets makes them the primary arena

for such foreign investors, including central banks, and sovereign wealth funds.

The demand for U.S. Treasury bonds from non-U.S. official institutions, including sov-

Table 2.4. Distribution of Foreign-Owned U.S. Long-Term Securities

Type of Security	Dec. 1994	Mar. 2000	June 2002	June 2003	June 2004	June 2005 ¹
Equity						
Total outstanding (in US\$ billions)	7,767.0	24,703.0	17,904.0	17,941.0	20,779.0	22,041.0
Foreign-owned (in percent)	5.1	6.9	7.8	8.7	9.3	9.7
<i>Of which: Official institutions</i>	0.4	0.4	0.5	0.6	0.6	0.8
Marketable U.S. Treasury						
Total outstanding (in US\$ billions)	2,392.0	2,508.0	2,230.0	2,451.0	2,809.0	3,093.0
Foreign-owned (in percent)	19.4	35.2	40.7	45.5	50.8	51.7
<i>Of which: Official institutions</i>	10.9	18.5	25.1	26.6	32.5	34.1
U.S. Agency						
Total outstanding (in US\$ billions)	1,982.0	3,575.0	4,830.0	5,199.0	5,527.0	5,591.0
Foreign-owned (in percent)	5.4	7.3	10.2	11.3	11.2	14.1
<i>Of which: Official institutions</i>	0.6	2.5	2.8	3.5	3.8	5.8
Corporate and Other Debt						
Total outstanding (in US\$ billions)	3,556.0	5,713.0	7,205.0	7,852.0	8,384.0	8,858.0
Foreign-owned (in percent)	7.8	12.3	15.7	15.7	17.4	19.5
<i>Of which: Official institutions</i>	0.1	0.2	0.2	0.3	0.5	0.7

Source: U.S. Treasury.

¹The latest annual survey of the U.S. Treasury covering the distribution of foreign-owned U.S. securities through June 2006 was scheduled to become available on March 30, 2007.

foreign wealth funds, has been more stable than that from other investors (Figure 2.9; see also Chapter I). Furthermore, in recent years, foreign official investors seem to be leaning against the wind in this market, more specifically, increasing U.S. dollar-denominated assets during periods of heightened selling pressure from private sector market participants. The monthly correlation between non-U.S. official and private net purchases of the long-term U.S. Treasury securities over the latest 36 and 24 months is -0.27 and -0.41 , respectively, whereas over the entire 1996–2006 period it is estimated at 0.75 .

The decline in the term premia of long-term bonds in the United States can partly be attributed to increased international demand, and to the investment pattern of EM central banks. Prima facie evidence of lower premia for holding long-term assets is observed in lower implied volatilities of government bond futures. Several empirical studies have shown that foreign inflows tend to have an economically large and statistically significant impact on long-term interest rates, although estimates vary widely, ranging from 30 to 100 basis points (Table 2.5).

Emerging Market Bond and Credit Default Swap Spreads

Stronger inflows into EM external debt markets from MM economies have supported prices in this asset class (Table 2.6). Other contributing factors include improved economic performance of these EM countries, lower financial market volatility, a lower yield on MM sovereign assets, and perhaps the recent decline in net issuance of EM external debt in the context of an overall asset-liability management strategy (IMF, 2006a). A recent empirical study found that the flows from East Asia had a statistically significant impact on the decline in EM yield spreads between June 2004 and May 2005—a period during which East Asian reserves accumulation approached \$400 billion (IMF, 2006b). However, the study did not find any discernible effect of oil-related buying of EM debt securities on their yield spreads.

Volume growth, especially of credit derivative swaps (CDS) contracts with sovereign debt underlying them, has been strong, reflecting increased demand among investors for EM exposure. Since net issuance of external debt has declined substantially as EM countries

Table 2.5. Estimates of the Effect of Reserve Accumulation on U.S. Treasury Yields*(In basis points)*

Merrill Lynch	30
JPMorgan	30–50
Goldman Sachs	40
Eurosystem	65
Hauner and Kumar	90
Ben Bernanke and others	50–100

Sources: European Central Bank; Eurosystem; and Hauner and Kumar (2006).

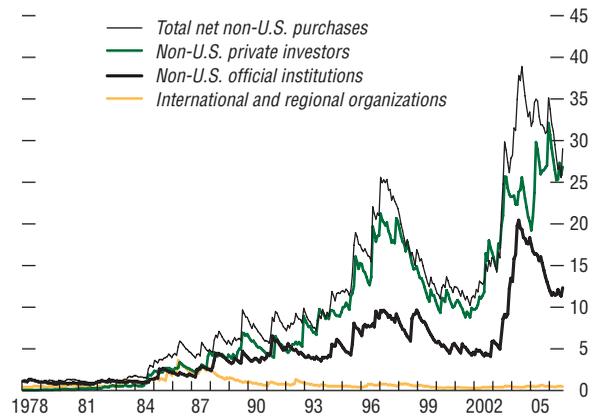
have turned to local currency debt to meet their financing needs (Turner, 2006), investors have met their EM exposure targets by selling protection on sovereign issuers and driving CDS spreads down. The term structure of CDS spreads has shifted downward as spreads have tightened regardless of maturity over the last three years (Figure 2.10).

Financial Stability Implications

The issues addressed in this chapter that center around the growth in cross-border capital flows and the widening of the investor base have implications for the stability of financial institutions and markets, and economies more widely. This section reviews the channels whereby changes in the investor base and investor behavior might have effects on financial and economic stability—be they desirable or undesirable—and marshals evidence to assess the balance of these effects. The discussion below is organized around two themes: first, the possible effects on recipient countries of cross-border flows; and second, the stability of financial institutions themselves.

Implications for Recipient Countries

The potential benefits and risks for recipients of international capital flows have been subject to extensive theoretical and empirical study (Edwards, 2001; Klein and Olivei, 1999; Rodrik, 1998). Under the right conditions, large inflows can contribute to consumption

Figure 2.9. Volatility of Net Cross-Border Purchases of Long-Term U.S. Treasury Securities
(In billions of U.S. dollars)

Source: IMF staff estimates based on U.S. Treasury Department, *Treasury International Capital System* data.

Note: Volatility estimates based on conditional standard deviation (GARCH).

