World Economic and Financial Surveys

Global Financial Stability Report

Market Developments and Issues

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Figures

The following symbols have been used throughout this volume:

. . . to indicate that data are not available;

—   to indicate that the figure is zero or less than half the final digit shown, or that the item does not exist;

–   between years or months (for example, 1997–99 or January–June) to indicate the years or months covered, including the beginning and ending years or months;

/   between years (for example, 1998/99) to indicate a fiscal or financial year.

"Billion" means a thousand million; "trillion" means a thousand billion.

"Basis points" refer to hundredths of 1 percentage point (for example, 25 basis points are equivalent to ¼ of 1 percentage point).

"n.a." means not applicable.

Minor discrepancies between constituent figures and totals are due to rounding.

As used in this volume the term "country" does not in all cases refer to a territorial entity that is a state as understood by international law and practice. As used here, the term also covers some territorial entities that are not states but for which statistical data are maintained on a separate and independent basis.

PREFACE

The *Global Financial Stability Report* (GFSR) assesses global financial market developments with a view to identifying potential systemic weaknesses. By calling attention to potential fault lines in the global financial system, the report seeks to play a role in preventing crises, thereby contributing to global financial stability and to sustained economic growth of the IMF's member countries.

The report benefited from comments and suggestions from staff in other IMF departments, as well as from Executive Directors following their discussion of the *Global Financial Stability Report* on March 19, 2007. However, the analysis and policy considerations are those of the contributing staff and should not be attributed to the Executive Directors, their national authorities, or the IMF.

EXECUTIVE SUMMARY

Favorable global economic prospects, particularly strong momentum in the euro area and in emerging markets led by China and India, continue to serve as a strong foundation for global financial stability. However, some market developments warrant attention, as underlying financial risks and conditions have shifted since the September 2006 *Global Financial Stability Report* (GFSR).

Through the use of a new global financial stability map, Chapter I charts principal near-term risks. Chapters II and III examine the financial stability implications of two longer-term trends: the changing investor base from which global capital flows are sourced, and the globalization of financial institutions, particularly banks.

The changing mix of assets, source countries, and types of cross-border investors identified in Chapter II should, for the most part, help to stabilize global markets. But the secular trend has been reinforced by low interest rates and by low volatility in many mature markets, with investors seeking higher-yielding assets in some emerging markets and other mature markets. Chapter I examines this investor strategy—the carry trade—noting that while countries' fundamentals have improved and sovereign external debt has become less risky, international issuance of corporate debt and equities has risen rapidly to accommodate investor demand.

A theme of Chapter III—that the globalization of banks may help reduce individual bank risk but may not necessarily enhance the resilience of financial systems as a whole—is also echoed in Chapter I, which examines possible spillovers from a deterioration in credit quality in the U.S. subprime mortgage market.

Chapter I identifies several short-term risks. First, the subprime segment of the U.S. housing market is showing signs of credit quality deterioration. While the fallout to date has been limited, there is scope for it to deepen and spread to other markets, possibly to structured mortgage credit products held by a variety of global investors. Fortunately, the economic impact of the housing market slowdown has been limited and some market indicators have begun to stabilize, suggesting that the financial effects may also be contained.

Second, low interest rates and healthy corporate balance sheets have spurred an increase in private equity buyouts. This has led to a substantial rise in leverage in the acquired firms, potentially making such firms more vulnerable to economic shocks. The increased use of leveraged loans as part of financing also poses risks to some intermediaries that provide bridge financing to leveraged-buyout transactions. The situation bears careful attention, especially if a large high-profile deal runs into difficulty, as this could trigger a wider reappraisal of the risks involved.

Third, capital inflows to some emerging markets have risen rapidly, in part reflecting improved economic fundamentals, but also reflecting the search for yield given low interest rates in most mature markets. In general, strong private capital inflows are to be welcomed, as they reflect a reallocation of capital to more productive investments. However, the shift to private sector debt flows, especially bank-based flows into emerging Europe and portfolio flows into other regions, including sub-Saharan Africa, shows that foreign investors are taking more risk and an abrupt reversal cannot be ruled out.

Finally, while the downside risk from a possible disorderly unwinding of global imbalances has receded somewhat, it remains a concern. The larger role of fixed-income inflows in financing the U.S. current account deficit indicates that inflows into U.S. bond markets may have become more sensitive to changes in world interest rate differentials.

Against the backdrop of continued global growth, none of the individually identified risks by themselves threaten financial stability. However, with volatility across asset classes close to historic lows and spreads on a variety of credit instruments tight, investors may not have adequately factored in the possibility that a "volatility shock" may be amplified given the increased linkages across products and markets. Institutions may well be acting in accordance with their own incentives, but collectively their behavior may cause a buildup of investment positions in certain markets, possibly resulting in a disorderly correction when conditions change. For instance, the rapid growth of some innovative instruments, the rise in leverage in parts of the financial system, and the growth of carry trades suggest that market participants are expecting a continuation of the low volatility environment and that a sustained rise in volatility could perturb a wide range of markets.

Chapter II examines the recent acceleration in the accumulation of international assets as well as the investors behind rising cross-border flows. As noted above, flows and stocks of cross-border claims have increased both in absolute size and relative to the volume of domestic economic activity. The diversity of assets, source countries, and investor types now involved in cross-border asset accumulation suggests more stable flows. However, for some countries, the sharp increase in capital inflows has contributed to rapid credit growth and asset price inflation, at times complicating the conduct of policies. Furthermore, foreign investors have been venturing into markets previously regarded as excessively risky for outsiders, encouraged by the generally benign financial environment.

Policymakers can take advantage of these secular changes and at the same time minimize pockets of vulnerabilities that have become apparent. Recipient countries have to continue to establish a track record of credible macroeconomic policies. Vulnerabilities can be reduced by promoting efficiency, stability, and the effective regulation of domestic capital markets (including the development of local debt markets) so as to increase their attractiveness to a stable investor base. Liberalization of capital outflows from domestic investors, though not a panacea, may help balance the effects of capital inflows and allow domestic investors to better manage their risk.

Chapter III examines the implications of the accelerating globalization of financial institutions—particularly banks—for global financial stability. The institutional and regional pattern of globalization is remarkably varied. For large banks, greater geographical dispersion of assets and revenues tends to be associated with better share price performance and lower default risks. However, while cross-border diversification seems to be associated positively with the stability of the individual institution, the financial system as a whole may not be more stable, with the potential for linkages among markets and activities having increased. This is an especially important result for countries in regions with heavy foreign bank penetration across correlated economies.

The chapter highlights two clear priorities to help to contain the potential contagion risk arising from institutional globalization while maximizing its benefits. First, supervisors need to collaborate ever more closely in the oversight of cross-border institutions. Second, authorities need to continue improving crisis management procedures with the counterparts with whom they share the greatest overlapping responsibilities and interests. While the jurisdiction of supervisors and regulators remains predominantly domestic, at odds with the scope of activities of global institutions, these practical steps can go some way toward addressing the challenges to financial stability posed by institutional globalization.

ASSESSING GLOBAL FINANCIAL RISKS

Developments since the September 2006 *Global Financial Stability Report* (GFSR) have been broadly in line with the baseline scenario of solid economic growth, while near-term economic risks have eased. However, changes in underlying financial risks and conditions in some areas require heightened surveillance. This chapter discusses those changes in risks and conditions, and introduces the global financial stability map, a tool for assessing and summarizing how financial risks have evolved.

The map shows that financial stability risks have increased modestly in some areas. While none of the individual areas of risk identified constitutes a direct threat to financial stability, an adverse event affecting any one of those areas could lead to a reappraisal of risks in the others. This possibility is reinforced by low nominal and real interest rates and the environment of low volatility that has continued to encourage risk-taking and leverage, suggesting that the markets' adjustment to a higher level of volatility may not be smooth. A box at the end of the chapter assesses the implications of the February–March 2007 correction.

The risks identified as the main spokes of the global financial stability map are examined by exploring several topics. For instance, credit risk is examined by way of a deeper look into the U.S. mortgage market and the current wave of leveraged buyouts (LBOs) and their implications for corporate credit. The chapter then examines the financing of the U.S. current account in light of still-high global imbalances, which has implications for the spokes identified as macroeconomic and market risks. The assessment then turns to emerging market

(EM) risks. While those risks have diminished somewhat given the positive global economic backdrop and improvements in fundamentals, the chapter notes that increased risk appetite, which is a financial condition in the stability map, has played a role in the rapid pace and changing composition of capital inflows to EMs—a situation that has been challenging for the officials in these countries. Finally, several risks identified in the spokes are pulled together in a discussion of the low level of volatility and how this may be affecting various trading strategies, including the carry trade, and the possibility of its disorderly unwinding. The chapter concludes with the implications for policy and financial surveillance. The challenge is to ensure that the financial system remains resilient should current benign financial conditions change. Thus, policymakers should use the current "good times" to prepare for a period when conditions are less favorable.

Four annexes complete the chapter. Annex 1.1 details the methodology and analytical underpinning of the global financial stability map. Annex 1.2 assesses the credit quality of banking systems in mature and emerging markets. Annex 1.3 assesses recent developments in credit derivatives and structured credit markets. Annex 1.4 provides an update on developments in the hedge fund industry and its oversight.

Global Financial Stability Map

The new global financial stability map provides a schematic presentation of key underlying conditions and risk factors that bear on stability, and illustrates how global financial stability has changed since the September 2006 GFSR (Figure 1.1). The concepts used in the risk map are broad and serve as a starting point for a deeper analysis of risks that affect global financial stability.

Note: This chapter was written by a team led by Peter Dattels and comprised of Brian Bell, Elie Canetti, Sean Craig, Rebecca McCaughrin, Christopher Morris, Mustafa Saiyid, Christopher Walker, and Mark Walsh.
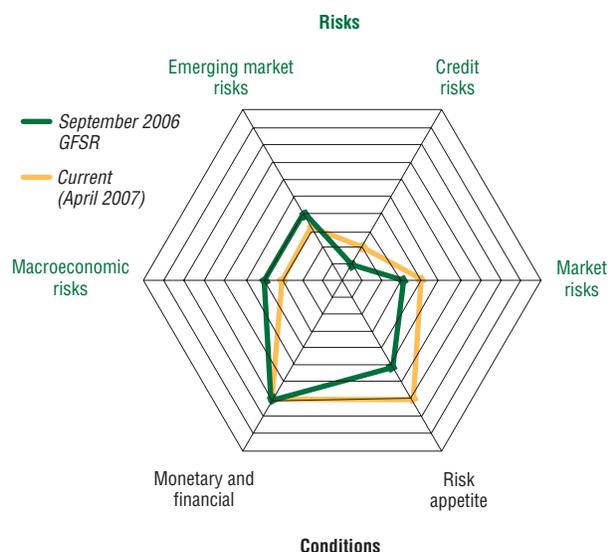
The judgment of International Monetary Fund (IMF) staff on the overall level of risk is reflected in the positioning of points along the axis. The map documents the extent to which each element is supporting or undermining stability at present (shown by where the yellow line crosses each axis), and compares that with the assessment at the time of the previous GFSR (the green line).

Beginning with the left-most axis, near-term macroeconomic risks have diminished somewhat. The April 2007 *World Economic Outlook* forecasts healthy global growth for this year and declining inflation (IMF, 2007). Risks to growth are still tilted to the downside but have declined since last September. There is still potential for a disorderly adjustment of global imbalances, but the U.S. fiscal deficit is coming down, growth differentials are lessening between regions as domestic demand picks up in Europe and EMs, and some Asian currencies are exhibiting increased flexibility.

The other large macroeconomic risk that loomed at the time of the September 2006 GFSR was the weakening of the U.S. housing market and potential cross-border spillovers (IMF, 2006b). Although the U.S. housing market appears to be stabilizing, risks of further deterioration cannot be ruled out. Overall, the U.S. mortgage market has remained resilient, although the subprime segment has deteriorated a bit more rapidly than had been expected at this point in a housing downturn. The fallout has so far been limited to a small number of lenders, but could yet spread to the structured credit markets. This chapter assesses the extent to which such a deterioration in the housing market would increase credit stress in the mortgage market, particularly in the subprime and related segments, and how changes in the structure of the U.S. mortgage market—including its securitization and distribution to a global investor base—may have altered potential spillover risks.

Overall, corporate profits appear robust, balance sheets are strong, credit spreads have declined further, and default rates remain low.

Figure 1.1. Global Financial Stability Map

Source: IMF staff estimates.
Note: Closer to center signifies less risk or tighter conditions.

However, corporate leverage in private markets is now rising from low levels with the boom in leveraged buyout activity. The current wave of LBOs differs from that in the 1980s and late 1990s in that the size of the deals being made is much larger, and the degree of leverage used is rising (although it remains low relative to the 1980s), while the way the deals are funded—with more leveraged loans and fewer high-yield bonds—has altered the distribution of risks. So far, target firms are mostly those with high cash flows and low leverage, and easily obtained loans are distributed widely through structured credit products. However, there are signs that credit risks have risen while easy *financing conditions*, coupled with rising *risk appetite*, have contributed to higher prices and less due diligence. Moreover, there is a general weakening of loan covenants and possibly credit discipline. The LBO-acquired firms have become heavily indebted and thus may be more fragile in the event of an economic downturn. In view of these developments and those in the housing market, our overall assessment is that *credit risks* have increased since last September, albeit from a low level.

While overall macroeconomic risks have diminished and the underlying causes of global imbalances are beginning to ebb, the risks to financing of the U.S. current account deficit remain. The chapter examines the implications of the rising role that fixed-income inflows have played in financing this deficit. Empirical analysis shows that inflows from abroad to U.S. fixed-income markets have become more responsive to changes in world interest rate differentials, and thus potentially more sensitive to shifts in market sentiment.

Emerging market risks appear to have improved since September as EM countries generally continue to follow sound macroeconomic policies and are making further progress toward exchange rate flexibility and prudent debt management. External positions generally remain very strong, and robust growth has led to an improvement in fiscal positions in many countries. Despite recent declines, commodity prices remain broadly supportive. Where sovereign issuance in international capital markets has declined, private corporate issuance has filled the void. The benign external environment and accompanying rise in *risk appetite*—reflected in the rapid rise in capital flows to some EM countries—pose challenges for those authorities and could threaten financial and economic stability, especially if capital flow reversals were to occur. Private sector flows into emerging Europe have already risen significantly, and banks have been heavy issuers of foreign-exchange-denominated debt in international markets. In some countries, the generally strong external position of the government may mask potentially growing vulnerabilities for corporations and banks. Portfolio flows into sub-Saharan Africa, where local markets are still small, could affect monetary and exchange market conditions and pose risks of a capital flow reversal.

Financial market volatility across a broad range of assets has continued to move to remarkably low levels and risk spreads are tight, both relative to historical levels and to the same point in previous business cycles. Notwithstanding the broadly favorable economic environment, investors may be giving insufficient weight to downside risks and may be assuming that the low risk premia are a more permanent feature of the financial market landscape. The growth of carry trades is another sign that market participants do not view the cyclical factors contributing to the low volatility environment—abundant low-cost liquidity, low leverage in the corporate sector, and high risk appetite—as likely to reverse in the near term. Moreover, competitive pressures and risk models may help to perpetuate risk-taking that, from an individual institution's view, responds rationally to the current environment but collectively could raise systemic risks. A market correction, potentially triggered by a volatility shock, could be amplified by leveraged positions and uncertainties about concentrations of risk exposures stemming from the rapid growth in innovative and complex products, some of which have rather illiquid secondary markets.

Figure 1.2. Residential Mortgage-Related Securities Market
($5.8 trillion as of January 2007)

Agency
65%

Subprime
14%

Alt-A
12%

Non-agency prime
9%
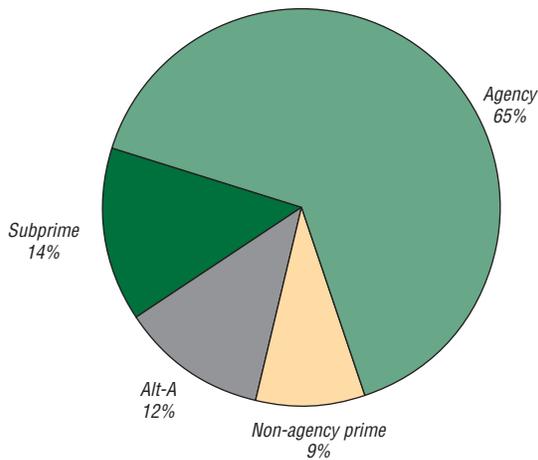
Sources: Credit Suisse, LoanPerformance.
Note: Includes only first lien securitized mortgages. Estimates are based on a securitization rate of 75 percent.

Figure 1.3. Mortgage Delinquency Rates
(In percent of total loans)

Subprime

Total

1998   2000   02   04   06
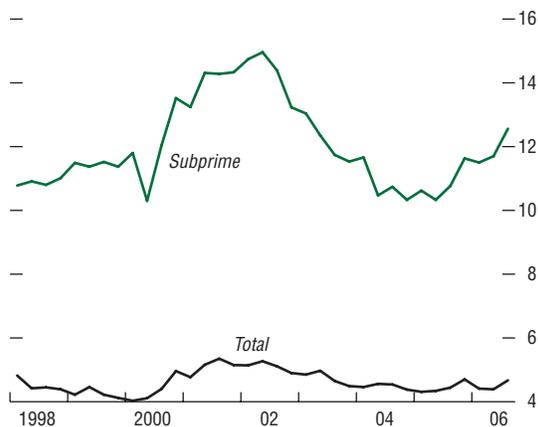
Source: Mortgage Bankers Association.

For these reasons, market risks are assessed as being greater.[1]

The sections that follow assess specific issues raised in the different risk areas of the global financial stability map.

Deterioration in the U.S. Subprime Mortgage Market—What Are the Spillover Risks?

This section explores the extent to which the cooling U.S. housing sector and a consequent rise in credit risk could pose a risk to financial stability, including potential spillovers of that risk to global investors. U.S. residential mortgage-related securities represent one of the largest pools of fixed-income securities in the world, totaling around $5.8 trillion as of January 2007.[2] Non-U.S. holdings of these securities, estimated at $850 billion as of mid-2006, represent a significant portion of foreign holdings of U.S. securities.[3] Because credit risk is highly concentrated among subprime borrowers—i.e., those borrowers with impaired or limited credit histories—it is important to study the U.S. mortgage market, since it is one of the few markets where such borrowers represent a notable portion of the overall market.[4] At an estimated $824 billion, the stock of securitized subprime mortgages

[1]This also illustrates the linkages between the various components of the map. Carry trades are popular as a result of the relatively easy monetary and financial conditions and the rising level of risk appetite. But the buildup of such positions represents a market risk. When those conditions change and carry trades as well as other strategies that involve leverage and the selling of insurance (credit default swaps) no longer look attractive, there is clear potential for perturbations across a wide range of markets.

[2]This estimate includes only first lien agency and nonagency mortgage-related securities. An estimate of all mortgage debt exceeds $13 trillion.

[3]Non-U.S. holdings of mortgage-related securities represented an estimated 10 to 12 percent of total foreign holdings of U.S. securities as of end-2005.

[4]See Bank for International Settlements (BIS) Committee on the Global Financial System (2006). The BIS attributes the lack of a subprime market elsewhere in part to consumer protection laws in some countries that cap mortgage lending rates, thus making it insufficiently profitable for mortgage lenders to lend to high-risk borrowers.

represents roughly 14 percent of outstanding mortgage-related securities (Figure 1.2).

The U.S. housing market cooled significantly in 2006 as sales fell and inventories rose sharply. So far, the resulting credit deterioration has been primarily confined to subprime mortgages, though it has begun to spread to Alt-A mortgages.[5] Subprime delinquency rates have picked up from cyclical lows in 2005, though they remain substantially below the previous cyclical peak in 2002 (Figure 1.3).[6] However, many market participants expect subprime delinquency rates to eventually surpass previous peaks. Indeed, growth rates of subprime delinquencies for recent mortgage vintages, notably 2006, are on steeper trajectories than the previously steepest vintage of 2000 (Figure 1.4).

This deterioration reflects a combination of regional economic factors and a shift in the structure of the U.S. mortgage market over the last few years. Specifically, the weaker mortgage collateral has partly been associated with adverse trends in employment and income in specific U.S. states rather than with particularly rapidly rising housing markets.[7]

In addition, a prolonged period of high home price appreciation coincided with a relaxation in underwriting standards, resulting in a rise in the proportions of less creditworthy borrowers, more highly leveraged loans, and more risky mortgage structures (Figure 1.5).[8] The

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[5]Alt-A mortgages, though of higher quality than subprime mortgages, are considered less than prime credit quality due to one or more nonstandard features related to the borrower, property, or loan that are usually associated with such mortgages.

[6]Other measures of mortgage credit deterioration show a similar trend, such as foreclosures and early payment defaults, generally defined as mortgage loans that are more than 30 days delinquent within six months of the start of the mortgage.

[7]Home price increases have been below the national average in nine of the 10 states with the highest concentration of problem loans. A number of these states have suffered large losses of manufacturing jobs, especially associated with the downturn in the auto industry.

[8]Such mortgages include interest-only and option ARMs, which offer borrowers a range of payment options that can include negative amortization, i.e., payments less than the total interest due.

Figure 1.4. Subprime 60-Day Delinquencies by Mortgage Vintage Year
(In percent of payments due)
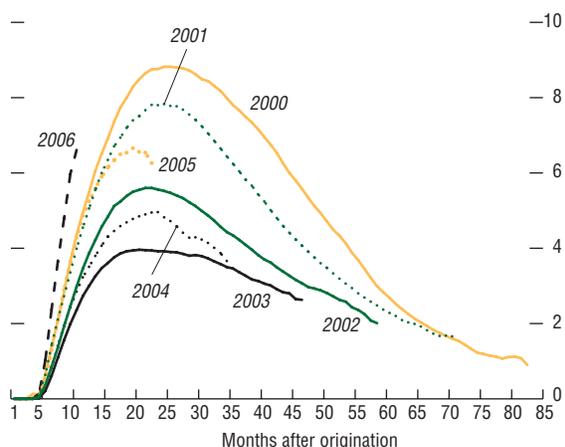
Sources: Merrill Lynch; and Intex.

Figure 1.5. U.S. Mortgage Universe
(In percent of total mortgages)
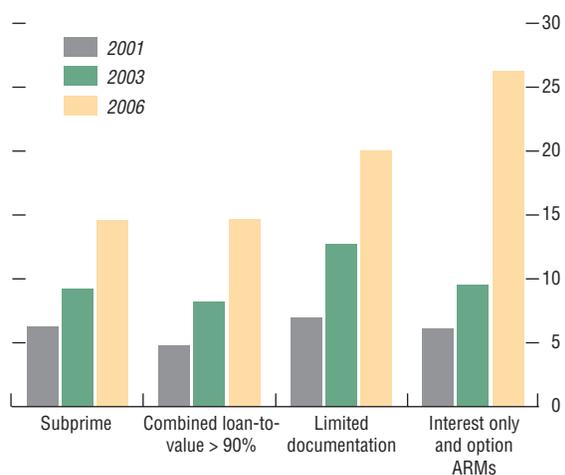
Source: Lehman Brothers.
Note: ARM = adjustable rate mortgage.

Figure 1.6. Synthetic (ABX) and Cash (ABS) BBB-Subprime Spreads
(In basis points)
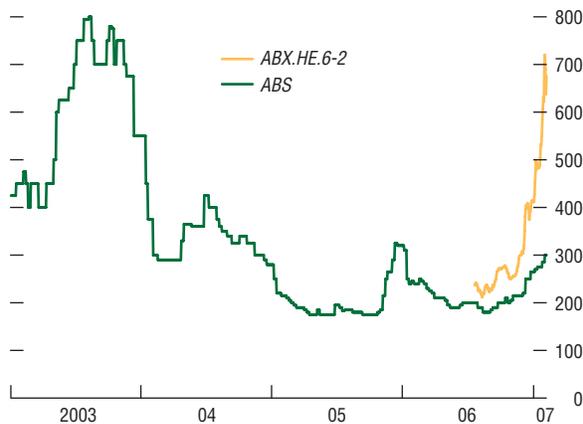
Sources: JPMorgan Chase & Co.; and Markit.

proliferation of so-called affordability products, which were intended to minimize borrowers' initial monthly payments, has exposed borrowers to payment shock, or substantial increases in monthly payments, as adjustable rate mortgages (ARMs) reset to a higher rate, low introductory rates expire, or mortgages start to amortize.[9] Subprime mortgages are especially exposed to such payment shocks, since a disproportionate share originated as ARMs.[10] Once faced with payment shock, borrowers with limited built-up equity may be unable to avoid default by extracting that equity to meet monthly payments. Similarly, they may be unable to pay off a mortgage by selling their home, particularly in an environment of weak home price appreciation. Either way, this is likely to boost the overall rate of default on subprime mortgages.

At the same time, recent U.S. regulatory guidance that tightened underwriting standards on nontraditional mortgages could exacerbate risk in the short term by reducing the refinancing options for subprime borrowers just as their mortgages are resetting to a higher rate, though some market participants believe underwriters were already tightening standards anyway. The regulatory changes may ultimately strengthen underwriting standards in the longer term, but they have no impact on previously originated mortgages.

The deterioration in the credit quality of subprime mortgages has, in turn, translated into wider spreads on securities collateralized by them. Spreads on BBB- asset-backed home equity loan (HEL) securities, which are collateralized by subprime mortgages, have widened 175 basis points since August. Credit default

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[9]Conventional ARMs, which are fully amortizing from the beginning of their term, are subject to payment shock as underlying interest rates rise. A "teaser rate," or a low interest rate, is often offered to attract borrowers to ARMs, but it then rises at each rate adjustment period. Interest-only and option ARMs also embed such payment shocks in their structure at the time they become amortizing. Market participants estimate that around $1.1 trillion to $1.5 trillion of such loans will be reset this year.

[10]Roughly 85 percent of subprime loans are ARMs, whereas only 55 to 60 percent of prime and Alt-A loans are ARMs, and less than 20 percent of agency loans.

Table 1.1. Stress Test: Impact of Home Price Appreciation (HPA) on Asset-Backed Securities (ABS) Collateralized by Subprime Mortgage Loans
(Percent impairment of ABS tranches)

Tranche	Home Price Appreciation Scenarios (Average 5-year HPA in percent per year)								Memo Item: Percent of subprime deals in 2006[1]
	−12	−8	−4	0	4	8	12	16	
AAA	0	0	0	0	0	0	0	0	75.0
AA	0	0	0	0	0	0	0	0	10.1
A	79	48	0	0	0	0	0	0	4.5
BBB	100	100	96	32	0	0	0	0	2.9
BB	100	100	100	100	25	0	0	0	0.7

Source: Lehman Brothers.
[1]Not rated or not available amounts to 6.7 percent.

swaps (CDS) on these securities, where—in contrast to the cash market—investors can take an outright short position to express a negative view on subprime credit, have widened by even more, particularly on those backed by more recent mortgages. Spreads on BBB- rated indices of ABX (indices of CDS on subprime securities) have widened sharply since November (Figure 1.6 and Box 1.1).

This weakness has been contained to certain portions of the subprime market (and, to a lesser extent, the Alt-A market), and is not likely to pose a serious systemic threat. Stress tests conducted by investment banks show that, even under scenarios of nationwide house price declines that are historically unprecedented, most investors with exposure to subprime mortgages through securitized structures will not face losses. These stress tests simulate how slowing house price appreciation would produce losses for asset-backed securities (ABS) collateralized by subprime mortgages. The stress test illustrated in Table 1.1 shows that tranches rated A and higher would not face losses unless house prices fell 4 percent per year for five years.[11]

This is because the lower-rated tranches absorb the risk of default first. Since, typically, nearly 90 percent of subprime ABS deals are rated A or higher, this suggests the amount of potential credit loss in subprime mortgages may be fairly limited. In fact, even the relatively risky BBB tranches only begin to face losses once housing prices fall by 4 percent per year.[12]

Potential Spillovers to Credit Markets and Market Participants

Notwithstanding that the impact of a cooling housing market has been primarily confined to subprime mortgages and securities issued on them, the growth in the subprime segment of the mortgage market and its increased linkages to various types of securities mean that shocks could create some of the following dislocations in broader asset markets:

- *Looser credit standards may extend beyond the subprime sector.* There is a risk that other higher-quality mortgage collateral may be subject to the same underwriting weaknesses observed in the subprime sector. For instance, more recent vintages of Alt-A mortgages show higher leverage ratios, lower credit scores, lower levels of documentation, more lax requirements for insurance, and other riskier characteristics

[11]The illustrated stress test is by Lehman Brothers and it used loan-level data for subprime mortgage loans that were originated during 1999–2005. These data were used to estimate losses for subprime collateral under different house price scenarios. Those losses were then applied to representative ABS deals using private deal modeling software in order to determine the extent of losses for each tranche of the securities. Stress tests by Bear Stearns and JPMorgan give qualitatively similar results.

[12]The latest data from the Office of Federal Housing Enterprise Oversight show housing price appreciation for the fourth quarter of 2006 running at 5.9 percent year-on-year.

Box 1.1. The Alphabet Soup of Subprime Mortgage Securitization—ABS, ABX, and CDOs

This box discusses the securitization process and carving up of mortgage cash flows into different types of securities. Over one-half of all U.S. subprime mortgage loans, prime second lien home equity loans, and home equity lines of credit are used as collateral for the issuance of asset-backed securities. Various types of credit enhancement are used to protect the securities issued from shortfalls in cash flows from the underlying collateral (see figure). Credit enhancement is achieved in several ways:

- *Subordination.* Securities are grouped in tranches with losses from defaults or foreclosures on the underlying mortgages applied to junior tranches before they are applied to more senior tranches.
- *Excess servicing.* A preset amount of interest is explicitly set aside from the servicing of the collateral each month to be used to make up any shortfalls in cash flows for senior tranches.
- *Residual tranching.* Additional cash flows above and beyond excess servicing are set aside to cover losses as needed.
- *Over-collateralization.* More collateral than the total par value of all the tranche securities may be pledged, generally in order to obtain a better credit rating.
- *Monoline insurance.* Third-party insurance or other financial guarantees may be provided to protect investors from losses.[1]

With these various credit enhancements, the most senior tranches are relatively secure against credit risk, even on subprime mortgage collateral. Accordingly, they are rated AAA and offer lower yields than other tranches in a deal.

There is also a growing market for credit default swaps on ABS (ABCDS), a market that has broadened ABS trading from a long-only, buy-and-hold activity by facilitating the execution of both long and short positions. ABCDS contracts are more complex than conventional

Note: The main authors of this box are John Kiff and Mustafa Saiyid.
[1]Such "pool" insurance is in addition to any mortgage insurance required by law for homeowners.

Creation of Asset-Backed Securities from Mortgage Loans: Subprime and Prime Seconds

Sources: Fabozzi (2002); Western Asset Management; and IMF staff estimates.
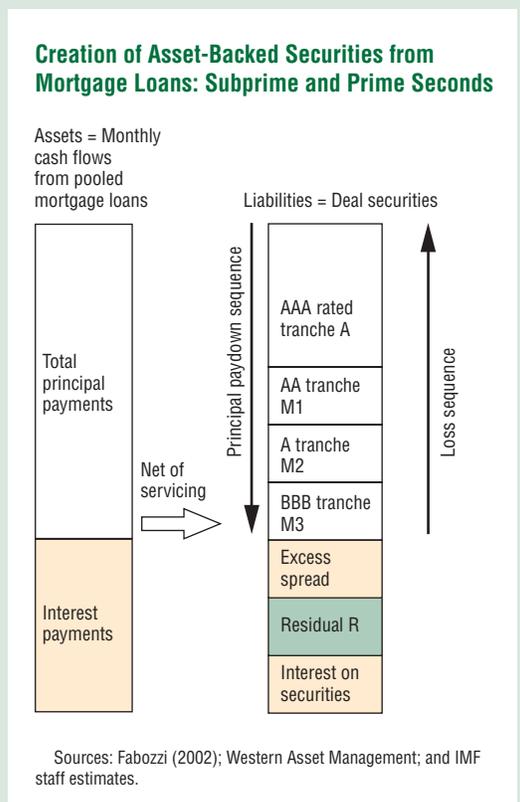
corporate-backed CDS, as they must account for various "soft" credit events that are specific to ABS, such as temporary interest and principal shortfalls.

ABX indices, which are indices on ABCDS, started trading in January 2006. These allow market participants to more efficiently trade credit exposure to ABS portfolios. The ABX indices are based on the largest and most liquid ABS issues, and a new series is launched every six months that reflects the most recent loan originations. Each series is subdivided into five subindices based on the credit ratings of the tranches of the 20 ABS that comprise the series: AAA, AA, A, BBB, and BBB-. Contracts based on these indices are cash settled.

The BBB- indices may be useful indicators of U.S. household sector financial stress, although they may not be entirely representative of the market. Spreads on the BBB- subindices of the

three most recent ABX series have widened sharply since November 2006, reflecting increasing defaults and stress in the lower-quality home equity loans, particularly for the two most recent (07–01 and 06–02) series, which are based on ABS issued during the first and second halves of 2006, respectively. These series and the underlying loans have demonstrated much higher early default rates relative to the loans underlying the ABS issued in the second half of 2005 (reflected in the first ABX series, 06–01). For example, the 06–02 series has experienced delinquencies 60 percent higher than those of the 06–01 series at comparable seasoning. On February 14, 2007, trading in standard tranches of the BBB- and BBB ABX indices (TABX) began providing exposure to specific slices of ABX credit risk.

An additional layer of complexity in the transmission of subprime mortgage risk has been introduced by the creation of collateralized debt obligations, securities whose cash flows are derived from pools of lower-rated ABS. Like an ABS, a CDO uses multiple tranches from an unrated "equity" tranche that absorbs the pool's first losses, through to one or more AAA-rated "senior" tranches. These senior tranches are protected from credit losses by one or more "subordinate" and "mezzanine" tranches that are typically rated from A to BBB. Unlike in an ABS, this underlying CDO collateral is managed; individual ABS may be bought and sold within limits written into the terms and conditions of the CDOs.

These CDOs concentrate mortgage default risk into highly leveraged equity tranches. For example, $220 billion of the outstanding stock of subprime mortgages and second-lien loans packaged into ABS in 2006 was comprised of noninvestment-grade tranches, most of which were repackaged into CDOs (Lehman Brothers, 2006). These CDOs were comprised of about $175 billion of senior tranches, $40 billion of mezzanine tranches, and only $5 billion of equity tranches. Hence, CDO equity tranches represent highly leveraged exposures to the underlying collateral pools, in that they are exposed to the bulk of the expected pool losses for an upfront payment equal to only a small fraction of the total pool.[2]

[2]For a more detailed discussion of the leverage inherent in CDO structures, see IMF (2006a, Box 2.5).

relative to earlier vintages. Such collateral has begun to perform more poorly than earlier vintages. Altogether, the Alt-A and subprime mortgage sectors account for roughly one-quarter of outstanding mortgage-related securities, thus exposing a wider segment of the mortgage market to downside risks.

- *The wider market for structured products, particularly asset-backed securities collateralized debt obligations (ABS CDOs), may start to see deterioration.* With the lower-rated tranches of subprime ABS forming 50 to 60 percent of the collateral for ABS CDOs, such structured products are especially sensitive to a deterioration in mortgage credit quality. One mitigating factor may be that there is some evidence that CDO managers may have been selecting higher-quality deals (for instance, eschewing the poorer performing 2006 vintage securities).
- *Other consumer credit markets, including credit card-backed ABS and CDS structures, could experience losses.* As housing price gains accelerated, homeowners were able to extract equity from their homes and pay down higher interest rate credit card and other debt. With home equity withdrawal slowing, charge-offs and delinquencies on credit cards have risen, albeit very modestly.[13] Still, as long as household income continues to grow, the spillover effects to other forms of household debt should be limited.

[13]A charge-off occurs when payments are no longer collectible, due either to bankruptcies or defaults.

A variety of market participants are active in the riskier segments of the subprime and related markets. Each group has different exposures and risks, including:

- *Mortgage lenders, servicers, and insurers.* Low barriers to entry have resulted in the proliferation of smaller, less-experienced subprime lenders that are now at risk from declining lending volumes, weakening credit quality, and falling profit margins. A number of lenders have already declared bankruptcy or are in the process of being consolidated following a sharp rise in early payment defaults on mortgages (which they are required to reabsorb). More are expected to follow suit. Servicers are also at risk if mortgage payments decline dramatically or if the insurance they buy to protect against losses on individual deals fails.[14] By the same token, mortgage insurers—especially those exposed to the subprime sector—may see an increase in their liabilities, though losses are typically limited to the amount of coverage extended and insurers can choose to foreclose property or pass the risk on to the originator. In addition, market consolidation should weed out the smaller, less-diversified, and poorly capitalized lenders, servicers, and insurers.

- *Banks.* A deterioration in mortgage performance would hurt profitability at banks that invest in, originate, securitize, and structure subprime mortgages into CDOs. Modeling performance of nontraditional mortgage products is difficult, given the limited time series data, and hedging exposure to such products may be imprecise. While roughly 70 percent of subprime lending is done by specialty mortgage companies, subprime lending accounts for a significant share of mortgage lending at a few more broad-based financial institutions. Also, some investment banks have been acquiring some small sub-

prime mortgage lenders, consolidating an industry experiencing financial distress. This development suggests the need for close monitoring, as this could lead to unexpected concentrations of risk exposure to the subprime mortgage market.

- *Overseas investors and hedge funds.* Anecdotal evidence suggests that overseas investors and hedge funds have significant exposure to the riskier portions of the CDO capital structure. Since many overseas investors are not permitted to invest directly in below-investment grade ABS, they may instead invest in CDOs as a means of gaining indirect exposure to the U.S. subprime market.

The complex market structure of mortgage-related securities can mask how risks are allocated and the degree to which they are hedged. As a case in point, the announced bankruptcy in December 2006 of Ownit Mortgage Solutions—a small subprime mortgage lender—prompted swap spreads to widen significantly (representing a three-standard deviation daily move) as market participants scrambled to assess counterparty risk, while spreads on other risky assets also widened. Fortunately, this was a one-day event and asset markets quickly recovered. However, the episode illustrates how the opacity and uncertainty about how mortgage-related securities allocate underlying mortgage risk could trigger volatility and disrupt broader asset markets. Major dislocation still appears to be a low-probability event, but the risks would be heightened if many subprime credit events were to take place simultaneously.

What Is Driving the Leveraged Buyout Boom and Does It Pose Stability Risks?

One of the most striking features of financial markets over the last year or so has been the massive increase in private equity buyouts, which has resulted in a sharp rise in leverage in targeted companies. This wave of LBOs differs from prior waves in that the size of the deal is much larger, and the degree of leverage is rising, while deal funding favors leveraged loans

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[14]Servicers are responsible for collecting monthly mortgage payments and maintaining accurate records of payments and balances, and they often pay taxes and insurance on behalf of the borrowers.

over high-yield debt. At the same time, the way deals are funded—with more leveraged loans and fewer high-yield bonds—has altered the distribution of risks. This section explores the potential financial risks associated with the rapid increase in activity and leverage.

Key Drivers

In 2006, global merger and acquisition (M&A) activity totaled $3.6 trillion, surpassing the previous record reached at the height of the equity market boom in 2000. A number of factors have contributed to the rise. First, strong corporate balance sheets, combined with the reticence of some publicly traded companies to undertake new investment, has provided fertile ground for M&A and LBO activity. Against the backdrop of robust global economic growth and low real interest rates, the share of profits in GDP reversed sharply at the turn of the century and has risen to about 25 percent above its longer-term average (Figure 1.7). Corporate cash flows are also strong, with corporate saving positive across G-3 countries in 2006. Notwithstanding high profitability, strong balance sheets, and low real interest rates, corporations have been less willing than in the past to invest in new capacity.[15] This has created a ripe environment for M&A activity, in which private equity funds have played a key role.

Second, some firms are seen as having capital structures that have a lower proportion of debt to capital than is optimal in the current environment of low interest rates and ample funds available for investment (Figure 1.8). As such, the current wave can be characterized as an exercise in capital structure arbitrage. Where such firms are in sectors with relatively stable earnings and

[15]In emerging Asia, Europe, and the United States, this reticence to invest may reflect some lingering cautiousness stemming from the excess capacity and overzealous investment of the late 1990s and the high hurdle rates used by companies in assessing new investments. In Japan, the current financial discipline may be related to the corporate sector's experience with deleveraging during the deflation period.

Figure 1.7. Corporate Profits for Euro Area, Japan, and the United States
(In percent of GDP)
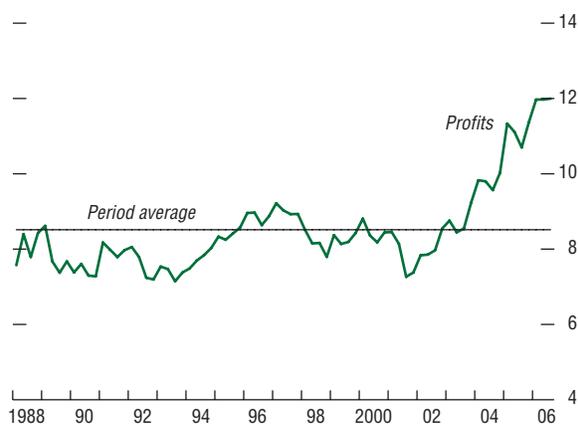
Sources: Bloomberg L.P.; Haver Analytics; and IMF staff estimates.

Figure 1.8. Weighted Average Cost of Capital versus Debt as a Share of Capitalization
(In percent)

$$y = -4.76x + 8.48$$
$$R^2 = 0.34$$
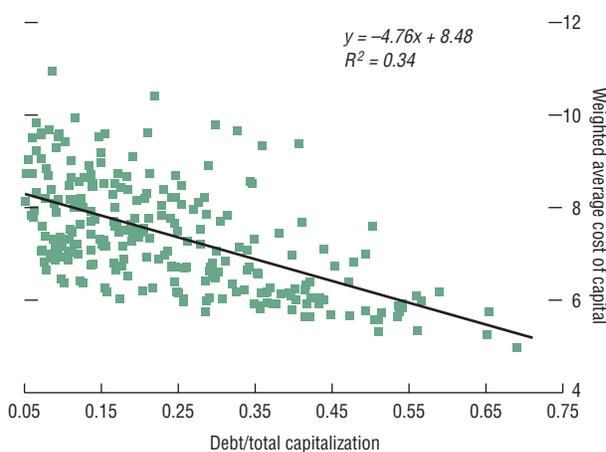
Sources: Morgan Stanley; and IMF staff estimates.

cash flows—such as utilities, consumer goods, and retail—they make tempting targets for buyouts.

Third, in some cases, public firms have been brought private to overcome costs (both perceived and actual) associated with regulatory compliance and shareholder scrutiny. For instance, in the United States, managers of some publicly traded companies subject to more stringent regulation following implementation of the Sarbanes-Oxley Act have reportedly opted to pursue management buyouts as a means to reduce the regulatory burden.

A fourth factor contributing to the rise in LBO activity has been the large influx of capital into private equity funds (Figure 1.9). The private equity industry is forecast to raise $500 billion this year, having raised $430 billion in 2006. In many cases, private equity funds are being boosted by the distribution of profits and dividends from earlier deals, and these are being reinvested in new deals.[16] In addition, Asian central banks, institutional investors, and wealth managers have made small allocations to private equity as part of their portfolio diversification to include alternative asset classes.[17] Middle East sovereign wealth funds, which recycle some of the petrodollar profits from high oil prices, are also believed to have invested in private equity funds.

In many ways, this wave is distinct from the M&A boom of the late 1980s and 1990s. Specific differences include the following trends:
• Deal sizes are getting bigger, and few firms are now thought to be too large to be the target of a takeover. The average LBO size has risen

Figure 1.9. Private Equity Buyouts and Leveraged Loan Issuance
(In billions of U.S. dollars)

Source: Bloomberg L.P.

[16]Market participants note that private equity funds have been generating and distributing returns on their investment at an accelerated pace, as short as 20 months following acquisition, versus a standard length of four to eight years.
[17]To achieve returns similar to those they achieved in the past, many pension funds and insurers have had to increase their exposure to higher-yielding alternative asset classes, including private equity funds. Pension fund legislation prompted pension funds to shift a larger share of assets into longer-duration and often lower-yielding debt instruments in order to better match the duration of their assets with their liabilities.

from roughly $400 million in the prior cycle to $1.3 billion during the current cycle. Previously, the largest deal completed was the $31.3 billion acquisition of RJR Nabisco, whereas a few LBOs have already exceeded that level during this cycle. Deal size has grown, in part, because a larger number of LBOs are being completed by groups of sponsors that pool their resources (so-called "club deals").

- The degree of leverage in the current wave of deals is rising, although it remains low relative to the 1980s cycle. The ratio of debt to earnings before interest, tax, depreciation, and amortization (EBITDA) among European LBOs reached almost 5.5 times by late 2006, up from around 4 times in 2002 (Figure 1.10). Leverage ratios have followed a similar trend in the United States, with debt/EBITDA rising from 3.5 times in 2000 to 5.1 times in late 2006.

- In contrast to prior LBO waves, much of the financing is from leveraged loans—defined as loans that carry an interest rate more than 150 basis points above LIBOR—rather than from the high-yield bond market (Figure 1.11). Unlike bonds, leveraged loans are sold though a process of syndication to a highly professional investor base. Also unlike bonds, loan contracts help overcome the collective action problem by providing for circumstances under which creditors can intervene and impose management changes if management fails to deliver on an agreed plan for the firm.[18] Importantly, the expansion of the collateralized loan obligation (CLO) market has greatly broadened the investor base for these loans, with institutional lenders eclipsing banks (Figure 1.11).[19]

At the same time, the recent wave of M&A is exhibiting some worrying symptoms of the

[18]Bondholders, by contrast, generally only have a say in the management of the company if it has defaulted (or is close to doing so). Bonds are traded in the secondary market much more than loans. Being numerous and uncoordinated, bondholders often face a collective action problem that prevents them from intervening effectively.

[19]CLOs pool loans and allocate rights to the cash flows into tranches, the most senior of which can then earn a high credit rating.

Figure 1.10. U.S. Corporate and Buyout Leverage
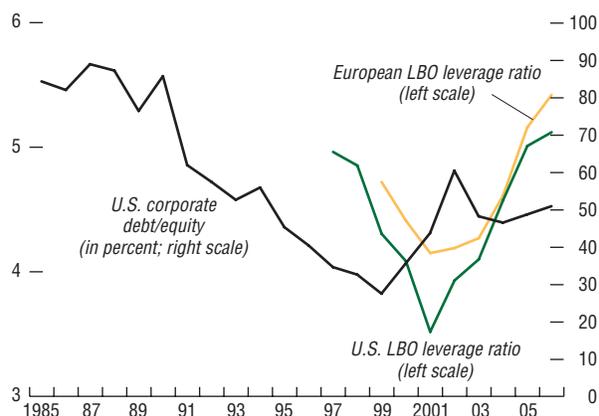
Sources: Standard & Poor's; Board of Governors of the Federal Reserve System; and IMF staff estimates.
Note: LBO = leveraged buyout. Leverage ratio is calculated as debt divided by earnings before interest, taxes, depreciation, and amortization.

Figure 1.11. U.S. Corporate Bond and Loan Issuance
(In billions of U.S. dollars)
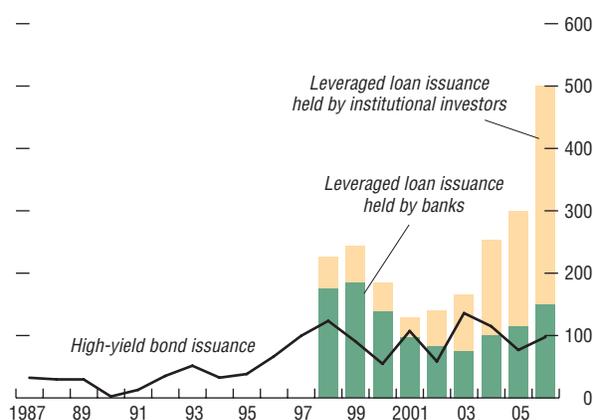
Sources: Bloomberg L.P.; and Standard & Poor's.

Figure 1.12. Global Speculative Default Rates
(In percent)
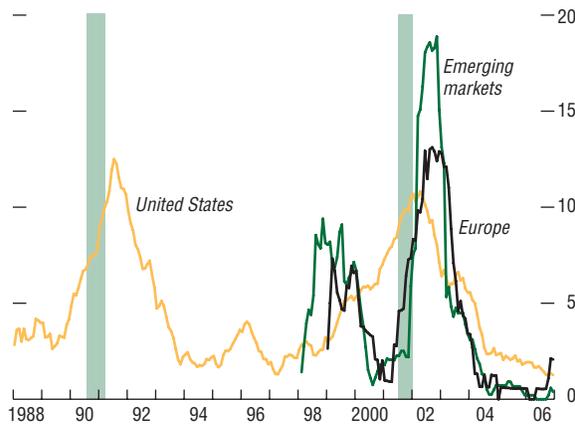
Sources: National Bureau of Economic Research; and Standard & Poor's.
Note: Bars indicate U.S. recessions.

past, and has introduced some new risks. First, while the low interest rates, longer maturities, and increasing average size of the deals may make the effective average debt burden on the target more manageable relative to previous M&A booms, all else being equal, higher debt levels potentially increase the vulnerability of acquired firms to economic shocks. This is reflected in the downgrade in credit ratings of several targeted companies. Such a development is not necessarily a systemic concern, but it does increase the risks of failure that could impact credit markets more broadly.

Second, a rise in corporate leverage tends to precede a spike in defaults. Defaults among corporates remain low (Figure 1.12), but trends may now be in place that could eventually cause defaults to rise. Already, the ratio of debt to equity among U.S. corporations has picked up from the low levels it reached at the turn of the century. The share of bonds rated CCC or lower has also begun to rise as a percent of total corporate issuance, after having troughed in mid-2006. Access to capital markets has therefore extended to companies that could be vulnerable to even a marginal deterioration in macroeconomic or financial conditions.

Third, while the increased use of leveraged loans as the primary form of debt financing suggests that risks may be less concentrated, banks face a number of risks during the syndication process, which can take several months. During this time, adverse market events could render the deal unattractive. The bank that has provided bridge finance or has underwritten the provision of the leveraged loans would be at risk during that period and could suffer large losses as a result of adverse market developments.[20]

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[20]Banks often have some risk-sharing provisions with the sponsoring buyout firm under such circumstances, but they could still be left with assets that declined in value and that they are unable to distribute, or they might have provided a bridge facility that is unlikely to be replaced swiftly by longer-term funding (and which fails to reward the bank for the higher risk it is bearing). The latter situation is sometimes referred to as a "hung bridge."

The fact that deal sizes have grown and pricing has become finer means these risks are now larger.

Fourth, there are signs of weaker financing conditions. The average contribution that private equity investors are providing, though still higher than during prior waves in the 1980s and 1990s, has declined in recent years, and is currently only about one-third of the total. In addition, deal terms have loosened, as reflected by weaker, fewer, or dropped loan covenants. The strength of demand for leveraged loans from investors has led to a shift of power from creditors to borrowers, often resulting in negotiated loan covenants. Thus one of the main advantages of loans over bonds as a financing medium has diminished. Finally, financing has grown more aggressive, as demonstrated by the higher proportion of second liens and other riskier forms of debt financing.[21]

Fifth, anecdotal evidence suggests the due diligence being performed by some investors may be weakening. Leveraged loans are in high demand, and many deals are fully subscribed soon after they are announced. In the case of deals sponsored by some of the larger and more established private equity funds, investors in leveraged loans may be relying unduly on the due diligence performed by the sponsor and may therefore not perform a full level of due diligence on the firm. Some market participants argue that the time horizon over which private equity firms are interested in the fate of their investments is much shorter than the maturity of the loans used to finance the buyouts.

Finally, with allocations to private equity funds continuing to rise, it appears likely that in the future, more funds will be chasing fewer attractive deals. Already, rating agencies have warned that the number of viable targets has diminished. The strong demand for all elements of the capital structure of these deals means that

prices are often bid up to levels that represent high multiples of earnings.

Current takeover activity is taking place against a benign backdrop of continued global growth, low real interest rates, high corporate profitability, and low volatility. If one of these factors changes, deals that looked promising in a benign environment could suddenly appear much less attractive. It is therefore likely that some private equity deals will fail to live up to expectations. The risk from a financial stability viewpoint is that the collapse of several large and high-profile deals during the syndication stage would trigger a wider re-appraisal across a broader range of products—a sharp decline in the appetite for high-yield bonds, for example, has the potential to curtail market access for higher-risk corporates.

Implications of Financing of Global Imbalances with Debt Flows

The persistence of global imbalances brings with it an important financial stability issue—the problem of sustaining the financing flows needed to support the imbalances. The April 2007 *World Economic Outlook* projects that imbalances are unlikely to fall much over the short term, and thus continued large cross-border net capital flows will be needed to finance current accounts at close to their present levels. This is clearly the case for the United States, which had an estimated current account deficit of $848 billion, or 6.4 percent of GDP, in 2006.

The rising dependence on fixed-income inflows to finance the U.S. current account deficit suggests that capital flows may have become more sensitive both to changes in world interest rate differentials and to expected exchange rate shifts. This section assesses the extent to which this has occurred and the implications for financial markets.

For several years, capital inflows to the United States have concentrated in fixed-income securities, including U.S. Treasury bonds, agency bonds, and corporate bonds. That tendency has become more pronounced since the 2001–02

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[21]Second liens, which have limited recovery rates, have reportedly risen in part to capitalize on cheap financing and to attract hedge fund and cross-over high-yield investors.

Figure 1.13. Sources of Financing for the U.S. Current Account Deficit
(In billions of U.S. dollars)
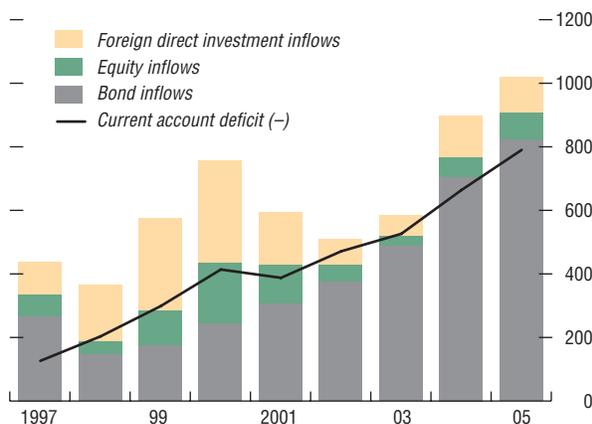
Source: IMF, *International Financial Statistics.*

Figure 1.14. Net Foreign Purchases of U.S. Fixed-Income Securities by Type
(In billions of U.S. dollars)
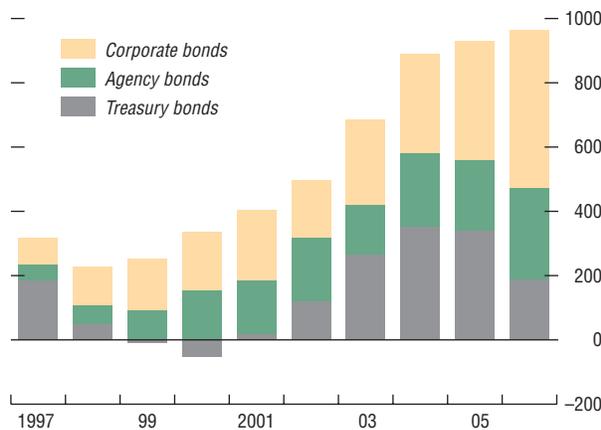
Source: Bloomberg L.P.

recession, even as the scale of the current account deficit to be financed has expanded rapidly (Figure 1.13).

Among the several factors cited as supporting the growth of fixed-income inflows to the United States, perhaps the most widely discussed is the accumulation of official foreign exchange reserves by foreign central banks, associated in some cases with efforts to limit appreciation against the dollar. In addition, the recycling of petrodollars—often through private sector intermediaries—has contributed to demand for U.S. fixed-income instruments. To some extent, bond purchases by the official sector may be insulated from market forces. However, the official sector, like the private sector, has become more sensitive to implicit interest rate differentials, in many cases weighing the cost of issuing domestic debt against the yield earned on foreign reserves (IMF, 2006b, Annex 1.4). At the same time, private sector demand for U.S. fixed-income instruments has also risen.

Increased private sector appetite for these securities may be attributable at least in part to global financial integration and—closely associated with this—a decline in asset home bias. As will be discussed in Chapter II, a combination of conditions has worked to ease the flow of capital across borders. In such circumstances, there should be an increase in substitutability between foreign and domestic assets. Accordingly, in a world of large current account imbalances, changes in relative interest rates or in other conditions that might once have had only a muted impact internationally could lead to sharp changes in capital flows or exchange rates.[22]

Greater responsiveness to yields on the part of investors into U.S. bond markets is seen, to some extent, in the types of fixed-income assets that they select. Since 2004, a growing share of purchases by foreigners—including by the official sector—has been in agency and corporate bonds (Figure 1.14). These categories include

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[22]At the same time, an overall increase in the willingness to hold foreign assets—that is, a decline in home bias—would result in a secular shift toward such assets.

mortgage-backed securities (MBS) as well as a host of complex financial products, such as collateralized debt obligations (CDOs), constructed from the bonds.

A set of econometric tests, as described in Box 1.2, gives further evidence that flows into U.S. bond markets have become more responsive to interest rate differentials (and, to a somewhat lesser extent, to domestic economic growth). As shown in Figure 1.15, in the second of two periods considered, the response to a sustained 1 percentage point increase in the spread of U.S. over foreign interest rates is statistically significant and persistent.

Notably, the tests fail to find any impact of exchange rate expectations on demand for U.S. bonds, even though it might be anticipated that such expectations should also play a role in determining flows.[23] Of course, this could mean simply that the model has not been able to capture how expectations are formed, especially if they are more forward looking. Nonetheless, the results are also consistent with the possibility that investors regard the path of exchange rates as a "random walk," believing that the best forecast about tomorrow's exchange rate is that it will be the same as today's. This provides some insight into the recent popularity of carry trades—the practice of borrowing in a currency where interest rates are low in order to invest in a currency where yields are higher. If investors believe that there is no real tendency for a lower-yielding currency to appreciate, then they will respond directly to increasing interest rate spreads. The decline in home bias and increased ease of engaging in cross-border transactions may be expected to amplify this tendency.

These results have some important inferences for financial markets.

First, the elasticity of substitution between foreign and U.S. bonds has increased, even as demand for U.S. assets has also become more

Figure 1.15. Response (of Bond Flows/GDP) to a 1 Percent Spread Increase: Period 2 (2002–05)
(Bond flows to the United States in percent of GDP)
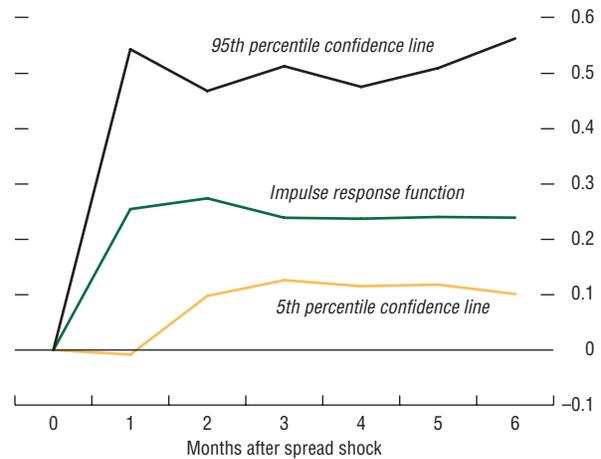
Source: IMF staff estimates.

[23]More formally, this is the notion of "uncovered interest parity," which holds that a positive interest rate differential should be matched by a justified expectation of depreciation by the higher-yielding currency.

Box 1.2. Bond Flows: Demand Response to Interest Rate and Exchange Rate Shifts

This box describes empirical work on the determinants of bond flows, which, as shown in Figure 1.13, are the dominant source of private sector funding for the U.S. current account deficit (Walker and Punzi, forthcoming). The model estimates the impact on foreign purchases of U.S. Treasury securities of several variables that are hypothesized to influence foreigners' investment decisions, and whether that impact has increased over time. The tests are based on a panel data set that uses interest rate spreads between the United States and another country as an explanatory variable, along with that country's GDP growth and a measure of expectations for a bilateral exchange rate shift. There are 12 countries in the sample. Both cross-border interest rate spreads and the rate of growth of the other country's financial markets are shown as important determinants of outflows, with their importance increasing between 1995 and 2005. By contrast, exchange rate expectations appear to have little impact on such flows.