Table 2.6. Determinants of Returns on Emerging Market External Debt

Dependent variable	Change in the Emerging Market Bond Index Global composite index values (returns on EM external debt).				
Explanatory variables	Dedicated EM debt fund inflows; VIX (implied volatility index of the U.S. stock market); economic risk rating (International Country Risk Guide), which includes inflation, ratios of budget balance to GDP, and current account to GDP (higher rating indicates improved economic health); and yield on 10-year U.S. Treasury bonds.				
Estimation results	Estimation method: Two-stage least squares using lags of explanatory variables as instruments; Newey-West HAC standard errors & covariance.				
	Sample 1998:1–2006:4, quarterly.				
	Variable	Coefficient	Std. Error	t-Statistic	Prob.
	Flow to EM debt fund	0.149	0.062	2.361	0.020
	Change in VIX	-0.969	0.289	-3.342	0.001
	Δ in economic risk	3.762	1.056	3.560	0.001
	Δ in U.S. T-bond yield	-7.024	2.691	-2.609	0.011
	Constant	0.916	0.857	1.070	0.288
	R-squared	0.333			
	Adjusted R-squared	0.304			
	Durbin-Watson statistic	2.185			

Sources: IMF staff estimates based on AMG; Bloomberg L.L.; JPMorgan Chase & Co.; and countrydata.com.

smoothing, or to capital accumulation and, thus, growth and diversification of the local economy (Kose and others, 2006). Inflows can also be a conduit for institutional improvements that favor improved economic performance, for example, through technology transfer and better corporate governance and transparency. Yet, dependence on inflows implies vulnerability to a possible sudden stop or reversal (Froot, O'Connell, and Seasholes, 2001). Inflows may be associated with undesirable domestic effects such as asset price bubbles, dangerously rapid credit growth, inflation, and real currency appreciation—even though in many cases the underlying cause of large inflows and the associated negative developments may be domestic distortions, which the inflows sustain at least temporarily.

Rapid cross-border asset accumulation among many countries might contribute to overall macroeconomic stability, but may also create vulnerabilities. The stabilizing influence is based on the diversity of investor behavior and on increased means to smooth consumption, investment, and financing. Nonetheless, the very size of world capital flows, documented in this chapter, prompts questions concern-

ing their role in transmitting, amplifying, and possibly triggering economic disturbances. The trend toward larger flows implies that even the world's largest economies rely on the continued smooth functioning of international capital markets. This implies that a small shift in world demand for any given asset could send its price soaring or plunging, depending on the depth and liquidity of the market for that asset. Even a net capital exporter may be severely affected, either by a shift in world demand for its own assets, or because demand for foreign assets by its investors rises or falls abruptly. Furthermore, macroeconomic interlinkages may be reinforced: if, say, country A is heavily invested in the financing of country B's real estate market, then a fall in housing prices in B and a rise in mortgage defaults could have a wealth effect in A. Each country may better insure itself against local disturbances, but each takes on exposure to shocks in other countries.

Volatility of Capital Flows

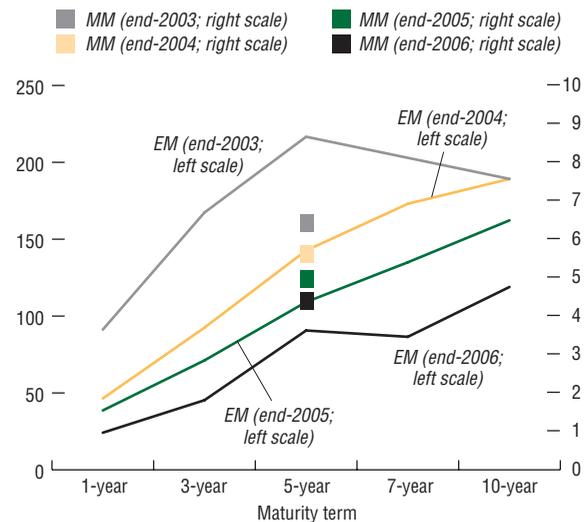
The volatility of net and gross capital flows has increased substantially over the past decade, both in MM countries and in some

EM countries (Figures 2.11 and 2.12).⁷ The increase is seen not only in absolute terms, but also relative to GDP. Mature market countries have seen a sharp rise in net flow volatility, as in the case of the United States, given the size of flows needed to finance its large current account deficit. However, the volatility of gross flows in and out of European countries is much higher, reflecting the integration of their financial markets. The United Kingdom and Singapore display especially high and rising volatility, consistent with their roles as financial centers.⁸

For emerging markets, volatility of outflows has generally increased, while the volatility of inflows has been mixed. In particular, volatility of inflows is lower in those countries that witnessed strong capital inflows followed by a crisis during the 1990s (e.g., Brazil, Korea, and Mexico). While some countries (e.g., Thailand) have attempted to tighten controls on inflows of capital, others have taken measures to liberalize capital outflows (Table 2.7), build up reserves, and increase the flexibility of exchange rate movements (IMF, 2007).

The international reserves available to mitigate the effects of fluctuating capital flows are now larger in both absolute and relative terms. Emerging market countries, which traditionally were most susceptible to sudden stops, have responded by reducing government borrowing abroad and accumulating foreign exchange reserves to act as buffers, which may also discourage speculative pressures and dampen volatility. Therefore, the rise in cross-border capital flow volatility, when scaled by foreign exchange reserves, exhibits a relatively more benign picture for most of these EM countries. In most cases, the ratio of the net capital flow

Figure 2.10. Term Structure of Sovereign Credit Default Swap (CDS) Spreads, 2003–06
(In basis points)

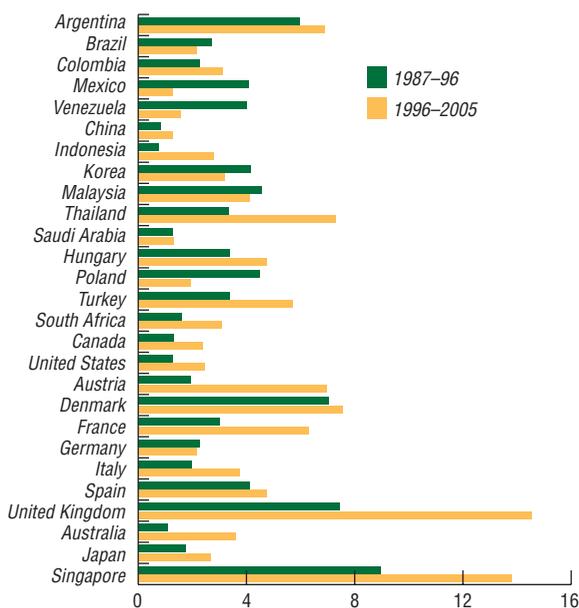


Sources: Bloomberg L.P.; and IMF staff estimates.
Note: Year-end spreads for 1, 3, 5, 7, and 10-year CDS contracts on external sovereign debt for emerging market (EM) and selected mature market (MM) countries. No CDS spreads of 7-year contracts were available at end-2003.

⁷This volatility in capital flows contrasts with relatively low volatility in financial market prices in the recent past; since 2001, there has been a secular decline in price volatilities across bonds, equities, and foreign exchange.