While previous work in this area has tended to focus on the bond market "conundrum" of the impact of foreign demand on domestic U.S. interest rates, the present research focuses on the converse problem in tracing the response of demand for the securities to interest rate shifts and other factors. Studies devoted to explaining and quantifying the "conundrum" of low long-term U.S. Treasury yields include Frey and Moëc (2005), who find that those yields would have been up to 115 basis points higher in 2004 had it not been for purchases by foreign central banks. Warnock and Warnock (2005) estimate the impact of overall foreign inflows on bond yields using ordinary least-squares regressions on aggregate, adjusted U.S. Treasury International Capital (TIC) data. They find a total impact from foreign inflows on U.S. long-term bond yields of 150 basis points.

Note: The main author of this box is Christopher Walker.

The Model

The present study uses monthly panel data on bilateral capital flows obtained from the TIC flows data set over 1994–2005. The data are adjusted to minimize custodial bias—that is, the fact that investors in one country may purchase securities through an intermediary in another country. The data are then divided into earlier and later periods, 1995–2001 and 2002–05. Although the break point between the two periods may be viewed as arbitrary to some degree, it was selected to correspond to the change in trends in the U.S. external accounts depicted in Figure 1.13, and (approximately) with the beginning of a business cycle.

In the model, which is derived from a simplified dynamic general equilibrium model of capital flows explored by Blanchard, Giavazzi, and Sa (2005), bond inflows as a ratio to GDP are a positive function of three independent variables—the spread between U.S. and foreign interest rates, the expected appreciation of the dollar against the domestic currency, and the country's growth rate.

While it is straightforward to obtain interest rate spreads and GDP growth rates (the latter proxied by month-on-month industrial production), there is no clear choice for a variable to represent exchange rate expectations. Although the notion of using forward prices to proxy such expectations is appealing, as this is a market-based indicator, this will not work, since—by covered interest parity—the difference between the spot and forward price is equal and opposite to the spread between the domestic and foreign interest rates. "Consensus" expectations obtained by polling market participants are a potential alternative, but these data are not available for every country over the entire span of the data set. In practice, an "adaptive" model of exchange rate expectations is employed, such that the expected rate of appreciation of a given currency is assumed to be related to past changes. While there are clear limitations to this approach, to the extent that investors do take past exchange rate move-

Two-Stage Least-Squares Regressions
(Dependent variable is bond flows as 1/1000 percent of own-country GDP)

Variable	Lagged Bond Flows	Interest Rate Spread (in percent)	Growth (percent, annualized)	Expected Dollar Appreciation (in percent)
1995–2001	.112 (1.81)	.174 (1.23)	.080 (1.62)	−.011 (−0.45)
2002–05	−.024 (−0.12)	.789 (2.31)	.238 (2.11)	−.004 (−0.05)

Note: *t*-statistics in parentheses.

ments into account in forming expectations about future movements, this approach should pick up these effects.

Estimation of the parameters raises standard identification issues typically associated with estimation of supply and demand elasticities. In particular, the spread variable $(r_{US} - r_i)$ is likely to be correlated with the error term ε_{it}, given that higher bond inflows (i.e., an increase in the quantity demanded) should be expected to lead to a lower spread (i.e., a higher price of U.S. bonds). Two distinct estimation techniques are used to minimize the identification problem.

Results from Estimations

Both estimators show a statistically significant, and in fact quite substantial, impact of the interest rate spread on bond inflows in the later period, whereas the effect in the earlier period does not register as significant at the usual confidence level. From a two-stage, least-squares estimator, the impact of the country's GDP growth is also increasing, and increasing in

significance, from the earlier to the later period. By contrast, adaptive exchange rate expectations appear to have no impact on bond flows in either period, even though there is some positive autocorrelation of exchange rate returns during 1995–2001. On balance, these results lend support to the notion that the elasticity of substitution between domestic and U.S. bonds rose between 1995–2001 and 2002–05.

Results from a panel vector autoregression show a stronger impact of the cross-border spread on bond flows. Figure 1.15 shows an impulse response function for the later period, indicating a statistically significant and positive impact from a change in spreads on bond flows. Indeed, the persistence of the response to a permanent spread shock may be regarded as evidence in favor of the theoretical relationship between interest rate spreads and bond flows. The panel vector autoregressions also indicate a dramatic increase in the responsiveness of bond flows to interest rate changes between the earlier and later periods.

responsive to growth rates within the countries whose residents are purchasing U.S. bonds. This provides support for the view that international financial integration has made it easier for nations to sustain larger current account deficits, insofar as it suggests that the interest rate premium needed to sustain a given pace of inflows has declined.

Second, on the basis of the empirical work described here, the potential impact of a decline in interest rate spreads on bond flows could be significant. The higher of the two estimates

obtained from this work would imply that a 1 percent reduction in the average spread of U.S. interest rates over foreign rates would, if sustained for a year, lead to a reduction of about $80 billion—out of a total of about $800 billion—in bond inflows to the United States.[24]

[24]Of course, any such estimate must be regarded with caution. The range of error of the estimate is fairly large (a 95 percent confidence interval ranging from $29 billion to $163 billion).

Emerging Market Risks and Challenges in a Benign External Environment

Emerging market risk has broadly declined since the September 2006 GFSR, supported by the benign global economic outlook, improved macroeconomic performance, and improving sovereign debt profiles. Investor flows to EMs have increased and demand has broadened, not just for external debt, but for local-currency-denominated assets. However, as investors move further out along the risk spectrum, such flows pose new challenges for policymakers, requiring concomitant advances in financial market development and regulation.

Two recent developments highlight the need for these advances. First, a rapid expansion of corporate debt issuance in emerging Europe, led by domestic banks, is contributing to rapidly expanding credit in some countries (see Annex 1.2). Second, as investors seek out "new frontiers" in EMs, recent inflows into local government securities of some countries in sub-Saharan Africa have exposed those markets to risks of reversal.

Emerging Market Fundamentals and Flows

The positive global outlook, including generally high levels of commodity prices in recent years, continues to provide a supportive backdrop for emerging markets and should allow for continued export-led growth. In addition, EM vulnerabilities have broadly continued to decline (Figure 1.16).

By and large, policy has supported improved market perceptions of EM sovereigns. Policy credibility continued to recover in Turkey following the central bank's sharp tightening of monetary policy in June and July 2006, and efforts to improve policy communications. In South Africa, the Reserve Bank's steady tightening of monetary policy helped consolidate market stability. In Hungary, market perceptions that fiscal policy was becoming increasingly credible helped restore investor confidence, leading to record levels of nonresident holdings of forint-denominated assets in late 2006. However,

Figure 1.16. Indicators of External Vulnerability in Emerging Markets
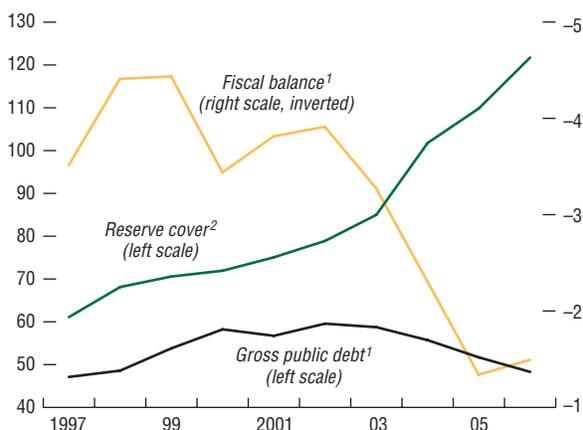
Sources: National authorities; and IMF staff estimates.
Note: Simple unweighted average of data from 49 emerging economies.
[1]In percent of GDP.
[2]In percent. Ratio of reserves to short-term external debt at remaining maturity plus the current account deficit. If current account is in surplus, set to zero.

policies have not been uniformly favorable. For instance, policy moves in Ecuador, Thailand, and Venezuela all led to adverse investor reactions.[25] However, these reactions remained confined to the countries concerned, suggesting investors have been discriminating—at least to some extent—on the basis of fundamentals.

The profile of external debt of EM sovereigns continued to improve in 2006. External debt issuance declined as improved fundamentals and increased reliance on domestic funding reduced external financing requirements (Figure 1.17, top panel). In addition, EM sovereigns aggressively retired external debt.[26] Looking forward, net sovereign external debt flows (including coupon payments) are expected to be negative during 2007, while private sector bond issuance is expected to fill the void.[27]

The combination of an improved external environment, better policies, and reduced external debt levels was reflected in a further rise in EM credit ratings to marginally below BB+, effectively a one-notch increase since end-2004 (Figure 1.18). Sovereign rating upgrades by Moody's and Standard & Poor's outpaced downgrades in 2006 for the fifth year in succession, with 38 upgrades versus only two downgrades.

[25]In Ecuador, announcements that the authorities were considering pursuing a debt exchange and regarded some debt as illegitimate sparked a 250 basis point widening of external bond spreads in mid-January 2007, though spreads subsequently recovered. In Thailand, the imposition of a 30 percent unremunerated reserve requirement on short-term capital inflows sparked a 15 percent drop in the Thai stock market on December 19, 2006, leading the authorities to immediately announce a reversal in the requirement as it applied to equity markets. After the market partially recovered, subsequent announcements in January that the authorities would enforce restrictions on foreign ownership of domestic companies pushed the stock market down again. In Venezuela, the announcement of major nationalization plans sparked a 19 percent drop in Venezuela's stock market on January 9, 2007.

[26]Emerging market sovereigns are estimated to have bought back $23 billion worth of outstanding bonds in 2006, and exchanged roughly $2 billion worth for local currency debt.

[27]Market analysts project gross sovereign bond issuance of a little more than $30 billion, against amortizations and coupon payments estimated to exceed $45 billion.

Figure 1.17. Emerging Market External Issuance
(In billions of U.S. dollars)
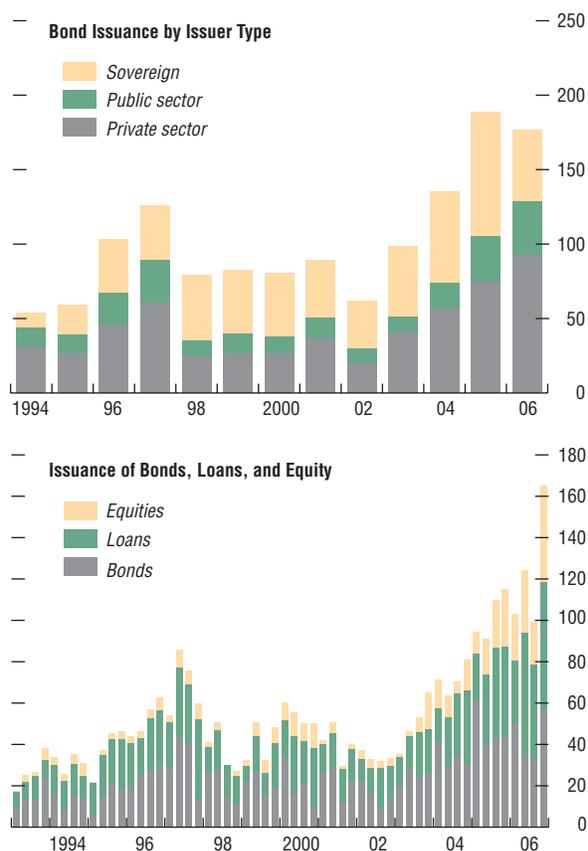
Source: Dealogic.

Figure 1.18. Emerging Market Credit Quality Index
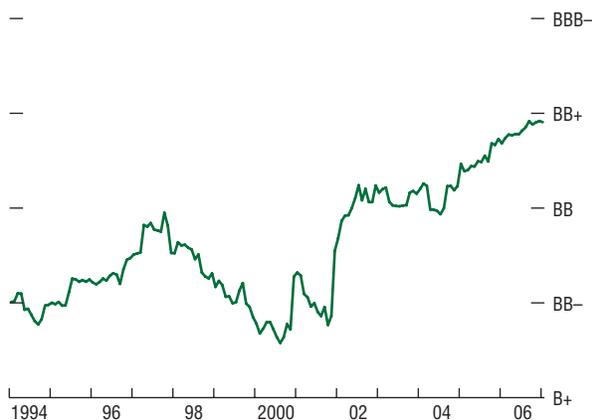
Sources: JPMorgan Chase & Co.; Moody's; Standard & Poor's; and IMF staff estimates.

Note: Market-capitalization weighted credit ratings of EMBI Global constituent countries.

Figure 1.19. Cumulative Net Flows to Emerging Market Funds
(In billions of U.S. dollars)
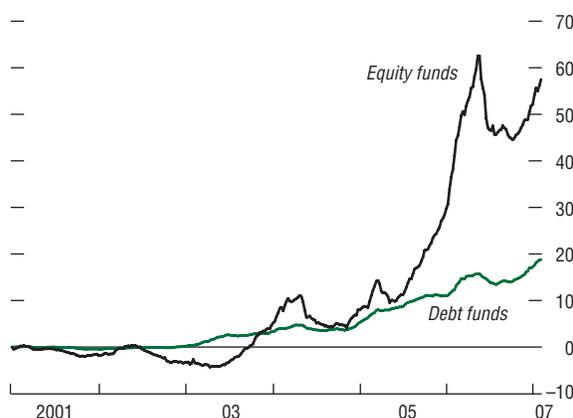
Source: Emerging Portfolio Fund Research, Inc.

These fundamental improvements, combined with continued high investor risk appetite, brought EM spreads to record lows in early 2007. The model of EM spreads presented in the April 2006 GFSR (IMF, 2006a) suggests that spread compression was consistent with EM fundamentals and the improved external environment (see Annex 1.1).

Against this backdrop, foreign investor demand for EM assets has continued to expand, with continued inflows into dedicated EM bond and equity funds (Figure 1.19). As well, JPMorgan estimated that strategic inflows (flows from institutional investors such as pension funds and endowments) amounted to $25 billion in 2006, and projected a further increase to between $30 billion and $35 billion in 2007. Investor demand for local currency and corporate debt has also grown. For instance, local debt markets now account for roughly 60 percent of all EM debt trading volume, compared with about 35 percent in 2000.

The growing demand for EM assets continues to broaden. Total EM gross primary issuance of bonds, loans, and equities reached a record high of $484 billion in 2006, a 20 percent increase over 2005 (Figure 1.17, bottom panel). Growth was strongest in equities (albeit from a lower base), reflecting foreign investors' growing appetite for risk.[28] Gross loan issuance climbed 40.6 percent in 2006, reflecting commercial banks' search for higher returns amid strong competition in mature markets. By contrast, gross bond issuance fell 7.3 percent in 2006.

Rapid Growth in Corporate Bond Issuance

Emerging market corporate bond issuance rose to a record level in 2006, as declining sovereign bond issuance led to a "crowding in" of private sector debt. Corporates (including

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[28]Equity issuance remains concentrated in Asia, and particularly in China, where rising issuance almost eclipsed U.S. issuance in 2006. However, about one-half the total for China was accounted for by a single initial public offering—the $19.1 billion raised by the Industrial and Commercial Bank of China in October.

those that are publicly owned) raised $125 billion from international bond markets in 2006, a nearly 20 percent increase over 2005, and market participants are projecting issuance to continue to rise.

The credit quality of new EM bonds, in aggregate, continues to rise, with the proportion of total corporate bond issuance rated investment grade rising to 58 percent in 2006. There are important regional differences, however, with corporate bond quality deteriorating in 2006 in emerging Europe, the region which saw the most significant increase in issuance.

In fact, the majority of recent corporate bond issuance in Europe, the Middle East, and Asia (EMEA) is rated subinvestment grade and is increasingly dominated by banks, specifically in Kazakhstan and Russia. Fitch Ratings (2006a) noted that the average rating for issues from Kazakhstan and Russia during 2006 was BB, markedly below the sovereign ratings of BBB and BBB+, respectively.

Corporates in Kazakhstan and Russia alone accounted for over 40 percent of EMEA's total (corporate and sovereign) bond issuance in 2006 (Table 1.2). This debt issuance is supporting rapid growth in bank loans to the private sector, which could lead to a deterioration in asset quality if banks' credit assessment capacity becomes overstretched.[29] This is of some concern because capital adequacy is declining in Russia and in Kazakhstan is relatively low for an EM country (see Table 22 in the Statistical Appendix). Also, in Kazakhstan, the nonperforming loans ratio is relatively high, especially in the context of rapid credit growth. Also in Russia, concentration risks are high as large

[29]In an effort to dampen rapid expansion in Kazakhstan, the authorities broadened and raised reserve requirements (effectively tripling required reserves, albeit from very low levels) in mid-2006, introduced foreign currency liquidity norms and limits on short-term external liability ratios to bank capital, and tightened regulations on related-party lending, real estate exposure, and cross-border loans. A second round of prudential tightening, which would include extension of borrowing limits to banks' total external obligations, was to have been implemented in March 2007.

Table 1.2. Foreign Currency Bond Issuance and Banking System Soundness: Europe, Middle East, and Asia (EMEA), and Kazakhstan and Russia

	2004	2005	2006	2007[1]
	(in billions of U.S. dollars)			
Foreign Currency Bond Issuance				
EMEA total	47.8	75.7	88.1	. . .
Of which				
Russia and Kazakhstan	19.7	27.0	37.6	10.1
Other	28.1	48.7	50.5	. . .
Russia				
Financial institutions	3.1	13.3	19.6	3.6
Nonfinancial institutions	10.4	10.0	9.4	0.3
Sovereign	0.0	0.0	0.0	0.0
Kazakhstan				
Financial institutions	3.5	3.7	8.4	6.3
Nonfinancial institutions	2.7	0.0	0.2	0.0
Sovereign	0.0	0.0	0.0	0.0
/Indicators of Banking System Soundness				
Russia				
Growth in credit to the private sector[2]	47.0	35.0	48.0	. . .
Regulatory capital ratio[2]	14.0	13.2	12.5	. . .
Nonperforming loans to total loans[2]	3.8	3.2	2.7	. . .
Kazakhstan				
Growth in credit to the private sector[2]	54.0	74.0	79.0	. . .
Tier 1 capital to total assets[2]	8.0	8.0	9.0	. . .
Nonperforming loans to total loans[3]	11.9	9.6	10.2	. . .
	(in billions of U.S. dollars)			
Memorandum Item:				
Russian local currency issuance[4]				
Financial institutions	1.2	3.2	9.9	0.3
Nonfinancial institutions	5.7	25.2	17.2	2.5

Sources: Bloomberg L.P.; IMF, *International Financial Statistics;* national authorities; and IMF staff estimates.
[1]2007 data are year-to-date through February 13, 2007.
[2]2006 data as of September.
[3]2006 data as of March.
[4]Converted to dollars at period average exchange rate.

loan exposures represent 150 to 200 percent of capital at some banks. Emerging market corporate bond growth, including for banks, remains predominately foreign currency denominated, increasing foreign currency exposure. However, all these risks may be offset to some degree by banking customers' rapid growth in wealth and relatively low leverage levels.

As banks account for a significant proportion of new EM corporate debt issuance, it is essential that domestic bank regulation and supervision develop in parallel. Regulators need to ensure that local banks upgrade their risk man-

agement, especially to manage growing currency mismatches on their balance sheets. Furthermore, policymakers should monitor potential bunching in corporate rollover requirements given that the majority of new bonds are of three- to five-year maturity.

"New Frontiers"

Investor interest in the "new frontier" of sub-Saharan Africa grew significantly in 2006, albeit from a very low base. Portfolio investors have become increasingly active, especially in local currency debt markets, led by dedicated EM hedge funds and institutional investors.[30] A trading volume survey by the Emerging Market Traders Association (EMTA) shows sub-Saharan debt trading volume reached $12.7 billion in 2006, nearly double the volume in 2005.[31] Portfolio inflows to the region have been concentrated in high yielding, commodity exporting countries and in those with a positive macroeconomic outlook and more "open" capital markets, notably Nigeria, Zambia, and, recently, Ghana.[32]

Investors have been attracted by the region's improving fundamentals. Sovereign balance sheets in many countries have improved significantly, benefiting from debt relief. High commodity prices and improved macroeconomic management are also contributing to reduced default risk and raising the prospects for sustained growth. Investors recognize that the international policy consensus for poverty reduction,

crystallized in the Millennium Development Goals and supported by the Heavily Indebted Poor Countries Initiative and Multilateral Debt Relief Initiative, offer significant one-off boosts to fiscal stability and growth.

In addition, sub-Saharan markets may offer investors the benefits of diversification, as those markets were uncorrelated with the more liquid EMs during the May/June 2006 correction.[33] Meanwhile, the ability of foreign investors to access the region's markets has improved as an increasing number of the region's assets can now be settled via Euroclear, lowering transaction costs. Prior to 2006, only the South African rand among sub-Saharan African currencies was a settlement currency within Euroclear. In 2006, seven additional sub-Saharan currencies were added.[34]

However, a surge in inflows can overwhelm underdeveloped markets and leave them vulnerable to sudden outflows, posing challenges for policymakers (see Box 1.3). The region's authorities need to ensure that market development and policy keep pace with growth in foreign portfolio flows. For instance, Nigeria's rapidly developing local pension sector provides a constant source of demand for local currency assets, so that secondary market liquidity continues to rise. Importantly, increased foreign flows require disciplined financial and macroeconomic policy in order to avoid distortions in local asset prices, and to ensure foreign investor confidence is established and retained.

Are Global Financial Markets Too Complacent?

Financial market volatility across a broad range of assets has continued to decline to

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[30]Some specialist funds with longer-term investment horizons and sufficient local resources to overcome initial information asymmetries are also increasing their activity in regional equity markets.

[31]The EMTA's survey reflects input from 66 major dealers, banks, and money management firms worldwide and includes data on secondary market trading in sovereign and corporate eurobonds, local treasury bonds, and other instruments from more than 90 emerging market countries.

[32]Analysts estimate that Nigeria received roughly $1 billion in inflows in the first half of 2006, over five times greater than estimated foreign capital inflows for all of 2005. Significant though smaller flows were also received by Zambia (approximately $250 million in 2006), Tanzania ($150 million), Ghana, Côte d'Ivoire, and, to a lesser extent, Kenya and Uganda.

[33]However, this low correlation could have reflected the limited involvement of foreign investors in the region.

[34]In part, this reflects efforts by the African Development Bank (AfDB) to foster local financial market development. The AfDB has issued a number of local currency bonds, in each case working with the authorities to ensure Euroclear status is achieved. Euroclear is the world's largest settlement system for securities transactions.

remarkably low levels (Figure 1.20) and risk spreads are historically tight. A number of *structural* reasons have been advanced to explain this persistently low level of asset market volatility. One is that inflation risk is less of a concern, partly because emerging economies, in particular China and India, can help meet growing global demand for both goods and services despite narrowing capacity constraints in industrial countries. Other explanations appeal to a shallower credit cycle due to improved macroeconomic policies, including the credibility attached to central banks. In addition, the wider dispersion of risks in the financial system, facilitated by financial innovations and deepening markets for credit derivatives, may also have contributed to lower volatility.

However, *cyclical* components are also likely to be important in explaining the current low volatility. Despite the increase in uncertainty normally associated with this stage of the business cycle, volatility appears low. Figure 1.21 compares equity volatility through the last three U.S. business cycles.[35] Three key factors are abundant global liquidity, still-low corporate leverage, and a high risk appetite. These factors could reverse in the future.

With respect to liquidity conditions, low real interest rates encourage investors to borrow in order to amplify the returns on their investments. As long as markets remain calm and liquid, this is a successful strategy, and market participants may be inclined to keep increasing leverage. Even as short-term nominal rates have risen in the United States and elsewhere (although real rates remain at or below long-term trend levels), funds have been available

[35]This commentary refers both to *realized* volatility, as measured by the standard deviation of realized asset returns, and to *implied* volatility. The latter is computed from options or swaptions prices as the expected standard deviation that must be imputed to investors to satisfy risk-neutral arbitrage conditions. Volatility indices such as the Chicago Board Options Exchange S&P 500 Volatility Index (VIX) typically track implied volatility. Actual and implied volatility generally, but not always, move in tandem.

Figure 1.20. Implied Volatility Indices
(January 2000 = 100)
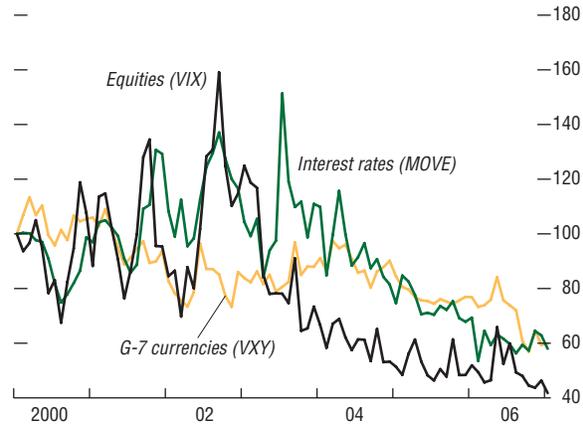
Sources: Bloomberg L.P.; and IMF staff estimates.
Note: VIX is the Chicago Board Options Exchange S&P 500 Volatility Index. MOVE is the Merrill Lynch Option Volatility Estimate Index. The JPMorgan VXY index measures volatility in a basket of G-7 currencies.

Figure 1.21. Volatility and the U.S. Business Cycle
(Index rebased to 100 at inception date)
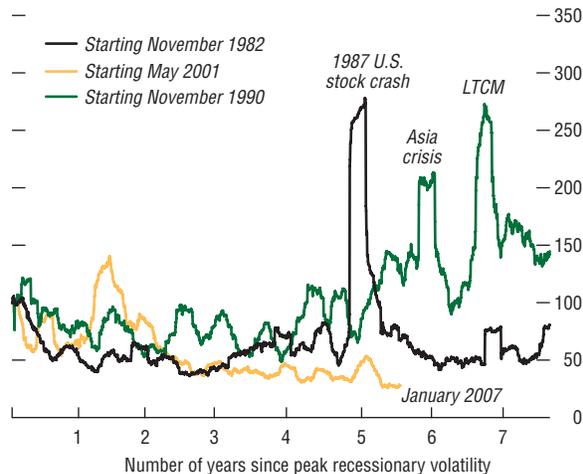
Sources: Goldman Sachs; Bloomberg L.P.; and IMF staff estimates.
Note: Historical volatilities on S&P 500 index; LTCM = Long-Term Capital Management.

Box 1.3. Zambia: A Case Study

The experience of Zambia between late 2005 and end-2006 provides a case study on the impact that foreign investor entry and subsequent exit can have on small local markets. Zambia had achieved the completion point under the Heavily Indebted Poor Countries Initiative in April 2005, and was poised to benefit from the G-8's post-Gleneagles Summit commitment to enhance poverty reduction resource flows to Africa. In addition, as a copper exporter, the dramatic rise in that metal's price—up 173 percent from end-2004 to its peak in May 2006—had strengthened prospects for Zambia's macroeconomic performance.

Against this favorable economic backdrop, foreign investor interest in local Zambian markets rose. High nominal interest rates (18 percent in September 2005) and prospects of gains from currency appreciation drew in foreign investors, despite very limited market liquidity and the undeveloped state of local markets.

Foreign inflows into local Zambian government securities markets increased from almost nothing to a sizable share of the domestic market. By the second quarter of 2006, nonresidents held 15 percent of the outstanding stock of bonds and 23 percent of the treasury bill market.[1]

The influx of foreign inflows accentuated the appreciation pressure on the Zambian currency. The kwacha rose by 44 percent from the second half of 2005 to the first quarter of 2006, significantly more than other commodity exporting countries. At the same time, inflows into local government securities brought with them a pro-

Note: The main author of this box is Mark Walsh.
[1]Foreign investors' indirect holdings, through products such as total return swaps, are likely to have been significantly higher as a share of the outstanding debt stock.

Zambia: Foreign Ownership of Outstanding Debt
(In billions of kwacha)
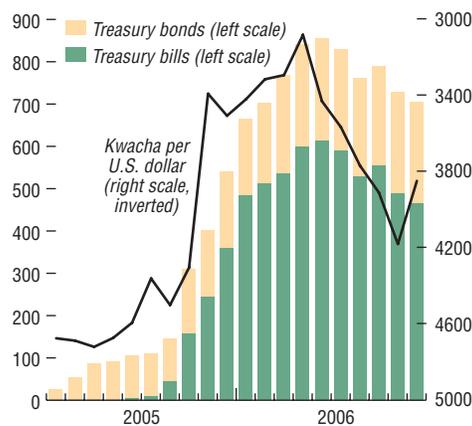
Sources: National authorities; and IMF staff estimates.

nounced drop in nominal yields, accompanied by a decline in inflation. The one-year yield fell to 7 percent by late May 2006, while inflation declined about 10 percentage points to 8.6 percent year-on-year.

However, amid growing political uncertainty ahead of the September 28, 2006 elections and a fall in copper prices, foreign investors retreated from local markets. This retreat added significantly to pressure on the local currency and interest rate markets. Between end-May and end-September, the kwacha depreciated by 16 percent against the dollar, compared with a decline in copper prices of 4 percent. Foreign investors' share of the outstanding stock of treasury bills declined from 24 to 19 percent during this period. By year-end, the one-year yield had moved back above 9 percent, reflecting, in part, the impact of foreign investors' exit from local markets.

from economies where nominal rates remain low, notably Japan and Switzerland. The resulting opportunity to borrow cheaply and invest in higher-return assets provides an incentive for

investors to engage in cross-border carry trades (Figure 1.22).

Carry trades have typically targeted high-yielding assets in both mature market

economies—the United States, Australia, New Zealand, and the euro area—as well as EM economies, including Brazil, Hungary, South Africa, Turkey, and some Asian economies. While there has been a secular interest by Japanese retail investors in overseas investment given low domestic returns, purchases by Japanese retail investors of bonds denominated in New Zealand dollars (part of the so-called "uridashi" bonds) have increased in recent years to around $2 billion per month, spurred by an interest spread of around 700 basis points. One measure of the shift toward carry trade strategies is provided by Figure 1.23, which shows that institutional investors (so-called "real money") have positioned themselves strongly in favor of carry trades over the past six months—funding in Japanese yen and Swiss francs and investing in high-yielding assets in other currencies—to an extreme percentile position (assessed over 1994–2007).

The scale of yen-funded carry trades can be glimpsed by the level of "other" investment outflows from Japan, which include lending and derivatives flows from Japanese banks to nonresidents (Figure 1.24). This component of the nation's balance of payments has become the major source of outflows in 2006, amounting to about $170 billion. The last time there were such bank and derivatives outflows was in 1997, in advance of the Asian financial crisis, the collapse of Long-Term Capital Management, and a sudden appreciation of the yen. While still a small proportion of foreign exchange trading, further evidence of the rising popularity of carry trades can be found in the speculative positions of traders of currency futures on the Chicago Mercantile Exchange, where short yen and Swiss franc positions reached record levels in January.[36]

A second cyclical factor currently depressing volatility is the low *degree of leverage* among nonfinancial corporations. Low corporate leverage has the effect of dampening credit market volatility, as debt service costs are small and the threat

[36]See the September 2006 GFSR (IMF, 2006b) for an extensive discussion of the yen carry trade.

Figure 1.22. Foreign Exchange Carry Trade Returns and Volatility
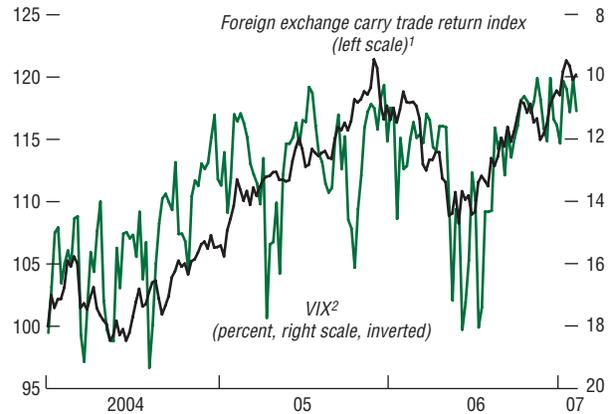
Sources: Deutsche Bank; Bloomberg L.P.; and IMF staff estimates.
[1]The Deutsche Bank G-10 Currency Future Harvest Index. Rebased, January 1, 2004 = 100.
[2]VIX is the Chicago Board Options Exchange S&P 500 Volatility Index.

Figure 1.23. Institutional Currency Positioning
(Percentile rank)
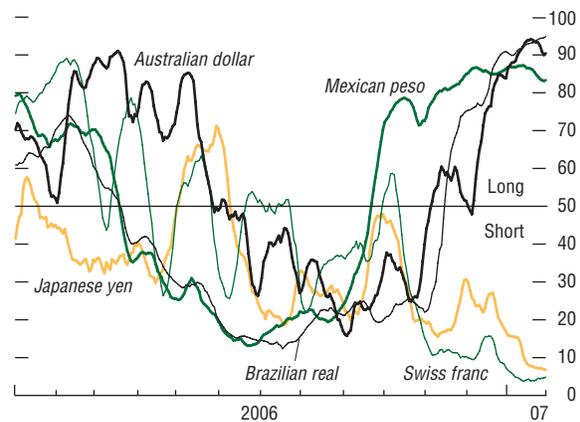
Source: State Street Global Markets.

Figure 1.24. Japanese International Capital Flows
(In trillions of yen)
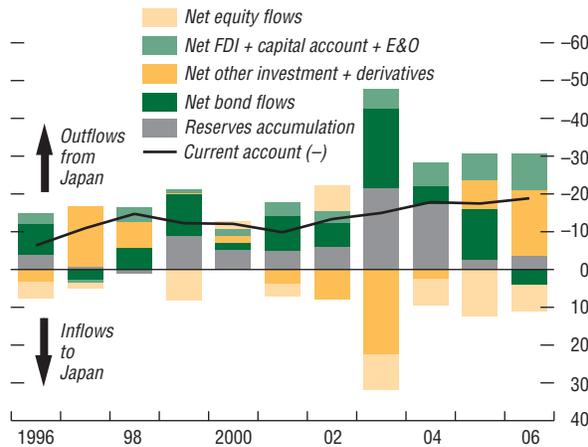
Sources: Bank of Japan; and IMF staff estimates.
Note: 2006 data for 12-month period ending September 2006. FDI = foreign direct investment; E&O = errors and omissions.

Figure 1.25. Bank Willingness to Lend and Corporate Default Rates
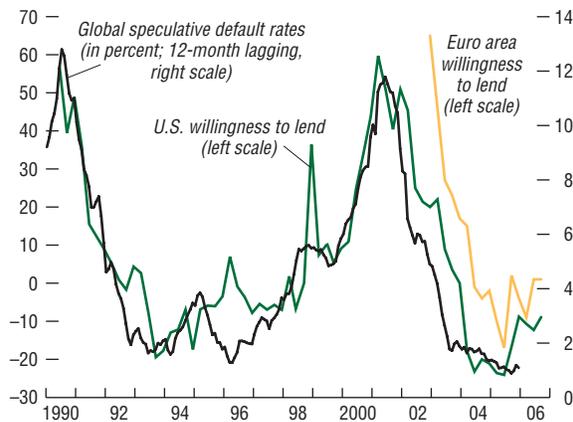
Sources: Board of Governors of the Federal Reserve System; European Central Bank; and Standard & Poor's.

of default is remote. Default rates have so far remained low, but easy financing conditions may have, in part, suppressed default rates, encouraging some to take on added exposures in credit risk. Pressure is building from private equity buyouts and the leverage cycle is beginning to turn. Figure 1.25 shows that U.S. high-yield defaults tend to rise a year or so after the willingness to lend has turned back up as it did in 2005.

Third, strong *risk appetite* may also work to perpetuate low volatility. Hedge funds and other investors have been actively engaged in "selling volatility," which is the practice of selling options, collecting the option premium in the (so far largely justified) expectation that market moves will not be large enough for the option to finish in the money. Such strategies are also apparent in the willingness of investors to sell protection against default through credit default swaps (most notably in leveraged form through instruments such as constant proportion debt obligations) (see Annex 1.3). A further manifestation of increased risk appetite leading to low volatility is illustrated by the behavior of the price of options that are deeply out of the money, and used to insure against extreme outcomes. This suggests that "tail risk" is relatively cheap, at least with respect to the historical average difference between the implied volatilities of deeply-out-of-the-money and at-the-money options (Figure 1.26).[37] Examples abound from other asset classes: what they have in common is the apparent confidence of investors that extreme events will not occur. High risk appetite is apparent in the increased demand for leveraged loans and an acceleration in the search for yield in riskier assets, including local-currency-

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[37]Tail risks are the risks of moves in market prices that are several standard deviations from the average of those prices. Conventionally, financial markets are well aware that large price moves are not uncommon, as herding behavior and options trading can cause prices to tumble one way or another. The cost of insuring against these tail events is therefore generally high relative to the cost of insuring against small moves. This is shown by the typical volatility "smile" that shows higher volatilities (implying higher costs of insurance) for large price moves than for small moves.

denominated EM instruments and the rise in exposure to market risk or leverage by hedge funds (Box 1.4).

Risks

The cyclical factors contributing to the low volatility environment—abundant low-cost liquidity, low leverage in the corporate sector, and high risk appetite—may reverse. Overall liquidity may be expected to diminish with the eventual removal of monetary accommodation by the Bank of Japan and the European Central Bank. The leverage cycle has turned, and with it, default rates should rise. High risk appetite may reflect an underestimate of economic risks and an overestimate of liquidity in higher-risk and more leveraged investments. Financial markets may well adjust smoothly in the transition from the current state of low volatility to one in which volatility returns to historically more normal levels.

However, there is a risk that the adjustment will be less smooth. A volatility shock—perhaps caused by a downward shift in growth expectations or by renewed inflation pressures—could precipitate sharp portfolio adjustments and a disorderly unwinding of positions. The consequences of such a shock would be amplified by the rise in leveraged investment positions, the increased use of complex derivative instruments that remain untested in more volatile market conditions, rising portfolio exposure to illiquid instruments, and the prevalence of crowded trades.

Furthermore, rising correlations in returns across asset classes have meant that the volatility of the overall market basket has not declined as much as the volatility of its component parts—indeed, by some measures it has increased. Insofar as markets have become overly complacent, they may not yet have priced in this covariance risk, which could lead to the further amplification of any volatility shock (Figure 1.27). For instance, the recent market sell-off in late February 2007 illustrated how seemingly minor, unrelated developments

Figure 1.26. Relative Price of "Tail Risk" in Foreign Exchange Markets
(Excess implied volatility of deep out-of-the-money options; in percent)
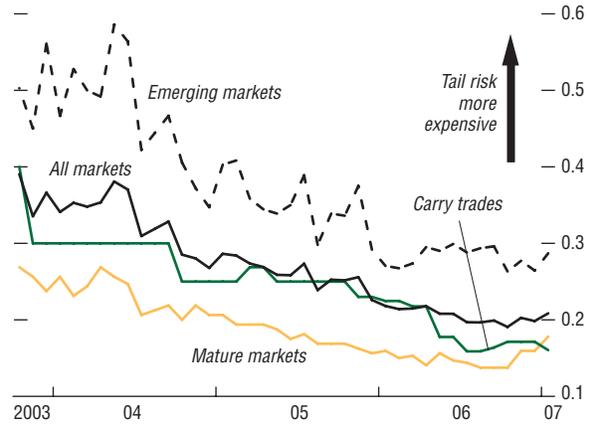
Source: Bloomberg L.P.
Note: Data represent the average excess implied volatility of a deep out-of-the-money options contract (delta = 0.25) relative to an at-the-money options contract (delta = 0.5).

Figure 1.27. Correlation of Asset Classes with S&P 500 and Broad Market Volatility
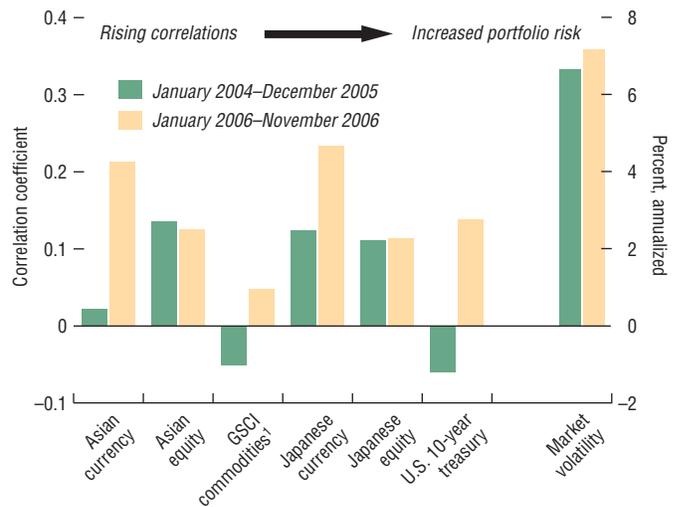
Sources: Bloomberg L.P.; and IMF staff estimates.
Note: Calculations based on daily returns. Market volatility is calculated as an average of the annualized standard deviation of returns for each of the listed asset classes and the S&P 500. Correlations are plotted on the left scale, market volatility plotted on right scale.
[1]GSCI = Goldman Sachs Commodity Index.

Box 1.4. Have Hedge Fund Risks Also Risen?

Hedge funds now account for a third of trading volume and, therefore, the liquidity provided in several markets. Their role as liquidity provider is enhanced by their ability to bear more risk than a typical retail investment vehicle and other institutional investors. They do this in a number of ways, including by investing in riskier segments of asset markets and through the use of leverage. They typically use leverage to amplify the returns from their trading strategies. The smooth functioning and stability of financial markets may depend on how well hedge funds manage the use of their leverage. Hedge funds can take on leverage in two ways: *direct* leverage, when a hedge fund borrows from its prime broker; and *financial* leverage, when a hedge fund buys a derivative which has the leverage embedded in it. Leverage increases the chances that hedge funds will be forced to sell assets into a falling market, potentially accentuating market volatility. Unfortunately, hedge fund leverage is notoriously difficult to measure, so we adopt here a measure that gauges the sensitivity of hedge fund returns to market prices. This provides an indirect gauge of both types of leverage as well as the relative riskiness inherent in their portfolio choices into a single indicator.

To determine which asset prices have the biggest impact on hedge funds, monthly hedge fund returns were regressed over a range of asset classes over a 12-year span. On the view that hedge funds could be characterized as "leveraged mutual funds," changes in an index representing all hedge fund returns were regressed on returns from major stock, bond, and commodity indices. To give an idea of how hedge fund sensitivities might be changing, perhaps due to changes in leverage, the coefficients on asset returns were summed for each of a sequence of "rolling" regressions on overlapping 36-month windows.[1] This indicator suggests that

Measure of Market Sensitivity of Hedge Fund Returns
(Sum of betas)

Source: IMF staff estimates.

the sensitivity to these factors has risen steadily over the last two years, moving back to levels last seen during the equity market bubble in 2000.[2] However, it is still below levels seen in previous financial market crises. Difficulties at several high-profile hedge funds in late 2006 do not seem to have triggered a reduction in these sensitivities, which actually picked up sharply at the end of last year as equities rallied.

Note: The main authors of this box are Christopher Morris and Christopher Walker.

[1]The indices included in the regression are the S&P 500, the Eurofirst 300, the Nikkei 225, the JPMorgan EMBIG Index, the Goldman Sachs Commodity Index, and the Lehman Aggregate Index of mature market bonds. Because the regressions leave out assets (for example, foreign exchange or real estate) that are important to some hedge fund returns, the sum of the coefficients in this exercise should be expected to be less than the actual amount of leverage. Accordingly, the direction of change in the indicator may be more significant than the level.

[2]The measured sensitivity will represent leverage under the joint assumptions that the average share of invested portfolios devoted to the assets measured here stays roughly unchanged, and that hedge funds invest, on average, the same proportion in the measured indices rather than other assets not included in the regression. To the extent that hedge funds invest, on average, in "high-beta" assets within the included asset classes, the measure may overstate direct leverage.

Several factors may help explain the rise in this indicator. First, other studies have concluded that hedge funds tend to increase leverage when markets have been stable for a while, only taking it off when markets become volatile again. The long period of low market volatility across a range of asset classes in recent years may therefore have led hedge funds to add to leverage, and thus their sensitivity to asset returns has increased. Second, and relatedly, inflows to hedge funds have fallen over recent months, even as the number of hedge funds has risen. Some are therefore finding it increasingly difficult to find profitable trading opportunities and are increasing the leverage or the riskiness of their portfolios in an attempt to deliver the excess returns investors are seeking. Third, hedge fund returns may simply have become more sensitive to the asset classes included in these regressions. This may be because hedge funds are selling options as a source of premium income. In any event, the increase in hedge fund sensitivities may be relevant for financial stability if an event induces abrupt or exaggerated reversal or alteration in their portfolio choices.

across markets quickly led to the unwinding of risk positions across a wide range of financial assets (see Box 1.5).

A volatility shock could lead to the rapid unwinding of carry trades. To the extent that such unwinding involves a reduction in yen funding, a sharp yen appreciation would be possible, particularly in light of global imbalances. While in some cases a relief from appreciation pressures would be welcome in target-currency countries, rapidly depreciating exchange rates could fan inflation, or force higher interest rates that could destabilize financial markets.

The impact of such a volatility shock would have a significant effect on emerging markets. Figure 1.28 shows the impact on EM sovereign spreads of changes in equity implied volatility, a proxy for risk appetite.[38] A reversion in volatility to two standard deviations above the average since 1990 would see spreads widen 225 basis points (i.e., more than doubling from their end-2006 levels), according to the model.[39] Such a move would be equivalent to a two-notch ratings downgrade for every sovereign included in the Emerging Markets Bond Index Global (EMBIG) underlying the model.

A disruptive unwinding of yen carry trades occurred in October 1998. From October 6–9, the U.S. dollar fell by almost 15 percent against the yen because of a large-scale unwinding of the yen carry trade, amplified by complex options and various hedging strategies. While the effects on the real sector were minimal, the unwinding of short yen positions by hedge funds and large financial institutions led to a rapid drying up of liquidity in key markets. This resulted in highly disruptive market conditions for a short period.

However, the current situation seems less worrisome than the run-up to the 1998 episode for a number of reasons. First, a gradual narrowing of interest rate differentials is the central scenario for monetary policy in the relevant countries. Second, the long side of the carry trade appears to be spread across a number of currencies, while in 1998 it was narrowly concentrated on the U.S. dollar. Third, global macro hedge funds are now less dominant market players, and hedge funds in general have shown flexibility in unwinding their positions, thanks to better risk management techniques. Fourth, the investor base in Japan

[38]This presentation uses an updated version of the model presented in the April 2006 GFSR (IMF, 2006a, Box 1.6).

[39]Such rises in volatility are by no means rare: the VIX, the measure of equity market volatility used here, and a proxy for risk appetite, has breached this level 10 times since 1997.

is more diversified, with retail investors add-ing stability to the financial landscape. Finally, financial markets are in general deeper than a decade ago and better able to absorb asset price volatility.

Policies to Mitigate Stability Risks

Global economic conditions have been sup-portive of a benign financial environment, but there are now emerging developments that have the potential to weaken financial stabil-ity. No single factor examined in this chapter constitutes an elevated risk by itself, but if the downside risks were to broaden or intensify, there could be knock-on effects elsewhere in the financial system. The challenge, therefore, is to further strengthen the financial system to ensure its resilience should current benign financial conditions change.

While the weakening U.S. housing market has had a limited effect on the overall financial system, the U.S. subprime segment is showing credit quality strains. So far, this has not affected financial stability overall, but because the com-plex market structures of mortgage-related secu-rities can disguise how risks are allocated, who holds them, and the degree to which they are hedged, financial supervisors need to identify the potential for spillovers. In this regard, ensur-ing that underwriting standards are maintained is critical to supporting market discipline and, in this regard, recently issued guidelines are welcome.

For policymakers in mature markets, the substantial growth in private equity buyouts will require continued scrutiny. Financial inter-mediaries active in these transactions need to understand the risks and be prepared for unlikely constellations of risks—supervisors can encourage them to do so. Specifically, banks that underwrite, provide bridge financing, or are involved in the syndication and distribution of leveraged loans must ensure they are manag-ing their risks appropriately. Regulators need to be mindful that the intense competition for deals could lead to a weakening of credit dis-

Figure 1.28. Volatility Shocks to Sovereign Spreads
(In basis points)
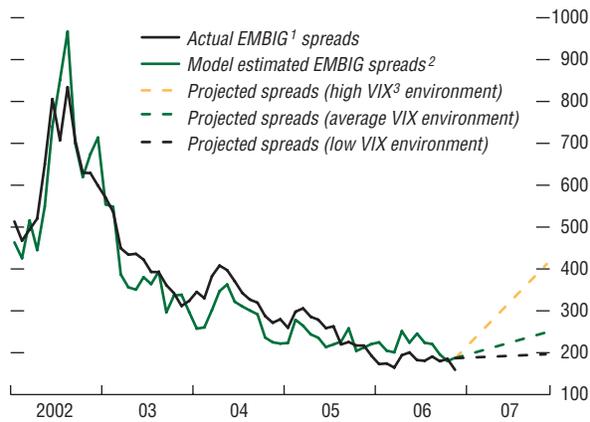
Sources: Bloomberg L.P.; JPMorgan Chase & Co.; The PRS Group; and IMF staff estimates.
[1]EMBIG = Emerging Markets Bond Index Global.
[2]Model excludes Argentina because of breaks in the data series related to debt restructuring. Owing to short data series, the model also excludes Indonesia and several smaller countries. The analysis thus includes 32 countries.
[3]VIX is the Chicago Board Options Exchange S&P 500 Volatility Index.

cipline and lending standards by some market participants.

While the risks of a disorderly unwinding of global imbalances have diminished somewhat, concerns are still present. The shift in composition of inflows to the United States to finance the current account deficit toward fixed-income securities suggests that bond inflows have become more responsive to alterations in interest rate differentials—and thus potentially more sensitive to swings in market sentiment. Policy actions should continue to focus on reducing vulnerabilities associated with global imbalances. Continued enhancement of their communications strategies would help monetary policymakers ensure an orderly market adjustment, including by minimizing risks of excessive buildup (and disorderly unwinding) of carry trade activity. In addition, regulators should warn retail investors of the risks in foreign currency or highly leveraged investments and ensure that investment firms selling such instruments provide adequate warnings.

Regarding EMs, capital inflows should help economic development, but they also have the potential to reverse swiftly. If the global economic environment becomes less benign, financing conditions are likely to become more difficult, in particular for those countries that rely heavily on portfolio inflows (IMF, 2006b, Chapter I). Ensuring that macroeconomic management is sound and stable so that capital inflows are put to effective long-term use will help stem the likelihood of a rapid withdrawal. And an investment environment conducive to the maintenance of confidence, the efficient use of capital, and the development of local financial markets will help countries reap the benefits of foreign capital. In this regard, policies to strengthen and deepen local capital markets are an important element of the medium-term strategy to improve the resilience of financial systems in the face of capital flows. As discussed in Chapter II, moderate participation by foreign investors can help improve liquidity and lengthen the maturities

that can be traded in local markets. However, if foreign participation swamps the local investor base, domestic currency asset prices can be driven more by global than by local factors, and regulatory and supervisory capacity may be insufficient to deal with the risks. Policymakers are therefore encouraged to develop an institutional investor base—pension funds, insurance companies, and mutual funds—to help develop the domestic market. As part of this, EM countries should support efforts to free up local institutions to make investment choices on their merits, rather than being subject to central direction or tax or regulatory distortions.

The systemic risks associated with market participants' increased risk-taking are best addressed through policies aimed at assuring that participants adequately understand and appreciate the risks they are taking, and that "innocent bystanders" are protected from the fallout that may result from abrupt reversals in behavior. In this regard, hedge funds have been under increased scrutiny lately—in part because of their rapid growth in recent years and their opacity. Hedge funds play an increasingly important role in capital markets—in transferring risks, providing liquidity, and fostering financial innovation (see Annex 1.4). However, by facilitating interlinkages among asset and geographic markets, they also raise the likelihood of spillovers.

Specifically, as regards hedge funds, there are several areas that deserve attention. Investors are, of course, responsible for monitoring and seeking to influence the behavior of the institutions in which they hold stakes, but with investor demand generally exceeding hedge fund capacity to take in new capital, such market discipline may be less reliable. Even though transparency for hedge fund investors and their bank and broker counterparties has improved since the failure of Long-Term Capital Management in 1998, it is recommended that investors and counterparties continue to seek more transparency. For the purposes of financial stability, indirect monitoring of hedge fund

Box 1.5. Causes and Implications of the February–March 2007 Market Correction

In late February through early March 2007, markets were hit by a bout of volatility that took prices of many risky assets back to their late-2006 levels. That volatility had subsided by mid-March. The broad widening of risk premia in equity and credit markets was associated with a flight to quality, with yields on risk-free assets falling across the major sovereign debt markets. Following a prolonged period of low volatility and rising valuations, these market moves were attributed to an unwinding of a number of positions that had grown extended. Market participants had become more sensitive to weaker economic data, prompting a reassessment of downside risks to growth. The unwinding of carry trades during this episode highlighted risks to emerging markets that are overly reliant on portfolio inflows. A reestablishment of risk premia should tighten financial conditions, result in greater credit discipline, and, if sustained, could help to support global financial stability.

Causes of the Sell-off

The correction reflected a reappraisal of market risks, triggered by both valuation and fundamental concerns. The long rally in several markets made overextended positions especially vulnerable to downside risks. Moreover, in order to sustain strong returns, investors had reportedly taken larger, more leveraged positions, exposing them to potentially more violent swings in asset prices. Although the sell-off began with an unwinding of long equity positions in China, the broad and global scope of the sell-off suggested the underlying causes lay elsewhere. The flight to safer investment havens was highlighted by the fall in the price of risky assets (especially equities and credit products) and the rise in mature sovereign debt prices.

Prior to the sell-off, the deterioration in the U.S. subprime mortgage market had already contributed to a widening of subprime mortgage spreads and related derivatives products. Through early 2007, market participants had generally believed the U.S. housing downturn

Note: The main authors of this box are Rebecca McCaughrin and Chris Morris.

Asset Class Returns, February–March 2007 Correction
(Percent change)
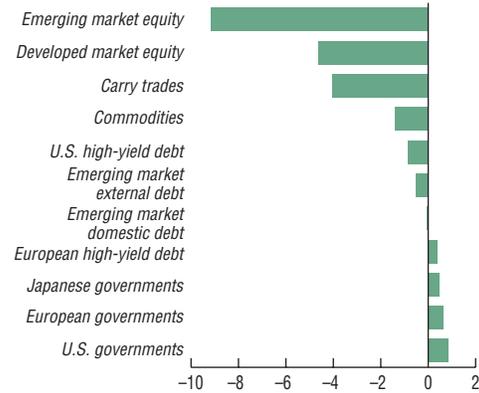
Sources: Bloomberg L.P.; Deutsche Bank; JPMorgan Chase & Co.; Merrill Lynch; and IMF staff estimates.

Spreads on Residential Prime, Subprime, and Commercial Mortgage-Backed Securities
(In basis points)
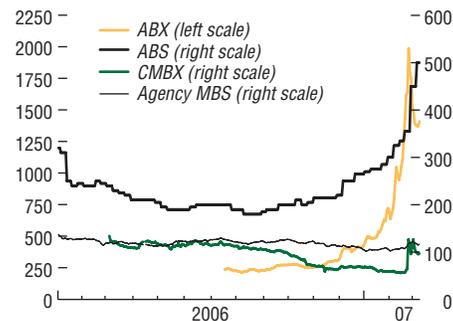
Sources: Bloomberg L.P.; and JPMorgan Chase & Co.
Note: ABX = credit default swaps on mortgage-related asset-backed securities; CMBX = synthetic index of commercial mortgage-backed securities; ABS = tranched securities collateralized by subprime mortgages; Agency MBS = mortgages securitized by government-sponsored enterprises.

would have a limited impact beyond the small subprime mortgage sector and the specialized firms involved in origination, servicing, and insuring subprime loans. Those beliefs were already starting to weaken in early January as

Cost of Insurance Against Default by Selected U.S. Financial Institutions
(In thousands of U.S. dollars per year for 5-year cover on $10 million of senior debt)

Merrill Lynch
Lehman Brothers
Goldman Sachs
CDX Investment grade[1]

Source: Bloomberg L.P.
[1]Index of investment-grade corporate credit default swaps.

Rates Implied by Eurodollar Futures
(In percent)

January 31, 2007[1]

February 26, 2007

March 9, 2007
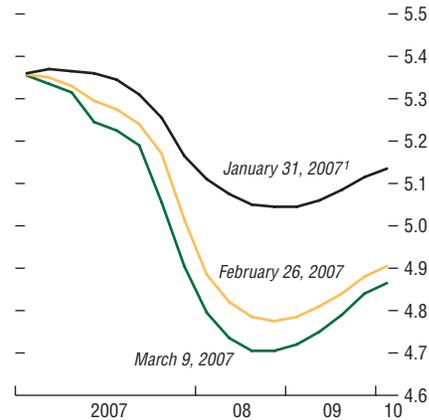
Source: Bloomberg L.P.
[1]January 31, 2007 was the date of the prior monetary policy meeting by the Federal Open Market Committee (FOMC).

credit default swaps written on subprime mortgages (as represented by the ABX index) rose to distressed levels. Spreads on the underlying subprime mortgages were relatively insulated from the widening through early February, but they too finally widened in late February, despite extremely light issuance. The underperformance of cash and synthetic subprime markets then spread to higher-rated mortgage products and tranches of collateralized debt obligations amid the broader market sell-off.

The cost of insurance against default by some of the United States' largest financial institutions rose as investors started to worry that they may have underestimated the impact of strains in the subprime market on their earnings. However, some commentators noted that, even after the widening, default spreads were still near historically low levels. They therefore argued that it did not signal a significant weakening in the financial soundness of these institutions. Interest rate swap spreads also widened, reflecting concerns about rising credit risks in the financial sector. Other asset

markets signaled a rise in broader credit risk premia, with high-yield cash spreads widening, while corporate credit default swap spreads widened due to strong protection buying.

Market participants generally believed that the base case scenario of a soft landing for the U.S. economy was still likely, but the correction brought downside risks into sharper focus. Ahead of the correction, market participants were growing increasingly concerned about potential downside risks, partly, but not exclusively, related to softness in the housing market. Data on the housing sector suggested that a bottom may not have been reached, with new home sales continuing to fall and inventories continuing to rise. Furthermore, data showed some signs of weakness in U.S. business investment.

Global monetary policy projections and key macro forecasts did not significantly change as a result of the turbulence. Eurodollar, euroyen, euribor, short sterling, and other interest rate futures markets showed only modestly greater expectations of additional easing following the correction.

Box 1.5 *(concluded)*

Which Markets Were Affected Most?

As discussed in detail in this chapter, the low volatility environment, rising risk appetite, and relaxed financing conditions had encouraged leveraged investment positions across a wide range of risk assets and strategies. Accordingly, **the markets that sold off the most were those that were most reliant on a continuation of this environment, and most susceptible to a rise in risk aversion.** In contrast to the correction in May–June 2006, which was mostly concentrated in emerging markets, the February–March 2007 risk reduction episode was more broadly based. More specifically, the most volatile moves relative to recent historical episodes were in the carry trades targeting higher-yielding currencies, implied volatility, mature sovereign debt markets, and both developed and emerging market equities. Corporate credit also saw significant movements.

The most extended carry trades were partially unwound, representing their worst performance since early 2006, with implied volatility experiencing moves greater than two standard deviations. The yen appreciated by 4 percent against the dollar, and higher-yielding currencies, especially in Brazil, Turkey, and South Africa, fell. An (unleveraged) investor funding a long rand money market position in yen would have lost an entire year's interest differential as a result of the currency move.

Implied volatility spiked across fixed-income, currency, and equity markets, reflecting the increase in realized volatility. Prior to this episode, many hedge funds were said to have played a part in pushing down volatility by selling options.

Prices in mature equity markets fell in response to perceived risks in the U.S. outlook. U.S., Japanese, and European equities fell in tandem as the increase in economic uncertainty was reflected in lower equity prices and the rise in equity volatility. Shares of financial companies declined on concerns over potential exposure to credit markets.