⁸The volatility of capital flows relative to GDP is even higher for Ireland, which is excluded from the figures in order to preserve the scale.

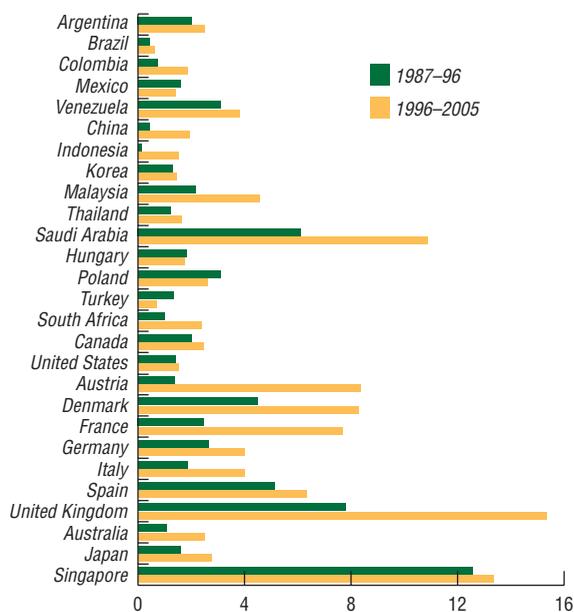
Figure 2.11. Volatility of Capital Inflows
(In percent of flows to GDP)



Source: IMF staff estimates based on data from IMF, *International Financial Statistics* and *World Economic Outlook*.

Note: Volatility is calculated as the standard deviation of the ratio of capital inflows to GDP over 10 years.

Figure 2.12. Volatility of Capital Outflows
(In percent of flows to GDP)



Source: IMF staff estimates based on data from IMF, *International Financial Statistics* and *World Economic Outlook*.

Note: Volatility is calculated as the standard deviation of the ratio of capital outflows to GDP over 10 years.

Table 2.7. Liberalization of Capital Outflows: Recent Experiences of Selected Countries

Countries	Measures Taken
Brazil (March 2005)	Ceiling lifted on overseas transfers by Brazilian nonfinancial enterprises for the purpose of direct investment; pre-authorization requirement eliminated for financial guarantees by Brazilian entities to their foreign subsidiaries.
Chile (May 2005)	Inward and outward transactions in the form of shares or equity were authorized.
China (April 2006)	Qualified Domestic Institutional Investor (QDII) Program launched, enabling domestic individuals and companies to hold overseas portfolio assets up to a government-determined aggregate quota. For example, the QDII Program allows commercial banks to sell financial products denominated in renminbi to domestic customers, and pool the funds to buy foreign exchange and invest in offshore fixed-income products within the predetermined quota.
Colombia (June 2006)	The Ministry of Finance lifted the requirement that portfolio investments not be liquidated within one year after the date of investment. This reversed a decree of late 2004 that was intended to discourage short-term capital flows.
Korea (January 2007)	Tax breaks and other incentives introduced to facilitate overseas portfolio investments by domestic institutional investors and banks; ceiling on speculative overseas real estate investment raised from \$1 million to \$3 million; various promotion measures introduced to facilitate overseas foreign direct investment (FDI) (for example, insurance schemes are to be launched or expanded to help hedge FDI-related risks, and the Export-Import Bank of Korea is to expand its overseas investment support capacities).
Malaysia (April 2005)	The threshold for investing abroad rose for institutional investors, including, for example, unit trust management companies, asset management companies, and insurance companies.
South Africa (March 2006)	The limit on investments abroad by resident individuals was more than doubled. The primary remaining restrictions comprise ceilings on portfolio outflows for institutional investors, prohibition of portfolio outflows by corporations, and ceilings on individuals' offshore investments. The authorities plan to replace quantitative limits on institutional investors with prudential regulations as part of broader reforms of the long-term insurance and pension funds industries.

Source: National authorities.

volatility to the foreign exchange reserves showed a significant decline from 1996 to 2005 (Figure 2.13).

Diversity of the Investor Base

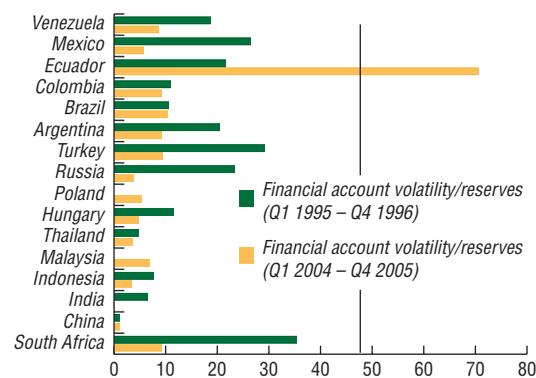
Greater diversity of investors should in principle improve stability over the longer term, but there may be downside risks in the near term (BIS Committee on the Global Financial System, 2007). A wider range of investors, representing different types of institutions and different countries, are less likely to suffer simultaneous, symmetric, or significant shocks that affect their overall willingness to hold foreign assets. If one set of investors suffers a negative shock or for some other reason decides to hold fewer international assets, a different set of investors is likely to take up the slack.

The prediction that a more diverse investor base will stabilize the supply of international capital relies on an assumption that the behavior of investors, and in particular that of additions to the investor base, is heterogeneous. Total flows from a wider range of countries should be relatively more stable, provided that co-movements in macroeconomic variables remain limited. In some cases it is intuitive that possible shocks will have largely asymmetric effects on the supply of capital from different countries. For example, oil and commodity producers have in recent years built up large international asset positions, supported by high prices for their main exports. A decline in commodity prices would reduce flows out of those countries.

Investment Strategies

The supply of international capital may over time be stabilized by the growing role of institutional investors with long-term investment horizons. For example, pension funds and life insurance companies, particularly when contributors have some years before retirement, should have the ability to absorb a greater degree of asset return volatility due to their relatively long time horizon. Hence, they may react differently in the case of market turbulence, and may be

Figure 2.13. Changes in Net Capital Flow Volatility versus Reserve Ratios



Source: IMF staff estimates based on data from IMF, *International Financial Statistics*.

prepared to ride out short-term fluctuations, thereby providing market liquidity at times when it is most needed.⁹

In contrast, other types of investors such as mutual funds and hedge funds can be subject to redemption pressures. If on-balance-sheet liquidity is insufficient to meet large redemptions, these institutions can only meet investors' withdrawals with the forced sale of their securities, potentially affecting other funds and creating conditions favorable to a market crash. While large-scale redemptions appear to be rare in developed countries, they have occurred in EM countries. For instance, fears of a tightening of interest rates in the United States brought about a crisis in the mutual fund industry in Costa Rica (Carvajal, 2006).