Carry Trade Currency Performance versus U.S. Dollar During the February–March 2007 Correction
(Percent change)
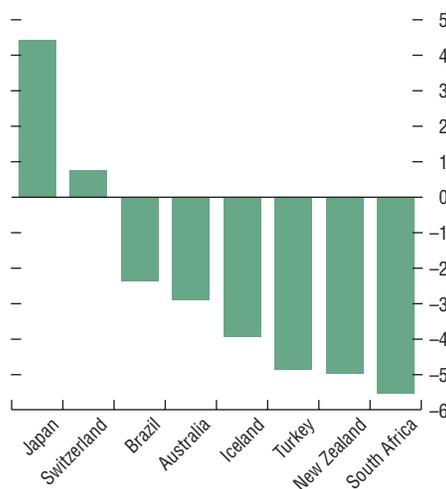
Equity prices in emerging markets fell, but by less than during the May–June 2006 period. The markets that had seen large rallies in the first few months of the year—China, Malaysia, the Philippines, Turkey—and where pricing had thus become rich, declined the most. In contrast to the May–June 2006 episode, emerging market sovereign debt spreads were less affected. There was little differentiation across regions and no fundamental driver other than an unwinding of risk.

Most notable about the February–March 2007 sell-off was the breadth and speed of the sell-off of riskier assets. The correlation of returns across asset classes was rising at the end of 2006, and the turbulence drove it higher still, thus reducing the benefits of diversification. However, even at the height of the February–March sell-off, volatility was still below the peak seen during the May–June 2006 correction. Two-way liquidity was maintained in all markets, and credit derivatives markets functioned smoothly.

Comparison of Emerging Market Corrections
(Percent change)

Legend:
- April/May 2004
- May/June 2006
- February/March 2007

X-axis categories:
- Equity (MSCI emerging market)
- External debt (EMBI Global)
- Local debt (GBI emerging market)
- Currency
- S&P 500
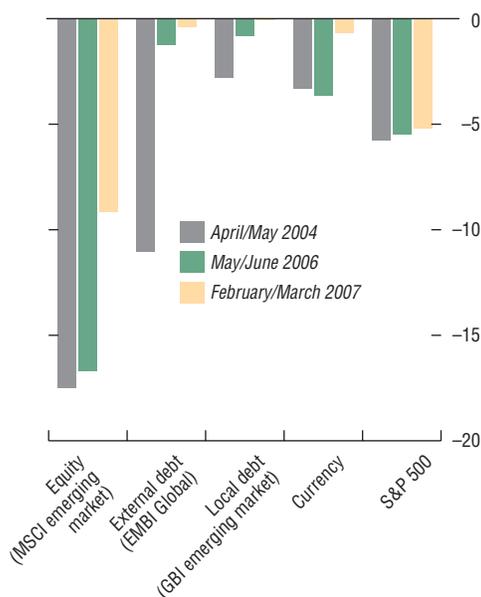
Sources: Bloomberg L.P.; JPMorgan Chase & Co.; Morgan Stanley Capital International; and IMF staff estimates.

Emerging Market Equity Rally and Correction
(Percent change)

Y-axis: Equity corrections (2/27/2007–3/6/2007)
X-axis: Equity rally (1/1/2007–2/26/2007)

Data points: Venezuela, Colombia, Thailand, Chile, Indonesia, Russia, Korea, Peru, Hungary, Mexico, China, India, Brazil, Turkey, Poland, South Africa, Malaysia, Argentina, Philippines

Sources: Bloomberg L.P.; and IMF staff estimates.

Implications

Despite recent market corrections, global financial stability continues to be underpinned by the favorable economic baseline scenario.
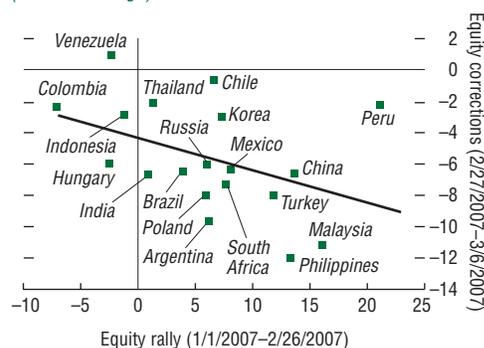
However, financial market and credit risk have shifted to the downside, and warrant attention by market participants and regulators.

The unwinding of carry trades highlighted risks to emerging markets that are overly reliant on portfolio inflows. Some emerging market countries with large current account deficits and external vulnerabilities have relied on foreign investor inflows into local bond markets, attracted by higher yields, but the correction demonstrated that such flows can dwindle or reverse if financial volatility becomes elevated.

activity through enhanced dialogue with supervisors and oversight of the regulated banks and brokers that service hedge funds will likely be the most effective and practical approach, and one that does not limit the hedge funds' potential to contribute to financial stability. As with standard practices in other financial industries, efforts by the private sector and supervisors to consider and possibly develop a code of best practices for the hedge fund industry is to be welcomed. Finally, monitoring developments in the global hedge fund industry from an inter-

national and multilateral perspective should be increasingly useful as a complement to domestic efforts.

Annex 1.1. Implementing the Global Financial Stability Map

Note: The main author of this annex is Brian Bell.

This annex outlines the choice of indicators—and the particular advantages and disadvantages of each measure—for each of the broad

Figure 1.29. G-3 Real Short-Term Interest Rates
(GDP-weighted average; in percent)

Sources: Bloomberg L.P.; and IMF staff estimates.

Figure 1.30. G-3 Excess Household and Corporate Liquidity
(In percentage points)
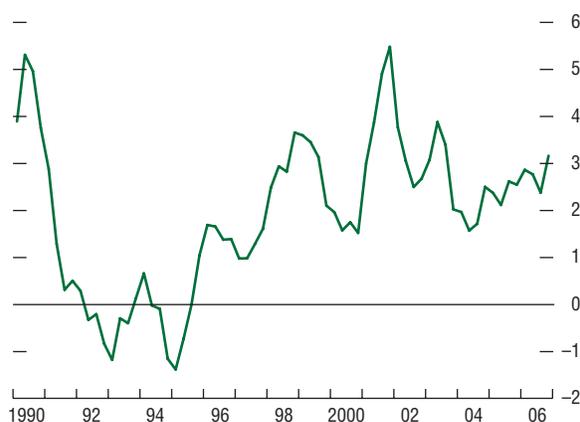
Sources: Organization for Economic Cooperation and Development; Bloomberg L.P.; and IMF staff estimates.

risks and conditions on the global financial stability map (Figure 1.1). The map is supplemented by market intelligence and judgment where available indicators cannot be adequately represented.

To begin constructing the stability map, we determine the percentile rank of the current level of each indicator relative to its history to guide our assessment of current conditions, relative to both the September 2006 GFSR and over a longer horizon. Where possible, we have therefore favored indicators with a reasonable time series history. However, the final choice of positioning on the map is not mechanical and represents the best judgment of IMF staff. The stability map is a work in progress and will be developed further in future GFSRs. As the concepts underlying the risks and conditions are refined, more effective indicators could replace some of those discussed below. Table 1.3 shows how each indicator has changed since the last GFSR as well as our overall assessment of the movement in each risk and condition.

Monetary and Financial Conditions

Measures the availability and cost of funding linked to global monetary and financial conditions.

To capture movements in general monetary conditions in mature markets, we begin by examining the cost of central bank liquidity, measured as the average level of real short rates across the G-3 (Figure 1.29). We then take a broad measure of excess liquidity, defined as the difference between broad money growth and estimates for money demand (Figure 1.30). Realizing that the channels through which monetary policy is transmitted to financial markets are complex, some researchers have found that including capital market measures more fully captures the effect of financial prices and wealth on the economy. We therefore also use a financial conditions index that incorporates movements in exchange rates, interest rates, credit spreads, and asset market returns

Table 1.3. Changes in Risks and Conditions Since the September 2006 *Global Financial Stability Report*

Conditions and Risks	Change since September 2006 GFSR
Monetary and Financial Conditions	↔
• G-3 average real short rate	↓
• Adjusted broad monetary growth	↑
• Financial conditions index	↑
• Growth in official reserves	↔
Risk Appetite	↑↑
• Merrill Lynch investor survey	↑
• State Street investor confidence	↑
• Flows into EM bond and equity funds	↑
• Goldman Sachs risk aversion index	↑
Macroeconomic Risks	↓
• *World Economic Outlook* global growth risks	↓
• G-3 confidence indices	↓
• Economic surprise index	↑
Emerging Market Risks	↓
• Fundamental EMBIG spread	↔
• Ratings agency upgrades/downgrades	↓
• Volatility of median inflation	↑
• Implied volatility of EM foreign exchange	↓
Credit Risks	↑
• Global high-yield index spread	↓
• Credit quality composition of high-yield index	↑
• Speculative default rate forecast	↔
• LCFI portfolio default probability	↔
Market Risks	↑
• Value-at-risk of investment banks	↔
• Hedge fund market sensitivity measure	↑
• Speculative positions in futures markets	↑
• Implied volatility across asset classes	↓

Note: Changes are defined for each risk/condition such that ↑ signifies more risk or easier conditions and ↓ signifies the converse. ↔ indicates no appreciable change.

Figure 1.31. Goldman Sachs Global Financial Conditions Index
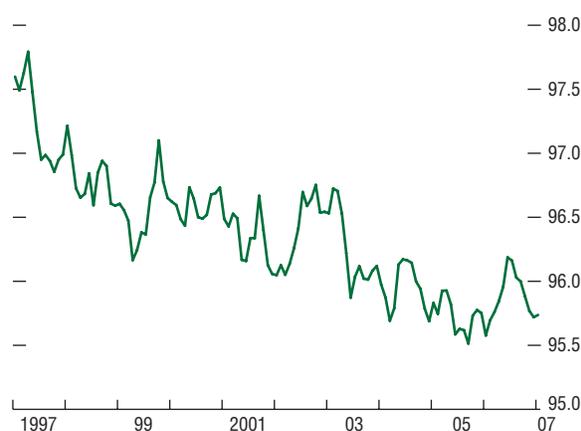
Sources: Goldman Sachs; and IMF staff estimates.

(Figure 1.31).[40] Rapid increases in official reserves held by the central bank create central bank liquidity in the domestic currency and in global markets. In recent years, the investment of a large share of these reserves into U.S. treasuries and agencies has contributed to the low yields in global fixed-income markets. To

[40]Several investment banks produce broad financial condition indexes. This annex reports on one produced by Goldman Sachs. The benefits of including broad measures of financial conditions are discussed in English, Tsatsaronis, and Zoli (2005). For more discussion on gauging liquidity conditions, see the April 2005 GFSR (IMF, 2005, Box 2.1).

Figure 1.32. Custodial Reserve Holdings at the Federal Reserve Bank of New York
(In percent; 12-month growth)
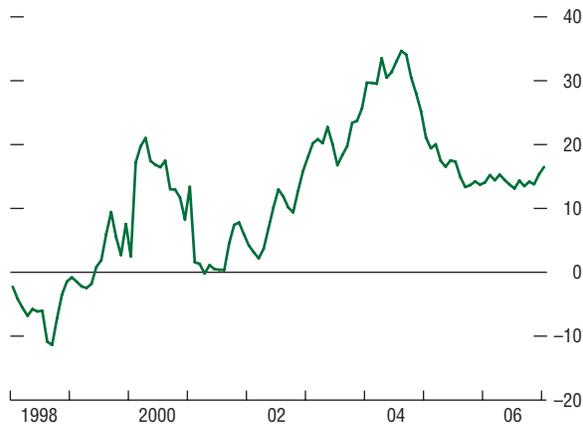
Sources: Bloomberg L.P.; and IMF staff estimates.

Figure 1.33. Merrill Lynch Fund Manager Survey Question on Risk Appetite
(In percent)
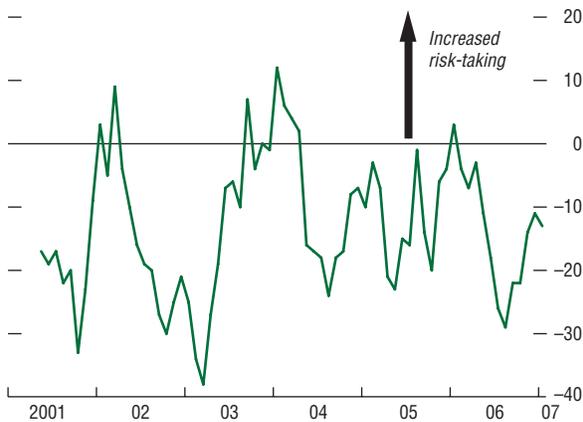
Source: Merrill Lynch.
Note: Value indicates the net percent of surveyed investors reporting risk-taking in excess of benchmark level.

measure this, we look at the growth of official international reserves held at the U.S. Federal Reserve System (Figure 1.32).

Monetary and financial conditions remain broadly positive, particularly relative to historical experience. The growth in broad money and official reserves has remained robust, and financial conditions continue to ease as a result of rising equity markets and the continued narrowing of credit spreads. Indeed, the financial conditions index remains close to the easiest it has been in the last 10 years. Offsetting this to some extent, real short rates have risen as a result of both increased expectations of policy tightening and lower inflation outcomes, though they remain moderate compared to the longer run. Overall, monetary and financial conditions remain favorable and at broadly the same level as at the time of the September 2006 GFSR.

Risk Appetite

Measures the willingness of investors to take on additional risk by increasing exposure to riskier asset classes, and the consequent potential for increased losses.

This measure looks at the extent to which investors are actively taking on more risk. A direct approach to this exploits survey data that explicitly seek to determine the risk-taking behavior of major institutional investors. The Merrill Lynch Investor Survey asks more than 300 fund managers what level of risk they are currently taking relative to their benchmark (Figure 1.33). We then track the net percentage of investors reporting higher-than-benchmark risk-taking. An alternative approach is to examine institutional holdings and flows into risky assets, on the basis that an increase in such positions signals an increased willingness of institutional investors, relative to individual domestic investors, to take on risk. The State Street Investor Confidence Index uses changes in investor holdings of equities relative to other, safer, assets to measure risk appetite, covering portfolios with around 15 percent of the world's

tradable assets (Figure 1.34).[41] In addition, we take account of flows into EM equity and bond funds, as these represent another risky asset class (Figure 1.35). Risk appetite may also be inferred indirectly by examining price or return data. As an example of this approach, the Goldman Sachs Risk Aversion Index measures investors' willingness to invest in risky assets as opposed to risk-free securities, building on the premises of the capital asset pricing model (Figure 1.36). By comparing returns between treasury bills and equities, the model allows the level of risk aversion to move over time. Taken together, these measures cover various aspects of risk-taking and provide a broad indicator of risk appetite.

The level of risk appetite has increased in recent months, as investors have become more confident that global growth will remain strong through 2007 and the U.S. economy will experience a soft landing. Investors report increasing risk-taking relative to benchmarks, and flows into riskier assets have been rising. As discussed in this chapter, investors are increasingly moving up the risk curve reflected in rising capital flows into local and corporate EMs and greater interest in more exotic markets. However, most of the measures we have looked at remain comfortably below the extremes of risk appetite observed at previous points. This suggests that, while risk appetite is rising, it is not yet at levels that cause significant concern for financial stability.

Macroeconomic Risks

Measures the risk of macroeconomic shocks with the potential to trigger a sharp market correction, given existing conditions in capital markets or a stress on financial institutions.

The principal assessment of macroeconomic risks is based on the analysis contained in the April 2007 *World Economic Outlook* and is consistent with the overall conclusion reached in

[41]See Froot and O'Connell (2003) for a discussion of the benefits of using data on portfolio holdings to capture risk appetite.

Figure 1.34. State Street Investor Confidence Index
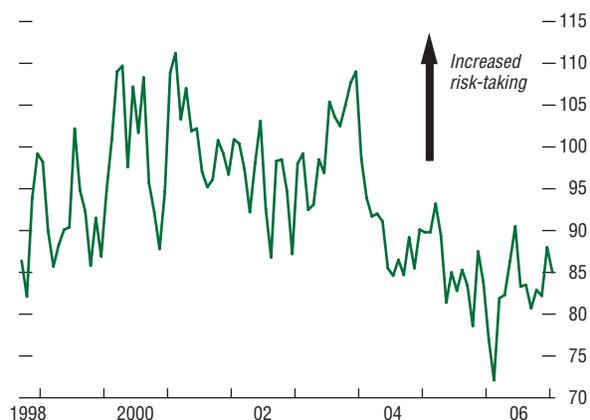
Source: State Street Global Markets.

Figure 1.35. Total Inflows into Emerging Market Bond and Equity Funds
(In percent of assets under management; 13-week moving average)
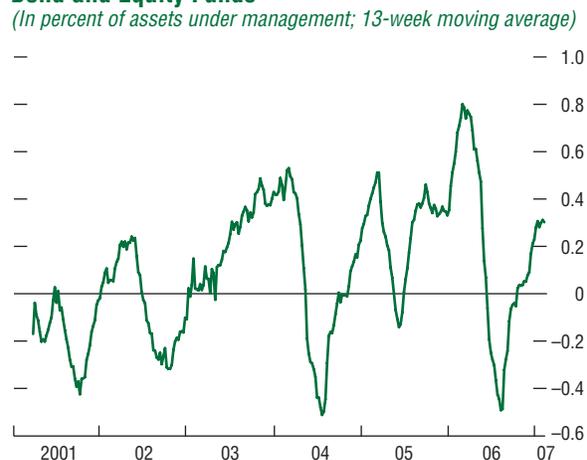
Sources: Emerging Portfolio Fund Research, Inc.; and IMF staff estimates.

Figure 1.36. Goldman Sachs Risk Aversion Index

Source: Goldman Sachs.

Figure 1.37. G-3 Average Economic Confidence Indicator
(Index)

Sources: Bloomberg L.P.; and IMF staff estimates.

that report on the outlook and risks for global growth (IMF, 2007). We complement that analysis by examining measures that focus on movements in confidence regarding the overall economic outlook. First, we look at the GDP-weighted sum of confidence indices across the major mature markets to determine whether businesses and consumers are optimistic or pessimistic about the economic outlook (Figure 1.37). Second, we examine an index of economic activity surprises that shows whether data releases are consistently surprising financial markets on the upside or downside (Figure 1.38). The aim is to capture the extent to which informed participants are likely to have to revise their outlook for economic growth in light of realized outcomes.

Macroeconomic risks appear to have declined since the September 2006 GFSR. The *World Economic Outlook* forecasts healthy global growth for 2007 and argues that, while risks to growth are still tilted modestly to the downside, these risks have declined since the last assessment. This is consistent with the indicators outlined above, which show an increased level of confidence in the macroeconomic outlook and expectations of robust global growth through 2007. Risks remain, however, including the weakness of the U.S. housing market and a disorderly adjustment of large global imbalances.

Emerging Market Risks

Measures risks associated with underlying fundamentals in EMs and their vulnerabilities to external risks.

The risks measured here are conceptually separate from, though closely linked to, macroeconomic risks, since they focus only on EMs, as opposed to the global environment. Using the model of EM sovereign spreads presented in previous GFSRs, we can identify the movement in EMBIG spreads accounted for by changes in the fundamentals of EM countries as opposed to the spread changes resulting from external factors (Figure 1.39). These fundamental factors account for changes in economic, political,

and financial risks within the country. This is then complemented by examining the trend in sovereign rating actions of S&P and Moody's (Figure 1.40). The measure attempts to capture improvements in both the macroeconomic environment facing such economies and in progress in reducing vulnerabilities arising from external financing needs. We also want to measure fundamental conditions in EMs that are separate from those related to sovereign debt, particularly given the reduced need for such financing across many EMs. Consequently we examine the volatility of inflation rates across EMs (Figure 1.41). To the extent that monetary policy has become more predictable and dedicated to controlling inflation, we might expect a decline in this measure. Finally, we use the recently constructed JPMorgan EM currency volatility index for a market-price-based perspective on risk across emerging markets (Figure 1.42).

Emerging market risks remain low by historical standards and have probably declined slightly since the September 2006 GFSR. Spreads on sovereign debt have declined to record lows as fundamentals have improved strongly across EMs, and ratings actions continue to be very favorable in spite of some recent high-profile downgrades. Having said this, there has been some increase in inflation volatility across a number of EMs, admittedly from low levels, that may challenge the commitment of policymakers to price stability, and there remain concerns over reform fatigue in a number of countries. Implied volatility on EM assets is also low, suggesting that market participants are not unduly concerned over EM risks. While there are significant risks in some countries, the market appears confident that such risks will not spread across the wider EM universe.

Credit Risks

Measures credit exposures creating the potential for defaults that could produce losses in systemically important financial institutions.

Spreads on a global high-yield index provide a market-price-based measure of investors' assess-

Figure 1.38. Dresdner Kleinwort Global Economic Activity Surprise Index
(On a rolling 6-month cumulative basis)
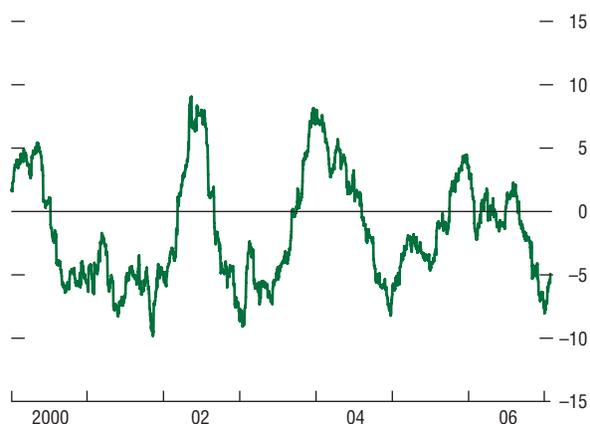
Source: Dresdner Kleinwort.
Note: Net number of positive less negative data surprises.

Figure 1.39. EMBIG Spreads: Actual and Fundamental Model Estimates
(In basis points)
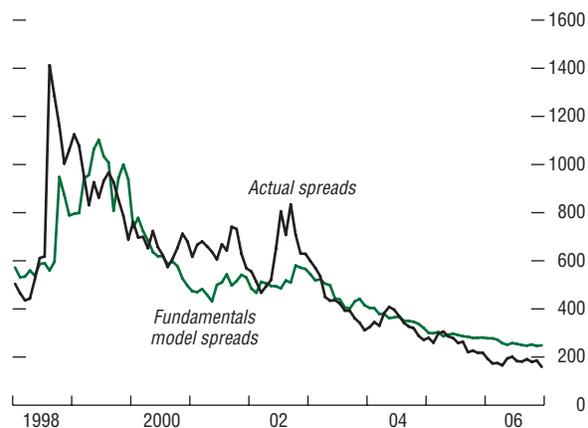
Sources: Bloomberg L.P.; JPMorgan Chase & Co.; The PRS Group; and IMF staff estimates.
Note: EMBIG = Emerging Market Bond Index Global. The model excludes Argentina because of breaks in the data series related to debt restructuring. Owing to short data series, the model also excludes Indonesia and several smaller countries. The analysis thus includes 32 countries.

**Figure 1.40. Emerging Market Credit Quality:
Net Credit Ratings Changes**
(12-month rolling sum of net ratings upgrades less downgrades)
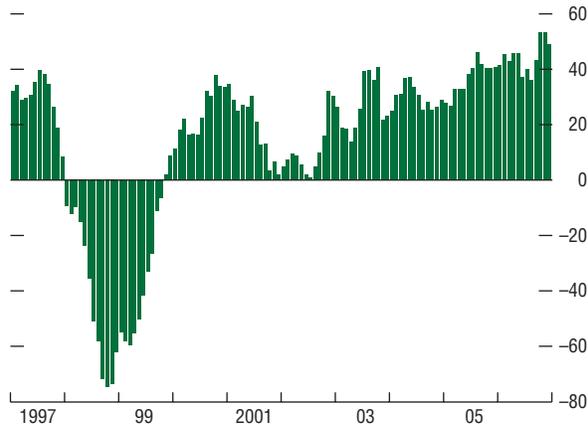
Sources: JPMorgan Chase & Co.; Standard & Poor's; Moody's; and IMF staff estimates.
Note: Data compiled as net sovereign credit actions of upgrades (+1 for each notch), downgrades (–1 for each notch), changes in outlooks (+/– 0.25), and reviews and creditwatches (+/– 0.5).

**Figure 1.41. Median Volatility of Inflation Across
Emerging Market Countries**
(In percent)
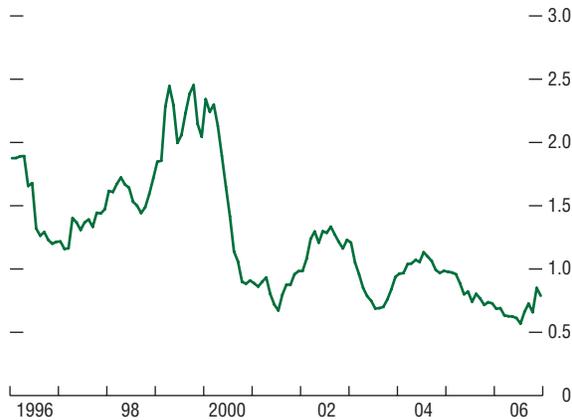
Sources: Bloomberg L.P.; and IMF staff estimates.
Note: Average of 12-month rolling standard deviations of consumer price changes in 25 emerging markets.

**Figure 1.42. JPMorgan Emerging Market Foreign
Exchange Implied Volatility Index**
(In percent)

Sources: JPMorgan Chase & Co.; and Bloomberg L.P.

**Figure 1.43. Merrill Lynch Global High-Yield Index
Spread**
(In basis points)
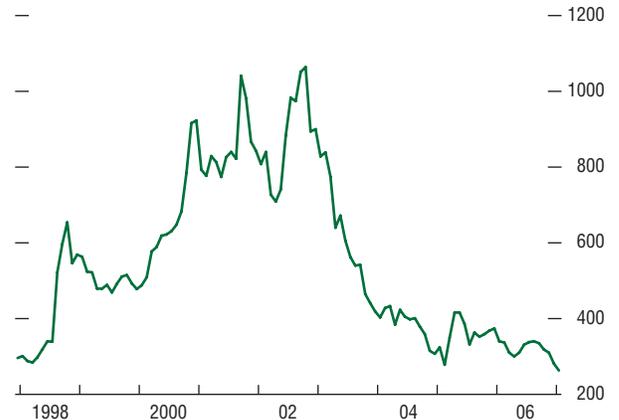
Sources: Merrill Lynch; and Bloomberg L.P.

ments of corporate credit risk (Figure 1.43). We recognize, however, that such an assessment forms only part of the pricing of such assets, and that prices can deviate from fundamental valuations over extended periods of time. Consequently, we also focus on more direct measures of credit quality. To do this, we examine the credit-quality composition of the high-yield index to identify whether it is increasingly made up of higher- or lower-quality issues (Figure 1.44). To be precise, we report the percentage of the index comprised of CCC or lower rated issues. This captures two distinct effects: first, a change in the ratings of corporate issues already in the index; and second, differences in the quality of new issues that are entering the index compared with the current constituents. Both are important in measuring the overall level of credit quality. We also examine forecasts of the global speculative default rate produced by Moody's (Figure 1.45). While forecast default rates depend on the robustness of the underlying econometric model, they at least conceptually present a forward-looking measure of defaults as opposed to the traditional trailing realized default rates. Finally, we use the credit risk indicator for large complex financial institutions (LCFIs) discussed in Annex 1.2 to highlight market perceptions of systemic default risk in the financial sector, given our remit of focusing on financial stability (Figure 1.46).

Credit risks remain low, particularly given the stage of the business cycle. Credit spreads are tight and default rates are low, with little expectation of a major pickup over the course of the year. Having said that, there has been some marginal deterioration in the credit quality of the high-yield corporate debt indices and, as discussed in this chapter, corporate leverage in private markets is rising. In addition, the downturn in the U.S. housing market implies a rise in credit risk in mortgage-related instruments. While this does not imply an immediate risk to financial stability from the credit market, it does suggest that risks are gradually building that could materialize in the event of a major credit event or risk retrenchment. Hence we would

Figure 1.44. Share of CCC or Lower-Rated Corporate Securities in Merrill Lynch Global High-Yield Index
(In percent)
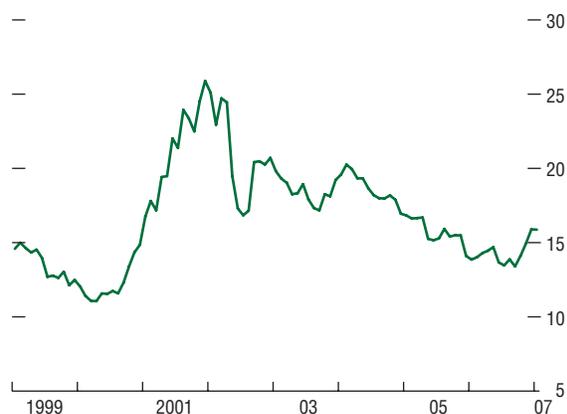
Source: Merrill Lynch.

Figure 1.45. Moody's Global Speculative Grade Default Rate
(In percent)
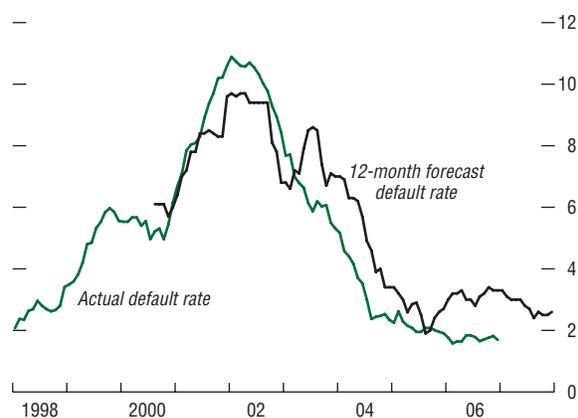
Source: Moody's.

Figure 1.46. Probability of Multiple Defaults in Select Portfolios for Large Complex Financial Institutions
(In percent)
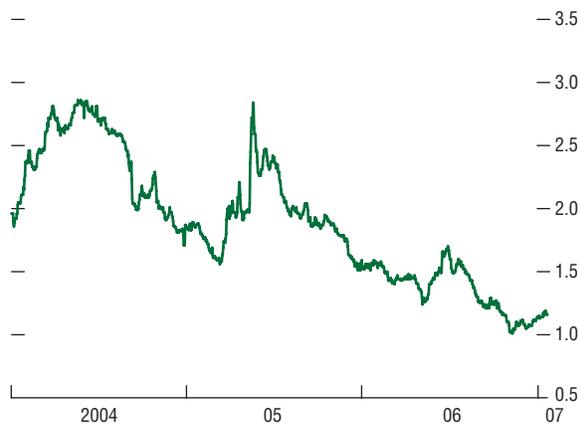
Sources: Bloomberg L.P.; and IMF staff estimates.

Figure 1.47. Hedge Fund Market Sensitivity Measure
(Sum of betas across asset classes)
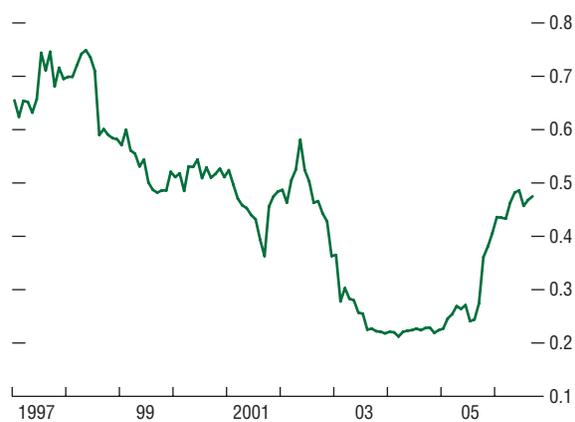
Sources: Bloomberg L.P.; and IMF staff estimates.
Note: Data represent a 36-month rolling regression of hedge fund performance versus real asset returns.

suggest that credit risks have risen marginally, though they remain at historically low levels.

Market Risks

Measures exposures of systemically important financial institutions and the potential for consequent mark-to-market losses, as well as the extent to which markets may be underpricing risk.

The value-at-risk (VaR) across major investment banks provides a standard measure of the market exposure of this systemically important part of the financial sector, while an indicator attempting to capture the extent of market sensitivity of hedge fund returns provides a market risk indicator for this increasingly important trading group (Figure 1.47; see also Box 1.4). We also produce a speculative positions index, constructed from the noncommercial average absolute net positions relative to open interest across a range of futures contracts covering most asset classes as reported to the Commodity Futures Trading Commission (Figure 1.48). This measure will rise when speculators take relatively large positional bets on futures markets relative to commercial traders. Finally, we look at a measure of implied volatility across a range of assets to assess the extent of market concern over risk, though it may also indicate the extent to which markets are too complacent about those risks (Figure 1.49).

Market risks appear to be rising gradually, though from reasonably low levels. Our estimate of hedge fund risk-taking has been rising, and this is supported by our market intelligence. VaR among investment banks has also risen in absolute levels, though it remains low as a percentage of total equity. Still, the increased trading activity and risk-taking of such institutions increases the risks of mark-to-market losses. Speculator activity has increased across a range of futures contracts, and the increase in carry trades, supported by data on speculative short positions in Japanese yen, raises the risk of a market dislocation. Implied volatility across asset classes remains low, which may be interpreted as suggesting some complacency among market participants.

Annex 1.2. Financial Systems in Mature and Emerging Markets

Note: The main authors of this annex are John Kiff and Nicolas Blancher, with input from regional divisions.

In most regions, available indicators point to resilient financial systems, largely due to the strong macroeconomic environment. In particular, financial soundness indicators generally highlight well-capitalized and profitable banking systems benefiting from diversity of earnings and improving asset quality. Also, mature market financial system default risk, as reflected in credit derivative markets, remains relatively low (Figure 1.50).[42] However, the LCFI risk indicator has risen slightly since October 2006, due to growing perceptions that the credit cycle may have peaked.[43] In addition, new vulnerabilities and challenges may have started to emerge in some countries, due, for example, to rapidly accelerating credit growth. A potential economic slowdown or disruption in external financing may exacerbate such vulnerabilities, highlighting the importance of further reform efforts to strengthen regulatory and supervisory frameworks and to promote improved risk management practices. The situation in EMs across various regions is detailed below.

Latin America

Reflecting the region's encouraging macroeconomic performance due in part to high commodity prices, countries in Latin America generally have attracted significant capital inflows. Central American countries, in particu-

[42]This issue of the GFSR continues the use of credit risk indicators to review the evolution of market perceptions of systemic default risk in mature market financial systems. The credit risk indicator index measures the probability of multiple defaults within three groups of 11 financial institutions, implied from the market prices of credit default swaps (IMF, 2005, Chapter II), LCFIs, commercial banks, and insurance companies.

[43]The late-2006 rise in the credit risk indicator was driven by a slight widening of the spreads on five-year credit default swaps referencing four of the 11 institutions.

Figure 1.48. Average Net Speculative Positions in U.S. Futures Markets
(In percent of open-interest across select futures markets; 30-day moving average)
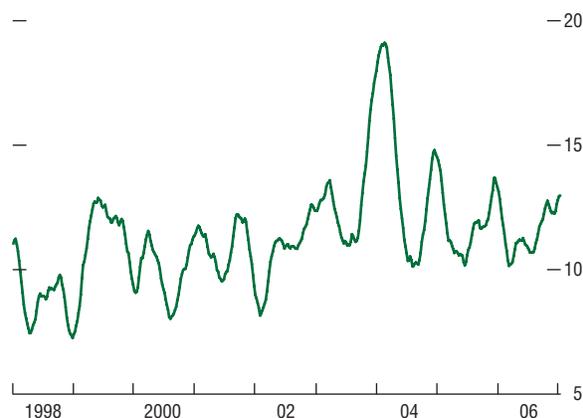
Sources: Bloomberg L.P.; and IMF staff estimates.
Note: Data represent the absolute value of the net position taken by non-commercial traders in 17 select U.S. futures markets. High values are indicative of heavy speculative positioning across markets, either net-long or net-short.

Figure 1.49. Composite Volatility Index
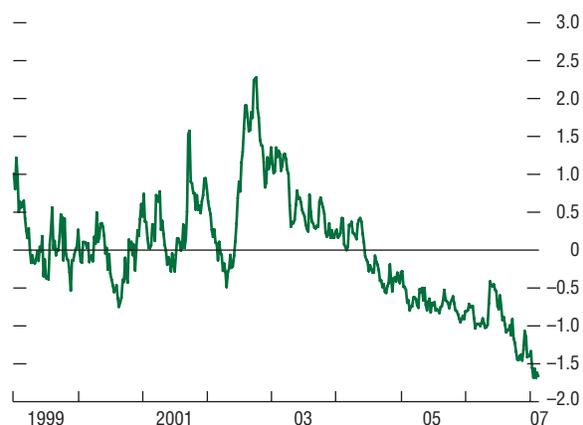
Sources: Bloomberg L.P.; and IMF staff estimates.
Note: Data represent an average *z*-score of the implied volatility derived from options on stock market indices, interest rates, and exchange rates. A value of 0 indicates the average implied volatility across asset classes is in line with the period average (from 12/31/98 from which data are available). Values of +/– 1 indicate average implied volatility is one standard deviation above or below the period average.
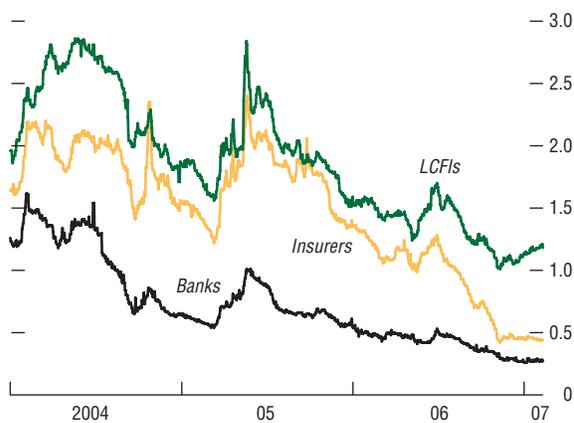
lar, have witnessed the acquisition of major local banks by international banks. In most countries, including Argentina, Brazil, and Mexico, the banking sector has continued to show adequate capitalization, improved asset quality, and rising profitability. Credit growth has begun to decelerate, but still outpaces GDP growth in most countries.

Against this backdrop, bank exposures to government debt remain high in some countries (e.g., Brazil), and indirect currency risk (from lending in foreign currency to unhedged borrowers) continues to be a potential vulnerability in dollarized economies, even though these risks appear to have declined in the current macroeconomic environment. The main macrofinancial risks appear to originate from the external sector, and include a potential drop in commodity prices, or the possible effects of a disruptive adjustment in global imbalances that could result in a decline or even reversal of capital flows to the region.

Asia

With few exceptions, banking systems seem well capitalized, liquid, and profitable, reflecting loan volumes, diversity of earnings, and improving asset quality. Capital markets also have performed well and continued to deepen (e.g., debt and derivatives markets). Such improvements have been facilitated by the ongoing restructuring and favorable macroeconomic environment, while regulatory changes and capital flows helped spur the capital markets. Nevertheless, vulnerabilities remain and new supervisory and risk management challenges are emerging. While nonperforming loans (NPL) have declined, they remain high in a few countries. Renewed capital inflows into many Asian countries may present challenges for stock market and currency valuations, as well as for monetary policy conduct. Intensified competition has led banks and nonbank institutions to aggressively diversify their activities (e.g., into microfinance, securitization, and credit derivative markets), while local banks strive to grow in

Figure 1.50. Probability of Multiple Defaults in Select Portfolios
(In percent)

Sources: Bloomberg L.P.; and IMF staff estimates.
Note: LCFIs = large complex financial institutions.

rapidly consolidating markets. Finally, economic growth is expected to slow as interest rates notch up to curb inflationary pressures and, in certain countries, banks may face substantial losses due to currency appreciation, while households will be increasingly vulnerable to housing price corrections and higher borrowing costs.

Going forward, despite substantial progress, the reform agenda remains large. Several countries have introduced medium-term financial sector strategies, state-run institutions are being reformed, regulatory frameworks have improved as part of preparations for Basel II implementation, and the focus is increasingly shifting to capital market development and deregulation. However, financial sector surveillance needs strengthening, including based on the use of more up-to-date information, and recently introduced corporate governance guidelines need to be enforced. Finally, credit growth and asset price bubbles remain a concern, and the policy response warrants careful evaluation.

Emerging Europe

Strong macroeconomic performance and the expansion of foreign financing continue to support buoyant lending to the private sector in most countries. Mortgage and consumer lending often remain the main drivers of the credit boom, as household indebtedness is still low compared to EU-15 average levels. Banking sectors appear relatively sound, with adequate capitalization, solid profitability, and good asset quality. With only a few exceptions, including Romania and Ukraine, the ratio of NPLs to total loans is below 5 percent (which also reflects rapid lending growth).

However, some risks have intensified. There is a growing exposure of banks to indirect foreign currency risk in certain countries, especially the Baltics, Bulgaria, and Croatia, where more than half of total lending is denominated in foreign currencies. The risk of a real estate price bust has become more pronounced in several countries, and mortgage foreclosure procedures have

not yet been tested in a downturn environment. A slowdown or disruption of the external financing flows may also have significant consequences on the quality of banking assets in many countries. In this respect, the signature of a Memorandum of Understanding on the management of cross-border banking crises between the central banks of Sweden and three Baltic states in December 2006 was a welcome development.

Africa

Financial systems in sub-Saharan Africa continue to strengthen, supported by a favorable macroeconomic environment, including high commodity prices and private capital inflows. With few exceptions, capital adequacy ratios appear high, although less so if the concentrations in credit risks that plague most countries are taken into account. Banks are highly but decreasingly profitable given increased competition and declining opportunities for quick returns in treasury bill markets. Average NPL ratios are declining, due in large part to rapid credit growth (marginal NPL ratios do not seem to have improved significantly).

While a number of countries have started to implement long-term strategic development plans to strengthen their financial systems, progress is slow and vulnerabilities to a range of risks remain. The liquidity generated from high oil and commodity prices and rapid credit extension may also pose a challenge for monetary management, while increased bank lending may accentuate credit risk in countries with limited absorptive capacity, weak credit management capabilities, and a creditor-hostile environment. In some countries, foreign investment inflows into treasury securities markets might also introduce a dependency on potentially volatile foreign financing. Regulatory gaps remain in such areas as consolidated and cross-border supervision, where banks are regionally active. Finally, some risk is posed by the emerging trend of reviving development banks with a view to expanding and influencing the sectoral allocation of credit.

Middle East and Central Asia

Financial systems continue to strengthen as the overall economic and financial situation has improved significantly, particularly in oil exporting countries. The turbulence in stock markets in the Gulf Cooperation Council (GCC) seems to have subsided, even though there has been a drop in some stock market indices in 2007, and while other regional markets continue to register remarkable growth. A number of non-oil exporting countries are also benefiting from the desire of GCC investors to invest in the region.

Efforts are ongoing to reform the financial sector, adopt strong regulatory and supervisory frameworks, create a competitive environment, and improve the soundness of financial institutions. A number of countries (e.g., Egypt and Morocco) are addressing the vulnerabilities of their banking systems, while others have launched privatization programs and are proceeding with their financial modernization efforts. Despite these positive developments, financial sectors in a large number of countries remain underdeveloped and NPL levels persistently high. Furthermore, regional political uncertainties continue to weigh on financial market developments and prospects.

Annex 1.3. Credit Derivatives and Structured Credit Market Update

Note: The main authors of this annex are Todd Groome and John Kiff.

Since the report on developments in credit derivative and structured credit markets in the April 2006 GFSR (IMF, 2006a, Chapter II), these markets have continued to grow in terms of size and scope. Outstanding credit derivatives rose from about $12 trillion at mid-2005 to $26 trillion at mid-2006 (Figure 1.51). Growth continues to be driven by portfolio swaps—CDS that reference more than one credit name.[44] In

[44]According to the Fitch Ratings (2006b) credit derivatives survey, about one-third of outstanding contracts reference multiple names.

addition, issuance volumes in the markets for asset-backed securities, mortgage-backed securities, and collateralized debt obligations continue to grow (Figure 1.52 shows new issuance volumes).[45] Since the April 2006 GFSR, activity in all of these markets has also emerged in Japan, and new credit derivative products have been introduced. Finally, issuance of CDOs backed by emerging market credit has also progressed somewhat.[46]

Market liquidity continues to vary considerably across the credit derivative product range. Although the published number of single-name CDS reference entities continues to expand, the number of names on which tight bid-offer spreads are quoted for reasonable size ($5 million to $10 million) remains around 600, and only about 150 names trade regularly. However, it is often now possible to execute much larger ($200 million plus) transactions in single-name CDS in about 50 of the most active names. Portfolio swaps that reference standardized CDS indices increasingly have demonstrated significant and consistent liquidity, but customized (i.e., "bespoke") portfolio swap and traditional structured credit products (ABS, MBS, and CDOs) are best characterized as buy-and-hold instruments, with very little secondary market activity.

[45]ABS are collateralized by loans, leases, receivables, or installment contracts, but when they are backed by mortgages, they are called MBS. Figure 1.52 does not include MBS issued by U.S. government-sponsored enterprises. In addition, the MBS number includes HEL, although some industry bodies (for example, the U.S. Bond Market Association) categorize HEL-backed securities as ABS. Also, only funded CDO issuance is plotted in Figure 1.52 (see IMF, 2006a, Box 2.1).

[46]Within the last year, a $106 million two-tranche "microfinance" CDO (BOLD 2006-1) and a $60 million three-tranche EM loan-backed CDO (CRAFT EM CLO 2006-1) were issued. Also, during the summer of 2006, the International Swaps and Derivatives Association formed a working group to create Shari'ah-compliant derivatives documentation, and an $18 million Shari'ah-compliant MBS transaction (KSA MBS 1 International Sukuk) was brought to market in the Kingdom of Saudi Arabia. This transaction benefited from credit support provided by the AAA-rated International Finance Corporation, as will several larger Shari'ah-compliant MBS issues reportedly being planned.

In the single-name CDS market, investment-grade corporate obligations (i.e., those rated BBB- and better) still comprise most of the underlying credit transferred. According to the September 2006 Fitch Ratings survey, investment-grade exposures comprised 69 percent of credit protection sold, compared with 76 percent in 2005 (Fitch Ratings, 2006b).[47] Fitch also reported that 80 percent of single-name CDS trading volume related to corporate obligations (compared with 76 percent in 2005), of which 18 percent was linked to financial institutions (14 percent in 2005), with an additional 4 percent linked to sovereign credits (6 percent). Although the number of underlying names being quoted continues to expand (reportedly now exceeding 2,000), Fitch found that the volume is becoming more concentrated, with the top 20 names comprising about 40 percent of single-name CDS activity (compared with 33 percent in the previous year's survey). Of these top 20 names, 13 were corporates (led by General Motors, Ford, and DaimlerChrysler), and seven were sovereign names (led by Brazil, Italy, and Russia).

A number of new credit derivative products have been introduced in the past year, including a variety of vehicles to transfer credit risk more effectively. For example, idiosyncratic risk is being distributed via rated equity notes, zero-coupon and zero-cost equity tranches, and systemic risk via leveraged super senior (LSS) products and constant proportion debt obligations (CPDOs).[48] The equity tranche vehicles effectively offer positions in the riskiest part

[47]The British Bankers' Association (2006) survey of London credit derivative market participants reported that investment-grade names comprised 70 percent of single-name CDS underlyings (mostly BBB and A rated), and 80 percent of CDS index underlyings.

[48]A typical tranched "capital structure" is comprised of an "equity" tranche that absorbs the first 3 percent of underlying portfolio default-related losses, one or more "mezzanine" tranches that absorb losses that exceed 3 percent up to a 10 percent "detachment point," one or more "senior" tranches (10 to 30 percent), and one or more "super senior" tranches (the final 30 to 100 percent). The equity tranche is seen as absorbing idiosyncratic default risk, and the super senior tranches as absorbing systemic default risk (see IMF, 2006a, Box 2.1).

Figure 1.51. Global Credit Derivatives Outstanding
(In trillions of U.S. dollars)
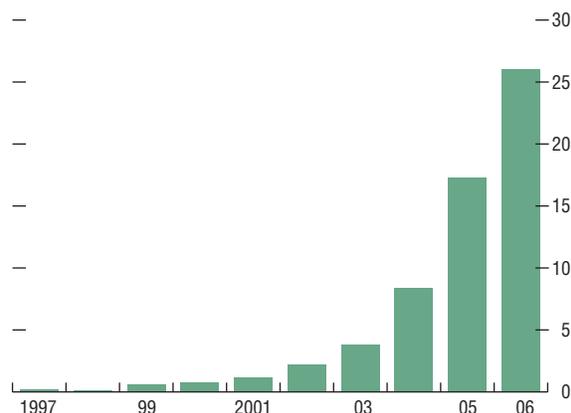
Sources: Bank for International Settlements; International Swaps and Derivatives Association; British Bankers' Association; and *Risk* magazine.
Note: Credit derivatives, as reported here, comprise credit default swaps, credit-linked notes, and portfolio swaps. Data for 2006 are only available through the first half of the year.

Figure 1.52. Global ABS, MBS, and CDO Issuance
(In trillions of U.S. dollars)

Collateralized debt obligations (CDO)
Asset-backed securities (ABS) (ex-HEL)
Mortgage-backed securities (MBS)[1]
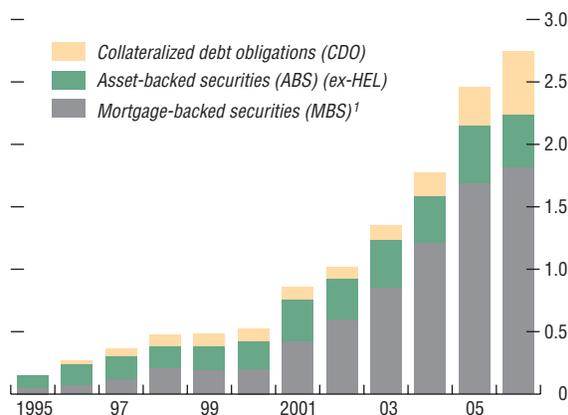
Sources: *Inside MBS & ABS*; Fitch Ratings; Standard & Poor's; JPMorgan Chase & Co.; Merrill Lynch; European Securitization Forums; and Reserve Bank of Australia.
Note: HEL = home equity loan.
[1]Mortgage-backed securities include home equity loans.

Box 1.6. Constant Proportion Debt Obligations

Constant proportion debt obligations (CPDOs) are CDS-based, AAA-rated, fixed-income instruments that offer returns well above those on otherwise similar AAA-rated products. These above-market returns are made possible by leveraging investment-grade credit risk exposure (typically 15 times). The first CPDO was issued during the summer of 2006, and at year-end total issuance stood at between $2.5 billion and $3 billion. These transactions seek to exploit the empirical observation that investment-grade credit spreads generally overcompensate for pure default risk (see Hull, Predescu, and White, 2005).

A CPDO is a bond-like instrument that pays periodic coupons (LIBOR plus a fixed spread) until it matures (for example, after seven to 10 years), at which time the principal is repaid. At the outset, the principal is invested in a reserve account that earns approximately LIBOR flat. Default protection is sold on U.S. CDX and European iTraxx investment-grade CDS indices, which, when leveraged 15 times, left about 450 to 500 basis points to cover default payouts and coupon and principal payments (effectively a reserve), as well as underwriting costs and profits, when investment-grade CDS premia were trading at about 37 basis points. According to S&P and Moody's, this was sufficient for the CPDO to pay a 200 basis point spread and achieve a AAA rating, although they have indicated that at tighter index spreads, the spread to investors would have to be reduced to get a AAA rating.

The leverage is managed dynamically by increasing leverage when spreads widen (to capture the higher spreads) and decreasing it when spreads narrow (to lock in mark-to-market gains). In addition, the likelihood of default payouts is minimized by rolling the indices every six months, since any credits that have fallen below investment grade are removed from the indices. Also, because the credit spread curve usually is upward sloping, the six-month rolls generate mark-to-market gains that are an important source of income for the structure (about 75 basis points,

according to S&P's current CPDO rating methodology).[1]

The transaction should produce the targeted return if actual default losses over the term of the note do not exceed those implied by the spreads on the underlying indices, unless the structure "cashes out." A "cash-out" unwinds the structure if the value of the reserve (as described above) drops below a certain threshold (usually expressed as a percentage of the note principal, for example, 10 percent). In such a case, investors are repaid only part of their principal. A cash-out is most likely to be associated with extreme spread widening and/or numerous defaults in the first couple of years. However, in return for capping the return (for example, LIBOR plus 200 basis points), the investor is protected against cash-outs in the transaction's later years by a "cash-in" trigger. The cash-in unwinds all protection positions and deposits the proceeds in the reserve until maturity, once the payment of all future coupon and principal payments can be assured. The earlier this cash-in event occurs the better for investors, and the structure can be vulnerable to late-life cash-outs if a cash-in has not occurred by the eighth year (of a 10-year transaction).

Financial Market Implications

The leveraged CDS index position-taking associated with CPDO issuance has been suggested as contributing in part to the tightening in 2006 of CDS index spreads. However, the total issuance to date is a fraction of typical daily CDX and iTraxx trading volume. At the margin, CPDO issuance (and, possibly more so, anticipations of future issuance) may have contributed to some index spread tightening and index implied correlation volatility, but broader credit demand from CDO managers (often referred to as the "structured credit or CDO bid") was

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[1]See Bank of America (2006) for a quantification of the CPDO roll, and Teklos, Sandigursky, and King (2006) for a comprehensive performance and risk analysis.

probably the main driver of structured credit spread tightening during 2006.

Market participants have expressed more concern about the potential market impact of the six-month index rolls. In particular, it is thought that they may tend to compress spreads for the on-the-run indices, and possibly also tend to flatten the credit spread curve, which, in the long run may undermine some of the economics. A potentially greater concern for investors may be the possible mark-to-market volatility associated with the six-month rolls and repricing. These effects could be mitigated by referencing more diverse credit portfolios and/or a move to managed portfolios, which is said to be under consideration by managers for future issuance.

of the "capital structure," while LSS products and CPDOs offer leveraged (for example, 15 times in some products) exposure to the least risky positions. The other motivation for LSS products and CPDOs is to create higher-yielding investments from lower-risk credit products, particularly in light of current tight spread levels. Despite their relatively high leverage and credit spread risk, these products are generally rated AAA (Box 1.6).

In addition, a number of credit derivative product companies (CDPCs) are reportedly preparing to come to market, most with the backing of a major investment bank, and involving a hedge or private equity fund. CDPCs are limited-purpose companies that trade credit derivatives and structured credit products. Primus Guaranty (which started operations in 2002), Athilon Advisors (2004), Newlands Financial (December 2006), and Invicta Credit (January 2007), all rated AAA, are currently the only four operational CDPCs. The existing CDPCs focus on selling highly leveraged credit protection on the highest quality (AA- and better) single names and tranches. However, the new CDPCs in the pipeline reportedly will be taking on more leverage, taking both long and short credit protection positions, and may not be rated.

These new vehicles are seen as materially contributing to drive corporate credit spreads to ever-tighter levels. Similarly, U.S. consumer loan-backed ABS and MBS spreads may have remained tighter through most of 2006 due to the strong CDO manager demand (the "CDO or structured credit bid"). Not only may such credit

market technical factors distort credit signals implicit in the prices of credit derivatives and structured credit products (i.e., the "canary in the coalmine"), but structural features in some of the newer products make the signal extraction more complex. In the case of ABS and other structured credit products, it has been suggested that credit-rating-driven enhancement levels may be useful metrics. In addition, the introduction of CDS on ABS (ABCDS) and the ABX indices of ABCDS may provide another indicator of household financial health (Box 1.1). CDS on leveraged loans (LCDS) and standardized LCDS indices (LevX), which have only just started trading, may also provide an indicator of corporate financial health.

On the operational risk front, banks and dealers, encouraged by the New York Federal Reserve and the U.K. Financial Services Authority (FSA), continue to make important credit derivative trading infrastructure improvements. For example, since September 2005, confirmations outstanding for more than 30 days had been reduced by 85 percent as of September 2006, and the proportion of trades confirmed on electronic platforms has doubled to 80 percent. However, completely eliminating the backlog may prove to be difficult, because it may be comprised of the more complex, customized ("bespoke") portfolio transactions, which may also represent very large and lumpy trades. Therefore, it is important that regulators and supervisors continue to monitor such operational issues at the banks and dealers, including encouraging them and their major clients to

move toward a common electronic trading platform. In this regard, the efforts of the Depository Trust & Clearing Corporation to build a straight-through processing system and a centralized trade information warehouse are welcome.

Potential settlement problems associated with defaults by entities for which the notional value of outstanding CDS contracts far exceeds the outstanding amount of deliverable obligations are expected to be reduced by a new protocol.[49] Since the April 2006 GFSR, the International Swaps and Derivatives Association has made cash settlement the standard for all CDS (single-name, index-based, and bespoke contracts).[50] The Dura bankruptcy, for which the settlement fixing took place on November 28, 2006, provided the first successful test of this new protocol. Recovery swaps, which effectively fix default-conditional recovery rates, may also play a role in allowing market participants to hedge and possibly reduce uncertainty regarding the final settlement amounts, but this market has yet to demonstrate material interest or liquidity.

The April 2006 GFSR suggested that a differentiated ratings scale would be very useful (or even necessary), particularly to senior officers and companies that set portfolio or risk limits based on credit ratings, possibly driven by regulation. At the time, the major rating agencies maintained that users of their ratings in general understood the differences, and indeed, they were making efforts to ensure that this was the case. However, in August 2006, Fitch Ratings introduced "stability scores" for synthetic CDOs, and in October, it launched a specialist ratings group dedicated to credit derivative ratings and analytics ("Derivative Fitch"). Although the other rating agencies have not yet followed Fitch's examples, they appear to be consider-

ing similar steps to more clearly differentiate the ratings of these different products, and to better reflect their different risk profiles. On the other hand, the rating agencies continue to expand the application of their ratings beyond the traditional credit risk domain. For example, CPDO ratings are based largely on assessments of market risk, and securitized commodities and foreign exchange risks (for example, in CDO structures) have been rated on traditional corporate bond rating scales.

Little progress can be reported on the improvement and rationalization of credit derivative data gathering, at least in terms of better, as opposed to more, data. The Bank for International Settlements will soon be reporting Herfindahl indices on its credit derivatives data, which will provide some information on bank intermediation concentration. However, numerous surveys continue to compete for bank and dealer input.

Annex 1.4. Trends and Oversight Developments in the Hedge Fund Industry

Note: The main authors of this annex are Todd Groome and William Lee.

Assets under management (AUM) by hedge funds continue to grow rapidly, reaching over $1.4 trillion at the end of 2006, even as performance has moderated (Figure 1.53). Such growth has been fueled primarily by increased allocations from institutional investors (i.e., representing about 30 percent of capital managed at year-end 2005, with wealthy individuals still representing over 40 percent of the sources of capital of AUM by hedge funds). Although average aggregate hedge fund returns since 2003 have not matched past performance and may have become more correlated with broader equity and fixed-income benchmarks, they continue to exhibit less volatility than major indices.

Institutional investors have increasingly sought to invest in hedge funds for their diversification benefits and attractive risk-adjusted returns. Equity-related strategies remain pre-

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[49]Most contracts call for physical settlement, whereby the protection buyer must deliver the reference bonds or loans to the protection seller in exchange for the par value.

[50]The ad hoc protocols used in previous default settlements applied only to index-based portfolio swaps. However, according to the British Bankers' Association (2006) survey, market participants were already moving toward cash settlement (24 percent of contracts in 2006 versus 11 percent in 2004).

dominant and account for around 38 percent of AUM. However, in recent years, investors' desire to obtain diversification benefits and asset allocation expertise has led to growing interest in opportunistic hedge fund strategies (e.g., event-driven and macro funds, about 20 percent and 10 percent of AUM, respectively), multi-strategy funds (about 15 percent of AUM), and strategies involving alternative asset classes (structured credit and insurance products, commodities, and private equity).

While the geographic origin of capital invested in hedge funds is broadening, the vast majority of assets continue to be managed by advisers based in the United States and the United Kingdom. Investment in hedge funds by European and Asian investors represents a growing share of total hedge fund AUM, at approximately 26 and 10 percent, respectively (Figures 1.54 and 1.55). Globally, AUM remain concentrated with funds located in offshore centers. However, investment advisors operating from the United States and the United Kingdom control most of these funds. In recent years, a growing number of advisors have begun to operate in Asian locations due to more certain and consistent regulatory and infrastructure environments, and in some instances due to tax incentives offered by countries seeking to build up their asset management industry.

Hedge funds are increasingly considered key players in today's international financial markets and are having a greater influence on capital market dynamics. This influence derives from their active trading style, often setting the marginal price, and the expansion by hedge funds into more markets. Hedge funds have been prominent in fixed-income and credit markets, including most forms of credit derivatives, where they have represented up to 60 percent of U.S. market volume (Table 1.4). Their presence in a variety of risk transfer markets reflects hedge funds' leading role in financial innovation, often serving to complete certain markets. Compared with other investor groups, hedge funds are more active in pursuing global cross-market strategies, and may contribute to the increas-

Figure 1.53. Global Hedge Funds
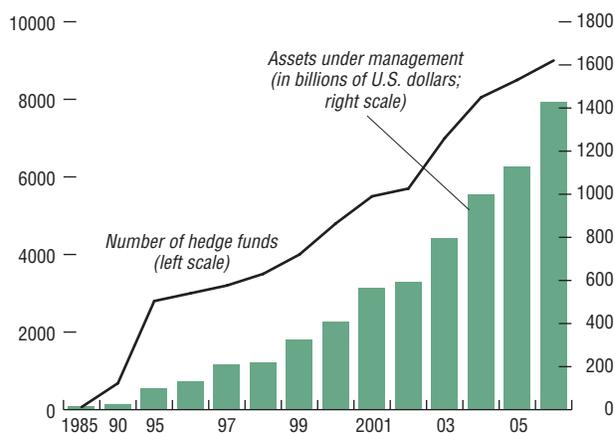
Sources: Hedge Fund Research, Inc.; and Hennessee Group LLC.

Figure 1.54. Global Hedge Funds by Geographic Source of Funds
(In percent)

2002

Asia 3%   Other 2%

Europe 9%

United States
86%

2005

Asia 10%   Other 2%

Europe
26%

United States
62%
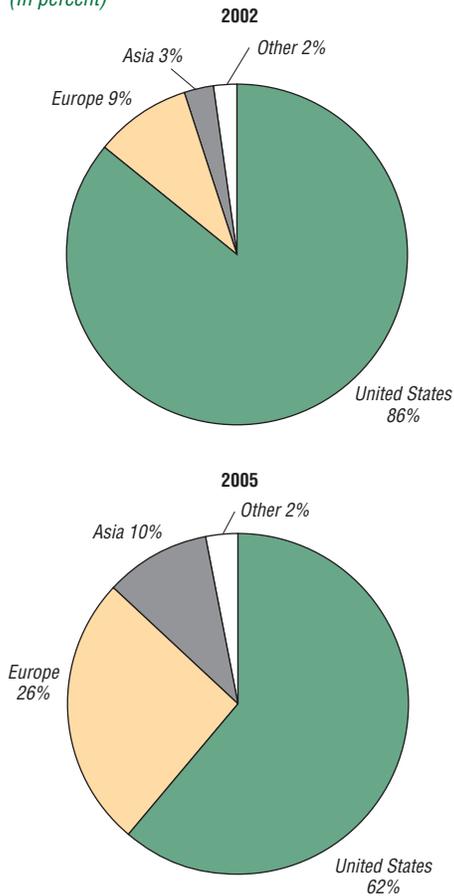
Source: International Financial Services, London.

ing linkage of various geographic and product markets.

The institutionalization of hedge funds and the convergence of their activities with other financial institutions and investment funds has continued, and even accelerated.[51] The more established hedge fund managers have significantly broadened their activities, and increasingly compete with other financial institutions in a variety of fields. For example, the larger hedge fund groups have sponsored private equity funds and actively manage long-only strategies to accommodate client demands and address potential capacity constraints.

Hedge funds are also seeking to secure more stable capital structures, and a few fund managers have privately placed debt securities and pursued initial public offering.

Meanwhile, major banks have developed in-house hedge funds as part of or alongside their traditional asset management businesses, and some banks have acquired equity participations in hedge funds. In addition, the proprietary trading desks of major banks have been pursuing strategies substantially similar to hedge funds for some time.

Finally, mainstream collective investment schemes (i.e., mutual funds) are increasingly making use of hedge fund investment techniques (e.g., short-selling). In addition, hedge fund-like products are being offered in numerous jurisdictions, particularly in Europe, by banks and traditional fund managers (e.g., structured notes, indexed to hedge fund returns). Together with the growth of funds of hedge funds, these developments contribute to an increased "retailization" of hedge fund investment.

[51]These trends possibly herald a structural shift toward a "barbell" industry structure composed primarily of large funds and small niche specialists. Based on June 2006 data, approximately 60 hedge fund groups reported at least $5 billion AUM, representing in aggregate over 50 percent of industry-wide AUM. Similarly, recent data show that the top 25 European hedge fund managers, the majority of which are located in the United Kingdom, accounted for 44 percent of total AUM as of June 2006.

Table 1.4. U.S. Fixed-Income Trading Volume—Hedge Funds, 2005

Fixed-Income Products	Trading Volumes[1] Total	Hedge funds	Hedge Funds as a Percent of Total Volume
U.S. fixed income—total[2]	19,650	2,940	15
High-yield[3]	335	84	25
Credit derivatives[4]	937	540	58
Distressed debt	34	16	47
Emerging market bonds	271	122	45
Leverage loans	133	42	32

Source: Greenwich Associates, based on trading volumes reported by 1,281 U.S. fixed-income investors, including 174 hedge fund respondents.
[1]In billions of U.S. dollars.
[2]Excludes short-term fixed income.
[3]Excludes below-investment-grade credit derivatives.
[4]Includes investment-grade, below-investment-grade, and structured credit products.

Implications for Financial Stability

In general, hedge funds have a constructive influence on market efficiency and stability. They can dampen market volatility by providing increased liquidity and improved price discovery. Their complex trading strategies and the strong demand from investors for diversification opportunities may broaden their trading activities and contribute to the development and completion of certain markets. For example, hedge funds have been an important catalyst for and a source of liquidity in credit derivative markets, as well as the much smaller but growing insurance-linked market.

However, together with proprietary trading desks in banks, hedge funds may also contribute to increased or even extreme volatility in some instances. This is most evident in crowded or less liquid market segments, particularly during periods of stress. Along with proprietary trading desks, hedge funds dominate activity in certain market segments, which can lead to "one-way" markets and occasional periods of price corrections, as markets rebalance and liquidity is provided only at less favorable prices.[52]

[52]In May 2005, many hedge funds found it very difficult to exit or hedge credit derivative portfolio swap positions, particularly since their dealer counterparties often had similar positions. However, the disruption remained relatively short lived, as new investors, primarily other hedge funds, entered the market and helped to restore stability (IMF, 2005).

Figure 1.55. Hedge Fund Sources of Capital by Investor Class, 2005
(In percent)
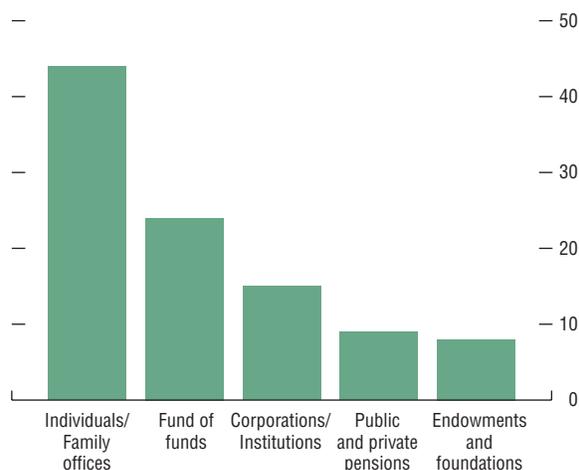
Source: Hennessee Group LLC.

Financial stability concerns focus on the potential impact that the failure of a hedge fund (or a group of funds) may have on major banks and brokers, as well as on hedge funds being possible transmitters or amplifiers of a shock. Systemic risks regarding hedge fund activities primarily concern their potentially negative effects on systemically important regulated counterparties. Hedge funds may also act as transmitters or amplifiers of shocks initiated elsewhere. For example, large portfolio liquidations by hedge funds—either preemptively or triggered by significant losses—may increase price volatility or result in a broader loss of market confidence.

Additional regulatory concerns relate to investor protection and market integrity, particularly in the context of pension fund or retail investments in hedge funds. The latter has been an issue of growing attention among regulators in jurisdictions where retail participation has grown.

Regulatory and Supervisory Developments, and Industry Reactions

The regulation, supervision, and oversight of hedge funds is a complex subject, and it is important to identify the intended purpose or goal of any public initiative. Different motivations underlie financial stability and investor protection concerns, as well as the possible role of regulation.

Financial stability concerns have been emphasized in jurisdictions with greater global hedge fund trading activity, such as the United States and the United Kingdom. In these countries (and elsewhere) a key policy challenge is to safeguard financial stability by ensuring that hedge fund failure(s) or other market activities do not jeopardize the safety and soundness of systemically important regulated counterparties (i.e., banks and broker-dealers), or otherwise create market disruptions resulting in financial instability, while seeking to maintain hedge funds' potential for positive contributions to market efficiency.

In jurisdictions where retail investors' exposure to hedge fund investments and related financial products has increased (e.g., continental Europe and Asia), registered hedge funds are usually subject to disclosure rules aimed at informing investors of the risks associated with hedge fund investments. Regulatory standards for eligible investors attempt to limit retail investor participation to those considered sufficiently informed to assess the risk profile and/or wealthy enough to retain advisors or sustain the potential losses. Over time, asset price inflation (including real estate prices) has eroded some of the nominal wealth and income eligibility criteria designed to limit the size of the eligible investor group, and some authorities have acted to restore their relevance.

The present approach to mitigate financial stability risks associated with hedge funds relies primarily on supervisory efforts to monitor the exposures and risk management practices of regulated banks and brokers. This approach utilizes established supervisory relationships with banks and brokers, and seeks to ensure that their counterparty risk management systems are appropriate, which may also act as a means to improve market discipline on hedge funds (IMF, 2004 and 2005). The major prime brokers and banks, which are the providers of credit and trading counterparties of hedge funds, also should be able to provide authorities and supervisors with a relatively complete assessment of market risk profiles. In this manner, some observers have referred to this as an "indirect" monitoring of hedge fund activities. An important part of the supervisory process involves asking the appropriate questions, which in itself may initiate internal or regulatory reviews of existing risk management practices and facilitate improved market discipline. Indeed, since the failure of Long-Term Capital Management, regulated institutions appear to have developed more robust risk management practices, including more sophisticated credit and collateral arrangements that allow for more graduated means to manage their hedge fund exposures, and thereby reduce

the risk of market disruptions and broader losses.[53]

The focus on counterparty risk management and efforts to indirectly monitor hedge fund and market risk profiles has been adopted to different degrees by national authorities, particularly by the New York Federal Reserve and the U.K. Financial Services Authority.

In the United States, regulatory bodies have expressed a variety of views in recent years regarding the appropriate means to monitor or supervise hedge fund activities.

First, the Securities and Exchange Commission (SEC) sought to register hedge fund managers and to gather basic information, with its traditional focus on investor protection. However, since the judicial overruling of SEC registration requirements, the agency has proposed revising its criteria for qualified investors by raising the minimum financial net worth of individuals (excluding a person's primary residence) able to invest in hedge funds from $1 million to $2.5 million (the "enhanced accredited investor" standard). More recently, the SEC has also more closely examined prime brokers' risk management practices. In addition, the Commodity Futures and Trading Commission has made ongoing efforts to improve its data classification scheme, intended to better identify commercial and "speculative" trading activities.

Moral hazard concerns associated with various forms of potential official monitoring or supervision have led the Federal Reserve Board of Governors to historically emphasize market discipline. The New York Federal Reserve Bank has pursued a more nuanced approach to evaluating

[53]In contrast to Long-Term Capital Management (LTCM), the benign market impact of the recent Amaranth failure may reflect these and other improvements in counterparty risk management practices, although it is difficult to evaluate precisely all the factors contributing to the smooth resolution. Despite the large reported losses (over $6 billion, compared with losses of $4.6 billion for LTCM), the lack of subsequent market disturbances was attributed in part to the presence of diverse market participants, the prime brokers' ability to unwind their exposure, and the ability of other market participants to assume Amaranth's positions, rather than those positions being liquidated hastily.

and influencing risk management practices at regulated institutions, and to conducting surveillance of hedge fund activities through their regulated counterparties and more informal dialogue with unregulated market participants, including hedge funds.

Most recently, the principles and guidelines published by the President's Working Group on Financial Markets (PWG) on February 22, 2007, reflect the converging regulatory approaches of the agencies represented in the PWG regarding "private pools of capital." The PWG is chaired by the Treasury Secretary and composed of the chairmen of the Federal Reserve Board, the Securities and Exchange Commission, and the Commodity Futures Trading Commission. The PWG worked with the Federal Reserve Bank of New York and the Office of the Comptroller of the Currency to develop this guidance. In the context of the current regulatory framework, which is deemed appropriate, the principles regard public policies that support market discipline, participant awareness of risk, and prudent risk management as the best means to both protect investors and limit systemic risk. This emphasis on market discipline, by investors and counterparties, is in line with the Working Group's earlier pronouncement in 1999. In addition, acknowledging the global nature of both the funds and their counterparties and creditors, the PWG acknowledges the need for international policy coordination and collaboration. Overall, the PWG's approach aligns closely with the policy messages developed by the IMF in past GFSRs.

In the United Kingdom, the Financial Services Authority conducts surveillance in a generally more pro-active manner, collecting information through a (semi-annual) survey of prime brokers to assess their exposure to hedge funds and gauge broader market risk profiles. It uses this information to identify the need for more direct dialogue with and surveillance of managers of the relatively "higher" impact funds. For such an approach to be effective, it is important that the appropriate information and risk metrics be gathered and analyzed so as to identify those advisors or funds most relevant to financial stabil-

ity analysis. As such, overemphasizing size (assets under management), or being overly focused on prime brokerage positions (which may reflect an equity market bias) rather than on potentially higher-risk strategies or markets, or failing to evaluate exposures across the full array of businesses within banks or brokers (which would be needed to evaluate fixed-income or credit strategies and markets), may produce misleading or incomplete indicators. Furthermore, for greatest effectiveness, such an approach would benefit significantly from increased cooperation and dialogue among regulators, which has been evident in recent months.[54]

Industry reactions to calls for increased collaboration between the private sector (i.e., hedge funds, banks, and brokers) and the supervisory community have been generally positive. The largest hedge funds today generally recognize the need to further improve transparency and public sector understanding of their activities. Many express a willingness to provide financial information to supervisory authorities to help improve financial stability analysis and greater understanding of hedge fund activities. However, while voluntary codes of conduct and best practices have been proposed previously by the industry, they have not gained broad acceptance.

Suggestions to require hedge funds to periodically disclose position information (e.g., to the public, investors, counterparties, and/or supervisors) have been met with strong resistance from the funds, in part due to the proprietary nature of this information and the risk of "front running" by counterparties and competitors. Moreover, given the active investment style of most hedge funds and the difficulties related to the implementation of such a program, disclosures of this type may be impractical and provide limited value.[55]

From a financial stability perspective, efforts to develop standardized leverage and liquidity measures for hedge fund disclosure (to investors and counterparties) could be useful. Such disclosure could be augmented with large exposure data from banks and brokers to their supervisors, including both trading and prime brokerage activities (which are frequently not aggregated effectively).[56] Such additional information would facilitate the dialogue between hedge funds and their counterparties, and between banks and brokers with their supervisors. However, as evidenced by previous efforts, developing a framework or template for financial disclosure across different hedge fund strategies has proven very difficult. Nevertheless, such initiatives could be encouraged.

Most observers agree that risk management practices have improved at regulated banks and brokers. However, remaining risk management challenges include determining and obtaining adequate collateral to limit losses (including potential exposures). This challenge may be most acute in fixed-income and credit markets. In these markets, regulated counterparties may find it less easy to measure or monitor exposure to a single fund or a particular transaction, or to make related margin and collateral decisions.[57] This is all the more important as banks and bro-

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[54]U.K., U.S., German, and Swiss regulators have heightened their monitoring and evaluation of hedge fund risk management practices, including a more coordinated effort to review margin and collateral practices related to hedge fund clients at their domestic institutions.

[55]Encouraging hedge funds to obtain credit ratings has also been suggested as a means to improve transparency

and strengthen market discipline. However, whether rating agencies would prove better than regulated counterparties and investors at evaluating hedge funds remains an open question. Nevertheless, they may be able to adequately assess certain operational risks (e.g., valuation and audit processes, administration arrangements, and regulatory compliance).

[56]The Counterparty Risk Management Policy Group II recommended that the private sector collaborate with the official sector to consider the feasibility, costs, and desirability of creating an effective framework of large-exposure reporting of regulated financial intermediaries active with hedge funds.

[57]In fixed-income and credit markets, hedge funds tend to employ relatively more leverage, pursue multi-legged transactions with several counterparties selected from a broader universe of trading institutions (limiting transparency), and often involve products or market segments exhibiting less consistent liquidity. All of this leads to much greater risk management challenges for banks and brokers.

kers utilize cross-margining and portfolio margining practices.

Industry observers and participants generally agree that any new initiatives related to hedge fund oversight should seek to preserve hedge funds' contribution to financial stability against the new or emerging risks their activities present. Costs associated with new requirements (e.g., reporting systems, legal infrastructures, etc.) may drive some funds from the market and deter new funds from entering the market at the possible costs of reduced competition, innovation, market liquidity, and risk dispersion. Moreover, it is crucial that efforts to promote improved transparency and market discipline not inadvertently increase moral hazard. Such initiatives may create a perception that public authorities have superior knowledge regarding market stability, and potentially weaken market discipline.

Private Equity

Private equity funds have attracted increased attention from investors and public officials. Like hedge funds, private equity funds are a heterogeneous group of investment vehicles, employing investment strategies geared toward sophisticated and long-term investors. These are a highly differentiated group ranging from start-up venture finance to leveraged buyouts to vulture or distressed asset funds. The "typical" private equity fund has a relatively long investment horizon (e.g., five to seven years, or longer), and is often engaged in the operation or restructuring of acquired firms.[58]

The inflow of capital into private equity, much of it from institutional investors, has expanded the potential scale of private equity transactions. The potential for larger buyouts across a range of sectors reflects a variety of cyclical and structural factors, including, most importantly, the availability of debt financing through leveraged loans and other debt instruments.[59] The appetite for holding the debt of these highly leveraged transactions and companies by fixed-income investors is likely to be a key factor determining the size of transactions and the extent of market activity, and may also highlight the primary financial stability concern.

The potential for increased debt financing for ever-larger buyouts raises prospects that greater amounts of leverage may amplify underlying risks and vulnerabilities, or contribute to a loss of market confidence and withdrawal of liquidity, which may negatively affect particular institutions and broader markets. Put differently, the increased use of leverage, which is readily available from debt markets today, may increase defaults among private equity/LBO transactions, with economic and macroprudential implications. This may occur due to a series of company or transaction-specific defaults, due to an economic slowdown or tighter monetary conditions, or possibly due to the failure of a large LBO-related financing. Given that credit spreads are generally at historically tight levels, a failed LBO could trigger a broader withdrawal of market liquidity, producing a liquidity-led deleveraging that could prove disruptive to the broader markets.

In this way, financial stability concerns may primarily arise from a liquidity-driven deleveraging, possibly triggered by a failed private equity/LBO transaction. Such a deleveraging event may be amplified by significant procyclical selling pressures driven by a general loss of market confidence and the increasingly mark-to-market trading environment, particularly given

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[58]For example, while LBOs often lead to downgrades of target companies, recent evidence also suggests instances where they may improve the creditworthiness of lower-rated companies with speculative-grade debt (e.g., rated Ca or C), due to improved efficiency and better management performance (see Moody's Investors Service, 2006).

[59]Recent private equity transactions (e.g., the approximately $35 billion HCA buyout in the healthcare industry and the recent bids of $39 billion and $41 billion for Equity Office Property Trust, a commercial office real estate investment trust, by Blackstone Group and Vornado Realty Trust, respectively) exceed the largest LBO of the 1980s (e.g., the $31.3 billion RJR Nabisco transaction). The CEO of a major private equity firm has noted that even larger deals (e.g., $50 billion or even $100 billion) are feasible in the near future.

the increased presence of relatively less-liquid structured credit products in a wider range of investors' portfolios. Such pressure could lead to a significant repricing of credit, with potentially negative medium- or longer-term reactions by institutional investors and regulators that may detract from the positive risk transfer developments in recent years.

References

Bank for International Settlements (BIS) Committee on the Global Financial System (CGFS), 2006, "Housing Finance in the Global Financial Market," CGFS Publication No. 26 (Basel, Switzerland, January).

Bank of America, 2006, "The ABCs of CPDOs," Bank of America Credit Strategy Research (November 6).

Blanchard, Olivier, Francesco Giavazzi, and Filipa Sa, 2005, "The U.S. Current Account and the Dollar," NBER Working Paper No. 11137 (Cambridge, Massachusetts: National Bureau of Economic Research).

British Bankers' Association (BBA), 2006, *BBA Credit Derivatives Report 2006* (London).

English, W., K. Tsatsaronis, and E. Zoli, 2005, "Assessing the Predictive Power of Measures of Financial Conditions for Macroeconomic Variables," in "Investigating the Relationship Between the Financial and Real Economy," BIS Paper No. 22 (Basel, Switzerland: Bank for International Settlements).

Fabozzi, Frank, 2002, *The Handbook of Financial Instruments* (Hoboken, New Jersey: John Wiley and Sons).

Fitch Ratings 2006a, "Sovereign Review—December 2006," Fitch Ratings Special Report (London, December 13).

———, 2006b, "Global Credit Derivatives Survey: Indices Dominate Growth as Banks' Risk Position Shifts," Fitch Ratings Special Report (London, September 21).

Frey, Laure, and Gilles Moëc, 2005, "U.S. Long-Term Yields and Forex Interventions by Foreign Central Banks," *Banque de France Bulletin Digest,* No. 137 (May), pp. 1–32.

Froot, K.A., and Paul O'Connell, 2003, "The Risk Tolerance of International Investors," NBER Working Paper No. 10157 (Cambridge, Massachusetts: National Bureau of Economic Research).

Hull, John, Mirela Predescu, and Alan White, 2005, "Bond Prices, Default Probabilities and Risk Premiums," *Journal of Credit Risk*, Vol. 1 (Spring).

International Monetary Fund (IMF), 2004, *Global Financial Stability Report,* World Economic and Financial Surveys (Washington, September).

———, 2005, G*lobal Financial Stability Report,* World Economic and Financial Surveys (Washington, April).

———, 2006a, *Global Financial Stability Report,* World Economic and Financial Surveys (Washington, April).

———, 2006b, *Global Financial Stability Report,* World Economic and Financial Surveys (Washington, September).

———, 2007, *World Economic Outlook,* World Economic and Financial Surveys (Washington, April).

Lehman Brothers, 2006, "Securitized Products Outlook 2007, Bracing for a Credit Downturn" (December 12).

Moody's Investors Service, 2006, "Default and Migration Rates for Private Equity-Sponsored Issuers," Moody's Investors Service Global Credit Research Special Comment (New York, November).

Teklos, Panayiotis, Michael Sandigursky, and Matt King, 2006, "CPDOs The New Best Seller?" Citigroup European Quantitative Credit Strategy and Analysis (London, Citigroup Global Markets, November 10).

Walker, Chris, and Maria Punzi, forthcoming, "Financing of Global Imbalances," IMF Working Paper (Washington: International Monetary Fund).

Warnock, Francis E., and Veronica Cacdac Warnock, 2005, "International Capital Flows and U.S. Interest Rates," International Finance Discussion Paper No. 840 (Washington: Board of Governors of the Federal Reserve).

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

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[1]In 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.

Figure 2.1. Total Global Cross-Border Inflows
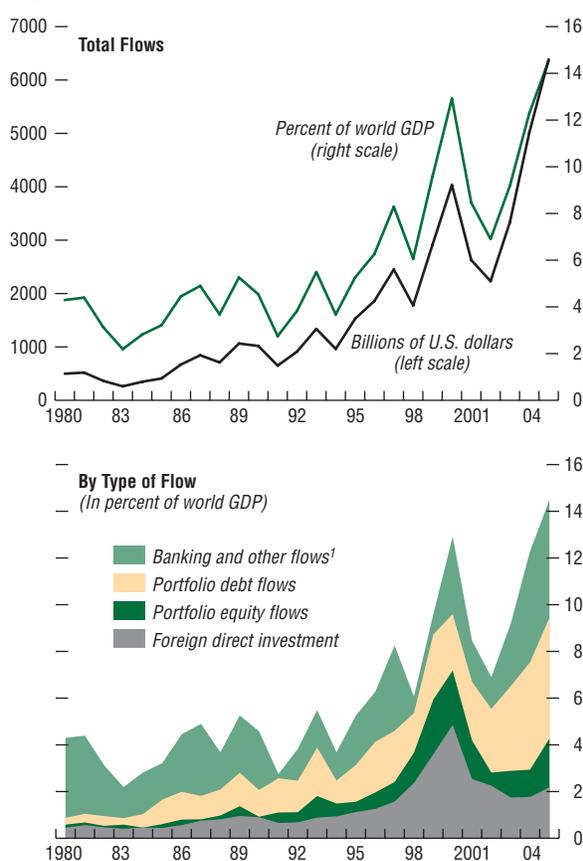
Source: IMF staff calculations based on data from IMF, *International Financial Statistics* and *World Economic Outlook.*
  [1]Other flows include derivative transactions.

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).

Global FDI Inflows
(In billions of U.S. dollars)

Source: IMF, *World Economic Outlook.*
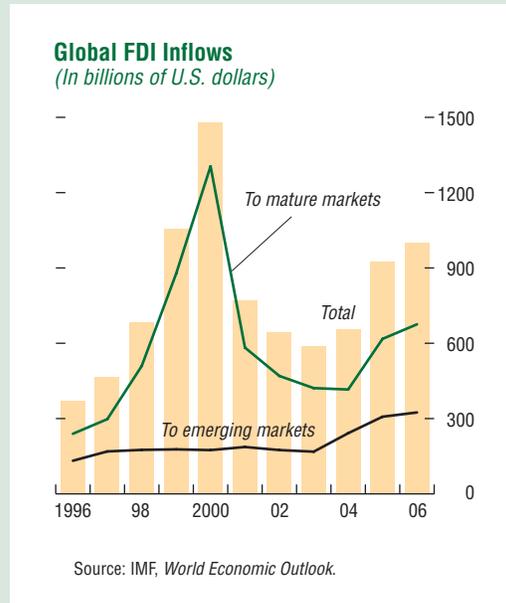
structure issues. The responses indicated that FDI is part of globalization in the world economy, that it is procyclical, and that it has been buoyed by structural reforms that

Emerging Markets: FDI Outflows by Region
(In billions of U.S. dollars)

Source: IMF, *World Economic Outlook.*
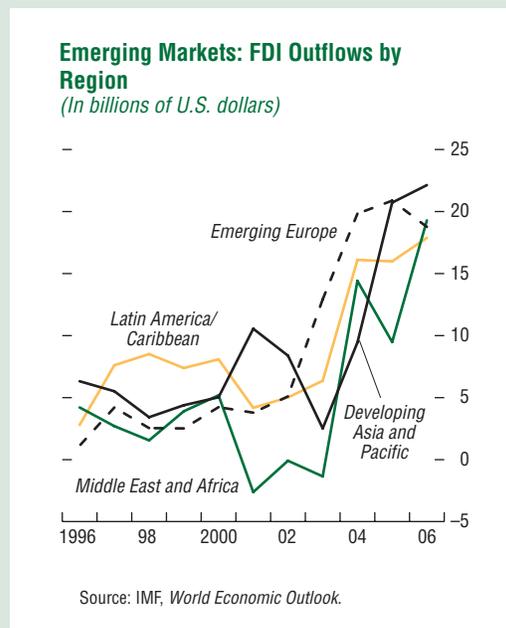
improve the investment climate in recipient countries. Direct investment is aimed at establishing a solid market presence in faster growing markets (linked closely to world economic growth). Most companies considered cross-border investment in mature markets as similar in risk to investment in their 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.

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[2]Large 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)
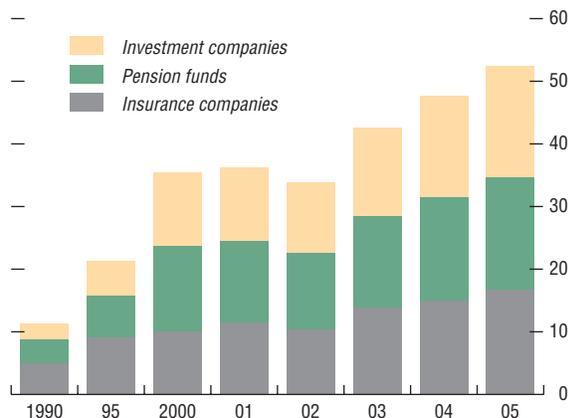
Sources: International Financial Services, London; OECD; and IMF staff estimates.

Figure 2.3. Portfolio Cross-Border Assets Held by Mature Markets
(In trillions of U.S. dollars)
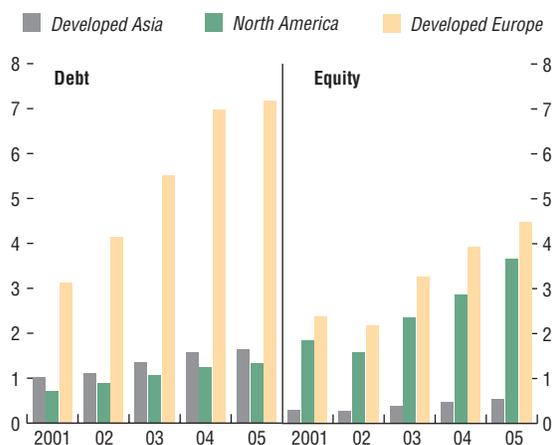
Source: IMF staff calculations based on the Coordinated Portfolio Investment Survey.

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

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

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.

Regional Breakdown of Gross Outflows
(In billions of U.S. dollars)
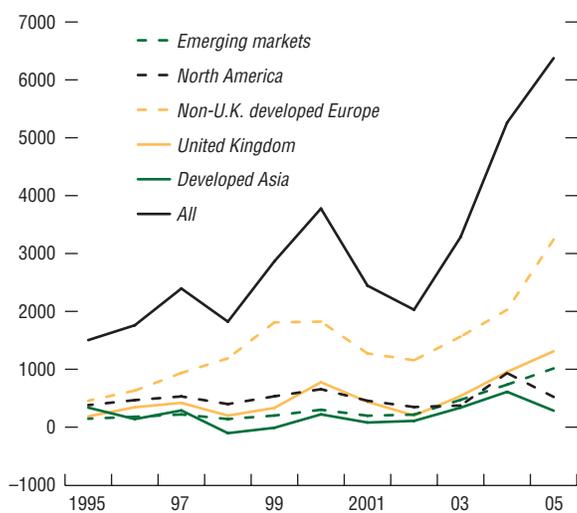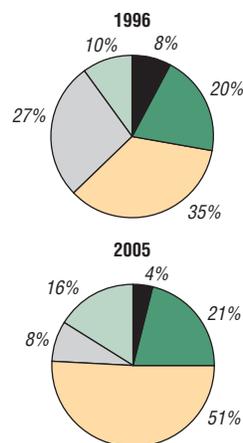
Source: IMF, *International Financial Statistics.*

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	2005	2001	2005	2001	2005	2001–05
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		
	Domestic	Inter-national	Domestic	Inter-national	Other
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).
[1]OECD (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

Top-Selling Mutual Funds by Sector in Europe in 2005
(In billions of euros)

Foreign Asset Manager Share of Institutional Mandates Originated in the Home Country
(In percent)
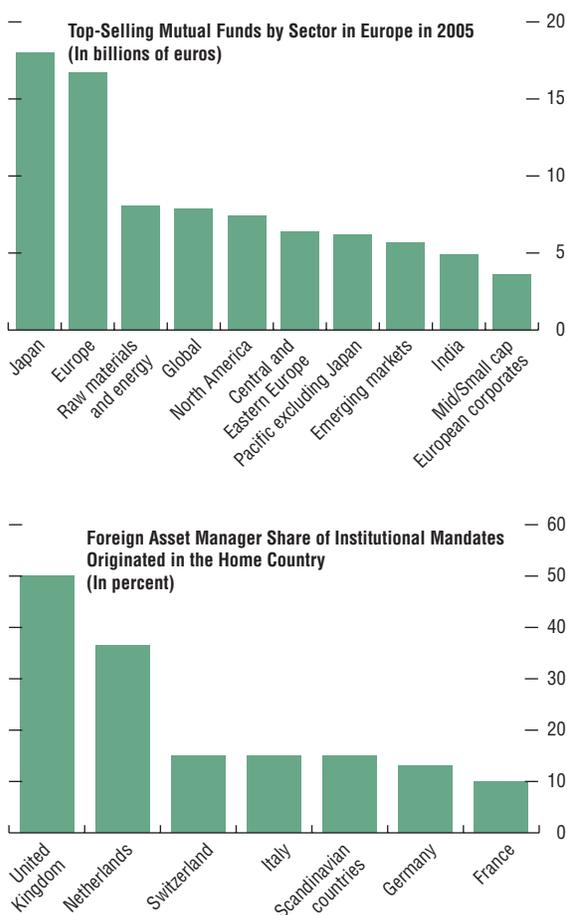
Source: Van Steenis (2006).

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

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[3]For 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).

[4]Recent 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**
Memorandum:			
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).*
[1]Excluding gold.
[2]End-November 2006.
[3]Country coverage conforms with the *IFS* world table on total reserves.
[4]Including gold at market prices.

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

Source: Hennessee Group LLC.

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,

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
Sovereign external assets			
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).
  [1]Based 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)
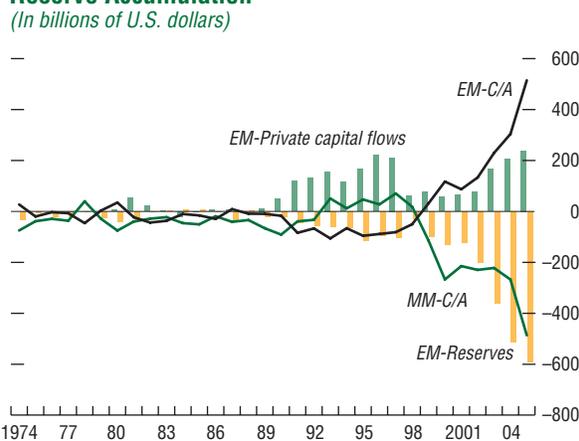
Source: IMF, *World Economic Outlook* database.
Note: EM = emerging market; MM = mature market; C/A = current account. Reserve building, as a capital outflow item, is shown as a negative entry.

[5]See 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)
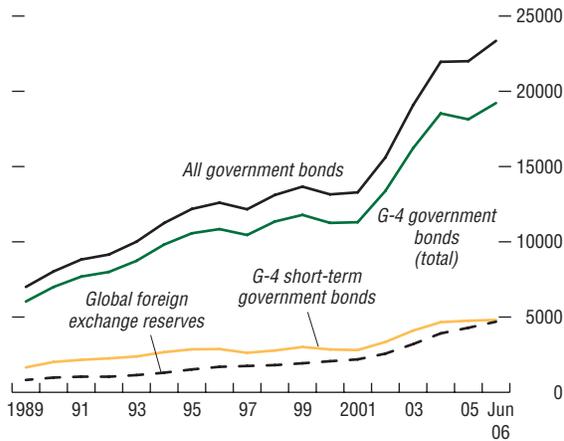
Sources: IMF, *International Financial Statistics*; and Bank for International Settlements, securities statistics, 2006.

Figure 2.8. Leading Oil Exporters: Major Asset Purchases, 2002–06
(In billions of U.S. dollars and in percent)
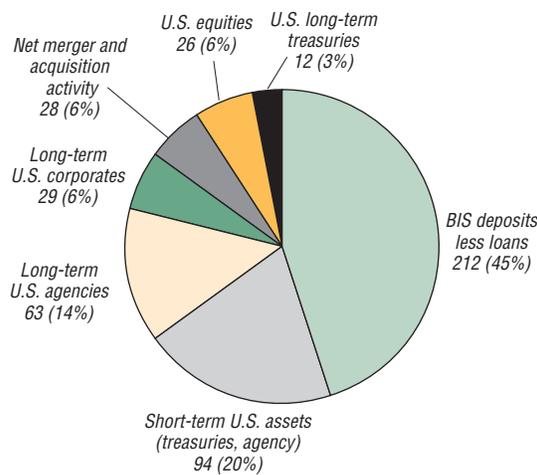
Source: Pacific Investment Management Company.
Note: BIS = Bank for International Settlements.

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.

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-

[6]For 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.

[1]See 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
Of which: Official institutions	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
Of which: Official institutions	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
Of which: Official institutions	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
Of which: Official institutions	0.1	0.2	0.2	0.3	0.5	0.7

Source: U.S. Treasury.

[1]The 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.

ereign 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)
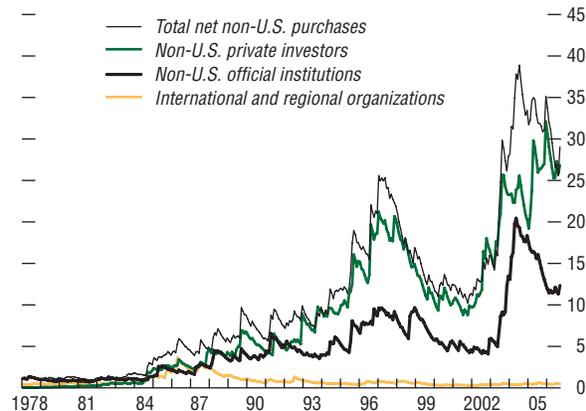
Source: IMF staff estimates based on U.S. Treasury Department, *Treasury International Capital System* data.
Note: Volatility estimates based on conditional standard deviation (GARCH).

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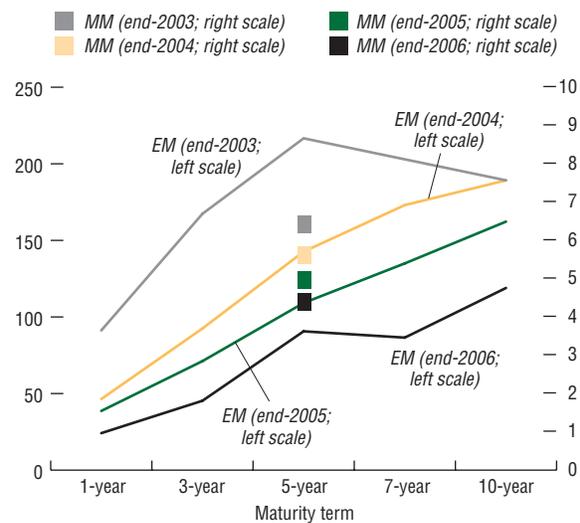
Sources: Bloomberg L.P.; and IMF staff estimates.
Note: Year-end spreads for 1, 3, 5, 7, and 10-year CDS contracts on external sovereign debt for emerging market (EM) and selected mature market (MM) countries. No CDS spreads of 7-year contracts were available at end-2003.

[7]This 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.
[8]The 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)
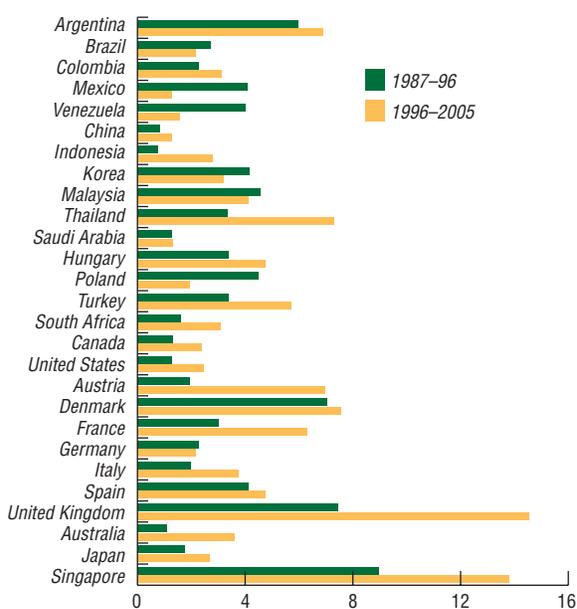
Source: IMF staff estimates based on data from IMF, *International Financial Statistics* and *World Economic Outlook.*
Note: Volatility is calculated as the standard deviation of the ratio of capital inflows to GDP over 10 years.

Figure 2.12. Volatility of Capital Outflows
(In percent of flows to GDP)
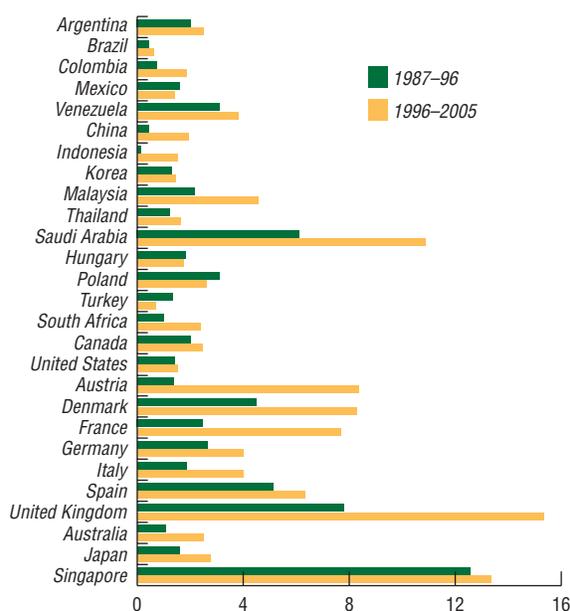
Source: IMF staff estimates based on data from IMF, *International Financial Statistics* and *World Economic Outlook.*
Note: Volatility is calculated as the standard deviation of the ratio of capital outflows to GDP over 10 years.

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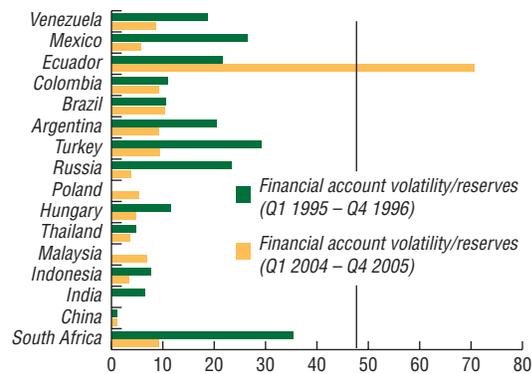
Source: IMF staff estimates based on data from IMF, *International Financial Statistics*.

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.

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[9]However, 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 deprecation, there is a need for enhanced transparency and

Figure 2.14. Share of U.S. Dollars in Reserves
(In percent)
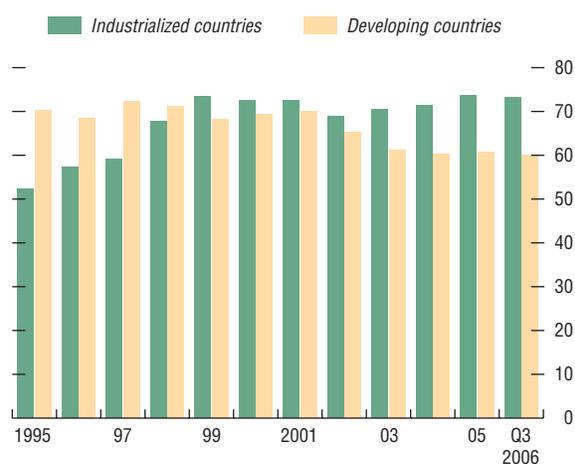
Source: IMF, *Currency Composition of Official Foreign Exchange Reserves* database.

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[10]Information 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.
[1]Based on the credit default swap (CDS) rate.
[2]Emerging Market Bond Index.
[3]Emerging 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

[11]Indeed, 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 2.15. International Syndicated Loans to Emerging Market Corporates, by Credit Rating
(In billions of U.S. dollars)
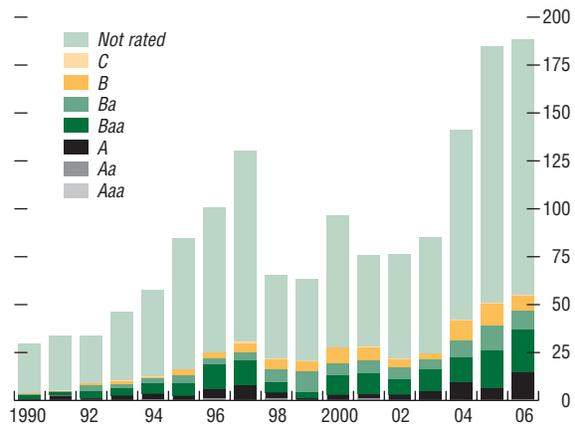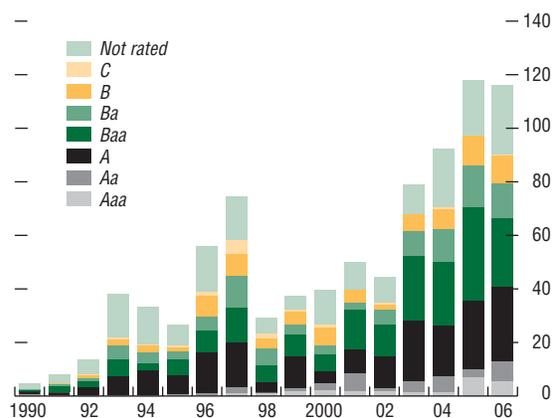
Sources: Standard & Poor's; Thompson Financial; and Dealogic.

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

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.

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-

Panel Data: Predictive Power (R^2) of Aggregate, Regional, and Type of Outflow Effects on Capital Ouflows 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.
[1]Small negative contributions were set equal to zero.
[2]The 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,

Note: The author of this box is André Santos.
[1]For related results, see Alfaro, Kalemli-Ozcan, and Volosovych (2005); and de Santis and Lührmann (2006).

[2]For 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 Economies[1]

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

	FDI/GDP[2]			Portfolio Flows/GDP[2]			Other Flows/GDP[2]		
Model	I	II	III	I	II	III	I	II	III
Domestic factors									
Change in real GDP	−1.47	1.29	1.28	13.34	20.11	28.65	3.92	21.96	20.28
	(−1.69)	(1.31)	(0.85)	(5.34)	(8.68)	(9.65)	(4.16)	(11.01)	(7.90)
Quinn capital account openness indicator	47.59	46.92	47.28	72.42	80.27	93.86	47.01	45.44	58.32
	(29.49)	(14.20)	(10.16)	(24.11)	(17.53)	(21.14)	(12.81)	(7.58)	(11.84)
Credit/GDP	−0.60	0.03	−0.25	−0.21	−0.70	−0.78	0.52	1.63	0.78
	(−4.09)	(0.12)	(−0.65)	(−0.76)	−(3.69)	(−4.95)	(2.37)	(5.35)	(2.07)
Global liquidity factors									
Short-term real interest rate in G-7		−20.99			−24.45			−18.14	
		(−5.73)			(−6.76)			(−3.68)	
Excess money supply (broad) in G-7			17.88			16.99			14.71
			(4.67)			(4.51)			(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.
[1]Countries 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.
[2]Variables scaled by 100.
[3]Panel B includes all countries from Panel A except Belgium, Greece, and Luxembourg.
[4]The 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)
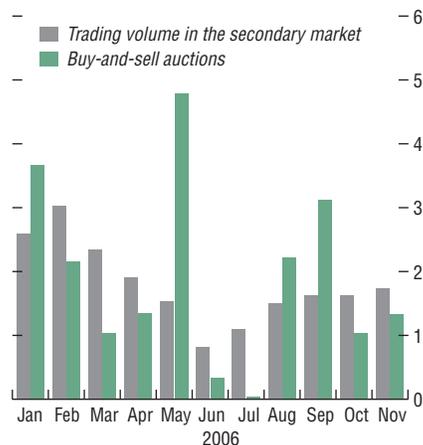
Source: Brazilian National Treasury.
Note: NTN-B = National treasury note, series B.

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.

References

Alfaro, Laura, Sebnem Kalemli-Ozcan, and Vadym Volosovych, 2005, "Capital Flows in a Globalized World: The Role of Policies and Institutions," NBER Working Paper No. 11696 (Cambridge, Massachusetts: National Bureau of Economic Research).

Aurelio, Marcela M., 2006, "Going Global: The Changing Pattern of U.S. Investment Abroad," *Federal Reserve Bank of Kansas Economic Review* (Third Quarter).

Bank for International Settlements (BIS), 2006, "The Recent Behavior of Financial Market Volatility," BIS Paper No. 29 (Basel, Switzerland, August).

Bank for International Settlements (BIS) Committee on the Global Financial System (CGFS), 2007, "Institutional Investors, Global Savings, and Asset Allocation," CGFS Publication No. 27 (Basel, Switzerland, February).

Bank of New York, and Casey, Quirk & Associates, 2006, "Institutional Demand for Hedge Funds 2: A Global Perspective," Thought Leadership Series White Paper (New York, October).

Banque de France, 2006, "Are Risk Transfer Mechanisms Sufficiently Robust?" *Financial Stability Review No. 9* (Paris).

Battelino, Ric, 2006, "Regional Capital Flows," address to the Sixth Asia-Pacific Economic Cooperation Conference, Future Economic Leaders Think Tank, Sydney, June 28.

Bayoumi, Tamim, and Eswar Prasad, 1997, "Currency Unions, Economic Fluctuations, and Adjustment: Some New Empirical Evidence," *Staff Papers,* International Monetary Fund, Vol. 44 (March), pp. 36–58.

Bekaert, Geert, Campbell R. Harvey, and Christian Lundblad, 2001, "Does Financial Liberalization Spur Growth?" NBER Working Paper No. 8245 (Cambridge, Massachusetts: National Bureau of Economic Research).

———, 2006, "Growth Volatility and Financial Liberalization," *Journal of International Money and Finance*, Vol. 25 (April), pp. 370–403.

Calvo, Guillermo, and Enrique Mendoza, 2000, "Capital Markets Crises and Economic Collapse in Emerging Markets: An Informational-Frictions Approach," *American Economic Review, Papers and Proceedings,* Vol. 90 (May), pp. 59–64.

Carvajal, Ana, 2006, "Regulatory Lessons from the Crisis of Costa Rica's Mutual Fund Industry," IMF Working Paper No. 06/288 (Washington: International Monetary Fund).

Carver, Nick, 2006, "Trends in Reserve Management—2006 Survey Results," in *RBS Reserve Management Trends 2006*, ed. by Robert Pringle and Nick Carver (London: Central Banking Publications).

Center for International Securities and Derivatives Markets, 2006, "Benefits of Hedge Funds: 2006 Update" (Amherst, Massachusetts: CISDM Research Department, Isenberg School of Management, University of Massachusetts).

Chadha, Bankim, and Jens Nystedt, 2006, "When and What Will Turn Vol Around?" Deutsche Bank Foreign Exchange Research, November 17 (unpublished; New York: Deutsche Bank).

Chan-Lau, Jorge Antonio, 2004, "Pension Funds and Emerging Markets," IMF Working Paper No. 04/181 (Washington: International Monetary Fund).

Davis, E. Phillip, 2002, "Institutional Investors, Corporate Governance and the Performance of the Corporate Sector," *Economic Systems,* Vol. 26, No. 3, pp. 203–29.

Deloitte Touche Tohmatsu, 2006, "Global Asset Management Industry Outlook: Integrating Strategy with Experience in a Changing World" (June).

De Santis, Roberto A., and Melanie Lührmann, 2006, "On the Determinants of External Imbalances and Net International Portfolio Flows: A Global Perspective," ECB Working Paper No. 651 (Frankfurt, Germany: European Central Bank, July).

Edwards, Sebastian, 2001, "Capital Mobility and Economic Performance: Are Emerging Economies Different?" NBER Working Papers Series No. 8076 (Cambridge, Massachusetts: National Bureau of Economic Research).

European Central Bank, 2006, "Hedge Funds: Developments and Policy Implications," *ECB Monthly Bulletin* (January), pp. 63–76.

French, Kenneth R., and James M. Poterba, 1991, "Investor Diversification and International Equity Markets," *American Economic Review, Papers and Proceedings,* Vol. 81 (May), pp. 222–26.

Froot, Kenneth A., Paul G.J. O'Connell, and Mark S. Seasholes, 2001, "The Portfolio Flows of International Investors," *Journal of Financial Economics*, Vol. 59 (February), pp. 151–93.

Galati, Gabrieli, and Philip D. Woodbridge, 2006, "The Euro as a Reserve Currency: A Challenge to the Pre-Eminence of the US Dollar?" BIS Working Paper No. 218 (Basel: Bank for International Settlements).

Geithner, Timothy F., 2006, "Hedge Funds and Derivatives and Their Implications for the Financial System," remarks at the Distinguished Lecture 2006, sponsored by the Hong Kong Monetary Authority and Hong Kong Association of Banks, Hong Kong SAR, September 15. Available via the Internet: http://www.newyorkfed.org/newsevents/speeches/2006/gei060914.html.

Goldstein, Morris, 2005, "What Might the Next Emerging-Market Financial Crisis Look Like?" IIE Working Paper No. 05-7 (Washington: Institute for International Economics, July). Available via the Internet: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=771045.

Grinblatt, Mark, Sheridan Titman, and Russ Wermers, 1995, "Momentum Investment Strategies, Portfolio Performance, and Herding: A Study of Mutual Fund Behavior," *American Economic Review,* Vol. 85 (December), pp. 1088–105.

Hauner, David, and Manmohan Kumar, 2006, "Fiscal Policy and Interest Rates: How Sustainable Is the 'New Economy'?" IMF Working Paper No. 06/112 (Washington: International Monetary Fund).

Imbs, Jean, 2004, "Trade, Finance, Specialization and Synchronization," *Review of Economics and Statistics*, Vol. 86 (August), pp. 723–34.

International Monetary Fund, 2004, *Global Financial Stability Report*, World Economic and Financial Surveys (Washington, September).

———, 2005a, *Global Financial Stability Report*, World Economic and Financial Surveys (Washington, April).

———, 2005b, *Global Financial Stability Report*, World Economic and Financial Surveys (Washington, September).

———, 2006a, *Global Financial Stability Report*, World Economic and Financial Surveys (Washington, April).

———, 2006b, *World Economic Outlook*, World Economic and Financial Surveys (Washington, April).

———, 2007, *World Economic Outlook*, World Economic and Financial Surveys (Washington, April, forthcoming).

JPMorgan Fleming Asset Management, 2005, "Asset Allocation: Manager Survey."

Kho, Bong-Chan, René M. Stulz, and Francis E. Warnock, 2006, "Financial Globalization, Governance, and the Evolution of the Home Bias," NBER Working Paper No. 12389 (Cambridge, Massachusetts: National Bureau of Economic Research).

Klein, Michael W., and Giovanni Olivei, 1999, "Capital Account Liberalization, Financial Depth and Economic Growth," NBER Working Paper No. 7384 (Cambridge, Massachusetts: National Bureau of Economic Research).

Kodres, Laura E., and Matthew Pritsker, 2002, "A Rational Expectations Model of Financial Contagion," *The Journal of Finance*, Vol. 57 (April), pp. 769–99.

Kose, M. Ayhan, Eswar Prasad, Kenneth Rogoff, and Shang-Jin Wei, 2006, "Financial Globalization: A Reappraisal," IMF Working Paper No. 06/189 (Washington: International Monetary Fund).

Lane, Philip, 2006, "Global Bond Portfolios and EMU," *International Journal of Central Banking* (June), pp. 1–23.

McGuire, Patrick, and Nikola Tarashev, 2005, "The International Banking Market," *BIS Quarterly Review* (December), pp. 15–30.

———, 2006, "Tracking International Bank Flows," *BIS Quarterly Review* (December), pp. 27–40.

Organization for Economic Cooperation and Development (OECD), 2006a, "Global Pension Statistics" (Paris, October).

———, 2006b, *Pension Markets in Focus,* No. 3 (Paris, October).

Quinn, Dennis, 1997, "The Correlates of Change in International Financial Regulation," *American Political Science Review*, Vol. 91 (September), pp. 531–51.

Rajan, Raghuram G., 2006, "Is There a Global Shortage of Fixed Assets?" Keynote speech at the G-30 meetings, New York, December 1.

Rodrik, Dani, 1998, "Who Needs Capital-Account Convertibility?" in *Should the IMF Pursue Capital-Account Convertibility?* Princeton Essays in International Finance No. 207 (Princeton, New Jersey: Princeton University Press).

Scharfstein, David, and Jeremy Stein, 1990, "Herd Behavior and Investment," *American Economic Review*, Vol. 83 (June), pp. 465–79.

Toloui, Ramin, 2007, "Petrodollars, Asset Prices, and the Global Financial System" (New York: Pacific Investment Management Company, January).

Turner, Phillip, 2006, "Local Currency Bonds in Emerging Markets: What Are the Links with Financial Stability," paper prepared for the LACEA session on "The Development of Domestic Bond Markets: Achievements, Challenges, and Implication for Financial Stability," Bank for International Settlements, November.

UBS Global Asset Management, 2005, "Pension Fund Indicators 2005" (London).

———, 2006, "Pension Fund Indicators 2006," (London).

Van Steenis, Huw, 2006, "On- and Off-Piste Trends in European Asset Management" (London: Morgan Stanley).

World Bank, 2006, "Financial Integration Among Developing Countries," in *Global Development Finance 2006: The Development Potential of Surging Capital Flows* (Washington), Chapter 4.

THE GLOBALIZATION OF FINANCIAL INSTITUTIONS AND ITS IMPLICATION FOR FINANCIAL STABILITY

The globalization of financial institutions appears to have accelerated over the past decade and has important implications for financial stability.[1] This chapter reviews developments, presents new empirical results on the link between globalization and financial stability, and discusses the key policy implications.

The analysis suggests, in particular, that the globalization of financial institutions appears to have generally helped improve financial stability from the perspective of individual institutions and in the face of relatively small-scale shocks. But it also suggests that, while generally beneficial, it cannot be taken for granted that globalization also makes financial systems as a whole more resilient in the face of extreme events. Increased international linkages within and across institutions may make crises more broad-ranging and complicated to deal with. As one commentator put it, financial systems may now be more efficient at sharing risk but also at transmitting shocks (Gieve, 2006a). If so, crises may be less common but more severe.

This underscores the importance of policy-makers continuing to ensure that national legal, regulatory, and supervisory arrangements evolve to cope with the increasingly globalized nature of institutions. To ensure that the benefits of institutional globalization are maximized, and

the potential risks contained, further work is needed to develop effective mechanisms for multinational collaboration, both in terms of ongoing supervisory coordination and crisis management and resolution arrangements.

Background

The trend toward greater globalization of financial institutions is closely intertwined with other structural changes in the financial sector.[2] In addition to the increased openness to foreign intermediaries in many countries, deregulation has facilitated the emergence of conglomerates combining banking, securities, asset management, or insurance activities in one organization; merger and acquisition (M&A) activities have led to the consolidation of the industry; ongoing securitization and the expansion of derivatives markets has allowed institutions to transfer—within and across borders—a range of risks that had previously been held on their balance sheets;[3] and risk management capacities in general have been strengthened within institutions.

These trends have created, among other things, larger institutions with a greater international scope frequently operating in multiple sectors (known as "large complex financial institutions" or LCFIs), and increasingly relying on funding from international markets rather than domestic sources. At the same time, institutional

[1]The main focus in this chapter is the globalization of banking, with insurance aspects also covered. Although large investment banking firms are included in some of the banking analysis, more general trends in the activities and products of international securities firms are not covered here. Their implications for financial stability, as well as developments in various types of infrastructure and supporting industries for global finance, will be examined in future issues of the *Global Financial Stability Report*.

[2]Furthermore, institutional globalization is a trend that affects emerging as well as mature market economies, not just because the former are frequently important as host countries but also because some emerging market-based financial institutions increasingly operate internationally. Lower-income countries are also part of this trend, albeit generally on a smaller scale.

[3]Some major institutions play central roles in the markets for such products, as well as in providing services to other key players in those newer markets (e.g., prime brokerage services for hedge funds).