Larger volumes of cross-border capital flows and the greater number of participants may create only the illusion of diversity if their behavior is highly synchronized—there may be more cows in the pasture, but they still move as a herd. Some asset management funds may be prone to momentum trading and herd behavior, which could turn them into sources of excess volatility, exacerbating the effect of negative shocks in the markets they operate in (see Annex 1.1 in Chapter I). Herd behavior can be induced by several factors. For instance, in the case of actively managed mutual funds, reputational issues related to the unobserved ability of mutual fund managers cause them to mimic each other's investment behavior (Goldstein, 2005; Scharfstein and Stein, 1990). In the case of indexed funds, especially in retail funds, there is evidence that investment decisions and capital flows in and out of these funds are subject to momentum-investment or positive-feedback investment strategies: they tend to buy recent winners and sell

recent losers (Grinblatt, Titman, and Wermers, 1995).

Hedge funds have, in recent years, tended to broaden their investment strategies toward more international portfolios. While the established hedge funds (most of which are closed and thus do not accept new money) tend to have less pressure on performance and can withstand higher volatility of returns, the newer entrants are subject to significantly greater pressure on performance because of their shorter track record and greater reliance on funding from funds of funds. During the last few years, hedge fund returns have become more sensitive to a number of asset classes, suggesting that they are taking on more risk (see Box 1.4 in Chapter I).

The growth of assets under management of hedge funds and other leveraged institutions, and the diversity of their investment strategies, can enhance overall market efficiency through improved liquidity and price discovery. Meanwhile, more competition for funds has increased the importance of risk management in the hedge fund industry. Further institutionalization of these firms can also infuse better risk management capabilities, fostering the resilience of the overall financial system. However, the ability of these institutions to lever up their bets during periods of low asset-return volatilities can magnify the potential impact during stress situations. Under pressure, leveraged investors are more likely to need to use the liquidity of the market than to be able to contribute to it. They may also bear substantial interest rate risk. There is a risk that other investors may pull back more than warranted given the uncertainty about overall market exposures to the leveraged participants and the degree to which price changes are related to domestic fundamentals (Kodres and Pritzker, 2002). The impact can not only put the capital of these institutional investors at risk, but also spread to the broader credit markets and the financial system as large global financial institutions that act as the main conduit for leverage through their prime brokerage activities come under pressure to reduce exposure.

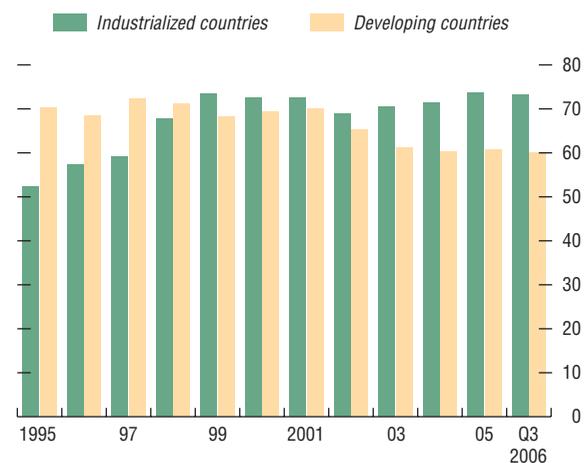
⁹However, if pension fund shortfalls are marked-to-market and reported on the sponsor's balance sheet, or result in a higher risk-based premium from a pension insurance scheme, the appetite to absorb volatility may be diminished. Similarly, the turnover of a pension fund's assets may increase if the fund trustees allocate mandates to fund managers that entail frequent reporting against short-term benchmarks.

Role of Public Sector Financial Asset Holders

Some public sector institutions are now individually large players in world financial markets, which brings its own challenges. A single institution could make sudden portfolio adjustments that could have significant price effects on certain asset classes. Market rumors of such adjustments may lead to volatility, as previous announcements by central banks have shown. In some cases, assets may be shifted for political-strategic reasons rather than economic and financial reasons. Furthermore, if raw material and energy prices fall, while domestic absorptive capacity rises, countries may intentionally run down their funds and international reserves, reversing past outflows. Therefore, their stabilizing influence cannot be projected into the indefinite future, especially if there is a major turnaround in macroeconomic conditions.

In particular, there is a widely held concern that the buildup in international reserves in recent years could lead to instabilities in financial markets should the reserve holders decide to diversify the currency composition of their reserves (Galati and Woodbridge, 2006). For those countries that provide information about their currency breakdowns, the quarterly changes in reserve holdings (at the aggregate level) show very stable trends over time, with a gradual shift in favor of euros away from the dollar and yen.¹⁰ Developing countries hold close to 60 percent of their reserves in U.S. dollars, more or less unchanged since 2003, with the decline during 2000–03 dominated by cross-currency valuation changes (Figure 2.14). As official reserves are invested in low-yielding foreign securities and are thus subject to the risk of a depreciation, there is a need for enhanced transparency and

Figure 2.14. Share of U.S. Dollars in Reserves
(In percent)



Source: IMF, *Currency Composition of Official Foreign Exchange Reserves* database.

¹⁰Information about the currency composition of reserves by country is not publicly available, but the IMF collects some information about the composition from its members and stores it in its highly confidential Currency Composition of Official Foreign Exchange Reserves (COFER) database. The IMF publicly releases quarterly data on the currency composition at an aggregate level split by industrial and developing countries.

Table 2.8. Performance of Selected Emerging Financial Markets, May 8–June 23, 2006

	U.S. Dollar Exchange Rate (in percent)	Equity Index (in percent)	CDS 5-Year Spread ¹ (in basis points)	EMBI Spread ² (in basis points)	ELMI ³ (in basis points)
Turkey	-22.8	-25.1	181	139	-22
Brazil	-8.2	-16.1	69	42	-6
Hungary	-9.1	-23.7	20	8	-8
Poland	-8.4	-17.0	10	6	-8
Indonesia	-6.6	-13.0	65	32	-5
South Africa	-18.6	-6.1	36	35	...

Source: IMF staff estimates based on Bloomberg.

¹Based on the credit default swap (CDS) rate.

²Emerging Market Bond Index.

³Emerging Local Market Index.

accountability in the management of reserves, especially when they are sizable.

Cyclical versus Structural Factors

The recent expansion in the international investor base and the aggregate supply of investable funds has come during a period of unusually benign macroeconomic conditions in many countries, and may indeed have contributed to these favorable developments. Most obviously, flows out of countries currently benefiting from high oil and commodity prices are dependent on those strong export earnings, but there appears to be a strong cyclical element in all capital flows. Cyclical factors include high levels of global liquidity and low real and nominal interest rates for much of this decade, and consistently strong growth in many parts of the world. These factors have also influenced investor decisionmaking. One such example is the popularity of “carry trades” among a broad set of institutional investors as they deploy their capital from low-interest-rate countries to markets where returns are higher (Chapter I).