Table 3.1. Financial Industry Mergers and Acquisitions (M&A), 1996–2006

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	(In billions of U.S. dollars)										
By regions											
Developed countries[1]	76.4	238.9	477.5	362.0	459.5	306.0	215.0	302.1	442.1	513.0	778.5
Cross-border	0.3	0.0	8.3	4.9	56.2	79.6	93.1	80.0	117.9	174.9	273.8
Rest of the world	2.7	4.8	23.7	16.2	42.5	70.2	44.1	28.8	57.3	85.3	124.1
Cross-border	0.0	0.2	0.0	2.0	8.5	29.5	17.6	14.8	22.2	54.6	85.6
Total	79.1	243.7	501.2	378.2	502.0	376.1	259.1	330.9	499.4	598.2	902.5
Cross-border	0.3	0.2	8.3	6.9	64.8	109.1	110.6	94.9	140.1	229.4	359.5
	(In percent of total)										
Cross-border M&A											
Developed countries[1]	0.3	0.0	1.7	1.3	11.2	21.2	35.9	24.2	23.6	29.2	30.3
Rest of the world	0.0	0.1	0.0	0.5	1.7	7.8	6.8	4.5	4.5	9.1	9.5
Total	0.3	0.1	1.7	1.8	12.9	29.0	42.7	28.7	28.1	38.4	39.8

Source: Bloomberg L.P.
Note: Includes only deals where both the target and the acquirer are classified as a financial institution.
[1]Australia, Canada, Japan, New Zealand, the United States, and Western Europe.

globalization is not limited to the activities of LCFIs: another key aspect is the cross-border expansion of smaller and less complex bank groups into markets where they have become systemically important.[4]

Although no one indicator fully captures institutional globalization in all its aspects and forms, one telling illustration is the volume of cross-border M&A in the financial sector.[5] As Table 3.1 shows, M&A activity in the financial system has risen sharply since 2000, with cross-border M&A increasing from less than 1 percent to nearly 40 percent of the total value of financial sector M&A activity from 1997 to 2006. Over the same period, financial institutions in developing countries grew increasingly attractive as M&A targets. By 2006, almost one-quarter of cross-border financial M&A (or 10 percent of total financial M&A) involved institutions outside developed countries. Cross-border consolidation was particularly active in Europe, following substantial deregulation of cross-border economic activity in both financial and nonfinancial markets and the adoption of the euro.

Improvements in information processing, telecommunications, and financial technologies have played an important role in spurring the globalization of financial institutions. For example, technological innovation in risk management, back-office support, and transaction processing has enabled banks and other institutions to manage risks at lower cost without geographic proximity to the customer (Berger and others, 2003). Similarly, in the insurance sector, advances in information technology have enabled consolidated cross-border databases to be maintained on actuarial, claims, underwriting, and policyholder data.

Institutions have internationalized for a wide range of reasons, including expectations that knowledge and efficiencies in undertaking business and underwriting risk in one market can be transferred into others; that economies of scale and scope can be achieved when operating multi-country operations; and that a cross-border group can better allocate a large and stable capital base profitably across business lines to those where profitability is expected to be greatest, while also diversifying risk geographically.[6]

[4]Although this chapter focuses on the impact on financial stability of the globalization of institutions, the additional trends noted here may also have important effects.

[5]Comprehensive financial sector foreign direct investment data are not available. See BIS Committee on the Global Financial System (2004) and Moshirian (2006).

[6]For further details on institutions' globalization strategies, see the literature on the determinants of cross-border banking, such as Buch and DeLong (2004).
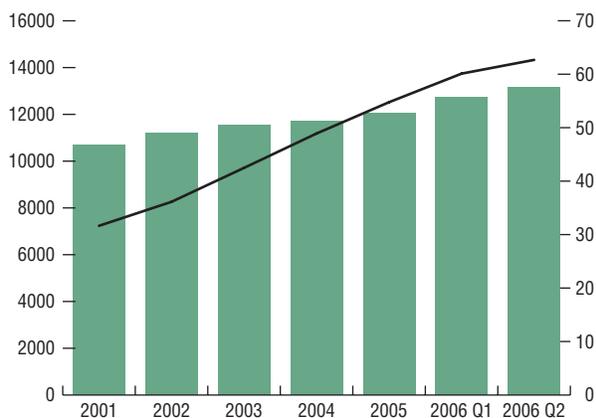
Cross-border expansion into emerging market (EM) countries has often been particularly appealing. Emerging markets have been seen as offering the prospect of faster business and profit growth, especially given the relative underdevelopment of their financial markets and institutions. For many emerging European countries, the prospects of closer economic integration with the European Union—including through EU accession and eventual membership in the euro area—have been a significant driving force in this regard. In addition, such countries sometimes have demographic or socioeconomic trends that are expected to encourage increases in long-term savings, which is of relevance to, for example, the life insurance industry.

Banking

Of all types of financial institutions, banks are most active in pursuing an international presence.[7] One measure of the rapid internationalization of banking in recent years is the rising number of foreign claims (loans made and deposits placed externally) of Bank for International Settlements (BIS) reporting banks. Figure 3.1 shows this trend both in levels and as a share of private sector credit in recipient countries. This general picture is supported by bank-by-bank data on cross-border ownership (Table 3.2). The increase in foreign ownership was particularly rapid in Eastern Europe, where the share of banking assets under foreign control increased from 25 percent in 1995 to 58 percent in 2005, and in Latin America, where that share rose from 18 to 38 percent of total bank assets. In contrast, internationalization of banking has proceeded more slowly in Africa, Asia, and the Middle East.[8]

The ownership picture can be complemented by an analysis of domestic, regional, and global

Figure 3.1. Foreign Loans and Deposits of Bank for International Settlements Reporting Banks

Source: Bank for International Settlements (BIS).
Note: Foreign loans and deposits of BIS reporting banks are represented in percent of private sector credit (bars measured on right-hand axis) and in billions of U.S. dollars (solid line measured on left-hand axis).

[7]There are also more data available on banks to facilitate analysis.

[8]Note, however, that these data reflect only the institutions covered by the Fitch-ICBA/BankScope database, and may give an unrepresentative picture for some countries.

Table 3.2. Foreign Bank Ownership, by Region

	1995				2005						
	Total bank assets (US$ billions)	Foreign-controlled total assets (US$ billions)	Total foreign asset share (percent)	Mean foreign asset share (percent)	Total bank assets (US$ billions)	Foreign-controlled total assets (US$ billions)	Total foreign asset share (percent)	Mean foreign asset share (percent)	Change in Foreign Assets (US$ billions)	Change in Foreign Asset Share (percent)	Change in Mean Foreign Share (percent)
Region (no. of countries)											
All countries (105)	33,169	5,043	15	23	57,165	13,039	23	35	7,996	8	12
North America (2)	4,467	454	10	8	10,242	2,155	21	17	1,701	11	9
Western Europe (19)	16,320	3,755	23	24	31,797	9,142	29	30	5,387	6	6
Eastern Europe (17)	319	80	25	21	632	369	58	49	289	33	28
Latin America (14)	591	108	18	14	1,032	392	38	29	284	20	15
Africa (25)	154	13	8	38	156	12	8	35	−1	−1	−3
Middle East (9)	625	85	14	14	1,194	202	17	17	117	3	3
Central Asia (4)	150	3	2	4	390	9	2	5	6	0	1
East Asia and Oceania (13)	10,543	545	5	6	11,721	758	6	7	213	1	1

Source: IMF staff calculations based on data from *International Financial Statistics* and ©2003 Bureau van Dijk Electronic Publishing-BankScope.

activities of large banks. The results, as shown in Table 3.3, suggest that most of the business of the world's 90 largest banks is still with the home country, although there are wide differences between individual banks and across regions. Banks headquartered in North America and the Asia-Pacific region tend to be more domestically oriented, whereas European banks are far more internationalized on average, even aside from their large intra-European interests. The strategic focus of regional banks also varies considerably. While some banks have established a strong presence over a wide range of developed markets within their region, others are concentrating their activities in a selected group of countries within their region. A third group conducts a large portion of their business in emerging markets.

Globalization of Banks in Emerging and Developing Markets

As noted above, the share of cross-border financial sector M&A involving target institutions in emerging markets has increased significantly (Domanski, 2005; BIS Committee on the Global Financial System, 2004 and 2005; and BIS, 2006). As a result, foreign banks have become dominant players in the 10 member states that joined the EU in 2004, for example, and accounted for 77 percent of total banking

sector assets at end-2005 (European Central Bank, 2005). Similarly, in Mexico, foreign banks account for over 75 percent of total banking sector assets. However, this trend is not uniform, and in a number of other EM countries (e.g., Indonesia, Israel, Malaysia, Saudi Arabia, and Thailand), foreign bank penetration has stagnated since 1999 (BIS, 2006).

The past decade has also seen a transformation of the role of foreign banks in EMs. First, while the large international banks have continued their expansion in selected markets, a number of mid-sized banks have also become increasingly active across borders since the mid-1990s, particularly in emerging Europe. This has partly reflected limited expansion opportunities, heightened competition in home markets, and prospects of strong profitability in host markets.[9]

Second, there has been a significant shift toward local activities by foreign banks in EMs. Traditionally, foreign banks primarily focused on providing financial services to their inter-

[9]See Focarelli and Pozzolo (2005). As an illustration, data from BankScope and the RZB Group (2006) show that for four Austrian banks, the share of revenue from activities in Central and Eastern Europe was 69 percent in 2005 compared with an asset share of 39 percent; and for two Italian banks it was 19 percent compared with an asset share of 7 percent.

Figure 3.2. Foreign Bank Participation in Emerging Countries
(In percent of total private sector credit)

Local claims of foreign banks[1]   *Cross-border claims of foreign banks[2]*
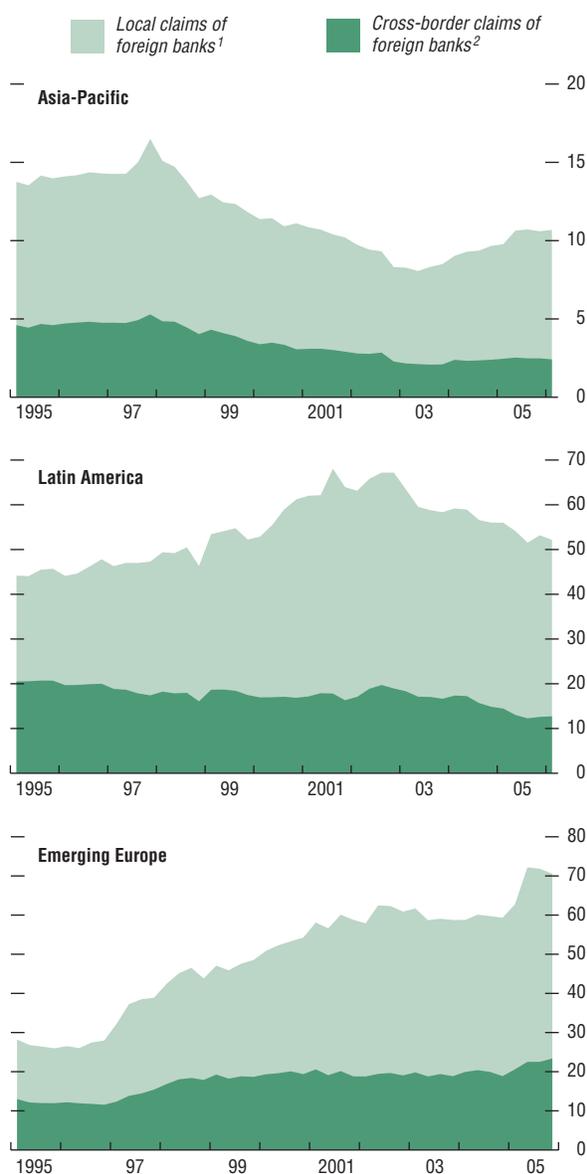
Source: Bank for International Settlements (BIS).
Note: Methodology, background analysis, and data were originally published in McGuire and Tarashev (2005a and 2005b). Updated data provided by BIS staff.
[1]Private sector local claims of foreign affiliates (in all currencies) as a percent of total private sector credit. While BIS data allow for netting of interbank claims in the case of cross-border claims and local claims in foreign currency, there is no sectoral breakdown available for local claims in local currency. For consistency purposes, the share of local claims in local currency to non-banks is estimated using the sectoral breakdown available for local claims.
[2]Private sector cross-border claims of foreign banks as a percent of total private sector credit.

Table 3.3 Cross-Border Activities of the 90 Largest Banks, 2005
(Geographical activity shares, in percent)

	Share of Activities in:		
	Home country	Rest of the region	Rest of the world
Banks based in:			
North America (20 banks)	77	8	15
Europe (50 banks)	55	24	21
Asia and Pacific (20 banks)	86	5	9

Sources: IMF staff calculations based on data from BankScope and the banks' annual reports for 2005.
Note: "Region" is defined as North America, Europe, and Asia and Pacific, respectively. For the purpose of this analysis, the geographical shares of a bank's activities are calculated as an unweighted average of shares of assets, revenues, and employees in a given region or country. This approach follows the methodology of the "transnationality index," developed by Sullivan (1994), and recently calculated by Schoenmaker and van Laecke (2006) for a sample of 60 of the world's "top banks." Using the same methodology, the shares of activities are computed here for the largest 50 European banks, 20 Asian-Pacific banks, and 20 North American banks. The data presented for each region are weighted averages of bank-by-bank data, using the bank size (the unweighted average of its share in assets, revenues, and employment of all banks in the region) as a weight.

national corporate clients in host countries, but there is now often a growing emphasis on housing-related and other personal lending (IMF, 2006a, Chapter II). One reflection of this development is that direct cross-border lending by the head offices of international banks has been progressively overshadowed by local lending by their foreign affiliates (Figure 3.2).[10,11] In Latin America and emerging Europe, for example, the increased participation of foreign banks in local credit markets was fully attributable to the growth of locally extended claims by foreign affiliates (upper shaded area in Figure 3.2).

[10]To the extent that foreign affiliates take on currency (or other) mismatches as a result of their local activities, their status as part of a larger international group would generally make it easier to hedge or otherwise manage those mismatches—for example, by hedging with the parent.
[11]It seems likely that this development has also contributed to the convergence of interest rates across countries, including at the retail level, over the last decade or so. Cross-country standard deviations of real lending and deposit rates have declined both globally and in individual regions in that period. An analysis of "beta" convergence of real rates to applicable benchmark rates also strongly shows such convergence.

Third, although most banks entering developing countries are from industrialized countries, banks from other developing countries have recently also become active as investors (World Bank, 2006; Van Horen and Claessens, forthcoming). In 2005, 27 percent of all foreign banks in developing countries were owned by a bank from another developing country, while these banks held 5 percent in assets (Figure 3.3). Especially in low-income developing countries, the importance of developing country foreign banks is very large (47 percent of foreign banks in terms of numbers and 27 percent in terms of assets). Furthermore, this type of foreign banking is strongly regionally concentrated. As is the case with foreign entry by industrialized country banks, direct investment by other developing country banks tends to be driven by economic integration, common language, and proximity. However, developing country banks tend to invest in small countries with weak institutions where industrial country banks are reluctant to go, presumably because the developing country banks have a competitive advantage dealing with countries with a weak institutional framework (Claessens and van Horen, 2007).

Insurers

This section concentrates on various aspects of the insurance sector, but it should be noted that other nonbank sectors of the financial industry are also increasingly globalized, in one sense or another. For pension funds and asset managers, for example, the main form of globalization is by way of increasingly internationalized asset allocations. The international investment activity of these groups is covered in Chapter II.

Insurance business is conducted across borders in one of two ways—either insurers domiciled in one country directly underwrite risks arising in other jurisdictions, or branches or subsidiaries controlled by foreign insurers underwrite domestic risks. Direct cross-border activity only accounts for a small percentage of total

Figure 3.3. Foreign Bank Entry by Developing Countries, by Country Income Level, 2005
(In percent)

Share of Foreign Banks Owned by Banks from Developing Countries[1]

Share of Foreign Bank Assets Owned by Banks from Developing Countries[2]
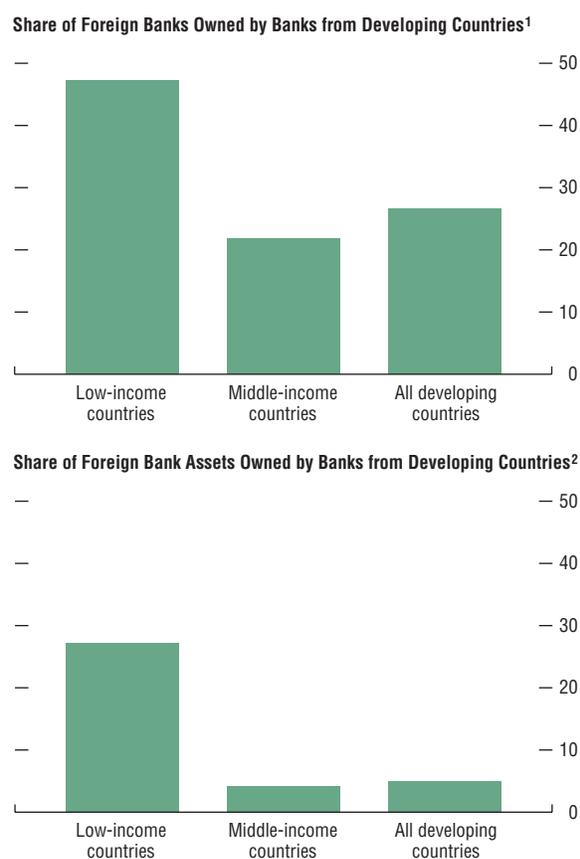
Source: World Bank (2006).
Note: Income classifications follow World Bank definitions as published in World Bank (2006).
[1]In percent of total number of foreign banks in each income level group.
[2]In percent of total foreign bank assets in each income level group, averaged over 2000–04.

Figure 3.4. Worldwide Market Share of the Largest 40 Life Insurance Groups
(In percent)

Source: Swiss Re.

world premia,[12] whereas cross-border M&A activity has ensured that an increasing proportion of insurance business is now written by operations controlled by foreign parents.

In addition, insurers can reduce the geographic or sectoral concentration of their risk portfolios by laying off a proportion of their risks to reinsurers. In turn, reinsurers may then hold a diversified portfolio of less correlated, geographically spread risks, or transfer some of their exposures to investors through insurance-linked securities, including catastrophe ("CAT") bonds. The availability of reinsurance provides insurers with some flexibility over the degree of geographic risk concentration that they are willing to hold. As a result, insurers can diversify their risk portfolio without having to globalize their own underwriting operations.

Life Insurance

As with banking, the pattern of globalization of life insurance groups is complex, with a few large companies now operating across a number of markets and increasing their market shares, primarily through the acquisition of existing companies in foreign markets. Between 1998 and 2004, the share of global premia attributable to the 12 "global" life insurance groups (with substantial operations outside their home market and at least 1 percent of global premia) increased from 20 to 28 percent (Figure 3.4).[13] This increase was accounted for entirely by acquisitions of other life insurers, both domestic and foreign, as opposed to faster organic growth.[14]

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[12]The latest available data refer to 2000, when 0.7 percent of life insurance and 2.2 percent of non-life insurance total world premia represented cross-border insurance business (Swiss Re, 2001).

[13]Swiss Re (2006a, p. 18). There is a significantly lower global concentration in life insurance than in banking due to life insurance product differentiation at the national level, lower capital requirements for life insurance company start-ups, and evidence that economies of scale in life insurance extend only to national operations.

[14]The equity market performance of insurance companies engaged in acquisitions to expand geographically has been found to significantly outperform that of insurers engaged in cross-sectoral expansion (Bø, Hulterström, and Pilskog, 2003).

Trends in foreign penetration in life insurance markets are far from uniform. From 1994 to 2003, the market share of foreign life insurance companies grew strongly in the largest life insurance markets of Japan, the United Kingdom, and the United States, remained relatively static in Germany and the Netherlands, and fell significantly in Canada and Spain. There has also been a strong rise in foreign life insurance company market share in the Czech Republic, Korea, Mexico, Poland, and Turkey, as global life insurance companies have expanded, primarily through the acquisition of existing operations (OECD, 2005, Tables 21 and 22). Cross-border insurance consolidation in Europe has been assisted by the mutual recognition of insurers by regulators across the EU and the small size of some domestic markets. It is likely to be accelerated by the EU's implementation of Solvency II, which will introduce a risk-capital framework that benefits geographical diversification of risks held and rewards economic capital management.[15] In Japan, the demutualization of several life insurers facilitated the acquisition of a number of life insurance companies by U.S. and European groups, and contributed to a decline in industry concentration. Acquisition, rather than start-up, has been the preferred route of foreign firms' entry into the U.S. market due to the fragmentation of state regulators raising the costs of start-up for a new entrant wishing to operate on an interstate basis. In 2004, five of the largest 10 U.S. fixed and variable annuity providers (by premia received) were foreign-owned entities, with a combined market share of over 20 percent.

General Insurance

In a broad sense, the non-life insurance sector is more global than the life insurance sector, particularly with regard to the pricing of liabilities and the ability to lay off risk globally. But in terms of the institutions themselves, inter-national experience has progressed more slowly than in other insurance segments, according to the scant cross-country data available. The internationalization of non-life insurance companies seems to reflect mostly a small number of large companies that can provide a wide range of insurance services, including global property and casualty coverage, to their corporate clients.

Market access issues may partly explain slower internationalization of non-life insurance companies (Ma and Pope, 2003). Despite ongoing progress toward harmonizing international accounting standards and insurance solvency requirements, contract laws continue to be grounded in domestic jurisdictions, significantly raising the costs of foreign expansion. Another factor reducing the incentives for cross-border expansion by general insurers is that risks can be laid off through reinsurance, or are sometimes handled through various state-run safety nets. In addition, economies of scale and risk diversification may often be achievable even in relatively small, domestic general insurance markets.

Reinsurance

Given its very rationale in insurance risk diversification, "reinsurance is almost necessarily a global business" (Group of Thirty, 2006, p. 9) spreading independent risks across countries and business lines and so enabling insurers to economize on capital.[16] Through reinsurance, primary insurers are less exposed to insolvency risk as a result of catastrophes or unanticipated insurance losses, while reinsurers can diversify and need not be exposed to single catastrophic risks.

In 2005, premia paid ("ceded") to nonaffiliated reinsurers amounted to 6.2 percent of global non-life insurance premia and 1.1 percent of life premia (International Association of Insurance Supervisors, 2006; Swiss Re, 2006c).

[15]Solvency II is the current project to reform the regime for EU insurers' capital. Adoption is currently scheduled for 2009–10.

[16]Swiss Re (2006b) estimates that the capital required to cover property insurance risks in 2004 in France, Germany, Italy, Japan, the United Kingdom, and the United States could have been reduced by at least 20 percent if catastrophe risk had been pooled by reinsurers across all six markets.

Figure 3.5. Gross Reinsurance Premiums Assumed and Ceded by Region, 2005
(In percent of total gross amount)

Ceded

Asia and Australia 6%
Other[2] 1%
Latin America 2%
North America[1] 57%
Europe 34%

Assumed

Asia and Australia 1%
North America[1] 53%
Europe 46%
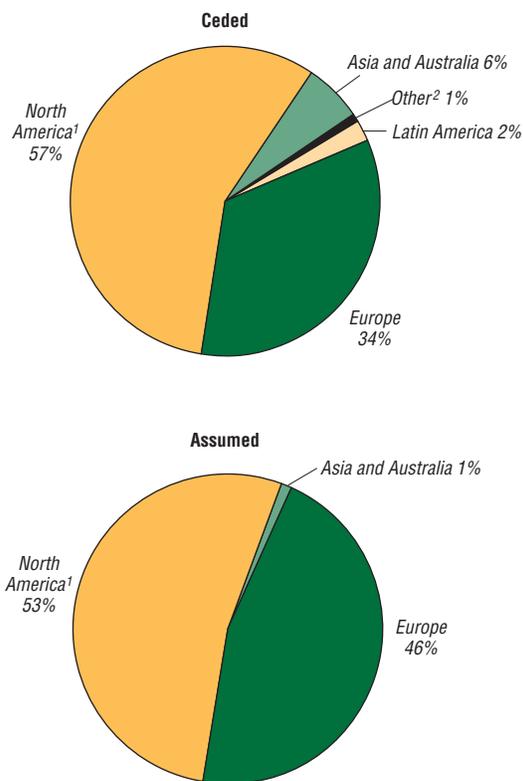
Source: International Association of Insurance Supervisors.
[1]North America includes Bermuda.
[2]Africa and the Middle East.

Figure 3.5 shows the regional distribution of premia ceded and assumed by reinsurers. European domiciled reinsurers have traditionally been large net recipients of risk from the rest of the world, principally Japan and the United States. However, Bermuda-based reinsurers are now substantially increasing their net acceptance of risk premia, particularly from the United States.

The global reinsurance market has become significantly more concentrated, with 10 firms now accounting for approximately 60 percent of global premia, compared with 40 percent a decade ago (Group of Thirty, 2006, p. 12). Consolidation has principally been through M&A activity, although a number of firms ceased operating in the late 1990s during the "soft" point of the reinsurance cycle when capacity was plentiful and premia were low. While this process has been driven by economies of scale and risk diversification across countries and business lines, it nevertheless means that primary insurers are increasingly dependent on a concentrating global reinsurance industry.

How Institutional Globalization Affects Stability

There are a variety of reasons to expect that, for the most part, increasing globalization of financial institutions brings benefits in terms of financial stability as well as financial sector development and efficiency. This is certainly the case at least from the perspective of individual institutions and at the system level in relatively benign times. But a key question is whether the stability of financial systems—home, host, or internationally—might be more vulnerable to disruption in extreme circumstances, given increased cross-border interlinkages.

The literature provides conflicting analysis concerning the overall impact of institutional globalization on financial stability. On one hand, it identifies a number of potential benefits, including the following:

• Diversification gains from lower volatility of income and asset values through reduced exposure to home market conditions;

- Increased profitability of foreign operations due to the application of more sophisticated techniques and products;
- Improved risk management practices transferred to foreign operations along with an internal capital market better able to deploy capital to the firm's most profitable opportunities;
- Greater stability in credit availability due to the parent bank's distance from the domestic credit cycle in any particular country;
- Improved access to deeper international markets for funding;
- Better liquidity for investment and hedging; and
- Greater access to hedging instruments and more diversified portfolios.

In addition, EM host countries should benefit more broadly from knowledge and technology transfer via foreign financial institutions.

On the other hand, there are a number of potential problems. In particular, the parent institution may expand in a manner that wastes capital or that loses "focus" on core home markets from the point of view of equity market expectations (e.g., if banking techniques and products do not actually transfer well to specific host markets, or if management is not sufficiently attuned to host market conditions). Risk management in a complex parent group, operating across a number of cultures and time zones, may be inherently more difficult than in a simple single-country structure, notwithstanding risk management techniques improving over time. This is particularly the case in ensuring adequate operational (including reputational) and market risk management in foreign operations by parents.[17] Credit risk management as well may be more difficult, especially in cases where limited or unreliable information on borrowers' creditworthiness in host countries restricts the usefulness of the

parent's risk measurement and management systems.

There is little empirical evidence to date to distinguish between these conflicting views and establish whether cross-border diversification of financial institutions reduces or increases firm-specific or systemic vulnerabilities.[18] A complication from the analytical perspective is that globalization of financial institutions has gone hand-in-hand with other trends, such as a trend toward greater functional diversification (e.g., from banking to nonbanking activities). There is extensive literature on diversification in firms in general,[19] and more recently new research has emerged on diversification costs and benefits in financial institutions specifically. But that research focuses on functional rather than cross-border diversification.[20] Studies that

[17]While fraud or management failures can of course be committed in purely domestic firms, risk controls can be more difficult to police in a cross-border structure. The Barings and Allied Irish Bank examples illustrate the point.

[18]Numerous studies have focused on cross-border diversification, but instead of linkages to financial stability, they have typically analyzed other issues. For the literature on measuring the extent of cross-border banking, see Manna (2004) and Schoenmaker and van Laecke (2006); for explanations of the factors driving the international banking flows, see Papaioannou (2005); for the impact on profitability, see Claessens, Demirgüç-Kunt, and Huizinga (2001) and Garcia-Herrero and Vázquez (forthcoming); for the impact on efficiency, see Berger and others (2000); and for the impact on financial sector development and access to financial services, see Detragiache, Tressel, and Gupta (2006).

[19]In particular, Wernerfelt and Montgomery (1988) found that cross-industry diversification has a negative effect on firm value (measured by Tobin's q or a similar measure), a result that has been confirmed by a number of subsequent studies and has come to be known as the "diversification discount." The common explanation of this finding is that conglomerates suffer from structural and managerial weaknesses, while at the same time their risk-spreading qualities are of little value to investors who can diversify their portfolios.

[20]Also, there is a nontrivial relationship between cross-border banking, competition, and stability. In a broad review of the literature, Claessens (2006) finds much, but not uniform, evidence that cross-border banking increases competition. As regards the relationship between competition and stability, a number of studies suggest a trade-off between the two (e.g., Beck, Demirgüç-Kunt, and Levine, 2006). However, this literature uses country-level concentration ratios that may not capture cross-border competition well. Studies using more direct measures of competition (e.g., Schaeck, Čihák, and Wolfe, 2006) find a positive relationship between foreign bank competition and stability.

employ accounting data or that focus only on diversification in a narrow sense (e.g., within the credit risk category) tend to find diversification benefits for financial institutions.[21] Contrasting with these results, but in line with the literature on conglomerates in general, Laeven and Levine (2005) find that there is a significant diversification discount in share prices of large banks in 43 countries. In other words, the market values of financial conglomerates that engage in multiple activities are lower than if those financial conglomerates were broken up into their component specialist constituents.[22] This underscores the possibility that "agency costs" may rise in such conglomerates and may outweigh the economies of scope and diversification gains.

Nevertheless, there are some reasons to believe that cross-border diversification of financial institutions may be more beneficial than functional diversification.[23] One reason the diversification gains may be larger is the imperfect correlation of economic activity among countries (although economic cycles are becoming more correlated in some regions). A second hint comes from the fact that the general corporate finance literature on cross-border M&A tends to find that multinational corporations are valued at a premium relative to industry-matched benchmarks, rather than the discount applying to functionally diversified corporations.[24]

To examine whether markets view cross-border mergers of financial institutions positively, an analysis was undertaken of both accounting and market-based data for a sample of large banks in Asia, Europe, and the United States. The four panels in Figure 3.6 plot data on individual banks' diversification across countries against various proxies for profitability, soundness, and market valuation.[25] To capture international diversification (on the horizontal axis), a Herfindahl index was calculated for each bank as the sum of the squared shares of its assets or revenues across the countries under consideration: the lower the index, the more cross-border diversified the bank. On the vertical axes, the four panels show a measure of performance (the risk-adjusted return on equity, ROE); an accounting measure of likelihood of default (z-score); a stock price-based measure of likelihood of default (distance to default, DD); and a measure of market valuation (Tobin's q).[26]

The analysis indicates that large banks with more internationally diversified revenues and, to a lesser extent, assets, have been characterized by higher average risk-adjusted returns, higher levels of individual soundness, and higher market valuation than other large banks. In addition, some two-thirds of the banks have more diversified operating revenues than assets, and their foreign operations tend to be more profitable than their home country business.

On the level of individual institutions, therefore, cross-border diversification appears to have benefits both in terms of profitability and

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[21]See Berg-Yuen and Medova (2005); Laderman (2000); and Everts and Liersch (2006).

[22]This does not necessarily mean, however, that conglomerates are more risky than less-diversified institutions. Share prices reflect market views on the benefits to shareholders, rather than benefits to depositors/bondholders or to financial stability more generally.

[23]For instance, Schmid and Walter (2006) find that geographic diversification by U.S. banks leads to a positive (but statistically insignificant) equity premium, whereas activity diversification results in a significant discount in their equity values.

[24]Notably, cross-border acquisitions of targets from different industries are found to result in a significant diversification discount. Significant wealth gains accrue to foreign target shareholders regardless of the type of acquisition (see Dos Santos and others, 2003).

[25]This analysis is an extension of Tieman and Čihák (forthcoming), which focuses only on Europe and uses a narrower range of variables.

[26]The z-score and the DD are two analogous measures of an individual institution's soundness: the first is based on accounting data, and the second uses stock price data. Both measures illustrate the probability that the market value of a financial institution's assets becomes lower than the value of its debt (the higher the indicator, the lower the probability). The DD is a useful proxy for individual bank default risk when bank stocks are traded in liquid markets; the z-score provides an alternative measure that does not require such markets. For a more detailed discussion of the pros and cons, and a review of the literature, see Čihák (forthcoming).

market valuation, and in terms of soundness indicators.[27] The relationship between internationalization and individual soundness is far from universal, however. Indeed, as Figure 3.6 shows, there are examples of diversified banks with low z-scores.

Moreover, Figure 3.6 does not analyze causality: a proper evaluation of the effect of cross-border diversification on bank soundness needs to take into account the bank-specific characteristics that bear both on soundness and on the decision to diversify. A more detailed econometric analysis confirms that even after adjusting for other factors (such as bank size or functional diversification, approximated by the share of noninterest income in total income), there is still a consistently positive (across different specifications) albeit weak link between cross-border diversification and profitability and soundness at the level of individual institutions.[28]

More importantly, despite its generally positive effects on individual institutions, it remains an open question whether greater cross-border diversification among the larger banks over the past decade has led to a decline in the *systemic* risk of these institutions as a group. The calculations presented in Box 3.1, for example, show that systemic risk may not have declined. Unlike the bank-specific findings above, the analysis in Box 3.1 considers the large banks as a group and picks up any correlations between their individual loss experience. The intuition behind this is that when all or most banks diversify internationally,

[27]All the slope coefficients in Figure 3.6 are significant at the 10 percent level. The slope coefficients for risk-adjusted ROE and Tobin's q are also significant at the 5 percent level.

[28]More details are provided in Čihák (2007). The part of the findings relating to profitability is consistent with a recent study by García-Herrero and Vázquez (forthcoming), who find (using a slightly different sample and definition of diversification) that greater asset allocation to foreign subsidiaries enhances the risk-adjusted profitability of international banks, even though these gains are somewhat reduced when subsidiaries concentrate in specific geographical regions. The authors argue that international diversification gains in banking are substantial and remain largely unexploited.

Figure 3.6. Cross-Border Diversification and Individual Bank Soundness, 1994–2004
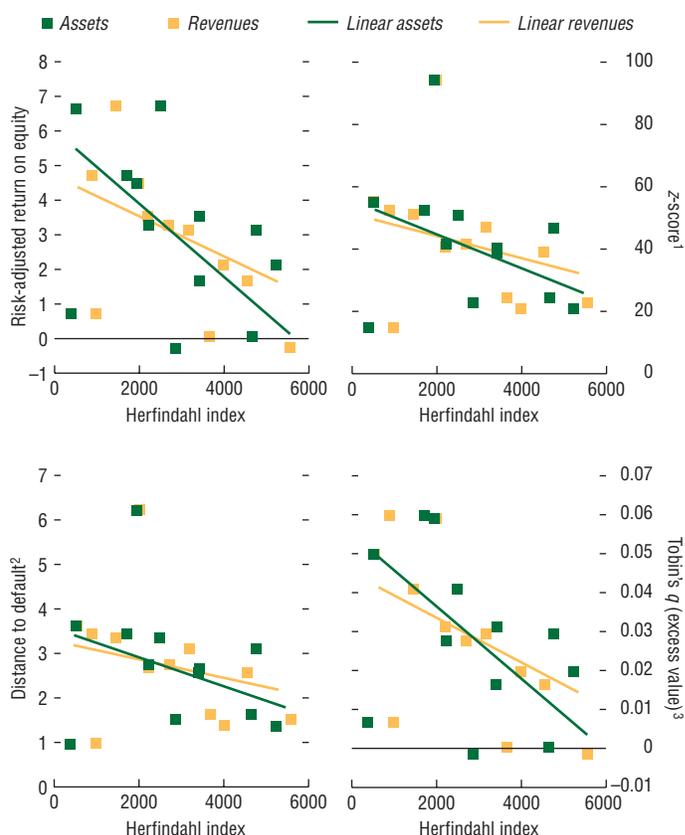
Sources: ©2003 Bureau van Dijk Electronic Publishing-Bankscope; and Thompson ONE Banker; and IMF staff calculations.

Note: Herfindahl Index calculated as the sum of the squared shares of a bank's assets or revenues across selected countries—the lower the index, the more cross-border diversified the bank.

[1]The z-score is defined as $z = (k+\mu)/\sigma$, where k is equity capital as percent of assets, μ is return as percent on assets, and σ is standard deviation of return on assets as a proxy for return volatility.

[2]The distance to default is defined as the difference between the expected value of the assets at maturity and the default threshold, which is a function of the value of the liabilities.

[3]The "excess value" is defined in line with the "conglomerization discount" literature (e.g., Laeven and Levine, 2005) as a difference between actual Tobin's q and a weighted average of estimated Tobin's q for the constituent entities.

Box 3.1. Some Evidence on Systemic Stability Aspects of Bank Globalization

The calculations in the main text suggest that for individual banks, cross-border diversification is generally associated with higher market valuation and greater robustness as measured by both accounting-based and market-based indicators. However, this result does not translate simply to the systemic level. As banks become more diversified across borders, the risk of joint failures does not decrease, the main reason being the correlation between individual bank loss probabilities.

This point is illustrated in the figure in this box, which compares the expected loss per $1 of exposure to a portfolio of all large banks and the loss per $1 of exposure to a portfolio of internationally active large banks (those with 50 or more percent of their business conducted outside their home country). To calculate the expected loss, market data (stock prices) are combined with accounting data in a fashion similar to the distance-to-default (DD) model for individual banks, which approximates probabilities of default in banks. Unlike the DD model, however, the expected loss also takes into account different losses given default estimates for banks in the system (reflecting their different size) and the co-movement of their share prices (to approximate the likelihood of interbank spillovers or common shocks).

The figure indicates that risks among the internationally diversified banks as a group appear to be higher than risks among the entire group of large banks. During a few years in the early 1990s, the opposite was true, as a result of a relatively strong performance (low volatility) of the internationally diversified banks. The expected losses increased sharply toward the

Note: The main author of this box is Martin Čihák.

Expected Loss on a $100 Portfolio of Internationally Active Large Banks Minus Expected Loss on a $100 Portfolio of All Large Banks
(In U.S. dollars, monthly averages)

Sources: IMF staff calculations based on data from Bloomberg L.P.; and ©2003 Bureau van Dijk Electronic Publishing-Bankscope.

end of the 1990s and subsequently remained high. A closer analysis reveals that this profile indicates that higher capitalization has been offset by higher exposure to risks among the internationally active banks.

The figure needs to be interpreted with caution, because using market-price data to gauge probabilities of default (and even more so the coincidence of defaults) has obvious limitations, documented in the literature. Nonetheless, it provides an important piece of cautionary evidence that cross-border diversification, despite relatively obvious benefits at the micro level, may have less clear-cut advantages at the macro level.

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systems may become more vulnerable to large, common shocks and to spillover effects.[29] For

example, there appear to be increased trading and other linkages between the large global-

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[29]Moreover, economies themselves are becoming increasingly integrated in some regions, which also tends

to reduce the stability-enhancing effects of international diversification.

ized institutions, as concentration in major local and international banking markets has increased, with a relatively small number of large international players having a central role in a range of key markets. Such effects raise potential systemic risks in financial systems and internationally.[30]

These findings are consistent with the model presented in Wagner (2006) and also with De Nicoló and Tieman (2006), who observe that the integration process in Europe does not have an unambiguously positive effect on financial stability. For a group of large European financial institutions, they find that measures of systemic risk did not decline during the period from 1990–2004 and that bank risk profiles converged, while the sensitivity of bank and insurance systemic risk measures to common real and financial shocks increased in most countries.

Several other indicators also raise the possibility that systemic risks may have increased as banks and other LCFIs have become more globalized. First, Figure 3.7 shows the increasing share price correlations among the major LCFIs. Second, despite widespread diversification, the distribution of exposures may still be quite heavily concentrated: among the major economies, the United Kingdom or the United States account for a substantial share of consolidated cross-border claims of BIS reporting banks (Figure 3.8). Third, there may be increased international spillovers between LCFIs in the face of extreme events, even after controlling for common domestic and global shocks (see Box 3.2).[31]

Figure 3.7. Stock Price Correlation for Major Banks, 1990–2006

Source: IMF staff calculations based on data from Bloomberg L.P.
Note: Each point corresponds to a pair of major bank stocks in the United States, Europe, and Asia. Points in the upper left corner indicate stocks that turned from negatively correlated in 1990–99 to positively correlated in 2000–06. The position of the regression line above the horizontal axis indicates that overall, the correlation has increased between the two periods. Similar results are obtained from an analysis of cointegration.

[30]Gieve (2006a) makes similar points about the relationships between major U.K. banking groups and other global LCFIs.

[31]The analysis in Boxes 3.1 and 3.2, the bottom two panels of Figure 3.6, and Figure 3.7 relies on stock price data. That has both advantages (e.g., it is based on high-frequency data and allows the extraction of market views on soundness) and limitations (e.g., the analysis is only as good as the underlying data—it works reasonably well as long as markets are liquid and operate smoothly) that need to be considered when interpreting the results.

Figure 3.8. Concentration of Cross-Border Risk, end-June 2006
(In percent)

Source: IMF staff calculations based on Bank for International Settlements data.

Note: Share of consolidated cross-border claims of reporting banks (ultimate risk basis).

Host Country Perspectives

A number of additional perspectives are of particular relevance to financial stability in emerging market and other host countries. The presence of strong and vibrant foreign banks in EMs seems to have generally made their banking systems more robust to traditional domestic banking crises.[32] Most of the foreign-owned banks in Central and Eastern European (CEE) countries, for example, are owned by large EU banks with sound capital bases and a substantial presence in the region. There are stronger presumptions of effective monitoring by such parent banks of the operations of their foreign affiliates, and of financial support if needed, which should enhance domestic financial stability, all else being equal. There is also some evidence that EMs in which a larger share of foreign claims is extended through local affiliates of foreign banks, as opposed to cross-border lending, enjoy more stable foreign financing (García-Herrero and Martinez Peria, 2005).[33]

In addition, the local presence of international banks brings many other benefits, including greater efficiency and, at the macroeconomic level, more open access to capital flows. These flows, often provided by the parent banks, have allowed foreign banks to upgrade the quality and range of domestic financial services and banking processes, and have contributed to rapid financial deepening.

But the greater scale and changing character of foreign participation in many host country systems has also altered the nature of financial

[32]The discussion here does not distinguish between the form of foreign banks' affiliates (branches or subsidiaries) in host countries. Indeed, the increasing centralization of core business operations at the bank group level makes the corporate structure distinction less relevant operationally, all else being equal, as discussed further in the next section of this chapter. See Dermine (2006) for a review of corporate structure determinants and Cerutti, Dell'Ariccia, and Martinez Peria (2005) for recent trends therein.

[33]Most studies, however, only document differences in the behavior of banks' cross-border and local claims, without discussing possible financial stability implications deriving from these differences. See De Haas and van Lelyveld (2002) for Eastern Europe, and Peek and Rosengren (1997) for Japan and Latin America (2000).

Box 3.2. Assessing Spillover Risks Among the World's Largest Banking Groups

The scope for cross-border spillovers among large complex financial institutions can be examined using extreme value theory (EVT), which analyzes the co-movements between extreme events ("co-exceedances"), specifically the co-movement of extreme negative (left-tail) realizations of banks' soundness measures.

The soundness measure chosen in this analysis is the distance to default (DD) (Crosbie and Bohn, 2003). The daily DD for the 24 largest banking groups in continental Europe, Japan, the United Kingdom, and the United States was computed for the period from May 30, 2000, to August 2, 2006 using daily stock price and annual balance sheet data from Bloomberg L.P. A binomial logit model was used to estimate the probability of a bank experiencing a large negative change in its DD in response to large negative shocks to the DDs of other banks.

Note: The main author of this box is Jorge A. Chan-Lau. The box is based on Chan-Lau, Mitra, and Ong (forthcoming), originally prepared for the IMF's 2006 United Kingdom Article IV consultation. The data set includes the world's 24 largest exchange-listed banking groups (including investment banking groups) by total assets, as of end-2005.

Large negative shocks were defined as those falling in the 10th percentile of the left tail of the common distribution of the changes in the DD across all banks. Three separate control variables—domestic stock market volatility, changes in the slope of the term structure, and the volatility of the Morgan Stanley Capital International All Country World Index—were also included in the logit model to account for common factors affecting domestic financial markets, the real economy, and global market factors, respectively. The results are summarized in the table below, which shows the number of statistically significant co-exceedances at the 5 percent confidence level.

The results suggest that, although spillovers within domestic banking systems generally remain more likely, the possibility of cross-border spillovers may be rising, at least in some cases. Bearing in mind that this analysis abstracts from cross-border spillovers within continental Europe, the potential for extreme events to spill over from the United Kingdom and the United States to continental Europe appears to have increased by these measures, as has the possibility of spillover from the United States to the United Kingdom.

Significant Co-Exceedances
(In percent of total bank transmission channels)

	May 2000–May 2003 Contagion to Banks in:			June 2003–August 2006 Contagion to Banks in:		
	Continental Europe	United Kingdom	United States	Continental Europe	United Kingdom	United States
Initial shock to banks in:						
Continental Europe	14	11	7	17	11	6
United Kingdom	4	17	6	19	17	6
United States	2	0	17	7	6	23

Source: Chan-Lau, Mitra, and Ong (forthcoming).

stability risks and introduced new challenges for domestic authorities.[34] Foreign-owned banks

have become channels through which different types of vulnerabilities could build up. While less vulnerable than otherwise to domestically generated shocks, financial systems with substantial foreign bank presence are of course more vulnerable to foreign shocks that seriously

[34]Domanski (2005) and Moreno and Villar (2005) discuss the changing character of foreign bank involvement in emerging countries.

affect the parent banks (and the more so, the more concentrated is the foreign bank presence). At least where the foreign banks are of high quality, the latter type of event may be considered relatively unlikely. Nevertheless, from the host authorities' point of view, the implications of such foreign shocks may well be serious. The shocks may, in some senses, be larger and certainly more difficult for the local authorities by themselves to deal with, or to even see coming.

It is generally believed that foreign banks provide stability in host country financial crises, exhibiting higher levels of credit growth and lower lending volatility than their domestic counterparts.[35] However, such findings tend to focus on the different reaction of foreign and domestic banks in the face of a domestic shock. In contrast, when different types of shocks are considered (including shocks in the home country or other host countries), the picture becomes more nuanced. For example, in response to the capital losses suffered by Japanese banks following the sharp drop in the Japanese stock market in the early 1990s, Japanese subsidiaries in the United States cut their local lending much more significantly than the parent bank in its home market (Peek and Rosengren, 1997). Other studies found that changes in claims on individual host countries are correlated with changes in claims on other host countries (Martinez Peria, Powell, and Vladkova-Hollar, 2005).

The issues above need to be seen through the prism of rapid credit growth in many EM countries, especially in emerging Europe and Latin America, where foreign banks have frequently become key local credit suppliers (Table 3.2 and Figure 3.2). Chapter II of the September 2006 *Global Financial Stability Report* (IMF, 2006a) examined household credit growth in EMs in some detail. An important aspect is how credit

from foreign banks is funded. Frequently, a substantial proportion of new lending by foreign banks has been foreign-financed rather than funded from domestic deposits—some by borrowing in international markets, some through funding directly from the parent or elsewhere in the international group. Figure 3.9, which shows bank net foreign assets, illustrates the importance of this trend for European EMs as a group, in particular. But the limited data available on the local claims and liabilities of foreign bank affiliates in other EMs suggest it is also relevant elsewhere, that is, for some individual countries, at least, in Latin America. In normal times, such external funding would likely be considered quite stable and indeed as offering flexibility to extend the maturity of funding. By the same token, however, adverse developments in the broader banking group or in international funding markets could have an important spillover effect for the host financial system.

The central issue here is the sheer scale to which foreign bank credit activity has grown in a variety of countries. It raises the prospect that a disruption or a significant slowing of credit supply due to factors specific to foreign banks could have a macro-relevant impact both in terms of overall domestic credit availability and in terms of the capital inflows financing sometimes significant current account deficits. (Figure 3.10 illustrates how the surge in net foreign bank claims in emerging Europe, where many countries operate closely managed or pegged exchange rate regimes, has coincided with rising current account deficits.) Such broader effects could, of course, have further second-round implications for the stability of the host country financial system.

Another aspect, again especially for EMs in Europe, is that much of the strong presence of foreign banks in the region is accounted for by the same relatively small set of foreign bank groups. At end-2005, half of all CEE foreign-owned bank assets were concentrated in eight bank groups (Figure 3.11). Similarly, almost half of foreign bank claims against CEE countries were concentrated in four home countries

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[35]See Dages, Goldberg, and Kinney (2000). Similarly, De Haas and van Lelyveld (2000) found that foreign bank claims did not seem to retrench during recent crises in CEE countries.

(Figure 3.12). The significance of these concentrations raises the possibility that an extreme event affecting a foreign bank (let alone more than one) could have potentially wide-ranging spillover effects within the CEE region. These effects would be all the more important if, in the face of a serious negative event, banks did not distinguish adequately between different EM countries, even if they would do so in more normal times.

Insurance Perspectives

Spreading insurance risk internationally has a number of attractions. Principally, when aggregating the amount of capital required for a multi-jurisdictional book of business, the amount necessary to cover the risks can be reduced, thereby increasing the absorption capacity of an insurer for a given level of capital. Such diversification has been calculated to reduce economic capital requirements by 40 to 50 percent relative to the separate capitalization of the same risks (De la Martinière, 2003, p. 88). In addition, to the extent that domestic insurance markets are subject to distinct insurance pricing and regulatory "cycles," diversification across markets should smooth insurers' profitability and reduce insolvency risk.

Nevertheless, multi-jurisdictional insurers face a number of challenges in realizing these benefits, including the regulatory, tax, and cultural differences that prevent easy transfer of insurance products between markets; the complexity of managing risks across multiple jurisdictions and business lines; and the need to adapt strategy to local distribution networks.

With respect to reinsurance, there were concerns about the degree of transparency in the global industry.[36] These concerns were prompted by the relative lack of public disclosure by a significant proportion of the industry and the

Figure 3.9. Selected Regions: Net Foreign Assets
(In percent of bank capital)
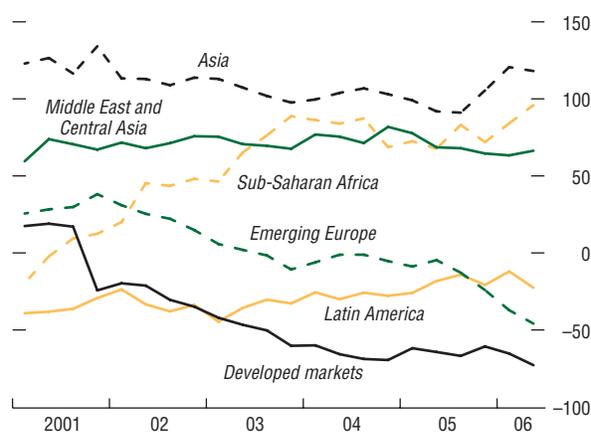
Source: IMF, *International Financial Statistics* database.

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[36]A concern voiced, for instance, at the Financial Stability Forum held in Toronto, Canada, on September 2–4, 2002. See http://www.fsforum.org/press/press_releases_47.html.

Figure 3.10. Net Foreign Bank Claims and External Position vis-à-vis Emerging Markets
(In billions of U.S. dollars)
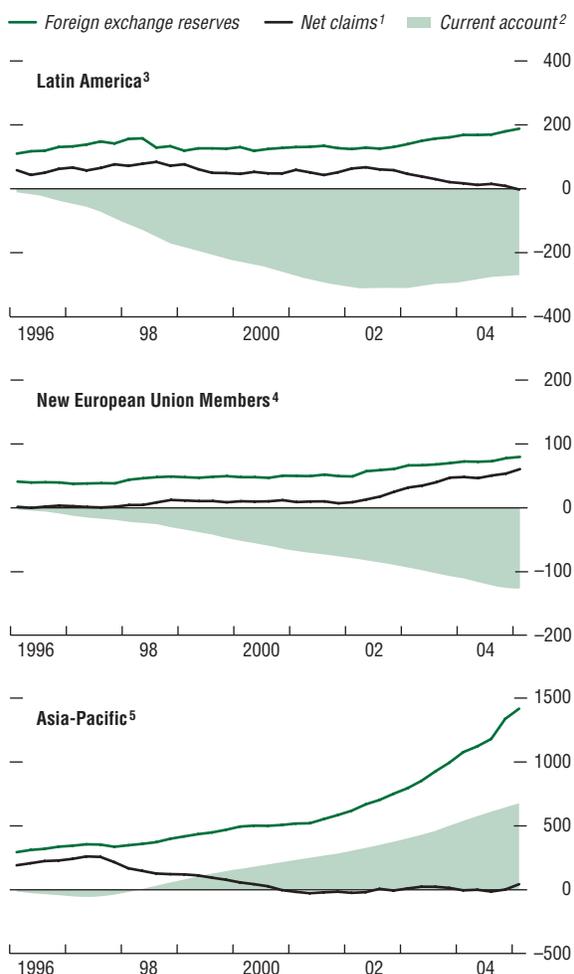
Source: Bank for International Settlements (BIS). Data and analysis originally published in McGuire and Tarashev (2005b). Updated data provided by BIS staff.
   [1]Total stock of net claims of BIS reporting banks.
   [2]Cumulative current account balance since 1995Q4.
   [3]Argentina, Brazil, Colombia, Mexico, and Venezuela.
   [4]The Czech Republic, Hungary, and Poland.
   [5]China (reports on an annual basis; the conversion to quarterly frequency assumes that flows are evenly distributed throughout each year), India, Indonesia, Korea, Malaysia (from 1997Q1 onward), the Philippines, Taiwan Province of China, and Thailand.

absence of global regulatory standards. However, the Reinsurance Transparency Group of the International Association of Insurance Supervisors has succeeded in closing some of the gaps in information by compiling data on 46 of the major reinsurance groups across seven jurisdictions. This information helped the Group of Thirty to conclude that even the failure of a global reinsurer that accounted for 20 percent of global reinsurance capacity does not appear to have the potential to cause insolvencies for major primary insurers across the sector.[37] The relative ease of entry of additional reinsurance capital, particularly through Bermuda-based special purpose vehicles, currently means that any capacity constraints are short-lived.

However, the regulatory practice in some jurisdictions of requiring reinsurers to ring-fence capital against the specific risks underwritten there increases the cost of reinsurance in those jurisdictions. And it thereby diminishes the benefits that global diversification can bring to the insurance market. The requirement to dedicate capital to support particular geographically sourced risks limits the ability of underwriters to reduce their overall economic capital requirement by holding uncorrelated risks, and raises the cost of insurance worldwide, not just in those jurisdictions.

Policy Implications

The discussion above highlights the fact that increasing globalization of financial institutions appears to be generally beneficial, and in particular is associated with better profitability and stability of the individual institution. But it may also be the case that financial systems are more prone to transmission across borders, markets, and activities in the event of severe shocks. These effects may reflect exposures to common shocks,[38] or potential spillovers arising

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   [37]Group of Thirty (2006, pp. 31–39) and Swiss Re (2003).
   [38]For example, as business cycles in various regions become more synchronized (IMF, 2007).

from ownership, trading, or other linkages. The evidence on these points, while not conclusive, is certainly suggestive when the different strands are taken together.

Further, this conclusion is not only an issue at the global level involving major LCFIs. It is also potentially important at the regional or country-specific level, and for smaller banks that operate internationally. In the face of a severe shock, for instance, banking flows to EMs—which in some cases are a significant share of capital inflows more broadly—could be quite sharply curtailed. What can be done to maximize the benefits of institutional globalization while containing the potential risks?

Two key challenges arise for policymakers. The first is to ensure that there is effective ongoing oversight of internationalized financial institutions to help prevent crises arising in the first place. The second is to put in place cross-border crisis management and resolution arrangements that are sufficiently robust to handle a severe shock and minimize spillovers. Both aspects require multinational institutions to be dealt with in a multilateral fashion.[39] The nub of the issue is the mismatch between the scope of institutions' activities on the one hand, and of legal, regulatory, and supervisory jurisdictions on the other.

This mismatch can be particularly problematic when there are significant asymmetries in the interests of home and host authorities, as can be the case in a range of EM and other host countries. In countries with rapid credit growth and substantial foreign bank activity, for example, host authorities may be concerned about possible domestic asset price boom-bust cycles, or about more general demand and external balance pressures, in which macroeconomic policy tools may be seen to be limited. Authorities may be uncertain how well foreign banks are managing related risks in what are often

[39]Internationally, securities regulators have established a multilateral memorandum of understanding to guide ongoing cross-border collaboration, and insurance supervisors have announced the intention of doing so.

Figure 3.11. Central and Eastern European (CEE) Countries' Bank Asset Structure, by Key Bank Groups, end-2005
(In percent of total CEE banking sector assets)
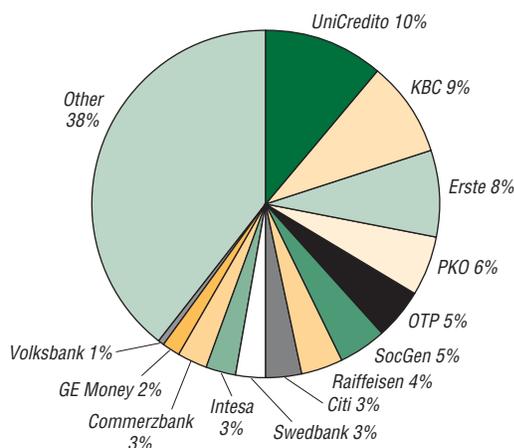
Source: RZB Group (2006).
Note: Markets include Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kosovo, Latvia, Lithuania, Poland, Romania, Russia, Serbia (data presented are for Serbia and Montenegro), Slovak Republic, Slovenia, and Ukraine.

Figure 3.12. Structure of Foreign Claims to Central and Eastern European (CEE) Countries, by Key Creditor Countries, end-March 2006
(In percent of total foreign bank claims to CEE countries)
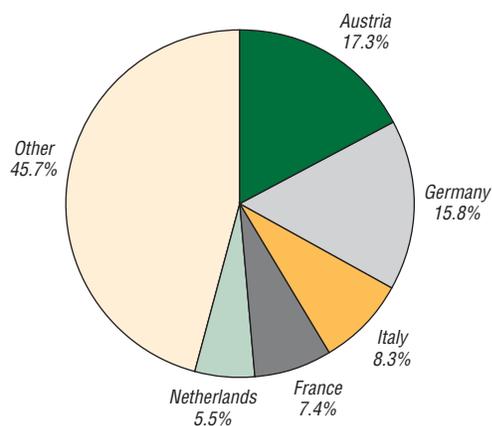
Source: Bank for International Settlements (BIS).
Note: Based on consolidated foreign claims of BIS reporting banks.

Figure 3.13. Home-Host Asymmetry in Foreign Bank Exposure, March 2006
(Percent of cross-border claims)

Emerging Europe

Latin America

Emerging Asia
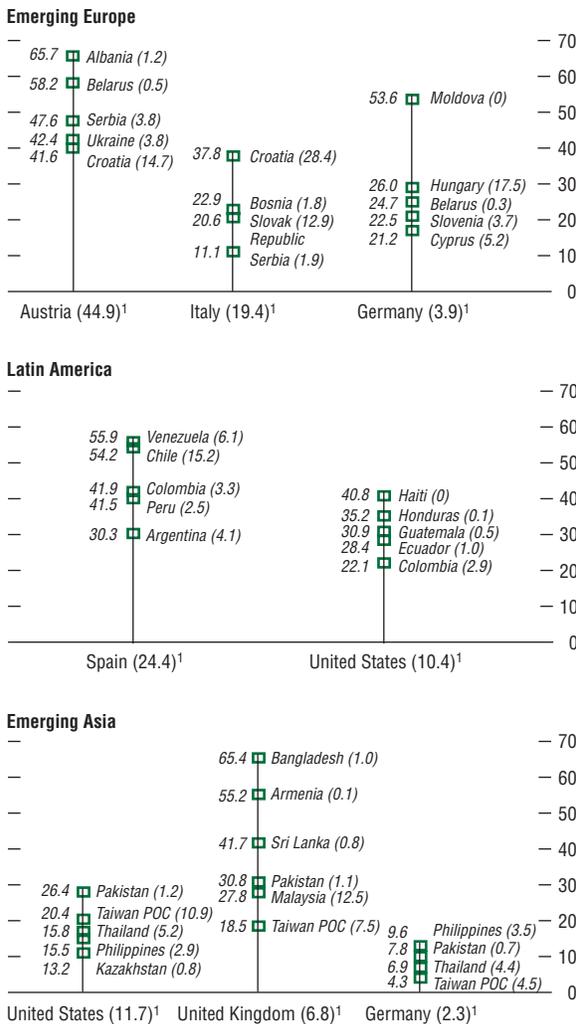
Source: Bank for International Settlements.