Indeed, a recent study (Chadha and Nystedt, 2006) finds that the much talked about moderation of asset price volatility is largely cyclical, but that it also has structural elements endogenous to financial markets. These elements include (1) lower credit risk accompanied by corporate de-leveraging due to the business cycle recovery; (2) reversal of the elevated volatilities during the stock market bubble of the late 1990s; and (3) financial innovations such as the ability of

market participants to sell volatility. Nonetheless, the sharp pickup in average correlations across asset classes, as seen over the recent past, has historically (mid-1990s) proven to be a strong leading indicator of an eventual pickup in volatility in asset prices. Therefore, exogenous factors such as an escalation of geopolitical risk, or the unwinding of large global imbalances, could shift the asset preferences of investors, leading to a ratcheting up of the risk premia on cross-border assets and higher volatility (Goldstein, 2005).

Volatility in international financial markets spiked in April–May 2006, mainly in reaction to inflation concerns in the United States, raising fears of higher world interest rates. These concerns provoked a reassessment of prospects for many EM countries and a fall in the prices of many financial assets. This episode seems to suggest that investors are now more discriminating across countries (at least after an initial period of generalized uncertainty) and that the diversity of investors has had a stabilizing effect. Those countries with relatively weak external positions, as indicated by a large current account deficit and comparatively low reserves (by current standards) ultimately suffered large depreciations in their currencies, higher risk premia on their external debt, and a broad market sell-off (Table 2.8). For those with a stronger external position, price falls were concentrated in certain markets, such as the equity market, where many of the countries had displayed large gains in the preceding period. Part of the expla-

nation appears to be that institutional investors, who were holding external debt, were prepared and able to endure the turbulence, whereas “fast money” investors, who were more concentrated in assets such as equity, were more skittish or had to liquidate their positions because the cost of leverage had risen.

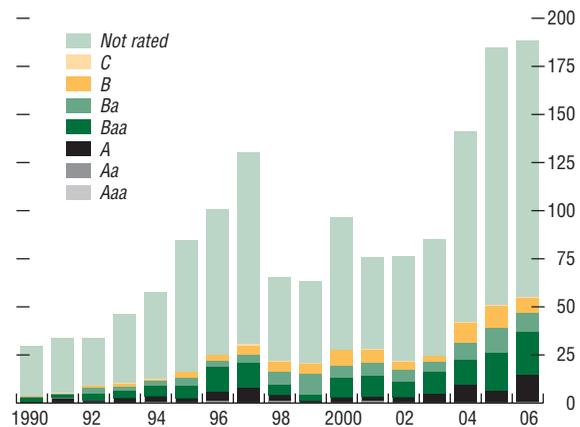
Further analysis provides some evidence that while global factors are important determinants of cross-border capital flows, idiosyncratic country-specific factors also play a critical role. An econometric investigation found that the particular circumstances of each country are significant in determining capital outflows from that country (Box 2.5). Common world factors were also estimated to be significant.

Implications for Institutions

For investors, the ability to diversify their portfolios across borders should have a number of benefits in terms of stability (Davis, 2002; BIS Committee on the Global Financial System, 2007). Diversification expands the opportunities to earn more without taking on more risk, such as by allowing exposure to other economies whose cycles and demographic trends are less correlated.¹¹ International diversification can provide exposure to industry sectors and financial instruments (e.g., inflation-indexed bonds) that are underrepresented or nonexistent in the domestic market, or allow funds to reduce their exposure to domestic markets that are heavily concentrated by firm or industry. It has been shown that investors around the world are—rationally—making more use of international assets to obtain portfolio diversification benefits and higher returns.

Yet, many investors are not simply rebalancing toward international exposures but are also taking on additional international risks. The risk-taking ability of the investor base is facilitated by the availability of credit from global banks, partly

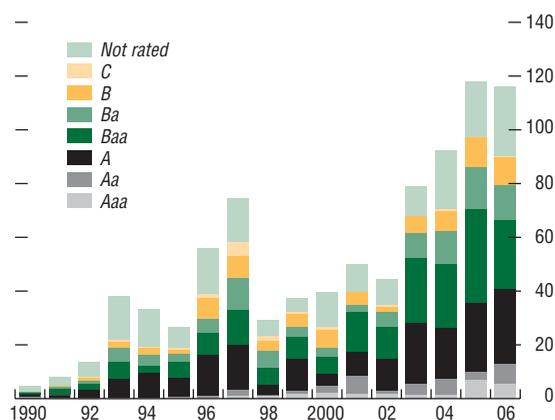
Figure 2.15. International Syndicated Loans to Emerging Market Corporates, by Credit Rating
(In billions of U.S. dollars)



Sources: Standard & Poor's; Thompson Financial; and Dealogic.

¹¹Indeed, given a company pension fund's exposure to its local economy through its sponsor's covenant, it may be optimal for the trustees to reduce domestic economy assets in favor of foreign ones.

Figure 2.16. International Emerging Market Corporate Bond Issuance by Credit Rating
(In billions of U.S. dollars)



Sources: Standard & Poor's; Thompson Financial; and Dealogic.
Note: Annual emerging market issuance volume (1990–2006) of corporate emerging market issuance of straight debt, floating rate notes, and medium-term notes.

through the use of off-balance-sheet mechanisms, and is also facilitated by risk models (e.g., value-at-risk [VaR] models) that are currently showing a lower probability of loss, mainly because of low historic volatility. However, the global financial system, particularly certain new credit risk transfer markets, has not yet been tested by a severe or sustained downturn in the presence of such large cross-border claims. Such a large downturn may invalidate the risk parameters used in VaR models, which tend to rely only on recent historical data. Therefore, there is uncertainty about how institutions and markets would react when faced with more exacting strains.

Movement into New Asset Classes

Favorable macroeconomic and financial conditions and advancements in technology and financial innovation, as well as the very process of globalization of financial markets, may induce investors to take on new and little-understood risks. Sustained high economic growth in much of the world has been reflected in lower premia on risky assets, which has emboldened investors to venture down the “credit ladder” in search of higher returns. Those investors such as central banks that in the past invested only in very high-grade, high-liquidity assets are venturing into more remunerative but volatile assets (Carver, 2006). Pension and insurance funds that had concentrated on blue chip equity and investment-grade securities are now placing some funds into what previously had been regarded as exotic assets, and are showing a willingness to take larger positions and even short positions (OECD, 2006b). The share of their portfolios in such investments is still small—though it may well increase further—but the absolute amounts are substantial given the growth in assets under management.

The market for EM corporate debt and syndicated loans illustrates these trends (Figures 2.15 and 2.16). The average credit quality of traded nonsovereign debt securities and underwriting standards of syndicated loans in many EM countries has declined. More and more

noninvestment-grade issuers have taken advantage of current lower-risk premia that support credit at even lower spreads, or lower borrower quality at an unchanged cost of borrowing. The trend is apparent since the late 1990s, but seems to have accelerated recently. Over the last five years, the issuance of new noninvestment-grade or unrated EM corporate debt (bonds and loans) has almost tripled to more than \$200 billion in 2006, and now represents 66 percent of the annual issuance volume. The decline in credit quality has been most pronounced for corporate bonds in Latin America and emerging Europe, where the shares of noninvestment-grade issues have increased to 61 percent (up from 47 percent in 2005) and 44 percent (up from 37 percent in 2005), respectively (see Chapter I).

These developments raise concerns about the ability and willingness of investors to assess risks based on experience accumulated during good times. There are theoretical arguments to suggest that investors will make less effort to research borrowers when conditions are favorable, and sharply tighten availability of credit when conditions become more difficult (Calvo and Mendoza, 2000). Furthermore, it has been argued that investors with more diversified portfolios will be less willing to bear the cost of careful, independent analysis, relying more on information already contained in financial market prices. Hence, the amount of information contained in the related prices may decline.

The pace of financial sector innovation in recent years has created uncertainty over how agents will behave when faced with unfamiliar strains. Reportedly, some foreign investment has been flowing into speculative EM instruments, such as distressed debt and equity participations in housing schemes, whose potential risks from ill-defined dispute resolution mechanisms and structural intricacies are frequently obscure. Many institutions that are new to the international investor base have little experience of how to cope with a more difficult trading environment.

In addition, the expansion of the supply of financing and the number of players in some smaller asset classes may increase the chances of a sudden drying up of liquidity if conditions deteriorate. So-called “crowded trades” can occur, where the convergence of investment strategies results in less diverse position taking. In these conditions, a combination of the high leverage of some investors and poor liquidity in certain markets could provoke a painful reversal of capital flows. Recent experience in the Brazilian local-currency-denominated government debt market illustrates the vulnerabilities (Box 2.6).

Spreading Risks Across a Broader Range of Investors

The broadening investor base may reduce systemic effects by spreading risks more widely, and by transferring them to institutions better able to manage them. In general, when risks are realized, the effects may be nonlinear (i.e., disproportionate for large shocks): a small negative shock may be manageable without significant adjustment, but a large shock may prompt portfolio rebalancing or even significant losses. Hence, distributing risks across investors, as opposed to each being exposed to a small number of large risks, reduces the chance that any one suffers a catastrophic hit. Self-reinforcing feedback and contagion effects should therefore be reduced. The diversification of the investor base may contribute to the achievement of a more even distribution of risk holdings, and therefore reduce systemic vulnerability.

One consequence of this diversification of the investor base may be that the financial system is better able to absorb the failure of individual institutions or sovereign entities than in the past. The increasing depth of markets and the decreasing exposure to specific asset classes may mean that, even when a failure involves large sums of money, the survival of other institutions is not put in doubt. Furthermore, many healthy institutions are available to purchase assets of the failed institution without the need for a “fire sale.” For example, the recent collapse

Box 2.5. Country, Regional, and Global Determinants of Capital Outflows

Capital outflows from a country are typically modeled as depending on the economic conditions within that country, conditions in the world economy, and, in particular, conditions in candidate recipient countries. An investigation of the determinants of capital outflows reveals that both idiosyncratic national and global liquidity factors have been and remain very important in determining the supply of international investment from individual countries.¹

For a large sample of 137 countries, the analysis below utilizes a simple technique to decompose fluctuations in capital outflows into respective components that can be attributed to worldwide annual factors (time dummies), to regional factors (regional group dummies), and to the type of capital flow (instrumental type dummies). A comparable approach to the estimation of common and regional factors in economic fluctuations is used in Bayoumi and Prasad (1997). The technique precludes the inclusion of country-specific economic factors to explain fluctuations. The dependent variable is the ratio of one of three types of capital outflow to world GDP.

The results suggest that the overall supply of cross-border capital has become more diverse and stable. The regional factors have been far more important than global factors since 1974. In the sub-period from 1996–2005, the regional factors still predominate, but the total predictive power (R^2) is significantly higher than the sum of that attributable to identified factors in the subperiod from 1974–96. This change suggests that there has been some strengthening of the interaction between regional and global factors, which is in line with evidence on the synchronization of business cycles between well-integrated regions (Imbs, 2004).

The analysis below attempts to quantify the sensitivity of capital outflows and their volatil-

Note: The author of this box is André Santos.

¹For related results, see Alfaro, Kalemli-Ozcan, and Volosovych (2005); and de Santis and Lührmann (2006).

Panel Data: Predictive Power (R^2) of Aggregate, Regional, and Type of Outflow Effects on Capital Outflows in a Panel Data Regression, 1974–2005

	Total	Worldwide Factor	Regional Factor	Type Factor ¹
1974–2005 ²	0.236	0.012	0.222	0.000
1996–2005 ²	0.170	0.002	0.095	0.000

Source: IMF.

¹Small negative contributions were set equal to zero.

²The contribution in other periods were small and negative.

ity to changes in the state of global conditions and domestic economic performance. The table on the next page summarizes the sensitivity of FDI and portfolio outflows and their volatility accounted for by country-specific factors such as GDP growth, credit-to-GDP ratios (a measure of financial development), and capital account liberalization (defined in Quinn, 1997), as opposed to the share that could be attributed to identified global liquidity factors, such as the growth rate of broad money over that of GDP and the short-term real interest rates in G-7 countries. For the results presented in the upper part of the table, the dependent variable is the ratio of capital outflows (FDI and portfolio) to GDP. The sample covers 26 mature market economies for which data were available. In the lower part of the table, the dependent variable is a moving average estimate of the standard deviation of the capital outflows-to-GDP ratio and the sample consists of 23 mature markets. To address endogeneity issues, the generalized method of moments estimation is used in the lower panel; the standard deviation over the next five years is regressed on the determinants of capital flows in the current year.²

Two main results are apparent. First, both country and global liquidity factors are important determinants of the direction and volatility of capital outflows. The direction of influence is generally in line with intuition. For example,

²For further details, see Bekaert, Harvey, and Lundblad (2001 and 2006).