Note: Each vertical line represents a particular home country; the exposures of selected host countries to this home country (in percent of total host foreign exposure) are graduated on the left-hand side of the vertical line. The exposure of the home country to the host countries (in percent of total home foreign exposure to region) is given in parentheses.

[1]Foreign bank claims of home country to region (in percent of total home foreign exposure).

very competitive local markets. In such cases, the authorities that bear most of the financial instability risks may not be the ones in the best position to mitigate them.

Figure 3.13 provides a partial illustration of the extent of some of these asymmetries for selected countries, based on BIS flow data for cross-border bank claims.[40] For example, 78 percent of foreign bank claims on Croatia are from two home countries (Austria and Italy), and these represent well over 100 percent of measured private sector credit in Croatia (in part due to the importance of direct cross-border claims). In contrast, Croatia represents a much smaller share of these countries' overall claims on the CEE region (14 percent in the case of Austria and 27 percent in the case of Italy). Similarly, in Latin America, 54 percent of foreign bank claims on Chile (which were themselves equivalent to 72 percent of private sector credit in Chile) originates from Spain, whereas Chile represents only 15 percent of Spain's total claims going to the region (middle panel of Figure 3.13). The asymmetries appear wider still in some other countries.

Ongoing Cross-Border Supervisory Coordination

At the day-to-day level, host supervisors need to be assured about the ongoing condition, and effective supervision, of a foreign bank affiliate that is systemically important from their local perspective.[41] However, when that foreign affiliate is not of great importance within the overall

[40]Data as shown in Figure 3.2, including direct cross-border claims and the local claims of foreign affiliates. Figure 3.13 concentrates on countries with the largest asymmetries as indicated by the BIS data. There are a few countries—such as Brazil and Mexico—in which foreign bank activity is very important but which are not shown in the figure because the asymmetries in the BIS data are smaller. (For Mexico, in fact, the asymmetry under the definition in the figure is opposite that for other host countries.)

[41]On some issues regarding supervisory coordination and supervisory structures in the euro area context, see Belaisch and others (2001).

bank group, or to its home supervisor, specific actions (or lack thereof) by the parent or home supervisor could have significant effects for the host financial system.

In principle, for foreign banks that are systemically important in a host country, ensuring local incorporation as a subsidiary rather than a branch may help to address these concerns.[42] All else being equal, this gives host authorities greater supervisory control over local operations, including the ring-fencing of assets in the event of a problem either in the affiliate or in the wider banking group, and possibly imposing specific reporting and capital-related prudential requirements.

However, while subsidiaries are still a more common form of entry than branches, the matter is rather more complex in practice.[43] Ultimately, even a subsidiary structure may not guarantee access to relevant information or the ability to respond promptly and effectively in the event of a crisis. But such a structure is also more costly to the parent bank and adds complexity to its capital structure, while not fully preventing it from extracting capital in the event of a loss or change in business strategy.

In particular, there is potential for subsidiaries to become more branch-like in practice as major governance arrangements and key management systems and functions (including risk management) are centralized in various other parts of the group.[44] This could pose further challenges for host supervision, as well as for effective intervention in case of a problem. To different degrees, supervisors have tried to address the challenges that might

arise from such centralization, while remaining aware that overly tight restrictions would negate some of the commercial benefits of globalization.[45]

In any event, whether the foreign bank affiliate is in the form of a branch or a subsidiary, its behavior depends to an important degree on the risk appetite and financial strength of its parent groups, whose leadership and respective home supervisors are located abroad. Accordingly, to the extent feasible, financial surveillance needs to be supplemented by strong supervisory coordination, including at the regional level.[46] Supervisors internationally have indeed been strengthening home-host coordination arrangements, although, not surprisingly, this has gone furthest between the major financial centers and within the EU, as a reflection of the importance of the most globally significant LCFIs.

It is important for this process to continue apace, and also for coordination processes to be stepped up with respect to EM host countries, where progress has been generally slower to date. Specifically, it would be ideal for host supervisors to ensure ongoing cooperation and the exchange of information not only with the home country authorities of systemically important foreign institutions, but also with authorities from other host countries where these foreign groups are active in the region.

However, it also must be recognized that there may be important legal, cost, and other constraints on how far such coordination can realistically go. For example, conflicting confidentiality or freedom of information requirements may limit the sharing of privileged information. In practice, home and host supervisors have a menu of options for various degrees

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[42]In New Zealand, for example, where all of the large banks are Australian-owned, the authorities have required that all systemically important banks incorporate locally to strengthen their crisis management capabilities.

[43]In any case, under EU passporting arrangements, a bank licensed anywhere in the EU is able to set up branches in other EU countries without needing further authorization.

[44]Centralization of group functions may also have implications for operational risk management that are of systemic relevance (Box 3.3).

[45]In New Zealand, where foreign banks are large and have extensive outsourcing arrangements for their business functions with their Australian parent banks, the authorities have introduced a policy that aims at ensuring that large banks that outsource their core management systems do not compromise their ability to provide core liquidity and payments services in the event that one of their service providers fails or becomes dysfunctional.

[46]And also including with offshore financial centers.

Box 3.3. Operational Risk and Business Continuity

In order to cut costs, globalized large complex financial institutions have increasingly moved toward centralization of operational functions, such as trade settlements or liquidity management, in one financial center. The possibility of a disruption in the functioning of such a centralized operation could have systemic consequences—for example, if the institution is a key member of a major clearing or settlement system—and could also spill over internationally. In general, as the financial services industry becomes more globalized, the possibility increases of operational risks in one region spreading throughout the firm.

Accordingly, global firms are putting increasing emphasis on having well-articulated business continuity plans that span their global network.

Note: The main authors of this box are Charles R. Blitzer and David Hoelscher.

Such plans, which often involve geographically dispersed back-up sites, are often designed at the central headquarters and then adapted for local conditions by regional and local offices. One example is the widespread development in the past 18 months of business continuity plans for the possibility of an influenza pandemic. Global financial firms have prepared to move many of their activities (including back-office functions and some trading) temporarily out of high-risk regions to other locations, while maintaining the ability to respond to their clients' needs. Staffing patterns may be changed and business needs may be met by work-from-home arrangements or by staffing secure sites that are isolated from the pandemic. Many firms are also upgrading their technological capacity and their health infrastructure in light of the dangers of a pandemic. These steps strengthen the ability of the global firm to continue business activities in spite of unexpected disruptions.

of joint work and cooperation that are appropriate in different circumstances. These range from ad hoc discussions on issues of mutual interest, through projects involving joint work, to mutual reliance in the performance of tasks and the delegation of responsibilities. How far supervisors go along this spectrum will depend on their respective legal powers and objectives, relative expertise and resources, preferences with regard to risk, and how systemically important cross-border affiliates are to the host country and to the group's solvency (Wright, 2006).

Surveillance in financial systems with a large foreign-owned component also needs to pay close attention to actual or potential macroeconomic and financial interactions. This should include, among other things, more attention to the funding of credit growth and how this links to macroeconomic developments and risks. Surveillance should also pay greater attention to the various types of potential risk concentrations, as well as to cross-border spillovers and co-movements among institutions. One aspect

of this is the potential for regional spillover risk. The data in Figure 3.13 illustrate that, even though claims on individual host countries may be quite small, claims to all such countries in a region may be substantial.

Finally, in addition to further development of actual cross-border collaboration arrangements, the continuing evolution and application of international supervisory and other standards and good practices—not least those directly related to cross-border supervision—has a key role to play in underpinning effective policy coordination and cooperation. The process facilitates a focus on common principles and objectives across different jurisdictions, including encouraging a risk-based supervisory framework, even if the forms of implementation differ. It can thereby help underpin the mutual confidence-building needed for improving multilateral collaboration. Basel II and the recently revised Basel Core Principles for Effective Bank Supervision are important examples. Another important area of continuing policy attention

is the handling of potential liquidity pressures in LCFIs operating in multiple countries and currencies (Gieve, 2006a). There is a strong emphasis on ensuring prudent liquidity management within the major institutions themselves, including appropriate and active stress testing and contingency planning. Closely related is the emphasis on ensuring effective and flexible central bank facilities and infrastructure that can help avoid system-level liquidity stresses.

Further, because the largest and most central institutions are typically also significantly involved in either securities market activities or insurance business (or both), the process goes beyond the banking area narrowly defined. In the insurance sector, for example, there is still a long way to go to develop a common approach to risk-based solvency standards, especially outside the EU and Solvency II context.[47] Continuing progress toward application of agreed international accounting standards is another case in point.

Crisis Management and Resolution

Financial systems globally have held up quite well in the face of a range of adverse events in recent years. But thankfully, financial systems and policymakers have not been tested to date by a full-blown crisis involving a significant cross-border LCFI failure, or by simultaneous failures of several internationally active institutions, with potential spillovers to other large institutions and economies more broadly.[48] While such an event may be unlikely, the need for effective coordinated arrangements to deal with it is pressing because, in their absence, the costs may be very large indeed. Furthermore, EM and other host countries may face quite similar issues, even if their concerns do not necessarily relate to the largest LCFIs. There have been several notable cases of bank failures with cross-

border dimensions in the past that have provided useful lessons for policymakers (Box 3.4).

Decisive action in a cross-border context is challenging for a number of reasons, including the difficulties of obtaining a complete picture of the soundness of institutions and markets in crisis from different authorities; the complexity of large firm structures; and the technical difficulties in winding down an entity that is engaged in complex trading strategies across multiple legal jurisdictions. Issues also surround the extent to which liquidity and capital can be moved around a cross-border group. Adding to the difficulties, private sector solutions are less easy to implement in a cross-border setting, in which the sheer number and diversity of counterparties makes it difficult to bring them to a single table, and a "rescue" merger may have to overcome competition law hurdles (e.g., in the EU context). The complexity and size of an LCFI can deter otherwise willing participants in a private rescue operation.

Various country authorities have worked to improve domestic crisis management arrangements and payments systems in recent years, as well as signing international memoranda of understanding (MOU) on the management of financial crises in banks with cross-border establishments. However, even with an MOU, coordination may be difficult where there are substantial differences of views and even conflicts of interest between authorities, as well as technical and broader constraints on cross-border coordination.

At the technical level, differing legal and regulatory structures may prove to be major obstacles in an extreme and fast-moving event. These structures may include legal limits to cooperation and information exchange; relevant MOUs that are unenforceable in practice; complexities that arise in coordinating a clean-up with creditors across different jurisdictions and investor types; the application of very different insolvency regimes, with differences in creditor priorities (even within the EU, for example, some regimes are more pro-creditor and others more pro-debtor) or different approaches to

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[47]The 2005 EU reinsurance directive, for example, strengthens home supervision of firms in the EU.

[48]Thus, the discussion of banking crisis management based on past experience (e.g., Hoelscher and Quintyn, 2003) says little about dealing with a potential cross-border crisis.

Box 3.4. Examples of Bank Failures with Cross-Border Dimensions

Herstatt Bank. The bank was closed down by the (West) German authorities in 1974 after they found out that it was insolvent (due mainly to large losses in the foreign exchange market). The action was taken after the European markets had closed for the day, but while New York was still open. The European leg of foreign exchange deals had been settled, but once news of the closure reached New York all trades involving Herstatt were suspended, so that counterparties already debited in Europe did not receive the corresponding dollar amounts due to them in New York. As noted by Latter (1999), this episode prompted central banks to pay much more attention to settlement risk in payments procedures, particularly in cross-border foreign exchange transactions.

Bank of Credit and Commerce International (BCCI). The closure of BCCI in 1991 ranks among the biggest single-bank failures. At the time of its collapse, BCCI was operating in more than 70 jurisdictions. It had lost money on lending operations and foreign currency dealings, and failed owing more than $18 billion to its creditors. BCCI was made up of layers of entities, linked through a complex series of holding companies, affiliates, subsidiaries, and other relationships. The BCCI case highlighted the challenges involved in cross-border failures. For example, the different treatment of set-off led to problems in the BCCI liquidation, in which Luxembourg law differed from that in the United Kingdom, leading to the differential treatment of creditors (Campbell, 2002). However, the contagious impact of BCCI's failure on other banks was limited (Kanas, 2004).

Barings. An institution with roots going back 233 years, Barings suffered a $1.3 billion trading loss in February 1995. The event was precipitated by a Singapore-based trader who eventually pled guilty to two counts of fraud and was sentenced to a six-year jail term. The loss was larger than the bank's entire capital base and

reserves. Barings was forced to declare bankruptcy and was later purchased by the Dutch bank ING for £1, and an agreement to assume the fallen bank's substantial debts. From the viewpoint of this analysis, the important point is that even though Barings was a merchant bank headquartered in London, its problems resulted from overseas operations in Singapore.

Riječka Banka. This case illustrates that foreign ownership, while often playing a useful role, is not a panacea when pressures accumulate in a local subsidiary. Riječka Banka was the third largest Croatian bank when it incurred $97 million in losses on foreign exchange transactions between 1998 and 2002 (nearly three-quarters of the bank's capital). According to the Croatian National Bank, the losses had become so large partly because the bank's majority owner, Bayerische Landesbank of Germany, did not put in place adequate control mechanisms (Croatian National Bank, 2003). In the aftermath of the losses, Bayerische Landesbank did not inject additional capital; instead, it sold its 59 percent share in Riječka Banka back to the Croatian government, for a price of $1. Riječka Banka was ultimately re-privatized to Erste Bank of Austria.

Argentine and Uruguay crises. Several "ordinary" single-country banking crises included cross-border issues to a limited extent. For example, the macroeconomic crisis in Argentina in the early 2000s involved numerous bank failures; however, only one international bank was harmed when its subsidiary failed because of a dispute over the provision of liquidity. In 2002, neighboring Uruguay suffered a severe banking crisis. The withdrawal of nonresident deposits—accounting for more than one-half of total deposits—due to the crisis in Argentina triggered a general run on deposits in Uruguayan banks. The liquidity pressures and a sharp increase in nonperforming loans after a devaluation, combined with corporate governance problems, led the authorities to restructure the banking system, including strengthening liquidity and capital adequacy to improve the system's capacity to withstand shocks (IMF, 2006b).

Note: The main author of this box is Martin Čihák.

"universality" versus "territoriality;"[49] and different treatment of assets and approaches to set-off and netting.

Even if the legal and regulatory differences can be overcome, which is by no means certain, coordination problems between authorities from different countries may arise due to a range of other factors, including the asymmetries in interests noted above; different attitudes toward the principle of state intervention in banking crises, the moral hazard issues involved, and the desirability of early intervention; the inability of some smaller home countries to support a large cross-border entity (the "too big to save" issue); differences in the financing and coverage of deposit protection schemes, as well as in their timing of payout; and differences in approach to the form of rescue or resolution operations. Such differences may also exist between the government, central bank, and banking regulator within a country.

Questions also arise concerning the division of any loss (either potential or actual) that the respective authorities would bear if they were to engage in a preemptive rescue operation to provide liquidity, guarantees, or capital to support or recapitalize a cross-border institution.[50] The likely coordination challenges have led some commentators to advocate a pre-negotiated burden-sharing formula between interested authorities.[51]

There are, however, numerous barriers to widespread implementation of such agreements. Most important perhaps is that many countries would be uncomfortable with the moral hazard implications of formalizing such bailout processes. Indeed, leaving such arrangements ambiguous has the advantage that depositors, creditors, and shareholders of cross-border banking groups are unsure of the degree to which a bailout is likely in a crisis, thereby encouraging their monitoring of bank risk-taking.

These challenges, together with the likelihood that a crisis in an LCFI is likely to be fast moving,[52] reinforce the need for authorities to do as much as they practically can to have robust systems and arrangements to prevent such a crisis, or at least manage and minimize the fallout from it. Though still challenging, it is more feasible to have multilateral understanding and agreement on processes than on burden-sharing. Key aspects include ensuring that payment systems are sufficiently robust to withstand a cross-border banking failure, that authorities build trusting relationships (through "colleges," for example) to facilitate a rapid flow of sensitive information, and that existing crisis management arrangements are clearly defined and well-rehearsed (Gieve, 2006b). Ultimately, countries with systemic cross-border banks need to be prepared for a scenario where the solvency of the entity is in doubt and there is a need to coordinate any possible rescue operation with foreign authorities, given the negative externalities of failure (Freixas, 2003).

[49]Under a universality-based insolvency regime, all assets and liabilities of the failed cross-border institution are transferred to the home country and the institution is resolved under the legal framework of that country. Under a territoriality regime, the institution's foreign branches and subsidiaries are ring-fenced and resolved jurisdiction by jurisdiction. In the BCCI case, for example, U.S. branches were dealt with under the United States' territoriality approach, while operations in other host countries were dealt with in Luxembourg under the EU's universality approach.

[50]This issue has been considered most carefully in the European context due to the increasing foreign ownership of systemically important banks across EU countries, and to the complications arising from the division of responsibilities between the European Central Bank and the national central banks for members of the euro area.

[51]In the EU context, this has prompted two proposals for how the distribution of the costs of such rescue

operations could be structured (Goodhart and Schoenmaker, 2006). Either the European Central Bank could be responsible for any bailout operation, funded initially from seigniorage, with its capital underwritten by national governments according to their relative population and GDP; or a pre-agreed formula based on a bank's share of assets held in affected EU countries could be used to allocate the cost of any bailout to home and host country governments.

[52]The increasing dependence of LCFIs on wholesale liquidity, and the marked-to-market nature of their trading positions, mean that a bank's liquidity and/or solvency could be brought into question within hours.

To that end, a number of national authorities have been undertaking financial crisis simulation exercises, both domestically and (especially in Europe) jointly with other countries' authorities. Such exercises need to be a regular feature of interaction between national authorities, and between countries that cooperate in the supervision of systemic cross-border institutions. Although costly and time-consuming to prepare, such exercises need to be sufficiently large-scale to prepare the authorities and top managers for financial crises that threaten large parts of the financial system, and sufficiently frequent to familiarize each new cohort of managers with their responsibilities and to test their relationships with counterparts at home and abroad.[53]

Lessons from the "war games" in Europe point to the priority areas for further effort. These include, in particular, clarification of legal access to collateral and other assets; further development and testing of domestic crisis management arrangements between supervisors, the central bank, and the finance ministry; and continued cross-border crisis management exercises to further build relationships, contacts, and, more fundamentally, a common understanding of the issues involved, even if there is no specific agreement on how to approach crisis resolution. The need is pressing for this kind of work to continue and to deepen and broaden beyond those countries that have been most active to date in this area. Many countries still need to make significant progress on putting sound domestic arrangements in place.

Greater convergence in and mutual recognition of predefined pre-crisis sanctions and tools would also help limit the incidence and cost of failure and give some confidence that a home regulator could not forbear to intervene in a failing institution, to the detriment of foreign creditors. Only limited progress has been made internationally in this area to date, and mutual home-host understanding and confidence would be buttressed by a more transparent and rules-based regulatory framework for intervention and crisis prevention, coupled with a more risk-sensitive regulatory and supervisory framework in general. Such an intervention framework would need to define the nature of corrective actions to be taken as well as the timing and triggers for intervention (European Shadow Financial Regulatory Committee, 2006).

In sum, notwithstanding the costs and other constraints related to improving multilateral collaboration and coordination, there is much that supervisors and policymakers can do on a practical level to move the process along in terms of both crisis prevention and management in a world of globalized financial institutions. Policymakers internationally have undertaken a substantial amount of work in recent years to deal with these two challenges, and to make supervisory and regulatory arrangements more transparent across jurisdictions as the basis for better mutual understanding. Such work continues in a range of key areas; indeed, it is critical that it continue and that it be broadened to include additional countries. The work is complex and challenging, but it must continue expeditiously, as institutional globalization continues apace.

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[53]An open issue in this context is inclusion of private sector managers in these exercises. In the "war games" carried out to date, private sector participants have been excluded from exercises concerned with financial crises (although often included in business continuity exercises), mainly to minimize moral hazard concerns. The benefits of involving the private sector may be substantial in simulations of LCFIs operating in many markets, but by the same token, moral hazard concerns would need to be contained through careful construction of the scenario.

References

Bank for International Settlements (BIS), 2006, "The Banking System in Emerging Economies: How Much Progress Has Been Made?" BIS Paper No. 28 (Basel, Switzerland, August).

Bank for International Settlements (BIS) Committee on the Global Financial System (CGFS), 2004, "Foreign Direct Investment in the Financial Sector of Emerging Market Economies," CGFS Publication No. 22 (Basel, Switzerland).

———, 2005, "Foreign Direct Investment in the Financial Sector—Experiences in Asia, Central and Eastern Europe, and Latin America," CGFS Publication No. 25 (Basel, Switzerland).

Beck, T., A. Demirgüç-Kunt, and R. Levine, 2006, "Bank Concentration, Competition, and Crises: First Results," *Journal of Banking and Finance*, Vol. 30 (May), pp. 1581–603.

Belaisch, Agnes, Laura Kodres, Joaquim Levy, and Angel Ubide, 2001, "Euro-Area Banking at the Crossroads," IMF Working Paper No. 01/28 (Washington: International Monetary Fund).

Berg-Yuen, Pia E.K., and Elena A. Medova, 2005, "Economic Capital Gauged," *Journal of Banking and Regulation*, Vol. 6, No. 4, pp. 353–78.

Berger, Allen N., Robert DeYoung, Hesna Genay, and Gregory F. Udell, 2000, "Globalization of Financial Institutions: Evidence from Cross-Border Banking Performance," in *Brookings-Wharton Papers on Financial Services*, Vol. 3, ed. by Robert E. Litan and Anthony Santomero (Washington: Brookings Institution Press), pp. 23–120.

Berger, Allen N., Qinglei Dai, Steven Ongena, and David C. Smith, 2003, "To What Extent Will the Banking Industry Be Globalized? A Study of Bank Nationality and Reach in 20 European Nations," *Journal of Banking & Finance*, Vol. 27 (March), pp. 383–415.

Bø, Lars Jacob, Måns Hulterström, and Terje Pilskog, 2003, "Assessing Insurance Deals," *The McKinsey Quarterly*, No. 2, pp. 18–19.

Buch, Claudia, and Gayle DeLong, 2004, "Cross-Border Bank Mergers: What Lures the Rare Animal?" *Journal of Banking & Finance,* Vol. 28 (September), pp. 2077–102.

Campbell, Andrew, 2002, "Issues in Cross-Border Bank Insolvency: The European Community Directive on the Reorganization and Winding-Up of Credit Institutions" (unpublished; Washington: International Monetary Fund). Available via the Internet: https://www.imf.org/external/np/leg/sem/2002/cdmfl/eng/campb.pdf.

Cerutti, Eugenio, Giovanni Dell'Ariccia, and Maria Soledad Martinez Peria, 2005, "How Banks Go Abroad: Branches or Subsidiaries?" Policy Research Working Paper No. 3753 (Washington: World Bank).

Chan-Lau, Jorge A., Srobona Mitra, and Li Lian Ong, forthcoming, "Contagion Risk in the International Banking System and Implications for London as a Global Financial Center" IMF Working Paper (Washington: International Monetary Fund).

Čihák, Martin, 2007, "Systemic Loss: A Measure of Financial Stability," *Finance a uver/Czech Journal of Economics and Finance*, Vol. 57, No. 1–2.

———, forthcoming, "Cross-Border Diversification of Large Banks and Financial Stability," IMF Working Paper (Washington: International Monetary Fund).

Claessens, Stijn, 2006, "Competitive Implications of Cross-Border Banking," Policy Research Working Paper No. 3854 (Washington: World Bank).

———, Asli Demirgüç-Kunt, and Harry Huizinga, 2001, "How Does Foreign Entry Affect Domestic Banking Markets?" *Journal of Banking and Finance*, Vol. 25 (May), pp. 891–911.

Claessens, Stijn, and Neeltje Van Horen, 2007, "Location Decisions of Foreign Banks and Competitive Advantage," Policy Research Working Paper No. 4113 (Washington: World Bank).

Croatian National Bank, 2003, "Report on Riječka Banka Completed," press release, January 15.

Crosbie, Peter, and Jeffrey R. Bohn, 2003, "Modeling Default Risk" (San Francisco: Moody's KMV).

Dages, B. Gerard, Linda Goldberg, and Daniel Kinney, 2000, "Foreign and Domestic Bank Participation in Emerging Markets: Lessons from Mexico and Argentina," *Economic Policy Review*, Vol. 6 (September), pp. 17–36.

De Haas, R.T.A., and I.P.P van Lelyveld, 2002, "Foreign Bank Penetration and Private Sector Credit in Central and Eastern Europe," DNB Staff Report No. 91/2002 (Amsterdam: De Nederlandsche Bank).

De la Martinière, Gérard, 2003, "The Complexity of Managing a Global Company: Regional Exposure vs. Global Exposure," *The Geneva Papers on Risk and Insurance*, Vol. 28 (January), pp. 87–93.

De Nicoló, Gianni, and, Alexander F. Tieman, 2006, "Economic Integration and Financial Stability: A European Perspective," IMF Working Paper No. 06/296 (Washington: International Monetary Fund).

Dermine, Jean, 2006, "European Banking Integration: Don't Put the Cart Before the Horse," *Financial Markets, Institutions & Instruments*, Vol. 15 (May), pp. 57–106.

Detragiache, Enrica, Thierry Tressel, and Poonam Gupta, 2006, "Foreign Banks in Poor Countries: Theory and Evidence," IMF Working Paper No. 06/18 (Washington: International Monetary Fund).

Domanski, Dietrich, 2005, "Foreign Banks in Emerging Market Economies: Changing Players, Changing Issues," *BIS Quarterly Review* (December).

Dos Santos, Marcelo Braga, Vihang Errunza, and Darius Miller, 2003, "Does Corporate International Diversification Destroy Value? Evidence from Cross-Border Mergers and Acquisitions" (unpublished). Available via the Internet: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=502322.

European Central Bank (ECB), 2005, "Banking Structures in the New EU Member States" (Frankfurt, January).

European Shadow Financial Regulatory Committee, 2006, "Basel II and the Scope for Prompt Corrective Action in Europe," Statement No. 25 (London, November).

Everts, Hugo, and Hartwig Liersch, 2006, "Diversification and Aggregation of Risks in Financial Conglomerates," in *Economic Capital Modeling: Concepts, Measurement and Implementation,* ed. by Iman van Lelyveld (London: Risk Books).

Focarelli, Dario, and Alberto Franco Pozzolo, 2005, "Where Do Banks Expand Abroad? An Empirical Analysis," *Journal of Business*, Vol. 78 (November), pp. 2435–464.

Freixas, Xavier, 2003, "Crisis Management in Europe," in *Financial Supervision in Europe*, ed. by J. Kremers, D. Schoenmaker, and P. Wierts (Cheltenham, United Kingdom: Edward Elgar), pp. 102–28.

García-Herrero, Alicia, and Maria Soledad Martinez Peria, 2005, "The Mix of International Banks' Foreign Claims: Determinants and Implications," Policy Research Working Paper No. 3755 (Washington: World Bank).

García-Herrero, Alicia, and Francisco Vázquez, forthcoming, "International Diversification Gains and Home Bias in Banking," IMF Working Paper (Washington: International Monetary Fund).

Gieve, Sir John, 2006a, "Financial System Risks in the United Kingdom—Issues and Challenges," *Bank of England Quarterly Bulletin* (Third Quarter), pp. 337–41.

———, 2006b, "Practical Issues in Preparing for Cross-border Financial Crises," *Bank of England Quarterly Bulletin* (Fourth Quarter), pp. 452–55.

Goodhart, Charles A.E., and Dirk Schoenmaker, 2006, "Burden Sharing in a Banking Crisis in Europe," Financial Markets Group Special Paper No. 164 (London: London School of Economics).

Group of Thirty, 2006, "Reinsurance and International Financial Markets," Study Group Report (Washington).

Hoelscher, David, Marc Quintyn, and others, 2003, "Managing Systemic Banking Crises," IMF Occa-sional Paper No. 224 (Washington: International Monetary Fund).

International Association of Insurance Supervisors (IAIS), 2006, *Global Reinsurance Market Report 2006* (Basel, Switzerland, November).

International Monetary Fund, 2006a, *Global Financial Stability Report*, World Economic and Financial Surveys (Washington, September).

———, 2006b, *Uruguay: Financial System Stability Assessment, including Reports on the Observance of Standards and Codes on the Following Topics: Banking Supervision and Payment Systems,* IMF Country Report No. 06/439 (Washington).

———, 2007, *World Economic Outlook*, World Economic and Financial Surveys (Washington, April).

Kanas, Angelos, 2004, "Contagion in Banking Due to BCCI's Failure: Evidence from National Equity Indices," *International Journal of Finance & Economics,* Vol. 9 (July), pp. 245–55.

Laderman, Elizabeth S., 2000, "The Potential Diversification and Failure Reduction Benefit of Bank Expansion into Nonbanking Activities," Working Paper No. 2000-01 (San Francisco: Federal Reserve Bank of San Francisco).

Laeven, Luc, and Ross Levine, 2005, "Is There a Diversification Discount in Financial Conglomerates?" CEPR Discussion Paper No. 5121 (London: Centre for Economic Policy Research).

Latter, Tony, 1999, "Silver Anniversary" (Hong Kong: Hong Kong Monetary Authority). Available via the Internet: http://www.info.gov.hk/hkma/eng/viewpt/991111e.htm.

Ma, Yu-Luen, and Nat Pope, 2003, "Determinants of International Insurers' Participation in Foreign Non-Life Markets," *Journal of Risk and Insurance,* Vol. 70 (June), pp. 235–48.

Manna, Michele, 2004, "Developing Statistical Indicators of the Integration of the Euro Area Banking System," ECB Working Paper No. 300 (Frankfurt: European Central Bank).

Martinez Peria, Maria Soledad, Andrew Powell, and Ivanna Vladkova-Hollar, 2005, "Banking on Foreigners: The Behavior of International Bank Claims on Latin America, 1985–2000," *IMF Staff Papers*, Vol. 52 (December), pp. 430–61.

McGuire, Patrick, and Nikola Tarashev, 2005a, "The International Banking Market," *BIS Quarterly Review* (June), pp. 15–30.

———, 2005b, "The International Banking Market," *BIS Quarterly Review* (September), pp. 15–30.

Moreno, Ramon, and Augustin Villar, 2005, "The Increased Role of Foreign Bank Entry in Emerging Markets" in "Globalisation and Monetary Policy in Emerging Markets," BIS Paper No. 23 (Basel, Switzerland: Bank for International Settlements, May), pp. 9–16.

Moshirian, Fariborz, 2006, "Aspects of International Financial Services," *Journal of Banking & Finance,* Vol. 30 (April), pp. 1057–64.

Organization for Economic Cooperation and Development (OECD), 2005, *Insurance Statistics Yearbook 1994–2003* (Paris).

Papaioannou, Elias, 2005, "What Drives International Bank Flows? Politics, Institutions, and Other Determinants," ECB Working Paper No. 437 (Frankfurt: European Central Bank).

Peek J., and E.S. Rosengren, 1997, "The International Transmission of Financial Shocks: The Case of Japan," *American Economic Review,* Vol. 87, No. 4, pp. 495–505.

———, 2000, "Implications of the Globalization of the Banking Sector: The Latin American Experience," *New England Economic Review* (September/October), pp. 45–62.

RZB Group, 2006, "CEE Banking Sector Report" (Vienna, September). Available via the Internet: http://www.rzb.at/eBusiness/rzb_template1/ 0,6589,1026359884948-1026067948581_ 19286413656686496-1028410307311-NA-NA-NA, 00.html.

Schaeck, Klaus, Martin Čihák, and Simon Wolfe, 2006, "Are More Competitive Banking Systems More Stable?" IMF Working Paper No. 06/143 (Washington: International Monetary Fund).

Schmid, Markus M., and Ingo Walter, 2006, "Do Financial Conglomerates Create or Destroy Economic Value?" Working Paper No. 06-028 (New York: Stern Business School, New York University).

Schoenmaker, Dirk, and Christiaan van Laecke, 2006, "Current State of Cross-Border Banking," Financial Markets Group Special Paper No. 168 (London: London School of Economics).

Sullivan, Daniel, 1994, "Measuring the Degree of Internationalization of a Firm," *Journal of International Business Studies,* Vol. 25, No. 2, pp. 325–42.

Swiss Re, 2001, "World Insurance in 2000: Another Boom Year for Life Insurance; Return to Normal Growth for Non-Life Insurance," *Sigma,* Number 6.

———, 2003, "Reinsurance—A Systemic Risk?" *Sigma,* Number 5.

———, 2006a, "Getting Together: Globals Take the Lead in Life Insurance M&A," *Sigma,* Number 1.

———, 2006b, "Solvency II: An Integrated Risk Approach for European Insurers," *Sigma,* Number 4.

———, 2006c, "World Insurance in 2005: Moderate Premium Growth, Attractive Profitability," *Sigma,* Number 5.

Tieman, Alexander, and Martin Čihák, forthcoming, "European Internationally Active Large Banking Groups," in *Integrating Europe's Financial Markets,* ed. by Jörg Decressin, Hamid Faruqee, and Wim Fonteyne (Washington: International Monetary Fund).

Van Horen, Neeltje, and Stijn Claessens, forthcoming, "Foreign Banking in Developing Countries: Origin Matters," *Emerging Markets Review.*

Wagner, Wolf, 2006, "Diversification at Financial Institutions and Systemic Crises," CentER Discussion Paper No. 71 (Tilburg, Netherlands: Center for Economic Research, Tilburg University).

Wernerfelt, Birger, and Cynthia A. Montgomery, 1988, "Tobin's q and the Importance of Focus in Firm Performance," *American Economic Review,* Vol. 78 (March), pp. 246–50.

World Bank, 2006, *Global Development Finance 2006: The Development Potential of Surging Capital Flows* (Washington: World Bank).

Wright, Paul, 2006, "Nonbank Supervision," paper presented at the Ninth Annual International Banking Conference, "International Financial Instability: Cross-Border Banking & National Regulation," Federal Reserve Bank of Chicago, October 5–6.

GLOSSARY

Asset-backed security (ABS)	A security that is collateralized by loans, leases, receivables, or installment contracts on personal property or on real estate. Often when the securities are collateralized by mortgages, they are called mortgage-backed securities (MBSs), although in principle MBSs are a type of ABS.
Asset allocation	The process of allocating investments among different kinds of assets, such as stocks, bonds, real estate, and cash, to optimize the risk/reward trade-off based on an individual's or institution's specific objectives and risk preferences.
Asset/liability management (ALM)	The management of assets to ensure that liabilities are sufficiently covered by suitable assets at all times.
Assets under management (AUM)	Assets managed by an investment company on behalf of investors.
Balance sheet mismatch	A balance sheet is a financial statement showing a company's assets, liabilities, and equity on a given date. Typically, a mismatch in a balance sheet implies that the maturities of the liabilities differ (are typically shorter) from those of the assets and/or that some liabilities are denominated in a foreign currency while the assets are not.
Banking soundness	The financial health of a single bank or of a country's banking system.
Brady bonds	Bonds issued by emerging market countries as part of a restructuring of defaulted commercial bank loans. These bonds are named after former U.S. Treasury Secretary Nicholas Brady and were first issued in March 1990.
Call (put) option	A financial contract that gives the buyer the right, but not the obligation, to buy (sell) a financial instrument at a set price on or before a given date.
Carry trade	A leveraged transaction in which borrowed funds are used to take a position in which the expected return exceeds the cost of the borrowed funds. The "cost of carry" or "carry" is the difference between the yield on the security and the financing cost (e.g., in a "positive carry" the yield exceeds the financing cost).
Cash securitization	The creation of securities from a pool of preexisting assets and receivables that are placed under the legal control of investors through a special intermediary created for this purpose. This compares with a "synthetic" securitization in which the generic securities are created out of derivative instruments.
CAT bonds	Catastrophe bonds (a type of insurance-linked security whereby investors bear risk if a specified catastrophic event occurs in return for an interest premium).

Collateralized debt obligations (CDOs)	A structured credit security backed by the performance of a portfolio of securities, loans, or credit default swaps, and in which securitized interests in the portfolio's performance are divided into tranches with differing repayment and interest earning streams. In the event of nonpayment or default, the higher-risk "equity" tranche absorbs the first loss from anywhere in the portfolio, up to a limit. After the equity tranche has been exhausted, the next least-secured tranche then absorbs the additional principal loss, and so on. When the tranches are backed by credit default swaps, the structure is called a "synthetic" CDO.
Corporate governance	The governing relationships between all the stakeholders in a company—including the shareholders, directors, and management—as defined by the corporate charter, bylaws, formal policy, and rule of law.
Credit default swaps (CDS)	Default-triggered credit derivatives. Most CDS default settlements are "physical," whereby the protection seller buys a defaulted reference asset from the protection buyer at its face value. "Cash" settlement involves a net payment to the protection buyer equal to the difference between the reference asset face value and the price of the defaulted asset.
Credit derivatives	A financial contract under which an agent buys or sells risk protection against the credit risk associated with a specific reference entity (or specific entities). For a periodic fee, the protection seller agrees to make a contingent payment to the buyer on the occurrence of a credit event (default in the case of a credit default swap).
Credit risk	The potential for losses on fixed-income investments and derivative contracts, caused by issue and counterparty defaults, and market value losses related to credit quality deterioration.
Credit spreads	The spread between benchmark securities and other debt securities that are comparable in all respects except for credit quality (e.g., the difference between yields on U.S. Treasuries and those on single A-rated corporate bonds of a certain term to maturity). Sometimes simply referred to as "spread."
Defined-benefit plan	Pension plan in which benefits are determined by such factors as salary history and duration of employment. The sponsor company is responsible for the investment risk and portfolio management.
Defined-contribution plan	Pension plan in which benefits are determined by returns on the plan's investments. Beneficiaries bear the investment risk.
Derivatives	Financial contracts whose value derives from underlying securities prices, interest rates, foreign exchange rates, commodity prices, and market or other indices.
Distance to default (DD)	The number of standard deviations of the value of a firm's assets from its default threshold, which is a function of the value of its liabilities. A higher distance to default is associated with a lower default probability,

in which default is assumed to occur when the market value of the firm's assets becomes lower than the default threshold.

Dollarization	The widespread domestic use of another country's currency (typically the U.S. dollar) to perform the standard functions of money—that of a unit of account, medium of exchange, and store of value.
EBITDA	Earnings before interest, taxes, depreciation, and amortization.
EMBI	The JPMorgan Emerging Market Bond Index, which tracks the total returns for traded external debt instruments in emerging markets.
Emerging markets (EMs)	Developing countries' financial markets that are less than fully developed, but are nonetheless broadly accessible to foreign investors.
Extreme value theory (EVT)	A theory focusing on co-movements between extreme events ("co-exceedances")—specifically in this context, the co-movement of extreme negative (left-tail) realizations of measures of banks' soundness.
Foreign bank affiliate	A branch, subsidiary, or joint venture of a foreign bank, whose head office is located abroad.
Foreign bank claim	Foreign bank on-balance sheet financial assets including deposits and balances with domestic banks, loans, and advances to domestic nonbanks, and holdings of domestic debt securities.
Foreign direct investment (FDI)	The acquisition abroad (i.e., outside the home country) of physical assets, such as plant and equipment, or of a controlling stake in a company (usually greater than 10 percent of shareholdings).
Forward price-earnings ratio	The multiple of future expected earnings at which a stock sells. It is calculated by dividing the current stock price (adjusted for stock splits) by the estimated earnings per share for a future period (typically the next 12 months).
Funded pension plan	Pension plan that has accumulated dedicated assets to pay for the pension benefits.
Hedge funds	Investment pools, typically organized as private partnerships and often resident offshore for tax and regulatory purposes. These funds face few restrictions on their portfolios and transactions. Consequently, they are free to use a variety of investment techniques—including short positions, transactions in derivatives, and leverage—to raise returns and cushion risk.
Hedging	Offsetting an existing risk exposure by taking an opposite position in the same or a similar risk, for example, by buying derivatives contracts.
Herfindahl index	A measure of concentration—usually the sum of the squares of the market shares of firms in a particular industry. In this context, it is used to measure the degree of cross-border diversification of a bank. Calculated for each bank as the sum of the squared shares of its assets or revenues across the countries under consideration: the lower the index, the more cross-border diversified the bank.

Home-equity loan/ home-equity line of credit (HEL/HELOC)	Loans or lines of credit drawn against the equity in a home, calculated as the current market value less the value of the first mortgage. When originating a HEL or HELOC, the lending institution generally secures a second lien on the home, i.e., a claim that is subordinate to the first mortgage (if it exists).
Implied volatility	The expected volatility of a security's price as implied by the price of options or swaptions (options to enter into swaps) traded on that security. Implied volatility is computed as the expected standard deviation that must be imputed to investors to satisfy risk neutral arbitrage conditions, and is calculated with the use of an options pricing model such as Black-Scholes. A rise in implied volatility suggests the market is willing to pay more to insure against the risk of higher volatility, and hence implied volatility is sometimes used as a measure of risk appetite (with higher risk appetite being associated with lower implied volatility). One of the most widely quoted measures of implied volatility is the VIX, an index of implied volatility on the S&P 500 index of U.S. stocks.
Interest rate swaps	An agreement between counterparties to exchange periodic interest payments on some predetermined dollar principal, which is called the notional principal amount. For example, one party will make fixed-rate and receive variable-rate interest payments.
Institutional investor	A bank, insurance company, pension fund, mutual fund, hedge fund, mutual fund, brokerage, or other financial group that takes large investments from clients or invests on its own behalf.
Intermediation	The process of transferring funds from the ultimate source to the ultimate user. A financial institution, such as a bank, intermediates credit when it obtains money from depositors or other lenders and on-lends it to borrowers.
Investment-grade obligation	A bond or loan is considered investment grade if it is assigned a credit rating in the top four categories. S&P and Fitch classify investment-grade obligations as BBB- or higher, and Moody's classifies investment-grade bonds as Baa3 or higher.
Large complex financial institution (LCFI)	A major financial institution frequently operating in multiple sectors and often with an international scope.
Leverage	The proportion of debt to equity. Leverage can be built up by borrowing (on-balance-sheet leverage, commonly measured by debt-to-equity ratios) or by using off-balance-sheet transactions.
Leveraged buyout (LBO)	Acquisition of a company using a significant level of borrowing (through bonds or loans) to meet the cost of acquisition. Usually, the assets of the company being acquired are used as collateral for the loans.
Leveraged loans	Bank loans that are rated below investment grade (BB+ and lower by S&P or Fitch, and Baa1 and lower by Moody's) to firms with a sizable debt-to-EBITDA ratio, or trade at wide spreads over LIBOR (e.g., more than 150 basis points).

Mark-to-market	The valuation of a position or portfolio by reference to the most recent price at which a financial instrument can be bought or sold in normal volumes. The mark-to-market value might equal the current market value—as opposed to historical accounting or book value—or the present value of expected future cash flows.
Mezzanine capital	Unsecured, high-yield, subordinated debt, or preferred stock that represents a claim on a company's assets that is senior only to that of a company's shareholders.
Mortgage-backed security (MBS)	A security that is collateralized by mortgages. MBSs can be backed by residential mortgages (RMBS) or mortgages on commercial properties (CMBS).
Mutual fund	An investment company that pools money from shareholders and invests it in a group of assets, in accordance with a stated set of objectives. Open-ended mutual funds sell and redeem shares at any time directly to shareholders. Closed-end funds generally sell a fixed number of shares, which trade on an exchange.
Nonperforming loans	Loans that are in default or close to being in default (i.e., typically past due for 90 days or more).
Occupational pension scheme	Pension plan set up and managed by a sponsor company for the benefit of its employees.
Offshore instruments	Securities issued outside of national boundaries.
(Pair-wise) correlations	A statistical measure of the degree to which the movements of two variables (e.g., asset returns) are related.
Primary market	The market in which a newly issued security is first offered/sold to investors.
Private equity	Shares in companies that are not listed on a public stock exchange.
Private equity funds	Pools of capital invested by private equity partnerships. Investments can include leveraged buyouts, as well as mezzanine and venture capital. In addition to the sponsoring private equity firm, other qualified investors can include pension funds, financial institutions, and wealthy individuals.
Private pension plan	Pension plan in which a private entity receives pension contributions and administers the payment of pension benefits.
Put (call) option	A financial contract that gives the buyer the right, but not the obligation, to sell (buy) a financial instrument at a set price on or before a given date.
Rate of return on equity (ROE)	Annual return as a percentage of equity capital.
Reinsurance	Insurance risk placed by an underwriter with another insurance company to reduce the level of the risk assumed under the original contract.

Risk aversion	The degree to which an investor who, when faced with two investments with the same expected return but different risk, prefers the one with the lower risk. That is, it measures an investor's aversion to uncertain outcomes or payoffs.
Risk premium	The extra expected return on an asset that investors demand in exchange for accepting the risk associated with the asset.
Sarbanes-Oxley Act of 2002	An act passed by the U.S. Congress that established new or enhanced standards for U.S. public company boards, management, and public accounting firms. The act covers such issues as auditor independence, corporate governance, and enhanced financial disclosure, and is geared toward protecting investors from the possibility of fraudulent accounting activities by corporations.
Secondary markets	Markets in which securities are traded after they are initially offered/sold in the primary market.
Securitization	The creation of securities from a pool of preexisting assets and receivables that are placed under the legal control of investors through a special intermediary created for this purpose—a "special purpose vehicle" (SPV) or "special purpose entity" (SPE). With a "synthetic" securitization the securities are created out of a portfolio of derivative instruments.
Spread	See "credit spreads" (the word credit is sometimes omitted). Other definitions include (1) the gap between bid and ask prices of a financial instrument; and (2) the difference between the price at which an underwriter buys an issue from the issuer and the price at which the underwriter sells it to the public.
Subinvestment-grade obligation	An obligation rated below investment grade, sometimes referred to as "high-yield" or "junk."
Subprime mortgages	Mortgages to borrowers with impaired or limited credit histories, and who typically have low credit scores.
Swaps	An agreement between counterparties to exchange periodic interest payments based on different references on a predetermined notional amount. For example, in an interest rate swap, one party will make fixed-rate and receive variable-rate interest payments.
Syndicated loans	Large loans made jointly by a group of banks to one borrower. Usually, one lead bank takes a small percentage of the loan and partitions (syndicates) the rest to other banks.
Tail event	The occurrence of large or extreme security price movements that, in terms of their probability of occurring, lie within the tail region of the distribution of possible price movements.
Tobin's q	The ratio of the market value of a firm's assets to their replacement value.
Trustee	Private entity (person or organization) with a duty to receive, manage, and disburse the assets of a financial plan.

Value-at-risk (VaR)   An estimate of the loss, over a given horizon, that is statistically unlikely to be exceeded at a given probability level.

With-profits policies   Under this policy, an insurance company guarantees to pay an agreed amount at a specific time in the future, and may increase this guaranteed amount through bonus payments. In effect, the policyholders are participating in the profits of the life insurance company.

Yield curve   A chart that plots the yield to maturity at a specific point in time for debt securities having equal credit risk but different maturity dates.

z-score   A measure of bank soundness derived from accounting data. As used in Chapter III, it is defined as $z = (k + \mu)/\sigma$, where k is equity capital as a percent of assets, μ is the return as a percent of assets, and σ is the standard deviation of the return on assets used as a proxy for return volatility. A higher z-score is associated with a lower probability of default.

SUMMING UP BY THE CHAIRMAN

The following remarks by the Chairman were made at the conclusion of the Executive Board's discussion of the Global Financial Stability Report *on March 19, 2007.*

Directors welcomed the balanced, in-depth analysis and discussion of financial risks in the *Global Financial Stability Report* (GFSR). They agreed that global financial stability continues to be underpinned by solid economic prospects, although downside risks have increased somewhat in a few areas.

Assessing Global Financial Stability Risks

Directors considered that a number of market developments warrant increased attention, reflecting a shift in underlying financial risks and conditions since last September's GFSR. While none of the identified short-term risks constitutes, in and of itself, a threat to financial stability, adverse events in one area can lead to a reappraisal of risks in other areas—with possible broader implications for the economy. The recent market turbulence validates this assessment, and serves to remind market participants that such reevaluations can occur quite rapidly.

Directors agreed with the general assessment portrayed in the global financial stability map presented by the staff, namely, that macroeconomic risks as well as those faced by emerging markets have eased marginally since September, but that market and credit risks have risen, albeit from relatively low levels. This has occurred against the backdrop of relatively benign monetary and financial conditions and a continued increase in investors' appetite for risk. Directors welcomed the global financial stability map as a useful tool for visualizing changes in the main near-term risks. They considered that further staff work on the analytics underpinning

the map and their integration with the GFSR should serve to strengthen the framework for assessing financial stability.

Directors had a wide-ranging discussion of the near-term risks to the global financial system. Some Directors felt that the risks of a possible spillover of the deterioration of credit quality from the U.S. subprime mortgage segment to broader market segments were relatively minimal, given the underlying support provided by the strong household income growth and the low unemployment rate, as well as the relatively small size of the subprime segment and the concentration of problem loans in states with weak employment. However, most Directors expressed varying degrees of caution or concern going forward. Mortgage securities are now held more widely by both public and private international investors as a result of wider securitization. Directors noted that the risk has been distributed more widely, thereby enhancing the resiliency of financial markets. At the same time, the identification of the ultimate holders of risk in the mortgage-related derivatives market has become more complex, and many Directors called for more focused attention to the possible spillover effects of an unwinding of risky positions on other asset classes or on U.S. consumer confidence.

Directors observed that the wider use of leveraged buyouts and the heavy flows into private equity have increased the risks to the corporate sector, but agreed that this is not yet worrisome. At the same time, continued supervisory vigilance and scrutiny of credit discipline and lending standards will be required. A few Directors noted possibly longer-term effects on corporate leverage, with newly acquired companies with

very high leverage ratios potentially experiencing difficulties if the current benign financing conditions change. Moreover, developments in the leverage loan market suggest some relaxation of credit discipline that could weaken overall corporate credit quality. A key question is whether the possible reactions of investors in credit risk transfer markets to changing circumstances could give rise to wider financial stability concerns. A promising area for further research is the medium-term ramifications of private equity activity, including the extent to which regulatory costs may be a factor in encouraging a shift from public to private companies.

Directors noted that although the risks of a disorderly unwinding of global imbalances have eased somewhat, they remain a concern, and require the pursuit of appropriate policies. Large inflows are still needed to finance the U.S. current account deficit. Directors underscored that fixed-income inflows have become more dominant and more sensitive to interest rate differentials between various countries and the United States. Many Directors noted that the increased sensitivity could make attracting inflows more susceptible to changes in investor sentiment, pointing to the need to pay continued attention to the role of shifting exchange rate expectations in the demand for U.S. fixed-income securities.

Directors generally agreed that risks and vulnerabilities in emerging markets have broadly declined, reflecting improved economic fundamentals, sound macroeconomic policies, and prudent debt management. Combined with investors' search for yield, this has resulted in large capital inflows in a number of countries, posing challenges to policymakers. Directors observed that an investment environment conducive to the maintenance of confidence, the efficient use of capital, and the development of local financial markets should help emerging markets reap the benefits of foreign capital. At the same time, they called on staff to continue to work toward identifying measures and strategies that would help mitigate the adverse effects of rapid capital inflows or possible reversals.

Directors discussed the relative contributions of structural and cyclical factors in bringing about the current low financial market volatility and historically tight risk spreads, which have encouraged risk-taking. Some concern was expressed that investors may be giving insufficient weight to downside risks, particularly the prospect of near-term reversal of the cyclical factors contributing to the low volatility environment—abundant global liquidity, still low corporate leverage, and high risk appetite. At the same time, it was suggested that market participants generally understood the risk outlook, and that the recent turbulence was evidence that rapid price changes can be absorbed easily. In this regard, while carry trades are a natural outcome of the current set of interest rates and low volatility in foreign exchange markets, some Directors expressed concern about the possibility of large currency swings if investors attempted to unwind carry trade positions suddenly in response to an increase in underlying volatility. Directors noted that hedge funds have played a constructive role in improving market efficiency and stability, but cautioned that their size and complex risk structure can lead to increased transmission or amplification of shocks. They underscored the importance of greater transparency to investors and counterparties for monitoring hedge fund activities as a means to support financial stability. Some Directors emphasized that indirect monitoring of hedge fund activity is likely to remain the most effective and practical approach. Directors noted the work and analysis under way both nationally and internationally, including at the Financial Stability Forum, and some Directors also saw a positive role for the IMF in the design of constructive solutions for hedge fund regulation or monitoring.

Changes in the International Investor Base and Implications for Financial Stability

Directors observed that the increased diversity of assets, source countries, and investor

types contributes to a globalized financial system which, by allowing capital to flow freely, should enable a more effective diversification of risks, enhance the efficiency of capital markets, and support financial stability. They underscored the importance for market participants to bear the risk of their positions, while policymakers should underpin the strength of the financial system through structural reforms and strong macroeconomic policies. Directors also stressed the need to devise mechanisms to deal with the considerable gaps in information concerning global financial flows.

Directors believed that the larger global diversity of investors and the increase in institutional investors with longer investment horizons should support financial stability. However, several Directors expressed concern that in some countries increased demand has outpaced the availability of domestic financial assets, leading to a sharp increase in asset prices, rapid credit growth, and currency appreciation.

Directors noted that the development and improved functioning of domestic financial markets can help reduce the likelihood of foreign investors withdrawing their funds. Directors acknowledged that facilitating capital outflows to allow domestic investors to better manage risks and help mitigate strong inflows may be of particular relevance for certain emerging market economies. At the same time, Directors underscored the importance of gradual and carefully sequenced liberalization of financial markets, and several Directors observed that economic efficiency, rather than conjunctural factors such as the need to reduce pressures on asset prices and currencies from rapid inflows, should be the main rationale for outward capital account liberalization.

Globalization of Financial Institutions: Financial Stability Implications

Directors noted the accelerating trend toward the globalization of financial institutions—which is most evident for banks, but also present in the asset management, insurance, and reinsurance industries. Directors considered that the process of globalization has generally improved financial stability, although some Directors cautioned that it cannot be taken for granted that global financial systems as a whole are more resilient in the face of extreme events. In this respect, some Directors noted that increased international linkages within and across countries may make crises more broad-ranging and complicated to deal with.

Directors welcomed the contribution being made by the GFSR to financial sector surveillance, including in encouraging national legal, regulatory, and supervisory systems to adjust to the more globalized financial environment. In this respect, Directors favored improved mechanisms for multilateral collaboration, specifically for strengthening ongoing supervisory coordination, including through better application of well-established international standards and further work on crisis management and resolution arrangements. Overall, Directors thought that even relatively modest but practical steps to make progress on domestic policies and procedures, while enhancing cross-border cooperation and coordination, will increase the benefits of globalization while mitigating some of the potential risks to financial stability.

STATISTICAL APPENDIX

This statistical appendix presents data on financial developments in key financial centers and emerging markets. It is designed to complement the analysis in the text by providing additional data that describe key aspects of financial market developments. These data are derived from a number of sources external to the IMF, including banks, commercial data providers, and official sources, and are presented for information purposes only; the IMF does not, however, guarantee the accuracy of the data from external sources.

Presenting financial market data in one location and in a fixed set of tables and charts, in this and future issues of the GFSR, is intended to give the reader an overview of developments in global financial markets. Unless otherwise noted, the statistical appendix reflects information available up to February 6, 2007.

Mirroring the structure of the chapters of the report, the appendix presents data separately for key financial centers and emerging market countries. Specifically, it is organized into three sections:

- Figures 1–14 and Tables 1–9 contain information on market developments in key financial centers. This includes data on global capital flows, and on markets for foreign exchange, bonds, equities, and derivatives as well as sectoral balance sheet data for the United States, Japan, and Europe.
- Figures 15 and 16, and Tables 10–21 present information on financial developments in emerging markets, including data on equity, foreign exchange, and bond markets, as well as data on emerging market financing flows.
- Tables 22–27 report key financial soundness indicators for selected countries, including bank profitability, asset quality, and capital adequacy.

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Financial Soundness Indicators

Figure 1. Major Net Exporters and Importers of Capital in 2006

Countries That Export Capital[1]

China 13.5%
Japan 12.2%
Germany 8.8%
Russia 8.8%
Saudi Arabia 8.8%
Norway 4.8%
Switzerland 3.7%
Netherlands 3.7%
Kuwait 3.6%
Singapore 2.8%
United Arab Emirates 2.7%
Algeria 2.3%
Venezuela 2.1%
Other countries[2] 22.2%

Countries That Import Capital[3]

United States 63.7%
Other countries[4] 15.2%
Turkey 1.9%
Italy 1.9%
France 2.8%
Australia 3.0%
United Kingdom 4.1%
Spain 7.4%
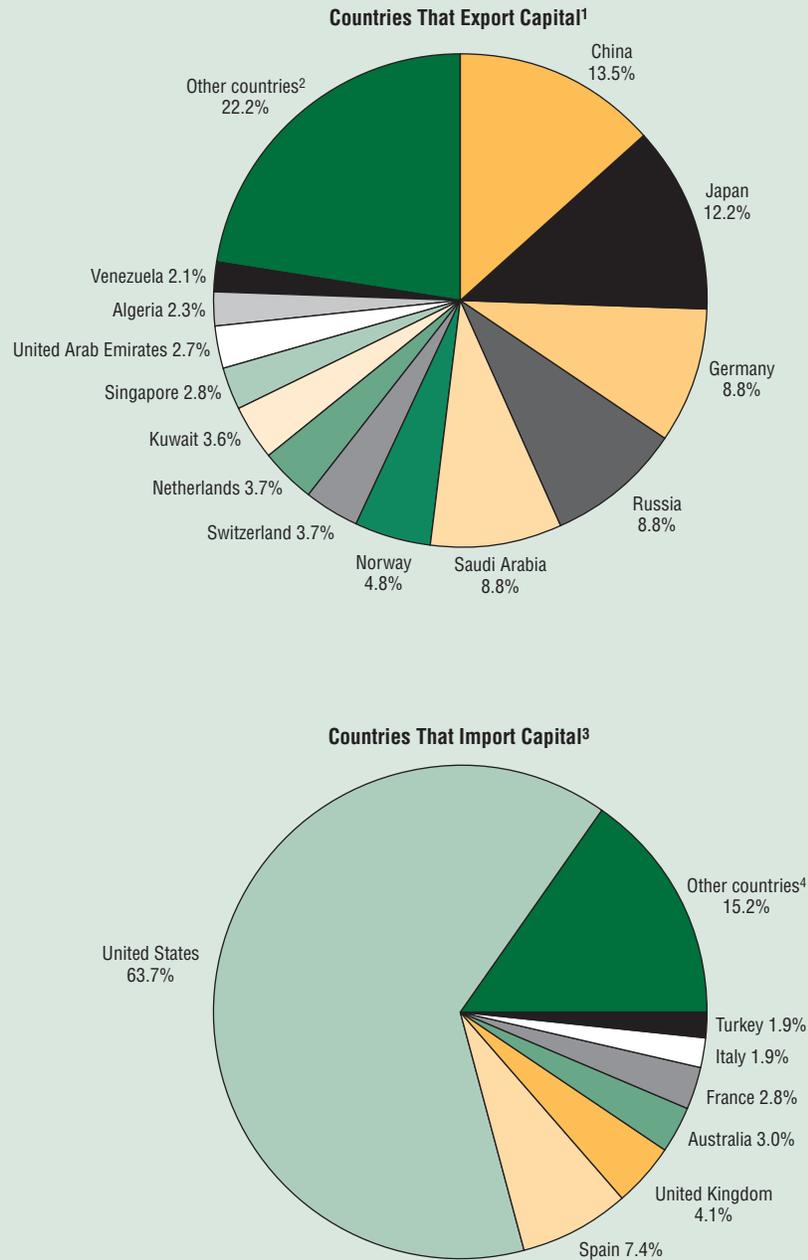
Source: International Monetary Fund, *World Economic Outlook* database, as of March 21, 2007.
[1]As measured by countries' current account surplus (assuming errors and omissions are part of the capital and financial accounts).
[2]Other countries include all countries with shares of total surplus less than 2.1 percent.
[3]As measured by countries' current account deficit (assuming errors and omissions are part of the capital and financial accounts).
[4]Other countries include all countries with shares of total deficit less than 1.9 percent.