Panel A. Fixed-Effects Estimation of the Determinants of Capital Outflows in 26 Mature Market Economies¹

Model	FDI/GDP ²			Portfolio Flows/GDP ²			Other Flows/GDP ²		
	I	II	III	I	II	III	I	II	III
Domestic factors									
Change in real GDP	17.50 (4.46)	21.88 (4.50)	26.80 (4.77)	40.88 (3.31)	44.33 (2.97)	46.57 (2.71)	50.72 (5.93)	63.96 (6.19)	73.57 (6.24)
Credit/GDP	2.48 (5.97)	2.54 (4.98)	2.81 (4.91)	7.97 (6.11)	8.35 (5.34)	10.64 (6.10)	3.99 (4.42)	3.21 (2.97)	5.49 (4.59)
Quinn capital account openness indicator	59.62 (5.60)	57.63 (4.07)	57.58 (3.46)	201.49 (6.01)	216.70 (4.98)	278.93 (5.47)	99.52 (4.29)	55.77 (1.85)	86.91 (2.49)
Global liquidity factors									
Short-term real interest rate in G-7		-7.15 (-0.89)			-60.88 (-2.47)			-50.83 (-2.99)	
Excess money supply (broad) in G-7			19.34 (3.13)			18.36 (0.97)			-8.30 (-0.64)
R²	0.46	0.45	0.46	0.35	0.39	0.42	0.47	0.50	0.53

Panel B. Generalized Method of Moments Estimation of the Determinants of the Standard Deviation of Capital Outflows over Five Years in 23 Mature Market Economies^{3,4}

Model	FDI/GDP ²			Portfolio Flows/GDP ²			Other Flows/GDP ²		
	I	II	III	I	II	III	I	II	III
Domestic factors									
Change in real GDP	-1.47 (-1.69)	1.29 (1.31)	1.28 (0.85)	13.34 (5.34)	20.11 (8.68)	28.65 (9.65)	3.92 (4.16)	21.96 (11.01)	20.28 (7.90)
Quinn capital account openness indicator	47.59 (29.49)	46.92 (14.20)	47.28 (10.16)	72.42 (24.11)	80.27 (17.53)	93.86 (21.14)	47.01 (12.81)	45.44 (7.58)	58.32 (11.84)
Credit/GDP	-0.60 (-4.09)	0.03 (0.12)	-0.25 (-0.65)	-0.21 (-0.76)	-0.70 (-3.69)	-0.78 (-4.95)	0.52 (2.37)	1.63 (5.35)	0.78 (2.07)
Global liquidity factors									
Short-term real interest rate in G-7		-20.99 (-5.73)			-24.45 (-6.76)			-18.14 (-3.68)	
Excess money supply (broad) in G-7			17.88 (4.67)			16.99 (4.51)			14.71 (3.63)
J-test statistics (significance levels)	0.96	0.99	0.99	0.64	0.99	0.99	0.04	0.99	0.99

Sources: IMF; and Quinn (1997).

Note: *t*-statistics in parentheses.

¹Countries included in Panel A are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong SAR, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Singapore, Sweden, Switzerland, United Kingdom, and the United States.

²Variables scaled by 100.

³Panel B includes all countries from Panel A except Belgium, Greece, and Luxembourg.

⁴The standard deviation of capital outflows was computed using a five-year rolling window. See Bekaert, Harvey, and Lundblad (2001 and 2006).

high GDP growth rates lead to larger savings and hence larger capital outflows and volatility on average. Second, variations in capital outflows are mostly accounted for by the country-specific effects; the marginal improvement in

explanatory power from including global factors is limited. However, both domestic and global factors play an important role in determining the volatility of capital outflows, as shown in the lower panel.

Box 2.6. Liquidity of Brazilian Inflation-Linked Instruments

The episode in May–June 2006 when Brazilian financial markets suffered turbulence in the context of a worldwide reassessment of emerging markets illustrates how foreign investors can be surprised by events. The search for yield and a limited knowledge of local conditions led investors to take positions that were unexpectedly difficult to unwind when the environment became more difficult.

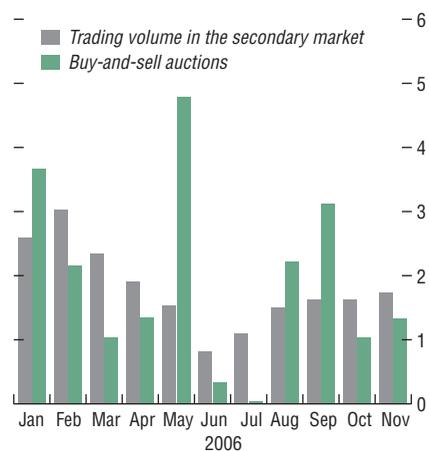
Since mid-2005, the Brazilian government has tried to reduce the country's external vulnerability by retiring its external debt. Foreign investors seeking exposure to Brazil therefore had to resort to the domestic financial markets, and in particular local-currency-denominated government bonds. Encouraged by a tax exemption granted on foreign investment in local bond markets in February 2006, foreign financial institutions had allocated a cumulative R\$52 billion to local-currency-denominated government bonds by end-March 2006, 47 percent higher than in March 2005. The long-dated inflation-linked government bonds—Series B National Treasury Notes (NTN-B)—were especially popular. Foreign financial institutions' holdings of NTN-B bonds represented about 10 percent of the total issue by April 2006. As those institutions expanded their participation in the NTN-B bond market, bond prices increased by 18 percent in the month following the tax exemption.

When volatility increased in April–May 2006, foreign investors in NTN-B bonds were hit by an increase in domestic interest rates. Foreign investors rushed to unwind their long position in NTN-B bonds. Liquidity in secondary markets for the bonds dried up as domestic pension funds had already exited the market. As a result, prices of NTN-B bonds fell sharply; the inflation-linked bond index dropped 11 percent in May. As investors sought to reduce their

Note: The authors of this box are Marcelo Carvalho and André Santos.

Brazil: Trading Volume in the NTN-B Bond Secondary Market and Buy-and-Sell Auctions of NTN-B Bonds by the National Treasury

(In billions of Brazilian reais)



Source: Brazilian National Treasury.

Note: NTN-B = National treasury note, series B.

positions, the exchange rate depreciated by 13 percent, thus compounding losses. In addition, trading in secondary markets fell by 49 percent between February and May 2006 (see figure). The shallowness and lack of liquidity in the secondary NTN-B bond market were thus important elements in the price sensitivity of these bonds.

The Brazilian national treasury stepped in to avoid further disruptions in government bond markets and carried out simultaneous buy-and-sell actions of NTN-B bonds in May 2006, thus providing liquidity to the market. In July 2006 the Brazilian central bank included NTN-B bonds in the pool of securities eligible for repo and reverse repo transactions with the central bank. The NTN-B bond market stabilized over the following months as concerns regarding the U.S. economic slowdown (the initial trigger for the market turbulence) subsided.

of the Amaranth hedge fund was dealt with quickly and smoothly, with hardly any concerns about a wider impact, whereas eight years ago a comparable case—Long-Term Capital Management (LTCM)—was viewed with great concern and prompted official involvement (BIS, 2006; Banque de France, 2006). However, the voluntary rescue of Amaranth took place under very benign conditions in global financial markets, while LTCM came on the back of the Asian and Russian crises of the late 1990s.

Conclusions and Policy Implications

The analysis in this chapter has shown that the supply of international capital has expanded and has become more diverse along several dimensions. Not only are flows and stocks of cross-border claims much larger today than they were 10 years ago, but they have also increased relative to the volume of domestic economic activity and the size of financial markets. All asset classes have been affected. In particular, some types of assets that traditionally had been held almost exclusively domestically, such as EM local currency debt, are now actively traded internationally. Flows within the MM economies of Europe have become very large in the context of European integration and particularly the European Monetary Union.

The chapter has also stressed that, while the expanding investor base should on average lead to relatively stable and sustained capital flows, the increasing exposure of both source countries and recipients brings its own challenges. Some past episodes of rapid growth in international capital flows have ended badly. Most such events had one dynamic in common: the confluence of an abrupt increase in risk perception and the subsequent actions taken by financial institutions and investors to limit their exposure to losses (Geithner, 2006). The favorable circumstances in which this round of globalization has taken place, including high real growth rates and low nominal and real interest rates for much of the decade, offer limited guidance as to the robustness of the system under significant

and sustained stress. The rate of growth in capital flows combined with persistent large global imbalances suggest that an abrupt correction cannot be ruled out (IMF, 2007).

While abrupt changes in risk perception are difficult to predict, countries can continue to address pockets of home-grown vulnerabilities and make themselves an attractive destination for long-term investment. Already, many EM countries have been receiving increased capital inflows, reflecting improved macroeconomic policies and successful structural reforms, but also due to the relatively low returns available domestically to MM investors, whose asset holdings have soared. However, regardless of the reason, these flows provide strong discipline on borrowing governments to continue to perform well and offer national authorities the opportunity to move ahead with reforms to make their financial systems more resilient. To this end, some EM countries have been implementing active management of liabilities to improve their debt structures and many have been accumulating official reserves. These efforts should help insulate these countries from negative shocks to their balance of payments, suggesting that a potential adjustment may differ from that seen in past episodes.

Several EM countries have been implementing structural policies to ensure that they can benefit fully from the globalization of capital markets. Policies include targeted efforts to promote deeper and more liquid capital markets. These efforts range from reforms in the legal, regulatory, and accounting systems consistent with international standards to changes in taxation. There is also considerable potential for enhancing cross-border compatibility in financial sector infrastructure and institutional development, and for supporting capital market integration. All these efforts will likely provide the expected growth benefits but also increase the attractiveness of these markets to a stable investor base.

However, it should be noted that these positive developments can lead to further increases in the already high inflows to some EM coun-

tries, contributing further to asset price inflation and complicating the conduct of policies by the authorities. As discussed earlier in this chapter, liberalizing capital outflows—though not a panacea—would, in the context of the broader reform of the domestic institutional investor base, allow local investors to better manage their risks and could, at least partially, balance the effects of capital inflows. Correction of the underlying issue requires the development of well-functioning local capital markets and the promotion of longer-term savings. Efforts to establish funded pension schemes, for example, are thus of macroeconomic importance.

Emerging market countries have also become important sources of capital in international markets. As a group they have also become net suppliers of capital, especially to the United States, mainly through central bank reserve holdings or assets accumulated in sovereign wealth funds. Given the magnitude of investable funds in the hands of the official sector, care should be taken in communicating changes in investment strategies. While the official sector in each country has devised its own investment policy and accompanying strategy, market participants' understandings of those policies—especially for the largest reserves holders—are often based on rumor. As a result, market speculation about the pace of diversification and shifts in official policies have been a source of sporadic exchange rate and interest rate volatility.

The chapter provides some evidence that financial risk-taking in EM local assets has also increased, which now creates pockets of vulnerabilities in some countries. Investors have been venturing into investments in which they have little experience and where credit quality is more questionable. Furthermore, the growing role of leveraged investors such as hedge funds may have introduced a propensity for asset prices to overshoot during good times, increasing the probability of downside risks when financial conditions worsen.

Further work is needed to better understand the financial market trends that are driving

globalization—including, in particular, the rapid development of credit risk transfer instruments and institutions, including hedge funds. These instruments can contribute to stability and reduce market inefficiencies by providing market liquidity, and by transferring risk to a much wider variety of willing investors. However, increased cross-border flows may result in increased unhedged currency mismatches on private sector balance sheets.

This underlines the need for the focus of prudential regulation and supervision to shift toward international risks conveyed through financial market instruments. These risks are often nontransparent because, for example, products cannot be looked at in isolation: an exposure may be bundled with any number of derivatives, insurance products, or currency hedges, and may often involve several jurisdictions. In addition, regulation and supervisory practices need to recognize the benefits of preserving the diversity of investor behavior, and care should be taken that ongoing reforms do not inadvertently cause the behavior of institutional investors to become more homogenous (IMF, 2005a).

While the current positive global environment makes dealing with a period of market stress seem remote, a comprehensive and system-wide approach will need to account for the ongoing changes documented above. Market participants should appropriately bear the risks of their positions while policymakers attempt to underpin the strength of the financial system at large. There are clear externalities, such as the provision of liquidity under severe market stress, that may warrant public sector involvement, but at the risk of exacerbating moral hazard. The greater diversity of market participants may affect the appropriate policy response under such market stress—how to limit systemic spillovers in a market dominated by domestic banks with short-term liabilities to the general public may differ from the actions needed when, say, international hedge funds or pension funds are major players. These issues are addressed in more detail in Chapter III.

Last but not least, the lack of comprehensive data and information makes an assessment of the benefits and risks of the expansion and deepening of the international investor base a daunting task. There is a need to devise mechanisms to deal with the considerable gaps in information concerning global financial flows to facilitate prudential oversight and effective surveillance by national authorities and better risk assessment by market participants. Several national authorities have put in place mechanisms to collect information to monitor capital flows by source countries and types of investors. The IMF and other international financial institutions have taken some initiatives in this area, including several joint efforts discussed in this chapter. Some market participants are utilizing surveys and proprietary data to assess aggregate investment activities. However, further efforts are needed to obtain better information in order to facilitate more accurate and timely assessment of emerging strains and potential vulnerabilities.

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