Figure 2. Exchange Rates: Selected Major Industrial Countries

—— Bilateral exchange rate (left scale)[1]
—— Nominal effective exchange rate (right scale)[2]

Sources: Bloomberg L.P.; and the IMF Global Data System.
Note: In each panel, the effective and bilateral exchange rates are scaled so that an upward movement implies an appreciation of the respective local currency.
[1]Local currency units per U.S. dollar except for the euro area and the United Kingdom, for which data are shown as U.S. dollars per local currency.
[2]2000 = 100; constructed using 1999–2001 trade weights.

Figure 3. United States: Yields on Corporate and Treasury Bonds
(Weekly data)

Yields
(In percent)

Merrill Lynch high-yield bond index

Baa

10-year treasury bond

Aaa

1978 80 82 84 86 88 90 92 94 96 98 2000 02 04 06

Yield Differentials with 10-Year U.S. Treasury Bond
(In basis points)

Merrill Lynch high-yield bond index

Baa

Aaa

1978 80 82 84 86 88 90 92 94 96 98 2000 02 04 06
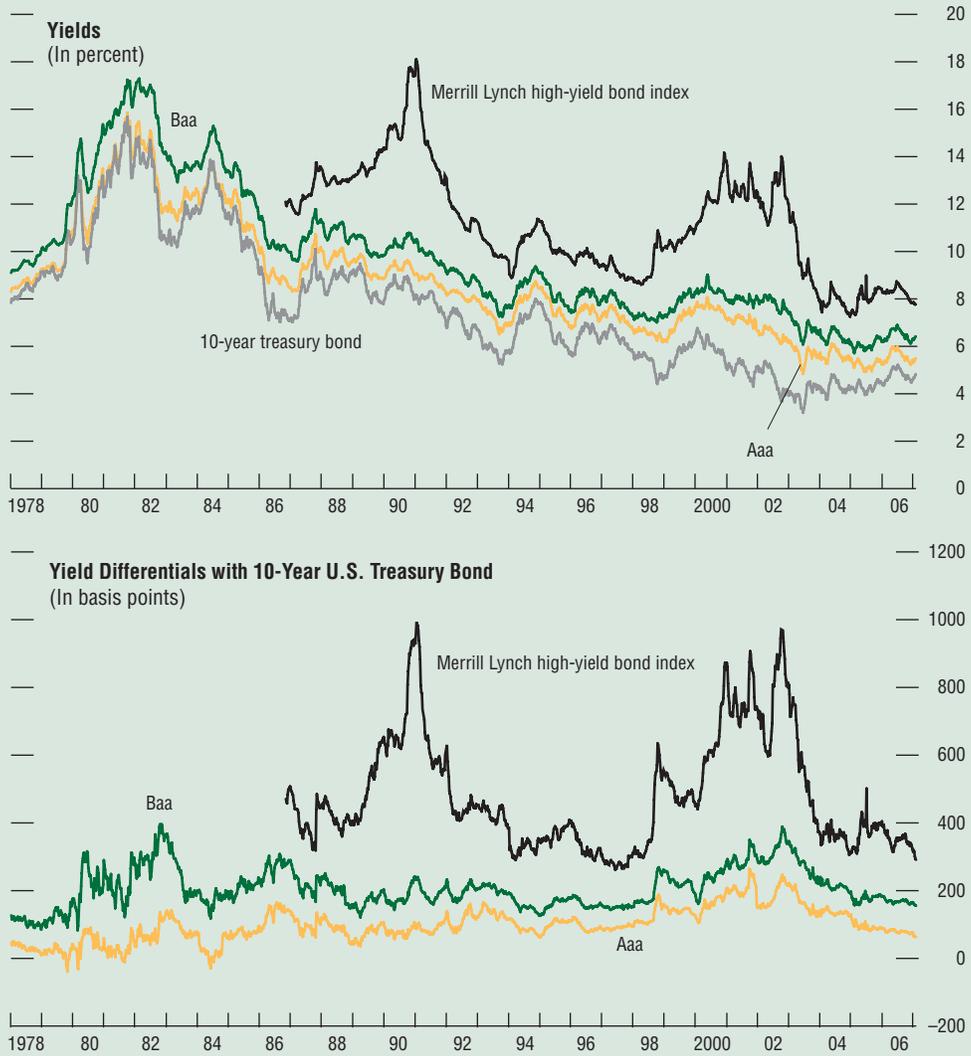
Sources: Bloomberg L.P.; and Merrill Lynch.

Figure 4. Selected Spreads
(In basis points)
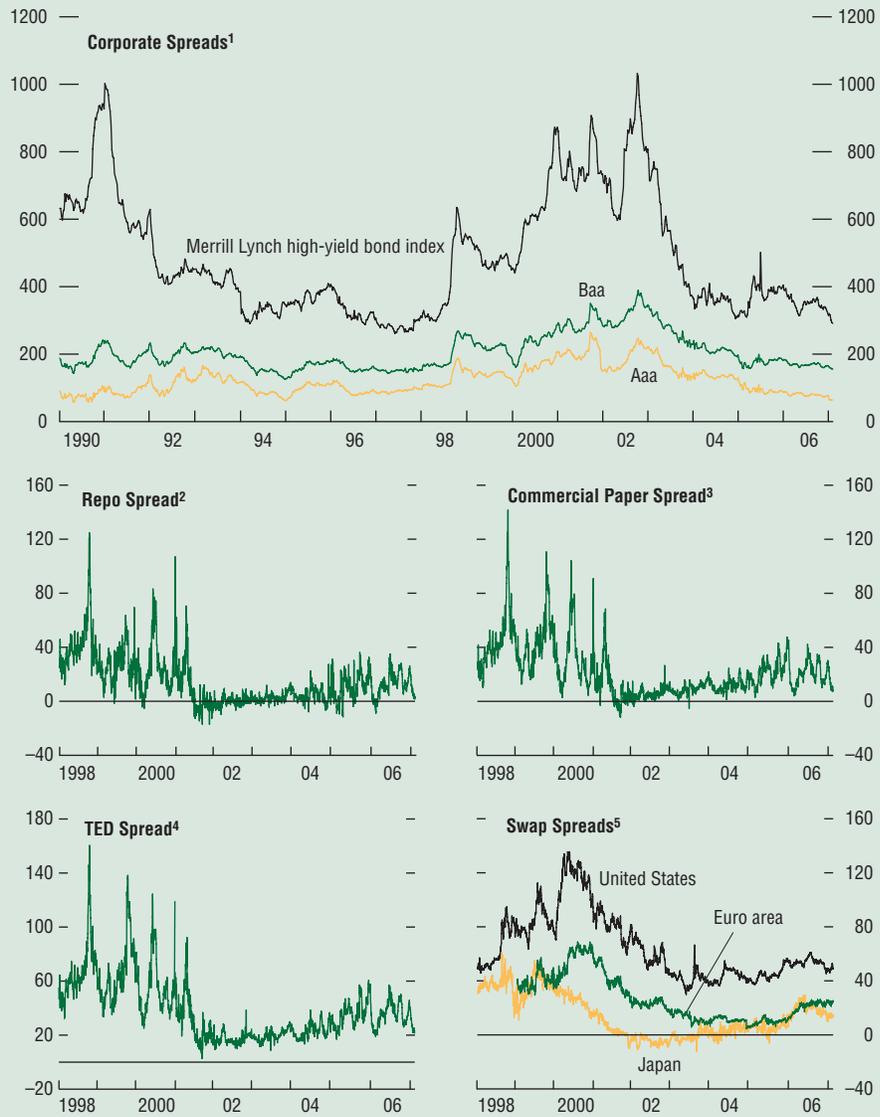
Sources: Bloomberg L.P.; and Merrill Lynch.
[1]Spreads over 10-year U.S. treasury bond; weekly data.
[2]Spread between yields on three-month U.S. treasury repo and on three-month U.S. treasury bill.
[3]Spread between yields on 90-day investment-grade commercial paper and on three-month U.S. treasury bill.
[4]Spread between three-month U.S. dollar LIBOR and yield on three-month U.S. treasury bill.
[5]Spreads over 10-year government bond.

Figure 5. Nonfinancial Corporate Credit Spreads
(In basis points)

AA Rated

United States

Euro area

Japan

1998 99 2000 01 02 03 04 05 06 07

120
100
80
60
40
20
0

A Rated

United States

Euro area

Japan

1998 99 2000 01 02 03 04 05 06 07

200
180
160
140
120
100
80
60
40
20
0

BBB Rated

United States

Euro area

Japan

1998 99 2000 01 02 03 04 05 06 07

350
300
250
200
150
100
50
0

Source: Merrill Lynch.

STATISTICAL APPENDIX
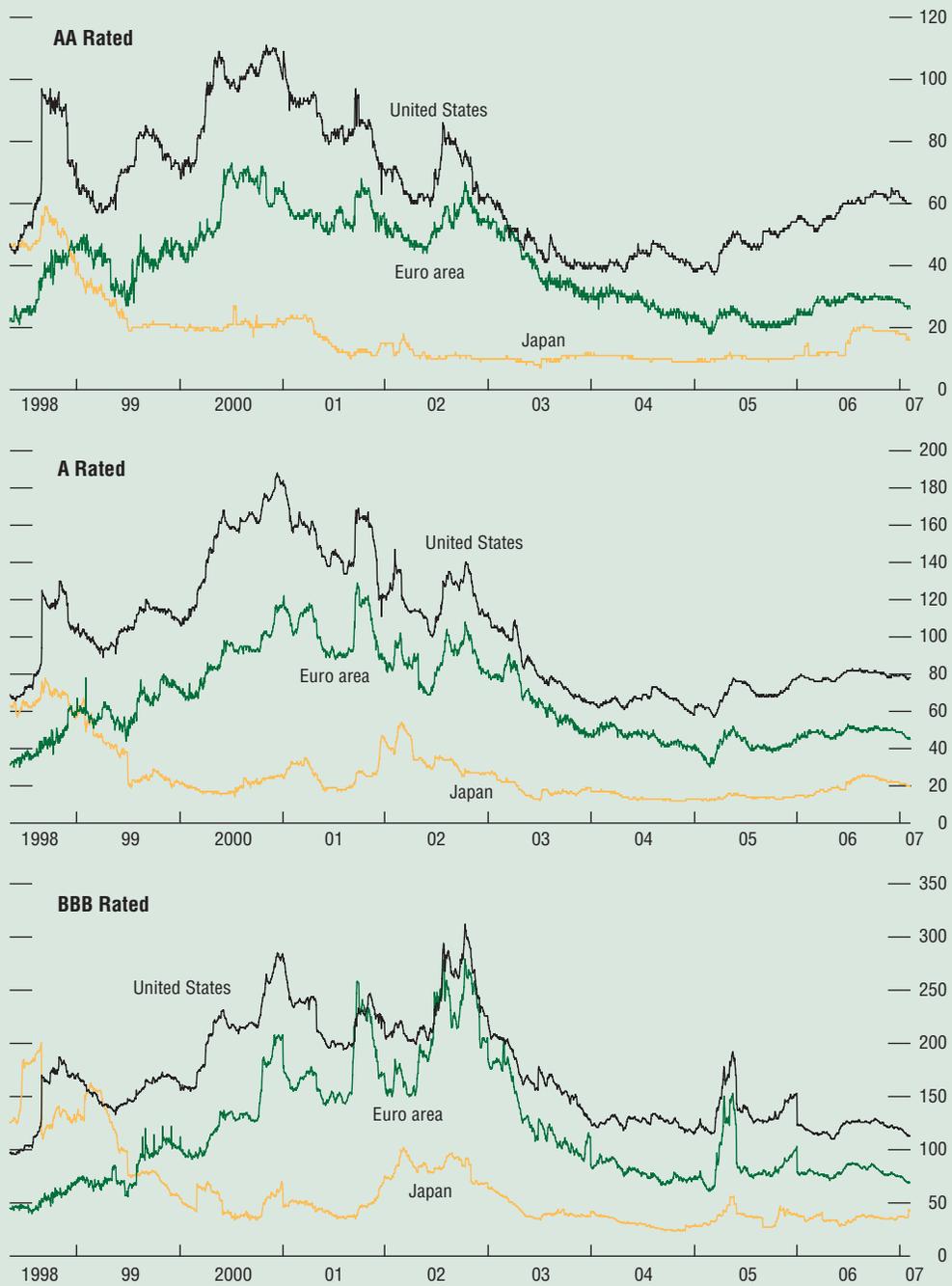
Figure 6. Equity Markets: Price Indices
(January 1, 1990 = 100; weekly data)

United States

Nasdaq

S&P 500

Wilshire 5000

1990 92 94 96 98 2000 02 04 06

Europe

Europe
(FTSE Eurotop 300)

Germany (DAX)

United Kingdom
(FTSE All-Share)

1990 92 94 96 98 2000 02 04 06

Japan

Topix

Nikkei 225

1990 92 94 96 98 2000 02 04 06

Source: Bloomberg L.P.

146
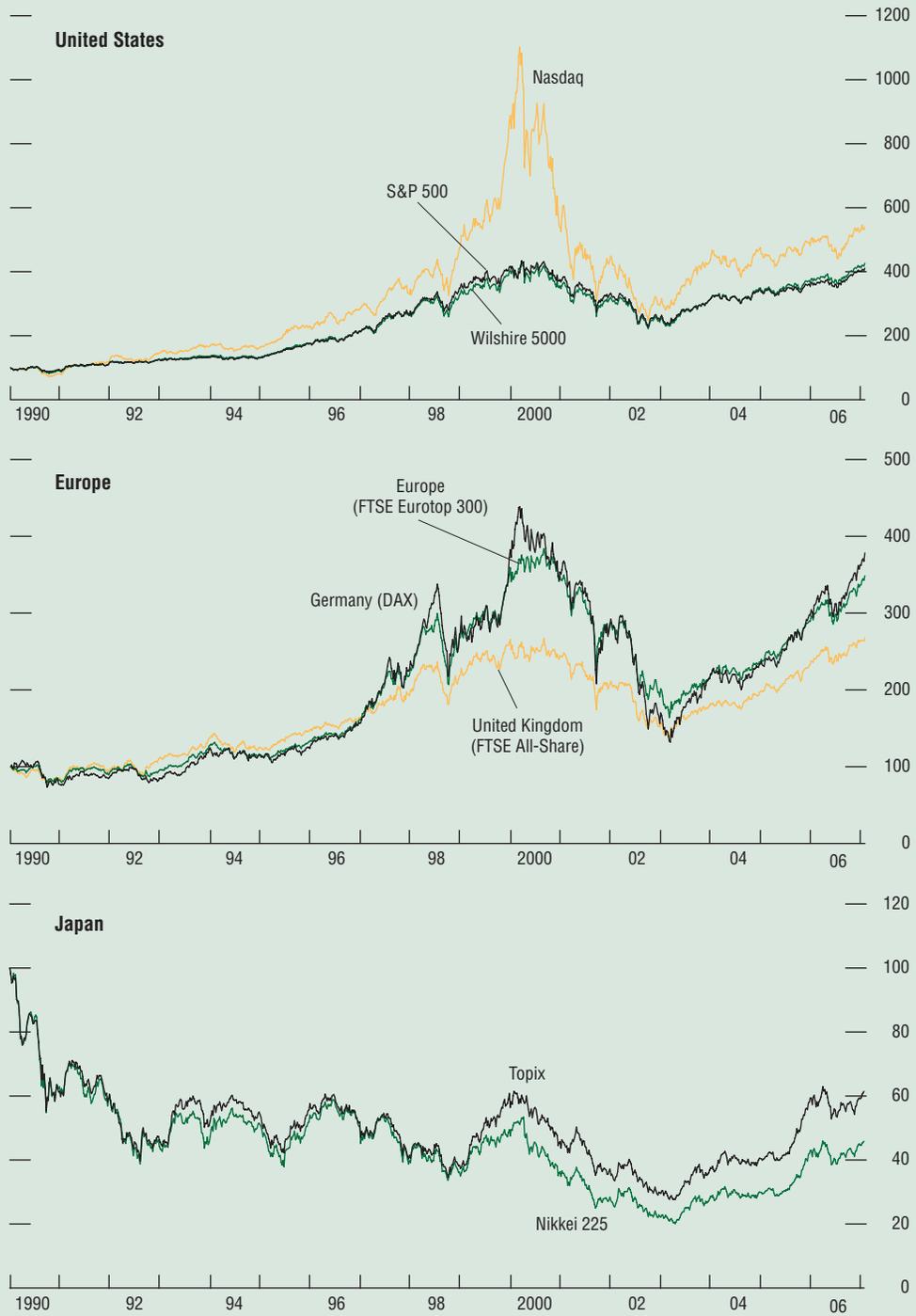
Figure 7. Implied and Historical Volatility in Equity Markets
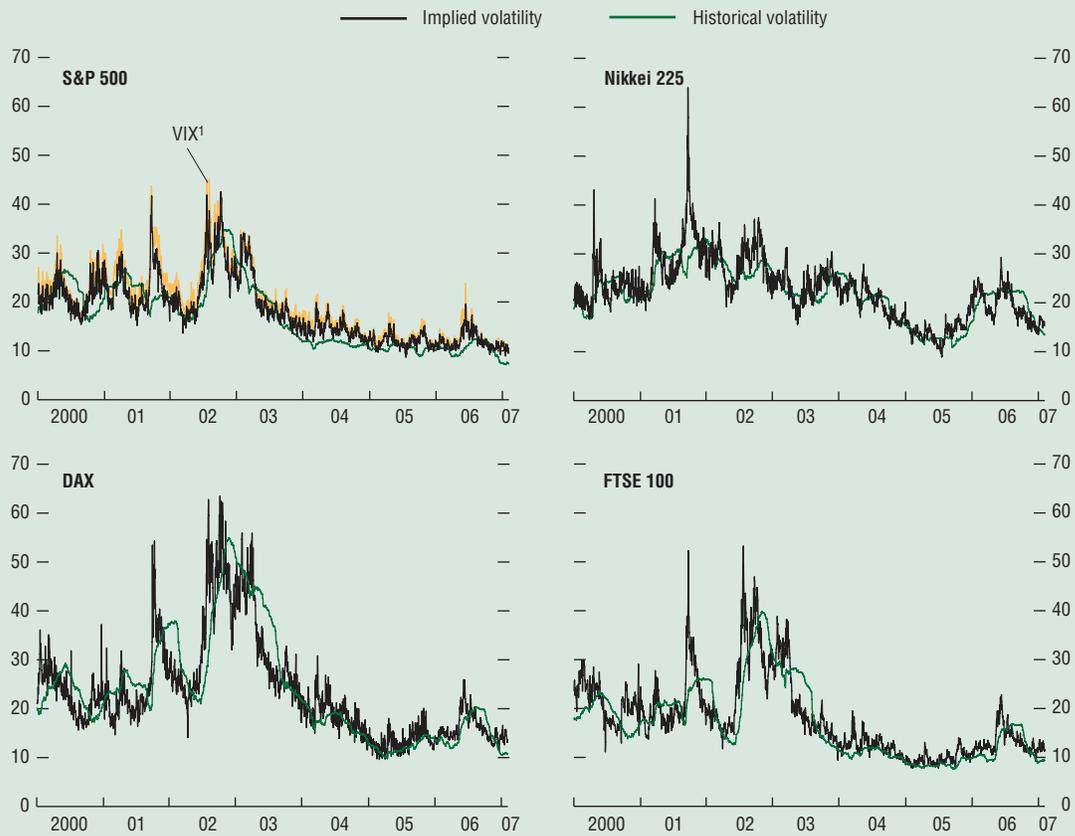
Implied volatility ———   Historical volatility ———

Figure 8. Historical Volatility of Government Bond Yields and Bond Returns for Selected Countries[1]
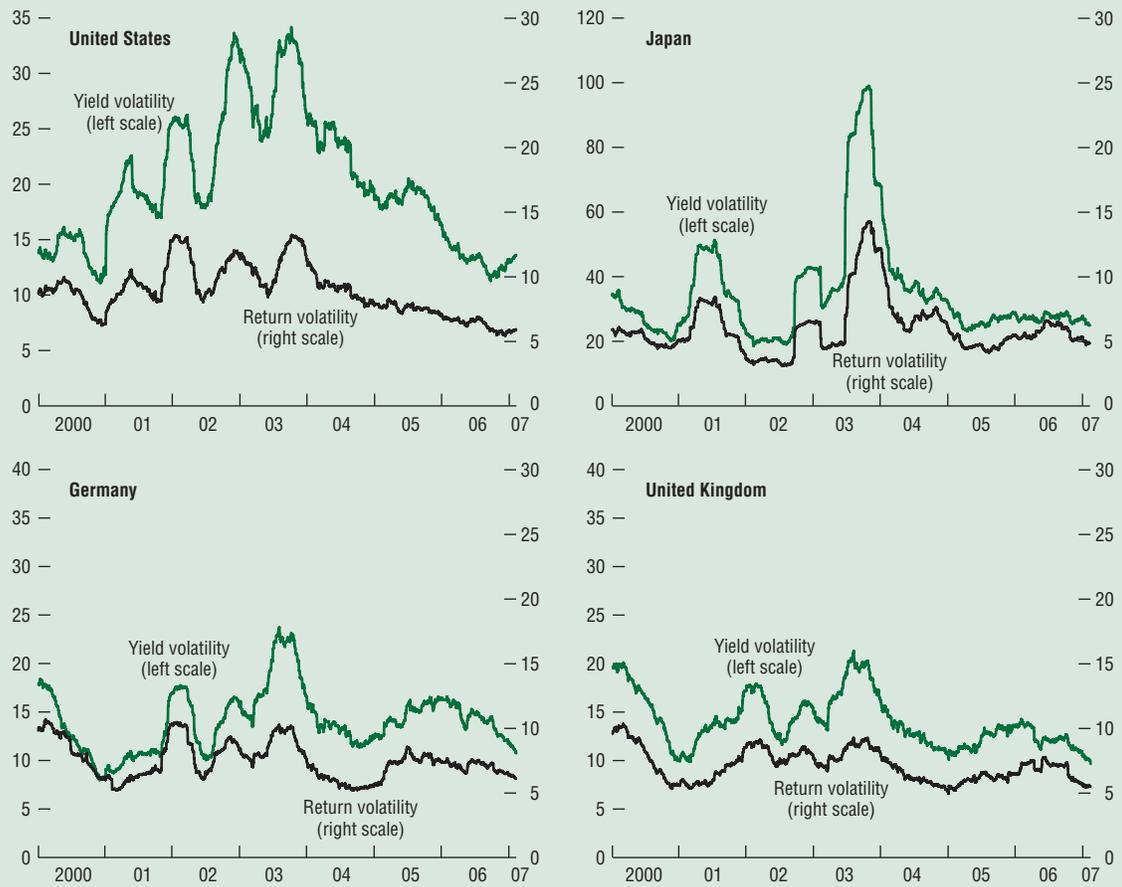
Sources: Bloomberg L.P.; and Datastream.

[1]Volatility calculated as a rolling 100-day annualized standard deviation of changes in yield and returns on 10-year government bonds. Returns are based on 10-plus year government bond indices.

Figure 9. Twelve-Month Forward Price/Earnings Ratios

Japan
(right scale)

Germany
(left scale)

United States
(left scale)
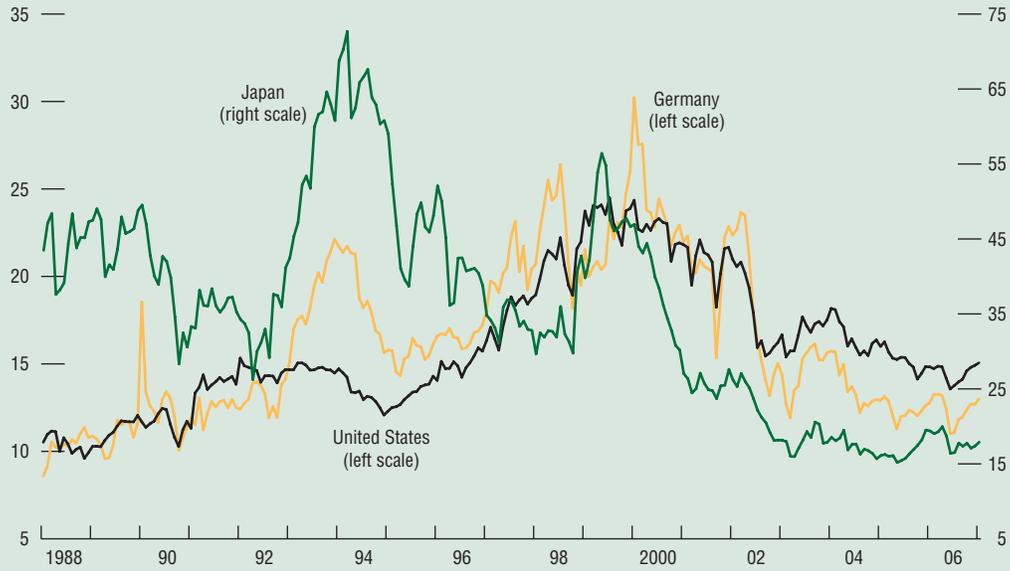
Source: I/B/E/S.

Figure 10. Flows into U.S.-Based Equity Funds
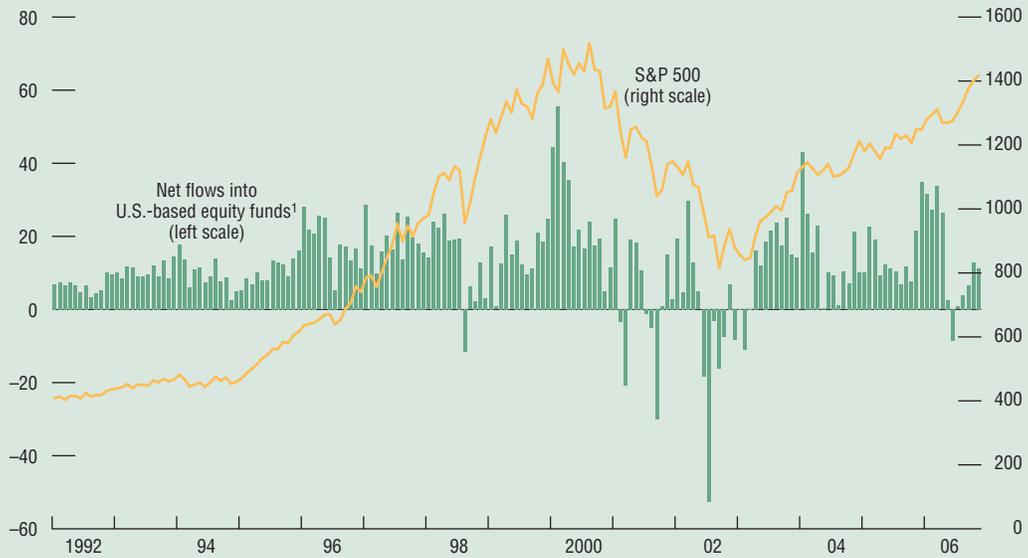
S&P 500
(right scale)

Net flows into
U.S.-based equity funds[1]
(left scale)

Figure 11. United States: Corporate Bond Market
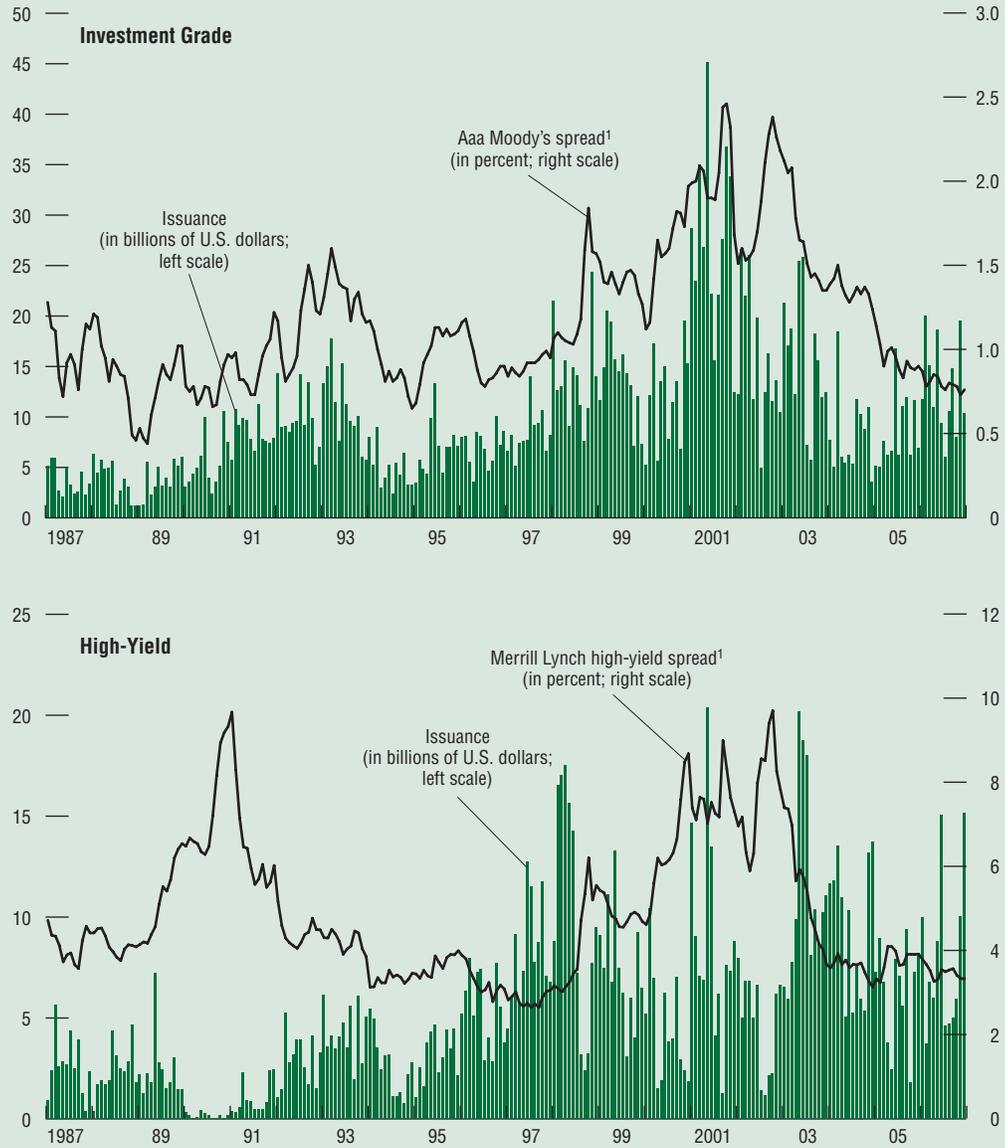
Sources: Board of Governors of the Federal Reserve System; and Bloomberg L.P.
[1]Spread against yield on 10-year U.S. government bonds.

Figure 12. Europe: Corporate Bond Market[1]

High-Yield Spread[2]
(In basis points)

European Corporate Bond Issuance
(In billions of U.S. dollars)
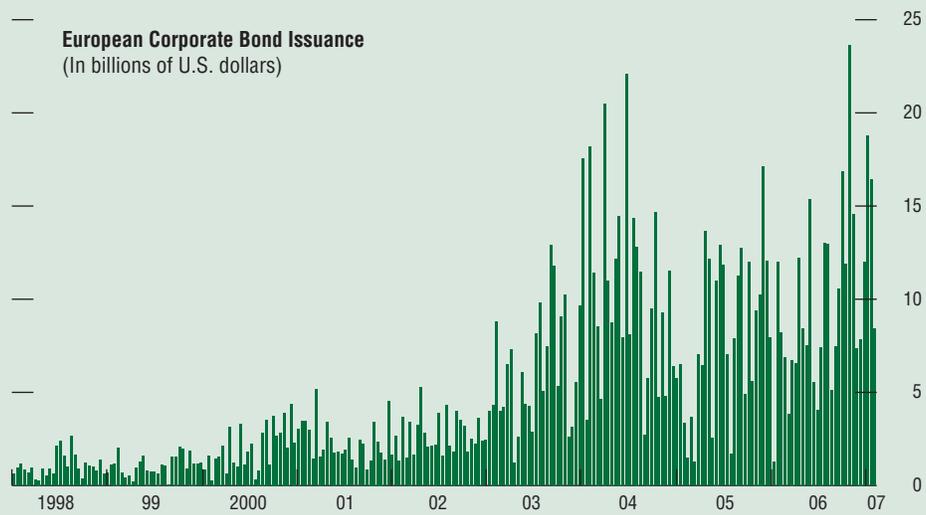
Sources: Bondware; and Datastream.
[1]Nonfinancial corporate bonds.
[2]Spread between yields on a Merrill Lynch High-Yield European Issuers Index bond and a 10-year German government benchmark bond.

Figure 13. United States: Commercial Paper Market[1]

Discount Rate Spread[2]
(In basis points; daily data)

Amount Outstanding
(In billions of U.S. dollars; monthly data)
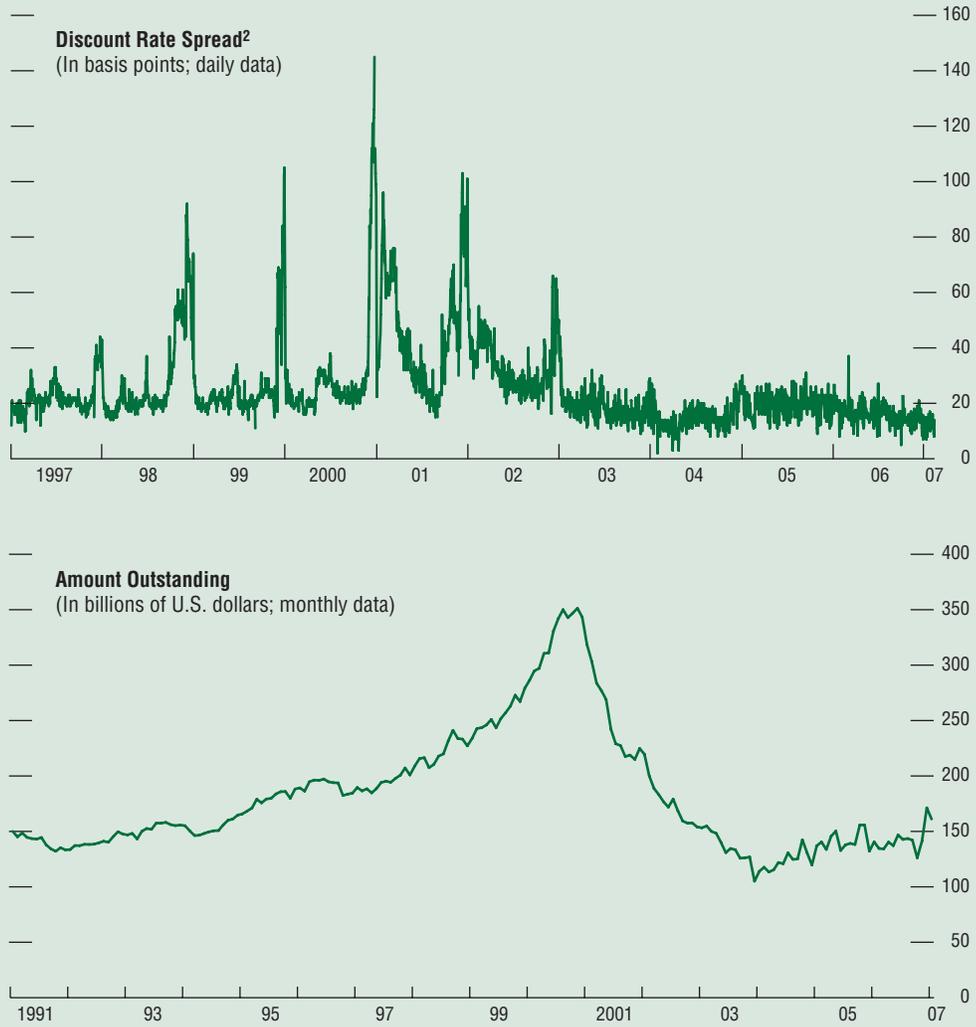
Source: Board of Governors of the Federal Reserve System.
[1]Nonfinancial commercial paper.
[2]Difference between 30-day A2/P2 and AA commercial paper.

Figure 14. United States: Asset-Backed Securities

ABS Spread[1]
(In basis points)

Total Amount Outstanding
(In billions of U.S. dollars)

- Automobile
- Credit card
- Home equity
- Student loan
- CBO/CDO[2]
- Other
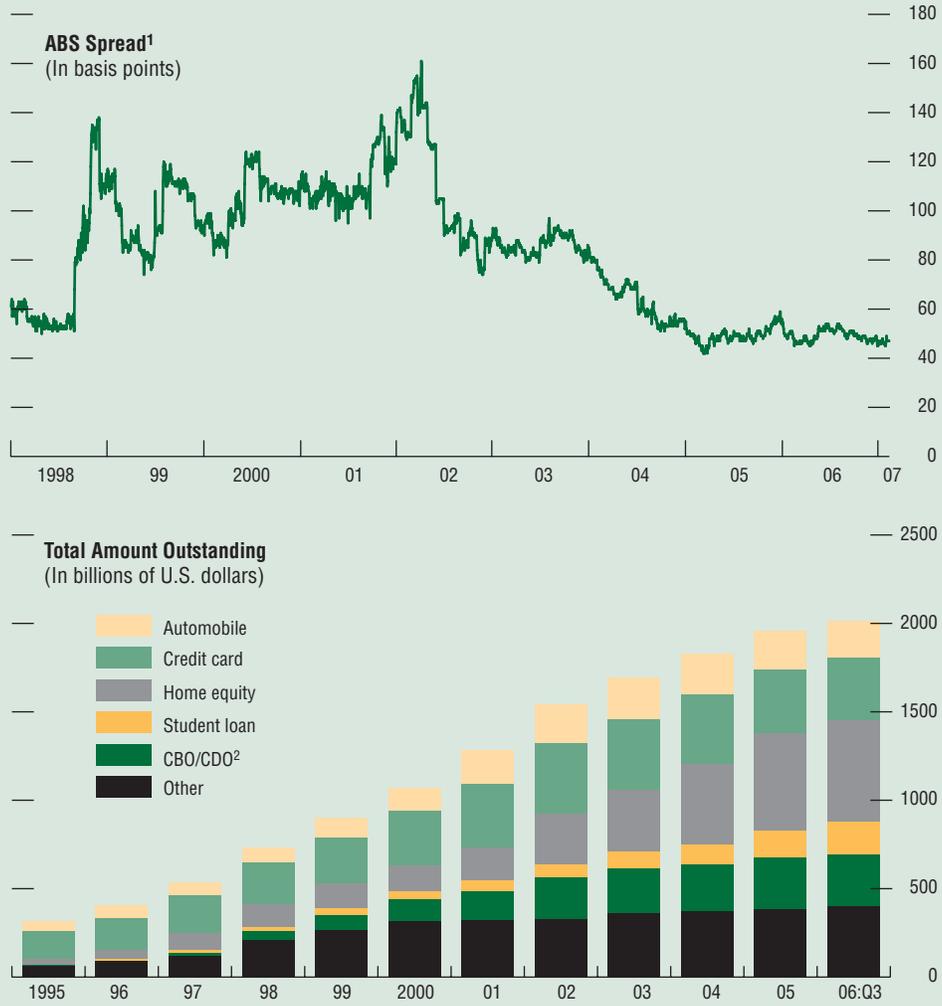
Sources: Merrill Lynch; Datastream; and the Bond Market Association.
[1]Merrill Lynch AAA Asset-Backed Master Index (fixed rate) option-adjusted spread.
[2]Collateralized bond/debt obligations.

Table 1. Global Capital Flows: Inflows and Outflows[1]

(In billions of U.S. dollars)

	Inflows										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
United States											
Direct investment	57.8	86.5	105.6	179.0	289.4	321.3	167.0	84.4	64.0	133.2	109.8
Portfolio investment	210.4	332.8	333.1	187.6	285.6	436.6	428.3	427.6	520.3	766.2	908.5
Other investment	170.4	131.8	268.1	57.0	165.2	289.0	187.5	285.8	280.5	550.9	193.9
Reserve assets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total capital flows	438.6	551.1	706.8	423.6	740.2	1,046.9	782.9	797.8	864.8	1,450.2	1,212.2
Canada											
Direct investment	9.3	9.6	11.5	22.7	24.8	66.1	27.7	22.1	7.3	1.2	34.1
Portfolio investment	18.4	13.7	11.7	16.6	2.7	10.3	24.2	11.9	13.9	41.6	7.0
Other investment	−3.9	15.7	28.0	5.4	−10.8	0.8	7.8	5.1	11.4	−4.7	24.9
Reserve assets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total capital flows	23.9	39.1	51.2	44.8	16.6	77.2	59.7	39.0	32.6	38.1	66.0
Japan											
Direct investment	—	0.2	3.2	3.3	12.3	8.2	6.2	9.1	6.2	7.8	3.2
Portfolio investment	59.8	66.8	79.2	56.1	126.9	47.4	60.5	−20.0	81.2	196.7	183.1
Other investment	97.3	31.1	68.0	−93.3	−265.1	−10.2	−17.6	26.6	34.1	68.3	45.9
Reserve assets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total capital flows	157.1	98.1	150.4	−34.0	−125.9	45.4	49.1	15.7	121.5	272.8	232.3
United Kingdom											
Direct investment	21.7	27.4	37.5	74.7	89.3	122.2	53.8	25.5	27.6	77.9	195.6
Portfolio investment	58.8	68.0	43.7	35.2	183.9	255.6	69.6	76.2	155.6	159.9	230.5
Other investment	106.2	251.8	322.2	110.5	90.0	414.6	327.0	109.1	396.7	741.2	938.3
Reserve assets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total capital flows	186.7	347.2	403.4	220.3	363.3	792.4	450.5	210.8	579.9	979.0	1,364.4
Euro area											
Direct investment	. . .	. . .	. . .	. . .	216.3	379.5	199.7	183.8	151.1	126.2	94.5
Portfolio investment	. . .	. . .	. . .	. . .	305.1	268.1	318.3	298.3	398.0	496.6	747.7
Other investment	. . .	. . .	. . .	. . .	198.4	340.3	238.1	60.5	195.7	345.2	801.7
Reserve assets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total capital flows	. . .	. . .	. . .	. . .	719.8	987.8	756.2	542.5	744.8	968.0	1,643.9
Emerging Markets and Developing Countries[2]											
Direct investment	125.1	148.4	191.5	187.4	213.1	211.7	225.5	182.2	199.6	272.8	361.2
Portfolio investment	89.5	176.0	146.9	32.3	102.7	91.7	11.4	−10.7	91.1	143.6	221.7
Other investment	104.6	95.5	150.3	−116.5	−70.2	−5.9	−57.6	1.8	124.0	202.8	133.4
Reserve assets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total capital flows	319.2	419.9	488.7	103.2	245.6	297.4	179.2	173.3	414.7	619.2	716.4

Sources: International Monetary Fund, *International Financial Statistics* and *World Economic Outlook* database as of March 21, 2007.

[1]The total net capital flows are the sum of direct investment, portfolio investment, other investment flows, and reserve assets. "Other investment" includes bank loans and deposits.

[2]This aggregate comprises the group of Other Emerging Market and Developing Countries defined in the *World Economic Outlook,* together with Hong Kong SAR, Israel, Korea, Singapore, and Taiwan Province of China.

	Outflows										
1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
−98.8	−91.9	−104.8	−142.6	−224.9	−159.2	−142.4	−154.5	−149.9	−244.1	−9.1	
−122.4	−149.3	−116.9	−130.2	−122.2	−127.9	−90.6	−48.6	−146.7	−146.5	−180.1	
−121.4	−178.9	−262.8	−74.2	−165.6	−273.1	−144.7	−87.9	−31.3	−479.9	−251.7	
−9.7	6.7	−1.0	−6.7	8.7	−0.3	−4.9	−3.7	1.5	2.8	14.1	
−352.3	−413.4	−485.5	−353.8	−504.1	−560.5	−382.6	−294.7	−326.4	−867.8	−426.8	
−11.5	−13.1	−23.1	−34.1	−17.3	−44.5	−36.2	−26.8	−22.2	−42.5	−34.2	
−5.3	−14.2	−8.6	−15.1	−15.6	−43.0	−24.4	−18.6	−13.8	−18.9	−42.7	
−8.3	−21.1	−16.2	9.4	10.2	−4.2	−10.7	−7.9	−14.6	−7.9	−16.6	
−2.7	−5.5	2.4	−5.0	−5.9	−3.7	−2.2	0.2	3.3	2.8	−1.3	
−27.9	−53.9	−45.4	−44.8	−28.5	−95.4	−73.4	−53.2	−47.4	−66.5	−94.8	
−22.5	−23.4	−26.1	−24.6	−22.3	−31.5	−38.5	−32.0	−28.8	−31.0	−45.4	
−86.0	−100.6	−47.1	−95.2	−154.4	−83.4	−106.8	−85.9	−176.3	−173.8	−196.4	
−102.2	5.2	−192.0	37.9	266.3	−4.1	46.6	36.4	149.9	−48.0	−106.6	
−58.6	−35.1	−6.6	6.2	−76.3	−49.0	−40.5	−46.1	−187.2	−160.9	−22.3	
−269.4	−154.0	−271.6	−75.8	13.4	−168.0	−139.2	−127.7	−242.3	−413.6	−370.8	
−49.1	−36.7	−60.9	−122.8	−202.5	−246.3	−61.8	−50.3	−65.6	−98.2	−91.7	
−61.7	−93.4	−85.0	−53.2	−34.3	−97.2	−124.7	1.2	−58.4	−259.2	−303.1	
−74.9	−214.7	−277.8	−22.9	−97.1	−426.8	−255.5	−151.0	−415.6	−596.9	−909.1	
0.9	0.7	3.9	0.3	1.0	−5.3	4.5	0.6	2.6	−0.4	−1.7	
−184.8	−344.1	−419.8	−198.6	−332.9	−775.6	−437.6	−199.5	−537.1	−954.7	−1,305.6	
. . .	. . .	. . .	. . .	−348.8	−413.7	−298.0	−163.4	−165.8	−178.7	−287.3	
. . .	. . .	. . .	. . .	−341.7	−385.3	−255.0	−163.2	−313.2	−420.8	−551.7	
. . .	. . .	. . .	. . .	−30.3	−165.8	−243.8	−220.1	−284.4	−392.0	−708.1	
. . .	. . .	. . .	. . .	11.6	16.2	16.5	−2.9	33.3	15.6	23.9	
. . .	. . .	. . .	. . .	−709.3	−948.7	−780.3	−549.6	−730.1	−975.8	−1,523.2	
−27.7	−31.6	−41.4	−27.4	−35.7	−43.0	−42.7	−30.0	−34.3	−82.7	−94.8	
−51.0	−86.1	−110.3	−7.3	−46.8	−105.8	−105.2	−91.4	−138.3	−160.9	−258.6	
−55.7	−96.3	−133.6	32.6	−68.4	−128.0	42.9	35.6	−115.5	−196.3	−231.1	
−110.7	−101.9	−87.9	−28.0	−98.2	−131.2	−120.6	−198.9	−358.9	−508.3	−590.0	
−245.2	−315.8	−373.1	−30.1	−249.2	−408.1	−225.6	−284.8	−647.0	−948.2	−1,174.4	

Table 2. Global Capital Flows: Amounts Outstanding and Net Issues of International Debt Securities by Currency of Issue and Announced International Syndicated Credit Facilities by Nationality of Borrower
(In billions of U.S. dollars)

	2001	2002	2003	2004	2005	2006 Q1	2006 Q2	2006 Q3
Amounts outstanding of international debt securities by currency of issue								
U.S. dollar	3,699.0	4,122.5	4,536.6	4,905.5	5,381.1	5,592.4	5,831.1	6,043.1
Japanese yen	411.4	433.2	488.0	530.5	472.1	472.8	487.7	477.4
Pound sterling	505.6	618.2	776.3	981.0	1,063.0	1,130.6	1,244.5	1,309.7
Canadian dollar	47.6	51.6	79.5	112.6	146.7	155.2	168.2	175.0
Swedish krona	8.2	11.1	15.8	20.9	23.2	24.3	27.0	28.3
Swiss franc	123.6	159.2	195.6	227.9	208.6	218.3	240.4	238.9
Euro	2,289.8	3,283.2	4,826.6	6,211.7	6,313.5	6,797.0	7,392.5	7,583.9
Other	110.4	152.0	216.7	285.7	355.8	374.2	393.7	410.9
Total	7,195.5	8,830.9	11,135.0	13,275.8	13,964.0	14,764.9	15,785.1	16,267.1
Net issues of international debt securities by currency of issue								
U.S. dollar	667.4	423.5	414.1	368.9	475.6	211.4	238.7	211.9
Japanese yen	18.5	−17.5	3.7	26.9	4.0	−1.7	4.9	2.1
Pound sterling	65.1	52.4	84.5	133.2	198.0	60.2	48.3	42.3
Canadian dollar	−1.1	3.6	15.6	25.5	29.4	8.9	5.7	7.0
Swedish krona	1.4	1.1	2.0	3.4	6.2	0.7	0.9	1.5
Swiss franc	−5.2	8.0	15.8	12.7	13.1	8.4	9.0	2.6
Euro	622.8	492.0	779.0	917.8	991.3	317.6	251.0	222.7
Other	19.3	30.7	38.0	52.9	87.6	24.4	16.2	15.6
Total	1,388.2	993.8	1,352.5	1,541.3	1,805.1	629.8	574.6	505.8
Announced international syndicated credit facilities by nationality of borrower								
All countries	1,381.4	1,296.9	1,241.4	1,806.9	2,232.3	433.3	569.5	456.5
Industrial countries	1,270.0	1,199.6	1,130.4	1,635.4	1,989.0	391.6	482.2	382.6
Of which:								
United States	845.2	739.7	606.6	897.6	977.3	193.7	226.9	199.9
Japan	23.8	19.5	18.2	27.5	19.3	16.6	6.4	2.6
Germany	36.5	84.4	97.6	116.3	133.1	23.6	42.9	26.0
France	50.3	64.1	65.9	150.9	171.8	37.5	44.0	17.9
Italy	35.9	22.8	45.3	22.3	74.0	2.6	5.4	7.1
United Kingdom	106.0	109.8	103.9	150.3	178.6	28.1	32.0	24.3
Canada	39.2	34.9	30.4	38.7	71.2	13.5	17.6	16.4

Source: Bank for International Settlements.

Table 3. Selected Indicators on the Size of the Capital Markets, 2005
(In billions of U.S. dollars unless noted otherwise)

	GDP	Total Reserves Minus Gold[1]	Stock Market Capitalization	Debt Securities Public	Debt Securities Private	Debt Securities Total	Bank Assets[2]	Bonds, Equities, and Bank Assets[3]	Bonds, Equities, and Bank Assets[2] *(In percent of GDP)*
World	44,595.0	4,243.8	41,966.6	23,422.4	36,268.2	59,690.7	63,473.2	165,130.4	370.3
European Union	12,879.0	241.2	9,555.7	6,673.8	12,024.1	18,697.8	30,975.1	59,228.6	459.9
Euro area	10,030.7	147.7	5,990.6	5,731.5	9,451.2	15,182.7	21,782.8	43,159.0	430.3
North America	13,588.3	87.0	18,483.0	6,614.6	18,683.2	25,297.8	11,086.8	54,867.7	403.8
Canada	1,132.4	33.0	1,482.2	693.1	531.6	1,224.7	1,762.7	4,469.5	394.7
United States	12,455.8	54.1	17,000.9	5,921.6	18,151.6	24,073.1	9,324.1	50,398.1	404.6
Japan	4,557.1	834.3	7,542.7	6,607.9	2,037.0	8,644.9	6,647.0	22,834.7	501.1
Memorandum items:									
EU countries									
Austria	305.3	6.8	126.3	160.4	259.9	420.3	389.7	936.3	306.6
Belgium	372.7	8.2	264.3	378.1	323.1	701.3	1,527.3	2,492.9	668.8
Denmark	259.2	32.9	159.7	95.8	405.7	501.5	635.6	1,296.9	500.3
Finland	195.8	10.5	183.7	112.8	83.7	196.5	202.9	583.1	297.8
France	2,127.2	27.8	1,550.9	1,107.3	1,766.3	2,873.7	6,284.4	10,708.9	503.4
Germany	2,791.7	45.1	1,221.1	1,267.6	2,835.5	4,103.1	3,706.9	9,031.1	323.5
Greece	284.1	0.5	145.1	294.5	59.6	354.1	275.8	775.1	272.7
Ireland	200.8	0.8	114.1	37.6	250.2	287.8	1,047.9	1,449.8	722.1
Italy	1,772.8	25.5	798.1	1,514.2	1,360.6	2,874.8	3,111.2	6,784.1	382.7
Luxembourg	36.6	0.2	51.2	0.0	49.4	49.4	686.0	786.7	2,148.2
Netherlands	629.9	9.0	508.8	261.0	1,148.9	1,409.9	2,598.3	4,517.1	717.1
Portugal	185.6	3.5	67.1	133.5	152.7	286.2	177.4	530.7	285.9
Spain	1,128.0	9.7	959.9	464.4	1,161.2	1,625.6	1,977.8	4,563.2	404.6
Sweden	358.5	22.1	347.2	161.0	301.2	462.2	454.9	1,264.3	352.7
United Kingdom	2,230.6	38.5	3,058.2	685.5	1,865.9	2,551.4	7,898.9	13,508.5	605.6
Emerging market countries[4]	12,014.1	1,940.0	6,385.1	3,175.8	1,610.4	4,786.2	10,895.2	22,066.5	183.7
Of which:									
Asia	5,433.1	1,248.4	4,408.6	1,484.9	1,189.0	2,673.9	7,322.9	14,405.5	265.1
Latin America	2,448.5	195.5	972.5	1,013.9	276.8	1,290.8	1,374.3	3,637.6	148.6
Middle East	1,134.2	149.5	159.0	34.0	26.8	60.8	869.0	1,088.8	96.0
Africa	808.6	91.5	549.3	90.0	44.2	134.2	525.6	1,209.1	149.5
Europe	2,189.8	255.1	295.6	552.9	73.6	626.5	803.4	1,725.5	78.8

Sources: World Federation of Exchanges; Bank for International Settlements; International Monetary Fund, *International Financial Statistics (IFS)* and *World Economic Outlook* database as of March 21, 2007; and © 2003 Bureau van Dijk Electronic Publishing-Bankscope.

[1]Data are from IFS.
[2]Assets of commercial banks.
[3]Sum of the stock market capitalization, debt securities, and bank assets.
[4]This aggregate comprises the group of Other Emerging Market and Developing Countries defined in the *World Economic Outlook,* together with Hong Kong SAR, Israel, Korea, Singapore, and Taiwan Province of China.

Table 4. Global Over-the-Counter Derivatives Markets: Notional Amounts and Gross Market Values of Outstanding Contracts[1]
(In billions of U.S. dollars)

	Notional Amounts					Gross Market Values				
	End-June 2004	End-Dec. 2004	End-June 2005	End-Dec. 2005	End-June 2006	End-June 2004	End-Dec. 2004	End-June 2005	End-Dec. 2005	End-June 2006
Total	**220,058**	**257,894**	**281,493**	**297,670**	**369,906**	**6,395**	**9,377**	**10,605**	**9,749**	**10,074**
Foreign exchange	**26,997**	**29,289**	**31,081**	**31,364**	**38,111**	**867**	**1,546**	**1,141**	**997**	**1,134**
Forwards and forex swaps	13,926	14,951	15,801	15,873	19,415	309	643	464	406	436
Currency swaps	7,034	8,223	8,236	8,504	9,669	442	745	549	453	533
Options	6,038	6,115	7,045	6,987	9,027	116	158	129	138	166
Interest rate[2]	**164,626**	**190,502**	**204,795**	**211,971**	**262,296**	**3,951**	**5,417**	**6,699**	**5,397**	**5,549**
Forward rate agreements	13,144	12,789	13,973	14,269	18,117	29	22	31	22	25
Swaps	127,570	150,631	163,749	169,106	207,323	3,562	4,903	6,077	4,778	4,944
Options	23,912	27,082	27,073	28,596	36,856	360	492	592	597	579
Equity-linked	**4,521**	**4,385**	**4,551**	**5,793**	**6,783**	**294**	**498**	**382**	**582**	**671**
Forwards and swaps	691	756	1,086	1,177	1,423	63	76	88	112	147
Options	3,830	3,629	3,465	4,617	5,361	231	422	294	470	523
Commodity[3]	**1,270**	**1,443**	**2,940**	**5,435**	**6,394**	**166**	**169**	**376**	**871**	**718**
Gold	318	369	288	334	456	45	32	24	51	77
Other	952	1,074	2,652	5,100	5,938	122	137	351	820	641
Forwards and swaps	503	559	1,748	1,909	2,186	. . .	. . .	. . .	. . .	. . .
Options	449	516	904	3,191	3,752	. . .	. . .	. . .	. . .	. . .
Credit default swaps	**. . .**	**6,396**	**10,211**	**13,908**	**20,352**	**. . .**	**133**	**188**	**243**	**294**
Single-name instruments	. . .	5,117	7,310	10,432	13,873	. . .	112	136	171	186
Multi-name instruments	. . .	1,279	2,901	3,476	6,479	. . .	22	52	71	109
Unallocated	**22,644**	**25,879**	**27,915**	**29,199**	**35,969**	**1,116**	**1,613**	**1,818**	**1,659**	**1,707**
Memorandum items:										
Gross credit exposure[4]	n.a.	n.a.	n.a.	n.a.	n.a.	1,478	2,075	1,897	1,900	2,032
Exchange-traded derivatives	26,997	29,289	31,081	31,364	38,111	. . .	. . .	. . .	. . .	. . .

Source: Bank for International Settlements.

[1]All figures are adjusted for double-counting. Notional amounts outstanding have been adjusted by halving positions vis-à-vis other reporting dealers. Gross market values have been calculated as the sum of the total gross positive market value of contracts and the absolute value of the gross negative market value of contracts with non-reporting counterparties.

[2]Single-currency contracts only.

[3]Adjustments for double-counting are estimated.

[4]Gross market values after taking into account legally enforceable bilateral netting agreements.

Table 5. Global Over-the-Counter Derivatives Markets: Notional Amounts and Gross Market Values of Outstanding Contracts by Counterparty, Remaining Maturity, and Currency[1]
(In billions of U.S. dollars)

	Notional Amounts					Gross Market Values				
	End-June 2004	End-Dec. 2004	End-June 2005	End-Dec. 2005	End-June 2006	End-June 2004	End-Dec. 2004	End-June 2005	End-Dec. 2005	End-June 2006
Total	**220,058**	**257,894**	**281,493**	**297,670**	**369,906**	**6,395**	**9,377**	**10,605**	**9,749**	**10,074**
Foreign exchange	**26,997**	**29,289**	**31,081**	**31,364**	**38,111**	**867**	**1,546**	**1,141**	**997**	**1,134**
By counterparty										
With other reporting dealers	10,796	11,668	12,179	12,161	15,281	247	486	377	323	367
With other financial institutions	10,113	11,417	12,334	12,721	15,120	352	648	471	412	471
With nonfinancial customers	6,088	6,204	6,568	6,482	7,711	267	413	294	261	296
By remaining maturity										
Up to one year[2]	21,252	22,834	24,256	23,910	29,578	. . .	. . .	. . .	. . .	. . .
One to five years[2]	3,912	4,386	4,729	5,165	5,841	. . .	. . .	. . .	. . .	. . .
Over five years[2]	1,834	2,069	2,097	2,289	2,692	. . .	. . .	. . .	. . .	. . .
By major currency										
U.S. dollar[3]	24,552	25,726	27,585	26,297	31,771	808	1,408	1,024	867	967
Euro[3]	10,312	11,900	12,405	12,857	15,348	380	752	512	397	472
Japanese yen[3]	6,516	7,076	6,907	7,578	9,510	178	258	220	256	242
Pound sterling[3]	4,614	4,331	4,273	4,424	5,219	130	220	150	121	148
Other[3]	8,000	9,545	10,994	11,572	14,374	238	455	377	354	439
Interest rate[4]	**164,626**	**190,502**	**204,795**	**211,971**	**262,296**	**3,951**	**5,417**	**6,699**	**5,397**	**5,549**
By counterparty										
With other reporting dealers	72,550	82,258	87,049	91,541	114,474	1,606	2,155	2,598	2,096	2,219
With other financial institutions	70,219	85,729	92,092	95,321	115,089	1,708	2,631	3,265	2,625	2,613
With nonfinancial customers	21,857	22,516	25,655	25,109	32,734	638	631	837	676	718
By remaining maturity										
Up to one year[2]	57,157	62,659	66,681	69,378	90,583	. . .	. . .	. . .	. . .	. . .
One to five years[2]	66,093	77,929	82,341	86,550	101,795	. . .	. . .	. . .	. . .	. . .
Over five years[2]	41,376	49,915	55,773	56,042	69,918	. . .	. . .	. . .	. . .	. . .
By major currency										
U.S. dollar	57,828	61,103	72,558	74,441	88,094	1,464	1,535	1,826	1,515	2,149
Euro	63,006	76,162	76,426	81,442	103,607	1,774	2,986	3,692	2,965	2,358
Japanese yen	21,103	24,209	25,224	25,605	32,214	324	352	454	295	472
Pound sterling	11,867	15,289	16,621	15,060	19,079	188	240	372	344	296
Other	10,822	13,740	13,966	15,422	19,302	201	305	356	279	276
Equity-linked	**4,521**	**4,385**	**4,551**	**5,793**	**6,783**	**294**	**498**	**382**	**582**	**671**
Commodity[5]	**1,270**	**1,443**	**2,940**	**5,435**	**6,394**	**166**	**169**	**376**	**871**	**718**
Credit default swaps	**. . .**	**6,396**	**10,211**	**13,908**	**20,352**	**. . .**	**133**	**188**	**243**	**294**
Unallocated	**22,644**	**25,879**	**27,915**	**29,199**	**35,969**	**1,116**	**1,613**	**1,818**	**1,659**	**1,707**

Source: Bank for International Settlements.

[1]All figures are adjusted for double-counting. Notional amounts outstanding have been adjusted by halving positions vis-à-vis other reporting dealers. Gross market values have been calculated as the sum of the total gross positive market value of contracts and the absolute value of the gross negative market value of contracts with nonreporting counterparties.

[2]Residual maturity.

[3]Counting both currency sides of each foreign exchange transaction means that the currency breakdown sums to twice the aggregate.

[4]Single-currency contracts only.

[5]Adjustments for double-counting are estimated.

Table 6. Exchange-Traded Derivative Financial Instruments: Notional Principal Amounts Outstanding and Annual Turnover

	1993	1994	1995	1996	1997	1998	1999
	(In billions of U.S. dollars)						
Notional principal amounts outstanding							
Interest rate futures	4,960.4	5,807.6	5,876.2	5,979.0	7,586.7	8,031.4	7,924.8
Interest rate options	2,361.4	2,623.2	2,741.8	3,277.8	3,639.8	4,623.5	3,755.5
Currency futures	34.7	40.4	33.8	37.7	42.3	31.7	36.7
Currency options	75.9	55.7	120.4	133.4	118.6	49.2	22.4
Stock market index futures	110.0	127.7	172.2	195.9	210.9	291.6	346.9
Stock market index options	231.6	242.7	337.7	394.5	808.7	947.4	1,510.3
Total	7,774.1	8,897.2	9,282.0	10,018.2	12,407.1	13,974.8	13,596.6
North America	4,359.9	4,823.5	4,852.3	4,841.2	6,347.9	7,395.1	6,930.6
Europe	1,777.9	1,831.8	2,241.2	2,828.0	3,587.3	4,397.1	4,008.5
Asia-Pacific	1,606.0	2,171.8	1,990.1	2,154.0	2,235.7	1,882.5	2,407.8
Other	30.3	70.1	198.4	195.0	236.2	300.1	249.7
	(In millions of contracts traded)						
Annual turnover							
Interest rate futures	427.0	628.5	561.0	612.2	701.6	760.1	672.7
Interest rate options	82.9	116.6	225.5	151.1	116.8	129.7	118.0
Currency futures	39.0	69.8	99.6	73.7	73.6	54.5	37.1
Currency options	23.7	21.3	23.3	26.3	21.1	12.1	6.8
Stock market index futures	71.2	109.0	114.8	93.8	115.9	178.0	204.9
Stock market index options	144.1	197.6	187.3	172.3	178.2	195.0	322.5
Total	787.9	1,142.9	1,211.5	1,129.4	1,207.1	1,329.3	1,362.0
North America	382.4	513.5	455.0	428.3	463.5	530.0	462.8
Europe	263.4	398.1	354.8	391.7	482.8	525.9	604.7
Asia-Pacific	98.5	131.7	126.4	115.9	126.9	170.9	207.7
Other	43.6	99.6	275.5	193.4	134.0	102.5	86.8

Source: Bank for International Settlements.

	2000	2001	2002	2003	2004	2005	2006 Q1	2006 Q2	2006 Q3
(In billions of U.S. dollars)									
	7,907.8	9,269.5	9,955.6	13,123.7	18,164.9	20,708.7	24,438.9	24,862.3	24,699.0
	4,734.2	12,492.8	11,759.5	20,793.8	24,604.1	31,588.2	48,001.9	51,975.7	43,369.3
	74.4	65.6	47.0	79.9	103.5	107.6	109.7	118.7	139.9
	21.4	27.4	27.4	37.9	60.7	66.1	70.8	69.1	68.0
	377.5	344.2	365.5	549.3	635.2	802.9	922.4	1,475.7	985.6
	1,148.4	1,574.9	1,700.8	2,202.4	3,024.0	4,542.6	5,400.3	5,913.3	6,316.5
	14,263.8	23,774.4	23,855.8	36,786.9	46,592.4	57,816.2	78,943.9	84,414.7	75,578.4
	8,167.9	16,203.2	13,719.8	19,504.0	27,608.4	36,394.2	51,328.5	53,499.3	45,898.7
	4,197.9	6,141.6	8,800.8	15,406.5	16,307.8	17,982.4	23,393.0	25,726.7	24,631.3
	1,611.8	1,318.4	1,206.0	1,659.9	2,426.9	3,014.1	3,760.0	4,692.3	4,534.8
	286.2	111.2	129.1	216.5	249.3	425.5	462.5	496.5	513.5
(In millions of contracts traded)									
	781.2	1,057.5	1,152.1	1,576.8	1,902.6	2,110.4	650.3	688.8	669.3
	107.7	199.6	240.3	302.3	361.0	430.8	139.1	157.0	146.7
	43.5	49.0	42.6	58.8	83.7	143.0	50.3	61.7	55.5
	7.0	10.5	16.1	14.3	13.0	19.4	5.5	5.7	6.4
	225.2	337.1	530.3	725.6	804.4	918.7	268.7	354.1	291.6
	481.5	1,148.2	2,235.5	3,233.9	2,980.1	3,139.8	874.2	835.5	773.4
	1,646.0	2,801.9	4,216.8	5,911.6	6,144.8	6,762.0	1,988.1	2,102.7	1,942.9
	461.3	675.6	912.2	1,279.8	1,633.6	1,926.8	593.7	695.4	648.9
	718.6	957.7	1,074.8	1,346.3	1,412.6	1,592.8	472.2	539.3	466.5
	331.3	985.1	2,073.1	3,111.6	2,847.6	2,932.4	825.0	770.6	722.2
	134.9	183.4	156.7	174.0	251.0	310.0	97.2	97.5	105.4

Table 7. United States: Sectoral Balance Sheets
(In percent)

	1999	2000	2001	2002	2003	2004	2005
Corporate sector							
Debt/net worth	50.9	48.3	50.8	49.7	47.6	44.4	42.4
Short-term debt/total debt	38.8	39.3	33.3	29.9	27.0	27.1	28.0
Interest burden[1]	13.4	15.8	17.7	14.4	11.8	8.7	8.1
Household sector							
Net worth/assets	86.1	85.0	83.5	81.5	81.8	81.3	80.9
Equity/total assets	35.3	31.4	27.1	21.0	24.2	24.2	23
Equity/financial assets	50.2	46.3	41.7	34.4	38.7	39.2	38
Net worth/disposable personal income	629.0	577.5	539.4	495.7	538.7	552.5	560.4
Home mortgage debt/total assets	9.0	9.8	10.9	12.5	12.7	13.2	13.9
Consumer credit/total assets	3.2	3.5	3.9	4.2	3.9	3.8	3.6
Total debt/financial assets	19.7	22.2	25.5	30.2	29.3	30.2	31.5
Debt-service burden[2]	12.3	12.6	13.1	13.4	13.5	13.5	14.1
Banking sector[3]							
Credit quality							
Nonperforming loans[4]/total loans	1.0	1.1	1.4	1.5	1.2	0.9	0.8
Net loan losses/average total loans	0.6	0.7	1.0	1.1	0.9	0.7	0.6
Loan-loss reserve/total loans	1.7	1.7	1.9	1.9	1.8	1.5	1.3
Net charge-offs/total loans	0.6	0.7	1.0	1.1	0.9	0.6	0.6
Capital ratios							
Total risk-based capital	12.2	12.1	12.7	12.8	12.8	12.6	12.3
Tier 1 risk-based capital	9.5	9.4	9.9	10.0	10.1	10.0	9.9
Equity capital/total assets	8.4	8.5	9.1	9.2	9.1	10.1	10.1
Core capital (leverage ratio)	7.8	7.7	7.8	7.8	7.9	8.1	8.3
Profitability measures							
Return on average assets (ROA)	1.3	1.2	1.2	1.3	1.4	1.3	1.3
Return on average equity (ROE)	15.7	14.8	13.2	14.5	15.3	13.7	13.3
Net interest margin	4.0	3.9	3.9	4.1	3.8	3.6	3.6
Efficiency ratio[5]	58.7	58.4	57.7	55.8	56.5	58.0	57.2

Sources: Board of Governors of the Federal Reserve System, *Flow of Funds;* Department of Commerce, Bureau of Economic Analysis; Federal Deposit Insurance Corporation; and Federal Reserve Bank of St. Louis.
[1]Ratio of net interest payments to pre-tax income.
[2]Ratio of debt payments to disposable personal income.
[3]FDIC-insured commercial banks.
[4]Loans past due 90+ days and nonaccrual.
[5]Noninterest expense less amortization of intangible assets as a percent of net interest income plus noninterest income.

Table 8. Japan: Sectoral Balance Sheets[1]
(In percent)

	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006
Corporate sector							
Debt/shareholders' equity (book value)	156.8	156.0	146.1	121.3	121.5	101.7	101.9
Short-term debt/total debt	37.7	36.8	39.0	37.8	36.8	36.4	36.0
Interest burden[2]	28.4	32.3	27.8	22.0	18.4	15.6	16.0
Debt/operating profits	1,229.3	1,480.0	1,370.0	1,079.2	965.9	839.9	897.4
Memorandum items:							
Total debt/GDP[3]	104.2	102.2	101.1	90.9	96.5	85.7	89.9
Household sector							
Net worth/assets	84.7	84.5	84.4	84.5	84.6	. . .	. . .
Equity	4.7	3.6	3.5	4.9	5.6	. . .	. . .
Real estate	36.6	35.8	34.7	32.9	31.8	. . .	. . .
Net worth/net disposable income	751.3	744.0	724.4	727.3	721.9	. . .	. . .
Interest burden[4]	5.4	5.2	5.1	4.9	4.8	4.7	. . .
Memorandum items:							
Debt/equity	324.3	426.9	449.6	316.7	275.7	. . .	. . .
Debt/real estate	41.7	43.2	45.0	46.9	48.4	. . .	. . .
Debt/net disposable income	135.3	136.1	134.0	132.9	131.3	. . .	. . .
Debt/net worth	18.0	18.3	18.5	18.3	18.2	. . .	. . .
Equity/net worth	5.6	4.3	4.1	5.8	6.6	. . .	. . .
Real estate/net worth	43.2	42.3	41.1	38.9	37.6	. . .	. . .
Total debt/GDP[3]	80.3	80.2	79.2	77.3	76.0	. . .	. . .
Banking sector							
Credit quality[5]							
Nonperforming loans[6]/total loans	6.3	8.4	7.4	5.8	4.0	2.9	2.7
Capital ratio							
Stockholders' equity/assets	4.6	3.9	3.3	3.9	4.2	4.9	4.9
Profitability measures							
Return on equity (ROE)[7]	−0.5	−14.3	−19.5	−2.7	4.1	11.3	13.9

Sources: Ministry of Finance, *Financial Statements of Corporations by Industries*; Cabinet Office, Economic and Social Research Institute, *Annual Report on National Accounts*; Japanese Bankers Association, *Financial Statements of All Banks*; and Financial Services Agency, *The Status of Nonperforming Loans*.

[1]Data are for fiscal years beginning April 1. Data on household nonfinancial assets and disposable income are only available through FY2004.
[2]Interest payments as a percent of operating profits.
[3]Revised due to the change in GDP figures.
[4]Interest payments as a percent of disposable income.
[5]The figure in FY2005 is at the end of September 2005.
[6]Nonperforming loans are based on figures reported under the Financial Reconstruction Law.
[7]Net income as a percentage of stockholders' equity (no adjustment for preferred stocks, etc.).

Table 9. Europe: Sectoral Balance Sheets
(In percent)

	1999	2000	2001	2002	2003	2004	2005
Corporate sector							
Debt/equity[1]	69.1	67.8	72.3	75.5	72.9	71.0	71.4
Short-term debt/total debt	37.8	39.6	38.8	37.1	36.4	36.9	38.4
Interest burden[2]	15.4	18.4	19.6	18.5	17.2	17.6	18.4
Debt/operating profits	289.8	317.1	323.5	339.8	330.3	328.3	342.3
Memorandum items:							
Financial assets/equity	1.5	1.5	1.5	1.4	1.4	1.4	1.4
Liquid assets/short-term debt	76.0	69.7	73.3	74.1	81.0	87.9	92.0
Household sector							
Net worth/assets	84.5	84.5	83.9	83.9	84.0	84.1	84.3
Equity/net worth	16.2	15.5	13.5	10.8	11.4	11.3	12.2
Equity/net financial assets	39.7	39.8	36.5	31.8	33.1	33.1	34.7
Interest burden[3]	6.3	6.5	6.2	6.1	6.0	6.0	6.2
Memorandum items:							
Nonfinancial assets/net worth	57.8	59.7	61.7	65.7	65.6	65.9	64.9
Debt/net financial assets	45.0	46.1	48.4	53.3	51.6	51.6	48.9
Debt/income	93.5	94.6	94.8	98.2	100.8	104.9	107.5
Banking sector[4]							
Credit quality							
Nonperforming loans/total loans	3.3	3.0	2.9	2.5	2.3	1.7	1.5
Loan-loss reserve/nonperforming loans	79.3	82.1	80.8	81.5	73.0	91.9	88.7
Loan-loss reserve/total loans	2.6	2.5	2.4	2.4	2.4	1.9	1.6
Loan-loss provisions/total operating income	34.5	23.6	38.0	52.1	35.6	26.2	31.0
Capital ratios							
Equity capital/total assets	3.9	4.3	3.3	3.1	2.9	3.5	3.4
Capital funds/liabilities	6.5	6.9	6.8	5.4	5.0	5.7	5.5
Profitability measures							
Return on assets (after tax)	0.6	0.8	0.5	0.4	0.5	0.6	0.5
Return on equity (after tax)	14.2	18.3	11.2	9.0	11.3	14.2	15.8
Net interest margin	1.5	1.5	1.4	1.6	1.5	1.4	1.1
Efficiency ratio[5]	65.9	66.4	68.2	69.0	73.1	63.6	63.2

Sources: ©2003 Bureau van Dijk Electronic Publishing-Bankscope; European Central Bank, *Monthly Bulletin;* and IMF staff estimates.
Note: GDP-weighted average for France, Germany, and the United Kingdom, unless otherwise noted.
[1]Corporate equity adjusted for changes in asset valuation.
[2]Interest payments as a percent of gross operating profits.
[3]Interest payments as percent of disposable income.
[4]Fifty largest European banks. Data availability may restrict coverage to less than 50 banks for specific indicators.
[5]Cost-to-income ratio.

Figure 15. Emerging Market Volatility Measures

Emerging Market Debt Volatility
(In percent)

EMBI Global index[1]

1998   99   2000   01   02   03   04   05   06   07

Emerging Market Equity Volatility
(In percent)

MSCI Emerging Markets index[2]

1998   99   2000   01   02   03   04   05   06   07
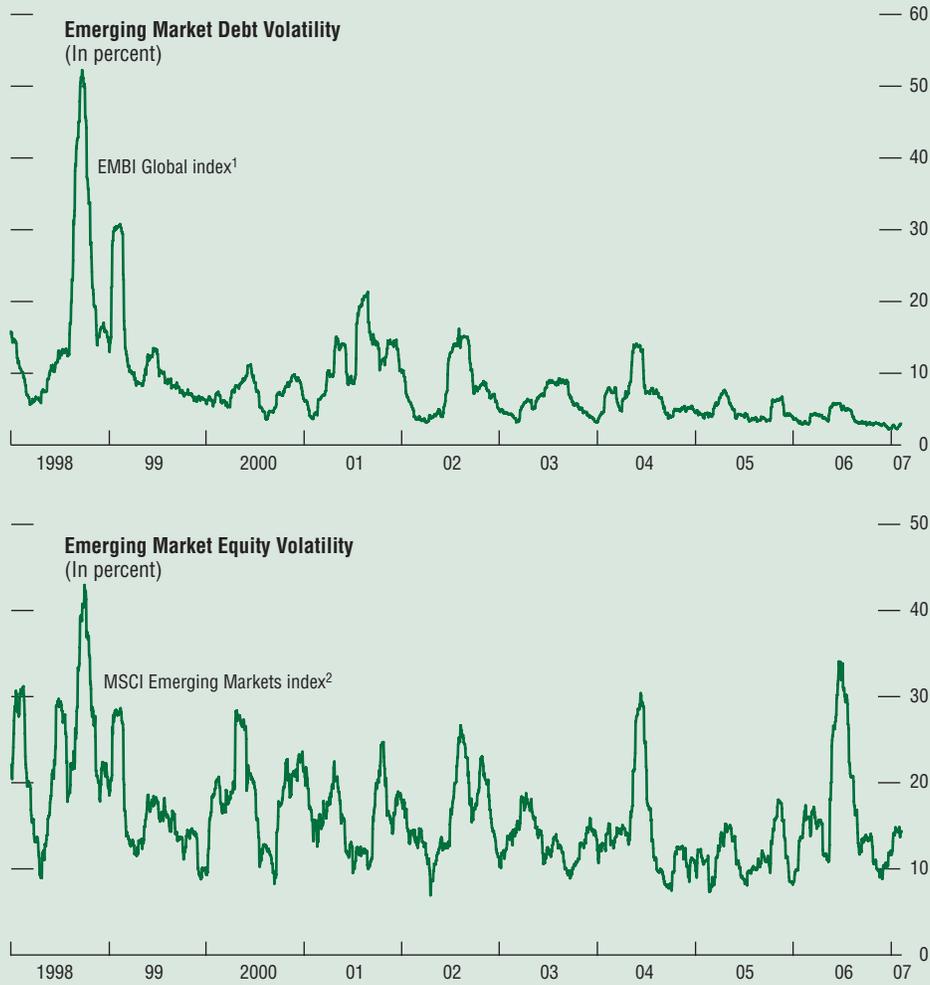
Sources: For "Emerging Market Equity Volatility," Morgan Stanley Capital International (MSCI); and IMF staff estimates. For "Emerging Market Debt Volatility," JPMorgan Chase & Co.; and IMF staff estimates.
[1]Data utilize the EMBI Global total return index in U.S. dollars to calculate 30-day rolling volatilities.
[2]Data utilize the MSCI Emerging Markets index in U.S. dollars to calculate 30-day rolling volatilities.

Figure 16. Emerging Market Debt Cross-Correlation Measures

Average Cross-Correlations, 2000–07[1]

Average Regional Cross-Correlations, 2000–07[2]

Asia

Overall

Latin America

Emerging Europe, Middle East, and Africa

Average Cross-Correlations, 2005–07[1]

Average Regional Cross-Correlations, 2005–07[2]

Latin America

Asia

Overall

Emerging Europe, Middle East, and Africa
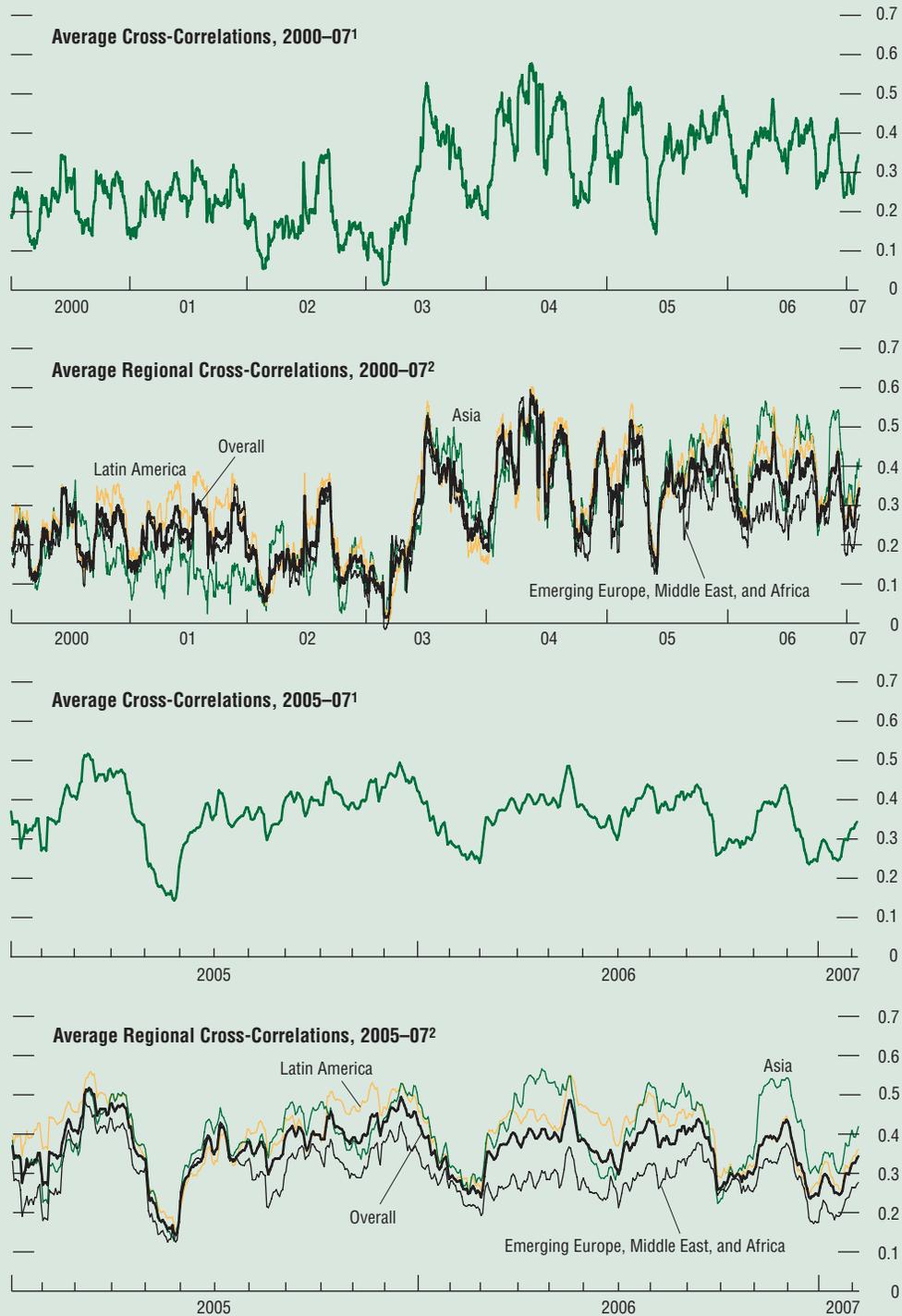
Sources: JPMorgan Chase & Co.; and IMF staff estimates.
[1]Thirty-day moving simple average across all pair-wise return correlations of 20 constituents included in the EMBI Global.
[2]Simple average of all pair-wise correlations of all markets in a given region with all other bond markets, regardless of region.

Table 10. Equity Market Indices

	2006 End of Period				End of Period					12-Month High	12-Month Low	All-Time High[1]	All-Time Low[1]
	Q1	Q2	Q3	Q4	2002	2003	2004	2005	2006				
World	**1,335.1**	**1,319.9**	**1,373.4**	**1,483.6**	**792.2**	**1,036.3**	**1,169.3**	**1,257.8**	**1,483.6**	**1,486.6**	**1,243.9**	**1,486.6**	**423.1**
Emerging Markets	**787.8**	**747.5**	**778.2**	**912.6**	**292.1**	**442.8**	**542.2**	**706.5**	**912.6**	**912.6**	**665.3**	**912.6**	**175.3**
Latin America	**2,469.4**	**2,368.2**	**2,473.1**	**2,995.7**	**658.9**	**1,100.8**	**1,483.6**	**2,150.0**	**2,995.7**	**2,995.7**	**1,986.3**	**2,995.7**	**185.6**
Argentina	2,370.3	2,473.9	2,307.7	3,084.1	470.3	933.6	1,163.0	1,857.1	3,084.1	3,093.6	1,879.6	3,093.6	152.6
Brazil	1,886.2	1,821.8	1,790.8	2,205.4	395.4	802.0	1,046.5	1,569.4	2,205.4	2,205.4	1,489.8	2,205.4	84.1
Chile	1,263.7	1,169.3	1,262.8	1,492.4	445.5	800.6	997.3	1,180.7	1,492.4	1,512.8	1,074.1	1,512.8	183.0
Colombia	580.4	395.2	470.7	549.8	68.3	108.6	245.0	495.7	549.8	599.1	309.0	599.1	41.2
Mexico	4,216.0	4,016.0	4,645.1	5,483.3	1,442.8	1,873.1	2,715.6	3,943.6	5,483.3	5,483.3	3,446.1	5,483.3	308.9
Peru	483.5	543.7	598.7	671.4	182.7	344.1	343.4	441.3	671.4	696.5	442.2	696.5	73.5
Venezuela	161.1	151.4	156.2	174.1	77.7	103.8	151.0	107.4	174.1	174.1	105.8	278.4	56.1
Asia	**311.9**	**303.7**	**322.9**	**371.5**	**140.3**	**206.4**	**231.6**	**286.2**	**371.5**	**371.5**	**276.9**	**433.0**	**104.1**
China	35.6	35.7	38.6	52.3	14.1	25.5	25.3	29.3	52.3	52.3	29.3	136.9	12.9
India	459.2	427.4	501.4	560.8	148.8	246.2	273.1	382.9	560.8	562.1	356.6	562.1	77.7
Indonesia	1,831.5	1,808.8	2,108.2	2,449.0	519.6	831.1	1,324.0	1,579.8	2,449.0	2,470.5	1,596.2	2,470.5	280.0
Korea	386.0	365.3	383.9	395.2	184.7	246.0	256.4	386.3	395.2	414.1	337.8	414.1	59.5
Malaysia	345.9	338.5	356.8	408.8	244.0	300.4	335.9	329.0	408.8	411.3	326.6	465.7	88.3
Pakistan	407.3	335.8	355.4	333.7	146.0	188.2	211.7	333.2	333.7	431.5	287.6	431.5	54.4
Philippines	460.4	445.6	531.1	620.2	210.1	303.7	381.1	431.9	620.2	620.2	420.5	917.3	132.6
Taiwan Province of China	279.7	279.5	286.2	318.2	189.5	259.1	257.7	275.8	318.2	318.2	258.5	483.5	103.9
Thailand	293.5	271.3	280.7	274.9	130.2	280.5	263.9	292.0	274.9	315.9	249.0	669.4	72.0
Europe, Middle East, & Africa	**342.6**	**306.5**	**306.3**	**364.4**	**108.4**	**163.9**	**222.7**	**300.3**	**364.4**	**377.7**	**271.1**	**377.7**	**80.8**
Czech Republic	394.5	357.7	369.8	408.3	116.2	152.9	234.8	371.5	408.3	422.5	288.4	422.5	62.8
Egypt	1,320.0	960.0	1,266.1	1,389.3	97.4	234.6	505.2	1,215.7	1,389.3	1,576.2	936.5	1,576.2	89.9
Hungary	1,586.2	1,450.7	1,446.0	1,690.0	535.5	646.9	1,057.0	1,447.0	1,690.0	1,764.3	1,244.6	1,764.3	77.1
Israel	201.4	176.4	187.7	194.4	90.8	141.4	167.4	209.2	194.4	218.3	165.7	236.2	67.6
Jordan	554.4	486.0	482.2	439.6	153.4	238.3	379.2	650.6	439.6	708.1	422.7	760.7	103.1
Morocco	315.3	303.6	333.5	342.9	138.5	171.4	189.1	231.3	342.9	362.9	230.4	362.9	99.6
Poland	1,980.2	1,953.5	1,979.1	2,253.2	861.0	1,118.3	1,419.3	1,867.4	2,253.2	2,349.9	1,707.1	2,349.9	99.6
Russia	1,043.6	1,065.0	1,067.4	1,250.3	270.7	461.1	479.9	813.4	1,250.3	1,250.3	813.4	1,250.3	30.6
South Africa	561.2	548.3	553.3	641.3	272.7	296.8	352.4	492.0	641.3	643.7	477.9	643.7	99.7
Turkey	682,935	558,350	581,504	614,409	169,900	319,808	425,009	645,739	614,409	777,492	491,161	777,492	426
Sectors													
Energy	680.6	680.6	654.5	760.0	163.1	287.4	349.0	548.6	760.0	803.4	552.4	803.4	81.7
Materials	374.6	382.2	374.5	442.1	182.8	250.1	265.0	325.4	442.1	442.1	322.4	442.1	98.5
Industrials	175.0	166.8	181.5	210.7	61.8	98.9	128.0	156.1	210.7	210.7	152.7	276.8	52.6
Consumer discretionary	398.4	352.5	370.2	422.6	138.8	233.8	292.3	381.1	422.6	426.4	323.0	426.4	74.1
Consumer staple	225.1	211.4	226.1	266.2	88.2	118.6	147.0	197.0	266.2	266.2	189.3	266.2	80.4
Health care	405.5	328.0	350.5	356.3	169.8	272.5	290.8	393.3	356.3	433.8	308.8	433.8	83.3
Financials	269.1	250.3	266.0	328.8	98.6	138.8	187.9	240.6	328.8	328.8	228.9	328.8	74.6
Information technology	212.9	202.6	216.4	231.8	103.9	149.6	161.5	209.1	231.8	237.0	185.5	300.0	73.1
Telecommunications	169.7	158.4	180.7	218.0	72.7	100.8	131.6	158.9	218.0	218.0	145.7	218.0	62.9
Utilities	229.6	217.8	232.2	282.1	72.4	127.2	149.8	197.0	282.1	282.1	193.7	282.1	63.1

Table 10 *(continued)*

| | 2006 End of period | | | | End of period | | | | |
	Q1	Q2	Q3	Q4	2002	2003	2004	2005	2006
World	**6.1**	**−1.1**	**4.1**	**8.0**	**−21.1**	**30.8**	**12.8**	**7.6**	**18.0**
Emerging Markets	**11.5**	**−5.1**	**4.1**	**17.3**	**−8.0**	**51.6**	**22.4**	**30.3**	**29.2**
Latin America	**14.9**	**−4.1**	**4.4**	**21.1**	**−24.8**	**67.1**	**34.8**	**44.9**	**39.3**
Argentina	27.6	4.4	−6.7	33.6	−51.0	98.5	24.6	59.7	66.1
Brazil	20.2	−3.4	−1.7	23.2	−33.8	102.9	30.5	50.0	40.5
Chile	7.0	−7.5	8.0	18.2	−21.7	79.7	24.6	18.4	26.4
Colombia	17.1	−31.9	19.1	16.8	18.3	59.0	125.7	102.3	10.9
Mexico	6.9	−4.7	15.7	18.0	−15.0	29.8	45.0	45.2	39.0
Peru	9.6	12.4	10.1	12.1	26.8	88.4	−0.2	28.5	52.1
Venezuela	50.0	−6.0	3.1	11.5	−18.6	33.6	45.4	−28.9	62.2
Asia	**9.0**	**−2.6**	**6.3**	**15.0**	**−6.2**	**47.1**	**12.2**	**23.5**	**29.8**
China	21.5	0.3	8.2	35.4	−16.0	80.3	−0.7	15.6	78.7
India	19.9	−6.9	17.3	11.8	5.3	65.5	11.0	40.2	46.5
Indonesia	15.9	−1.2	16.6	16.2	18.9	60.0	59.3	19.3	55.0
Korea	−0.1	−5.4	5.1	2.9	−3.0	33.2	4.2	50.6	2.3
Malaysia	5.1	−2.1	5.4	14.6	−2.7	23.1	11.8	−2.1	24.2
Pakistan	22.2	−17.5	5.8	−6.1	116.7	28.9	12.5	57.5	0.1
Philippines	6.6	−3.2	19.2	16.8	−28.1	44.5	25.5	13.3	43.6
Taiwan Province of China	1.4	−0.1	2.4	11.2	−25.8	36.7	−0.6	7.0	15.4
Thailand	0.5	−7.6	3.5	−2.1	21.1	115.4	−5.9	10.6	−5.9
Europe, Middle East, & Africa	**14.1**	**−10.5**	**−0.1**	**19.0**	**4.7**	**51.2**	**35.8**	**34.9**	**21.3**
Czech Republic	6.2	−9.3	3.4	10.4	19.2	31.6	53.6	58.2	9.9
Egypt	8.6	−27.3	31.9	9.7	−4.4	140.8	115.4	140.6	14.3
Hungary	9.6	−8.5	−0.3	16.9	5.4	20.8	63.4	36.9	16.8
Israel	−3.8	−12.4	6.4	3.6	−31.6	55.7	18.4	25.0	−7.1
Jordan	−14.8	−12.3	−0.8	−8.8	2.6	55.3	59.1	71.6	−32.4
Morocco	36.3	−3.7	9.9	2.8	−23.1	23.8	10.4	22.3	48.3
Poland	6.0	−1.4	1.3	13.9	−3.5	29.9	26.9	31.6	20.7
Russia	28.3	2.0	0.2	17.1	13.9	70.3	4.1	69.5	53.7
South Africa	14.1	−2.3	0.9	15.9	−11.8	8.8	18.7	39.6	30.3
Turkey	5.8	−18.2	4.1	5.7	−27.5	88.2	32.9	51.9	−4.9
Sectors									
Energy	24.1	0.0	−3.8	16.1	0.6	76.2	21.4	57.2	38.5
Materials	15.1	2.0	−2.0	18.1	5.2	36.8	6.0	22.8	35.9
Industrials	12.1	−4.7	8.8	16.1	−3.2	60.1	29.5	22.0	35.0
Consumer discretionary	4.5	−11.5	5.0	14.1	6.3	68.4	25.0	30.4	10.9
Consumer staple	14.2	−6.1	6.9	17.8	−6.7	34.4	24.0	34.0	35.1
Health care	3.1	−19.1	6.9	1.6	15.9	60.5	6.7	35.2	−9.4
Financials	11.8	−7.0	6.2	23.6	−8.4	40.7	35.4	28.1	36.7
Information technology	1.8	−4.8	6.8	7.1	−22.6	43.9	8.0	29.5	10.9
Telecommunications	6.8	−6.6	14.1	20.7	−20.9	38.7	30.5	20.8	37.2
Utilities	16.5	−5.1	6.6	21.5	−20.9	75.7	17.8	31.5	43.2

Note: Column group header "Period on Period Percent Change" spans all numeric columns.

Table 10 *(concluded)*

	2006 End of Period				End of Period					12-Month High	12-Month Low	All-Time High[1]	All-Time Low[1]
	Q1	Q2	Q3	Q4	2002	2003	2004	2005	2006				
Developed Markets													
Australia	1,036.4	1,025.2	1,037.9	1,135.1	604.4	655.5	797.9	959.6	1,135.1	1,135.1	959.6	1,135.1	250.2
Austria	290.3	266.1	277.3	316.6	91.8	118.0	185.3	262.7	316.6	316.6	240.1	316.6	79.7
Belgium	102.0	95.5	106.8	113.0	55.3	60.1	77.8	94.8	113.0	113.1	89.1	113.1	35.4
Canada	1,518.8	1,448.8	1,464.4	1,628.3	818.3	1,019.7	1,139.3	1,406.8	1,628.3	1,647.0	1,356.7	1,647.0	338.3
Denmark	3,161.1	2,997.2	3,285.4	3,662.6	1,448.8	1,772.7	2,115.9	2,994.0	3,662.6	3,662.6	2,787.1	3,662.6	556.5
Finland	141.2	129.6	132.4	140.3	100.3	97.4	93.9	123.4	140.3	149.5	121.2	383.1	22.9
France	137.8	131.3	138.9	147.1	81.3	93.2	100.6	124.9	147.1	147.1	121.6	178.6	42.9
Germany	108.8	100.6	106.4	116.9	56.0	74.6	79.2	98.2	116.9	117.1	93.5	163.6	41.4
Greece	121.1	109.1	115.7	127.3	46.8	63.5	83.3	108.1	127.3	128.5	100.1	197.2	38.2
Hong Kong SAR	8,556.6	8,438.1	8,940.4	10,152.8	4,808.4	6,341.3	7,668.4	8,016.2	10,152.8	10,152.8	7,925.8	10,165.3	1,995.5
Ireland	104.2	97.9	107.0	120.3	56.8	65.9	85.2	93.5	120.3	120.7	90.1	120.7	40.5
Italy	112.3	107.7	113.5	121.4	69.6	78.1	93.2	106.0	121.4	121.4	103.7	132.1	39.5
Japan	1,061.4	980.5	1,001.1	1,060.2	524.3	637.3	699.1	999.3	1,060.2	1,097.3	897.3	1,655.2	462.1
Netherlands	95.9	88.9	98.6	101.3	66.0	68.4	69.3	88.3	101.3	101.7	83.2	134.9	38.5
New Zealand	135.7	124.5	123.7	138.2	90.0	107.6	127.0	130.0	138.2	140.2	117.2	141.0	56.7
Norway	2,710.5	2,499.8	2,454.9	2,951.8	898.3	1,240.9	1,690.3	2,267.7	2,951.8	2,957.2	2,249.7	2,957.2	455.9
Portugal	97.1	90.1	97.5	105.5	57.0	66.1	74.7	82.2	105.5	105.5	81.9	128.0	35.2
Singapore	1,398.8	1,352.4	1,431.3	1,696.1	764.9	1,005.1	1,148.1	1,295.3	1,696.1	1,696.1	1,263.8	1,696.1	508.2
Spain	133.4	129.4	144.9	158.2	69.8	89.6	104.3	122.1	158.2	160.5	121.1	160.5	27.4
Sweden	8,366.7	7,434.4	8,083.7	9,047.5	3,517.4	4,675.2	5,785.4	7,489.8	9,047.5	9,055.7	6,762.3	12,250.4	787.2
Switzerland	1,052.8	1,005.2	1,104.4	1,159.5	603.2	714.3	747.1	994.6	1,159.5	1,164.1	939.8	1,164.1	158.1
United Kingdom	1,785.9	1,742.6	1,782.6	1,865.6	1,179.2	1,348.7	1,453.0	1,685.3	1,865.6	1,874.3	1,645.5	1,974.2	585.4
United States	1,224.1	1,199.3	1,257.9	1,336.3	824.6	1,045.4	1,137.4	1,180.6	1,336.3	1,345.4	1,153.3	1,493.0	273.7
					Period on Period Percent Change								
Developed Markets													
Australia	8.0	−1.1	1.2	9.4	−12.5	8.5	21.7	20.3	18.3	. . .	. . .	. . .	. . .
Austria	10.5	−8.3	4.2	14.2	−3.0	28.5	57.0	41.7	20.5	. . .	. . .	. . .	. . .
Belgium	7.7	−6.4	11.9	5.7	−29.7	8.7	29.5	21.7	19.2	. . .	. . .	. . .	. . .
Canada	8.0	−4.6	1.1	11.2	−15.3	24.6	11.7	23.5	15.7	. . .	. . .	. . .	. . .
Denmark	5.6	−5.2	9.6	11.5	−29.7	22.4	19.4	41.5	22.3	. . .	. . .	. . .	. . .
Finland	14.4	−8.2	2.2	6.0	−41.6	−2.9	−3.6	31.4	13.7	. . .	. . .	. . .	. . .
France	10.4	−4.7	5.8	5.9	−34.0	14.6	7.9	24.2	17.8	. . .	. . .	. . .	. . .
Germany	10.7	−7.5	5.8	9.9	−44.1	33.2	6.1	24.1	19.0	. . .	. . .	. . .	. . .
Greece	12.0	−9.9	6.1	10.0	−39.1	35.8	31.1	29.8	17.7	. . .	. . .	. . .	. . .
Hong Kong SAR	6.7	−1.4	6.0	13.6	−20.6	31.9	20.9	4.5	26.7	. . .	. . .	. . .	. . .
Ireland	11.4	−6.0	9.3	12.4	−39.0	16.0	29.2	9.8	28.7	. . .	. . .	. . .	. . .
Italy	6.0	−4.1	5.4	6.9	−23.6	12.2	19.3	13.8	14.6	. . .	. . .	. . .	. . .
Japan	6.2	−7.6	2.1	5.9	−19.4	21.6	9.7	42.9	6.1	. . .	. . .	. . .	. . .
Netherlands	8.6	−7.3	10.9	2.7	−34.3	3.6	1.3	27.5	14.7	. . .	. . .	. . .	. . .
New Zealand	4.4	−8.3	−0.6	11.7	−4.4	19.6	18.0	2.4	6.3	. . .	. . .	. . .	. . .
Norway	19.5	−7.8	−1.8	20.2	−29.7	38.1	36.2	34.2	30.2	. . .	. . .	. . .	. . .
Portugal	18.2	−7.3	8.2	8.2	−28.3	15.9	13.1	10.0	28.3	. . .	. . .	. . .	. . .
Singapore	8.0	−3.3	5.8	18.5	−18.4	31.4	14.2	12.8	30.9	. . .	. . .	. . .	. . .
Spain	9.2	−3.0	12.0	9.1	−29.5	28.3	16.4	17.0	29.5	. . .	. . .	. . .	. . .
Sweden	11.7	−11.1	8.7	11.9	−43.1	32.9	23.7	29.5	20.8	. . .	. . .	. . .	. . .
Switzerland	5.8	−4.5	9.9	5.0	−25.8	18.4	4.6	33.1	16.6	. . .	. . .	. . .	. . .
United Kingdom	6.0	−2.4	2.3	4.7	−25.7	14.4	7.7	16.0	10.7	. . .	. . .	. . .	. . .
United States	3.7	−2.0	4.9	6.2	−24.0	26.8	8.8	3.8	13.2	. . .	. . .	. . .	. . .

Source: Data are provided by Morgan Stanley Capital International. Regional and sectoral compositions conform to Morgan Stanley Capital International Definitions.
[1]From 1990 or inception of index.

Table 11. Foreign Exchange Rates
(Units per U.S. dollar)

	2006 End of Period				End of Period					12-Month High[1]	12-Month Low[1]	All-Time High[1]	All-Time Low[1]
	Q1	Q2	Q3	Q4	2002	2003	2004	2005	2006				
Emerging Markets													
Latin America													
Argentina	3.08	3.09	3.10	3.06	3.36	2.93	2.97	3.03	3.06	3.03	3.11	0.98	3.86
Brazil	2.16	2.17	2.17	2.14	3.54	2.89	2.66	2.34	2.14	2.06	2.35	0.00	3.95
Chile	526.35	538.85	535.10	533.38	720.25	592.75	555.75	512.00	533.38	511.00	550.35	295.18	759.75
Colombia	2,290.85	2,573.80	2,397.52	2,240.00	2,867.00	2,780.00	2,354.75	2,286.50	2,240.00	2,226.50	2,644.00	689.21	2,980.00
Mexico	10.87	11.34	10.98	10.82	10.37	11.23	11.15	10.63	10.82	10.44	11.48	2.68	11.67
Peru	3.37	3.26	3.25	3.20	3.51	3.46	3.28	3.42	3.20	3.20	3.45	1.28	3.65
Venezuela	2,147	2,147	2,147	2,147	1,389	1,598	1,918	2,147	2,147	2,147	2,147	45	2,148
Asia													
China	8.02	7.99	7.90	7.81	8.28	8.28	8.28	8.07	7.81	7.81	8.07	4.73	8.73
India	44.62	46.04	45.92	44.26	47.98	45.62	43.46	45.05	44.26	44.12	46.99	16.92	49.05
Indonesia	9,070	9,263	9,223	8,994	8,950	8,420	9,270	9,830	8,994	8,703	9,815	1,977	16,650
Korea	972	949	947	930	1,186	1,192	1,035	1,010	930	914	1,008	684	1,963
Malaysia	3.68	3.67	3.69	3.53	3.80	3.80	3.80	3.78	3.53	3.53	3.78	2.44	4.71
Pakistan	60.12	60.21	60.55	60.88	58.25	57.25	59.42	59.79	60.88	59.77	60.95	21.18	64.35
Philippines	51.05	53.13	50.25	49.01	53.60	55.54	56.23	53.09	49.01	49.01	53.52	23.10	56.46
Taiwan Province of China	32.46	32.38	33.10	32.59	34.63	33.96	31.74	32.83	32.59	31.33	33.32	24.48	35.19
Thailand	38.88	38.12	37.57	35.45	43.11	39.62	38.92	41.03	35.45	35.19	41.03	23.15	55.50
Europe, Middle East, & Africa													
Czech Republic	23.50	22.27	22.32	20.82	30.07	25.71	22.42	24.55	20.82	20.82	24.55	20.82	42.17
Egypt	5.75	5.76	5.74	5.71	4.62	6.17	6.09	5.74	5.71	5.71	5.77	3.29	6.25
Hungary	217.88	221.39	215.30	190.29	224.47	208.70	181.02	212.97	190.29	190.29	224.21	90.20	317.56
Israel	4.66	4.43	4.30	4.22	4.74	4.39	4.32	4.61	4.22	4.17	4.72	1.96	5.01
Jordan	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.64	0.72
Morocco	11.48	11.34	11.42	11.70	9.80	10.08	11.09	11.94	11.70	11.13	12.06	7.75	12.06
Poland	3.24	3.18	3.13	2.90	3.83	3.73	3.01	3.25	2.90	2.85	3.29	1.72	4.71
Russia	27.70	26.85	26.80	26.33	31.95	29.24	27.72	28.74	26.33	26.17	28.74	0.98	31.95
South Africa	6.18	7.17	7.77	7.01	8.57	6.68	5.67	6.33	7.01	5.96	7.88	2.50	12.45
Turkey	1.35	1.59	1.51	1.42	1.66	1.41	1.34	1.35	1.42	1.30	1.71	0.00	1.77
Developed Markets													
Australia[2]	0.72	0.74	0.75	0.79	0.56	0.75	0.78	0.73	0.79	0.70	0.79	0.84	0.48
Canada	1.17	1.12	1.12	1.17	1.57	1.30	1.20	1.16	1.17	1.01	1.17	1.10	1.61
Denmark	6.16	5.83	5.88	5.65	7.08	5.91	5.49	6.30	5.65	5.59	6.31	5.34	9.00
Euro area[2]	1.21	1.28	1.27	1.32	1.05	1.26	1.36	1.18	1.32	1.18	1.33	1.36	0.83
Hong Kong SAR	7.76	7.77	7.79	7.78	7.80	7.76	7.77	7.75	7.78	7.75	7.79	7.70	7.82
Japan	117.78	114.42	118.18	119.07	118.79	107.22	102.63	117.75	119.07	109.76	119.78	80.63	159.90
New Zealand[2]	0.62	0.61	0.65	0.70	0.52	0.66	0.72	0.68	0.70	0.60	0.71	0.74	0.39
Norway	6.55	6.22	6.53	6.24	6.94	6.67	6.08	6.74	6.24	5.99	6.84	5.51	9.58
Singapore	1.62	1.58	1.59	1.53	1.73	1.70	1.63	1.66	1.53	1.53	1.66	1.39	1.91
Sweden	7.80	7.20	7.33	6.85	8.69	7.19	6.66	7.94	6.85	6.77	7.98	5.09	11.03
Switzerland	1.30	1.22	1.25	1.22	1.38	1.24	1.14	1.31	1.22	1.19	1.32	1.12	1.82
United Kingdom[2]	1.74	1.85	1.87	1.96	1.61	1.79	1.92	1.72	1.96	1.72	1.98	2.01	1.37

Table 11 *(concluded)*

	2006 End of period				End of period				
	Q1	Q2	Q3	Q4	2002	2003	2004	2005	2006
Emerging Markets									
Latin America									
Argentina	−1.7	−0.1	−0.6	1.4	−70.2	14.7	−1.4	−1.9	−1.0
Brazil	7.9	−0.1	−0.2	1.6	−34.7	22.4	8.9	13.7	9.4
Chile	−2.7	−2.3	0.7	0.3	−8.2	21.5	6.7	8.5	−4.0
Colombia	−0.2	−11.0	7.4	7.0	−20.6	3.1	18.1	3.0	2.1
Mexico	−2.2	−4.1	3.2	1.5	−11.7	−7.6	0.7	4.8	−1.7
Peru	1.5	3.3	0.4	1.7	−2.0	1.5	5.6	−4.1	7.1
Venezuela	0.0	0.0	0.0	0.0	−45.5	−13.1	−16.7	−10.7	0.0
Asia									
China	0.7	0.3	1.1	1.3	0.0	0.0	0.0	2.6	3.4
India	1.0	−3.1	0.3	3.8	0.6	5.2	5.0	−3.5	1.8
Indonesia	8.4	−2.1	0.4	2.5	16.2	6.3	−9.2	−5.7	9.3
Korea	3.9	2.4	0.2	1.8	10.8	−0.5	15.2	2.5	8.6
Malaysia	2.6	0.2	−0.4	4.5	0.0	0.0	0.0	0.5	7.1
Pakistan	−0.5	−0.1	−0.6	−0.5	2.8	1.7	−3.7	−0.6	−1.8
Philippines	4.0	−3.9	5.7	2.5	−3.7	−3.5	−1.2	5.9	8.3
Taiwan Province of China	1.1	0.2	−2.2	1.6	0.9	2.0	7.0	−3.3	0.7
Thailand	5.5	2.0	1.5	6.0	2.6	8.8	1.8	−5.1	15.7
Europe, Middle East, & Africa									
Czech Republic	4.5	5.5	−0.2	7.2	18.4	16.9	14.7	−8.7	17.9
Egypt	−0.2	−0.1	0.3	0.5	−0.9	−25.1	1.3	6.1	0.5
Hungary	−2.3	−1.6	2.8	13.1	22.4	7.6	15.3	−15.0	11.9
Israel	−1.2	5.3	2.9	2.1	−7.3	8.0	1.6	−6.1	9.2
Jordan	0.0	0.0	0.0	−0.1	−0.1	0.1	0.0	0.1	−0.1
Morocco	4.0	1.3	−0.7	−2.5	−1.9	−2.7	−9.2	−7.1	2.0
Poland	0.3	1.8	1.5	7.9	3.5	2.6	24.0	−7.2	11.8
Russia	3.7	3.2	0.2	1.8	−4.5	9.3	5.5	−3.6	9.2
South Africa	2.5	−13.9	−7.7	10.9	39.6	28.2	18.0	−10.5	−9.7
Turkey	0.2	−15.1	4.9	6.7	−12.4	17.7	4.7	−0.6	−4.7
Developed Markets									
Australia	−2.2	3.6	0.5	5.7	10.2	33.9	3.8	−6.1	7.6
Canada	−0.6	4.7	−0.2	−4.1	1.3	21.2	7.9	3.4	−0.3
Denmark	2.3	5.6	−0.9	4.1	17.9	19.8	7.8	−12.9	11.5
Euro area	2.3	5.5	−0.9	4.1	18.0	20.0	7.6	−12.6	11.4
Hong Kong SAR	−0.1	−0.1	−0.3	0.2	0.0	0.4	−0.1	0.2	−0.3
Japan	0.0	2.9	−3.2	−0.7	10.8	10.8	4.5	−12.8	−1.1
New Zealand	−9.9	−1.2	7.3	7.8	25.9	25.0	9.5	−4.8	3.0
Norway	2.9	5.3	−4.8	4.8	29.2	4.1	9.6	−9.8	8.1
Singapore	2.9	2.1	−0.3	3.5	6.4	2.1	4.2	−1.9	8.4
Sweden	1.8	8.3	−1.9	7.1	20.6	20.9	8.0	−16.2	15.9
Switzerland	0.7	6.6	−2.2	2.6	20.0	11.7	8.7	−13.2	7.7
United Kingdom	0.8	6.4	1.3	4.6	10.7	10.9	7.4	−10.2	13.7

Source: Bloomberg L.P.

[1]High value indicates value of greatest appreciation against the U.S. dollar; low value indicates value of greatest depreciation against the U.S. dollar. "All Time" refers to the period since 1990 or initiation of the currency.

[2]U.S. dollars per unit.

Table 12. Emerging Market Bond Index: EMBI Global Total Returns Index

	2006 End of Period				End of Period					12-Month High	12-Month Low	All-Time High	All-Time Low
	Q1	Q2	Q3	Q4	2002	2003	2004	2005	2006				
EMBI Global	**355**	**348**	**370**	**385**	**225**	**283**	**316**	**350**	**385**	**386**	**342**	**386**	**64**
Latin America													
Argentina	98	92	106	126	57	68	81	83	126	126	83	194	47
Brazil	522	516	555	580	230	390	446	505	580	581	500	581	68
Chile	176	175	182	185	150	162	172	178	185	187	174	187	98
Colombia	264	252	271	283	169	201	228	256	283	284	247	284	70
Dominican Republic	164	162	176	184	117	99	126	156	184	184	156	184	83
Ecuador	702	687	681	561	230	464	562	636	561	750	561	750	61
El Salvador	138	134	145	152	98	110	123	134	152	153	132	153	95
Mexico	327	322	343	353	254	284	308	333	353	354	318	354	58
Panama	583	558	610	637	395	452	511	567	637	638	550	638	56
Peru	519	528	565	591	341	431	486	515	591	592	511	592	52
Uruguay	156	146	162	177	62	97	130	151	177	177	144	177	38
Venezuela	595	571	602	634	281	393	484	562	634	635	558	635	59
Asia													
China	256	256	267	271	230	241	253	260	271	274	254	274	98
Indonesia	136	136	146	154	. . .	. . .	121	133	154	154	132	154	98
Malaysia	211	209	219	224	176	194	207	215	224	226	208	226	64
Philippines	349	342	368	394	230	261	280	337	394	394	337	394	81
Vietnam	102	100	107	112	. . .	. . .	. . .	101	112	112	98	112	98
Europe, Middle East, & Africa													
Bulgaria	635	622	662	676	525	579	630	643	676	685	622	685	80
Côte d'Ivoire	95	95	90	84	43	58	66	79	84	97	79	101	29
Egypt	152	151	157	161	122	140	150	155	161	161	151	161	87
Hungary	144	142	150	153	137	142	144	148	153	155	142	155	97
Iraq	100	101	102	102	. . .	. . .	. . .	. . .	102	106	98	106	98
Lebanon	217	218	216	215	148	177	195	212	215	221	202	221	99
Morocco	288	292	296	299	237	262	268	285	299	299	285	299	73
Nigeria	731	739	758	760	377	586	656	727	760	760	721	760	66
Pakistan	113	110	117	123	160	160	107	112	123	123	109	160	91
Poland	321	319	335	340	280	290	312	327	340	344	317	344	71
Russia	531	523	554	568	348	426	475	538	568	571	517	571	26
Serbia[1]	110	102	110	117	. . .	. . .	. . .	108	117	118	102	118	99
South Africa	334	328	344	350	271	297	323	337	350	353	324	353	99
Tunisia	141	139	147	149	112	127	138	143	149	150	138	150	98
Turkey	339	314	340	356	213	279	307	336	356	358	307	358	91
Ukraine	331	325	342	353	241	289	310	334	353	354	319	354	100
Latin America	324	318	340	354	189	252	285	316	354	356	312	356	62
Non-Latin America	414	404	428	443	291	342	374	413	443	444	399	444	72

Table 12 *(concluded)*

	Period on Period Percent Change								
	2006 End of period				End of period				
	Q1	Q2	Q3	Q4	2002	2003	2004	2005	2006
EMBI Global	**1.5**	**−2.1**	**6.6**	**3.8**	**13.1**	**25.7**	**11.7**	**10.7**	**9.9**
Latin America									
Argentina	17.9	−6.0	14.8	19.0	−6.4	19.1	19.8	2.7	51.3
Brazil	3.4	−1.2	7.6	4.4	−3.6	69.8	14.3	13.2	14.8
Chile	−0.9	−0.4	3.9	1.5	15.8	8.3	6.0	3.2	4.1
Colombia	3.1	−4.3	7.2	4.7	13.3	19.4	13.2	12.4	10.7
Dominican Republic	5.3	−1.3	8.6	4.6	13.9	−15.3	27.2	24.1	18.0
Ecuador	10.4	−2.2	−0.9	−17.6	−4.7	101.5	21.1	13.2	−11.8
El Salvador	2.9	−2.8	8.7	5.0	. . .	11.9	11.5	8.8	14.1
Mexico	−1.7	−1.4	6.4	2.8	16.1	11.6	8.6	8.1	6.0
Panama	2.8	−4.3	9.3	4.4	11.9	14.4	13.0	11.1	12.3
Peru	0.9	1.8	7.0	4.5	10.8	26.6	12.6	6.0	14.8
Uruguay	3.8	−6.7	11.2	8.8	−40.6	55.6	34.0	16.3	17.3
Venezuela	5.9	−3.9	5.3	5.3	18.9	39.9	23.2	16.1	12.8
Asia									
China	−1.5	−0.1	4.2	1.6	13.6	4.5	5.1	3.0	4.1
Indonesia	2.0	0.1	7.4	5.7	. . .	. . .	. . .	9.7	15.9
Malaysia	−1.8	−0.8	4.9	2.1	16.9	10.7	6.6	3.7	4.3
Philippines	3.4	−1.9	7.6	7.0	14.6	13.4	7.1	20.6	16.8
Vietnam	0.8	−2.2	6.7	5.1	. . .	. . .	. . .	. . .	10.6
Europe, Middle East, & Africa									
Bulgaria	−1.3	−1.9	6.3	2.1	12.2	10.2	8.9	2.1	5.1
Côte d'Ivoire	21.4	0.0	−5.9	−6.3	−20.7	34.8	12.9	20.0	7.1
Egypt	−1.9	−0.7	3.8	2.7	18.5	14.4	6.8	3.8	3.8
Hungary	−2.7	−1.2	5.6	2.2	12.3	3.7	1.2	2.8	3.7
Iraq	. . .	1.0	0.6	0.7	. . .	. . .	. . .	. . .	. . .
Lebanon	2.6	0.4	−0.9	−0.5	14.1	19.5	9.9	8.7	1.6
Morocco	1.1	1.3	1.5	1.0	7.2	10.2	2.4	6.3	5.0
Nigeria	0.5	1.2	2.5	0.3	3.3	55.8	11.9	10.7	4.6
Pakistan	1.7	−2.7	6.0	5.2	31.3	−0.2	−33.3	4.5	10.3
Poland	−1.9	−0.7	5.0	1.5	14.2	3.7	7.5	5.0	3.8
Russia	−1.3	−1.5	5.9	2.5	35.9	22.4	11.5	13.3	5.5
Serbia[1]	2.2	−7.0	7.7	5.9	. . .	. . .	. . .	. . .	8.3
South Africa	−1.0	−1.8	5.1	1.5	22.9	9.6	8.8	4.3	3.7
Tunisia	−1.7	−1.1	5.3	1.4	. . .	13.3	8.7	3.7	3.8
Turkey	1.1	−7.4	8.2	4.7	21.1	30.8	10.0	9.5	6.1
Ukraine	−0.9	−1.8	5.2	3.5	21.0	19.8	7.2	7.7	5.9
Latin America	2.5	−2.0	7.0	4.2	6.8	33.0	13.4	10.9	11.9
Non-Latin America	0.1	−2.3	5.9	3.4	21.0	17.7	9.2	10.6	7.2

Source: JPMorgan Chase & Co.
[1]Data prior to 2006 refer to Serbia and Montenegro.

Table 13. Emerging Market Bond Index: EMBI Global Yield Spreads
(In basis points)

	2006 End of Period				End of Period					12-Month High	12-Month Low	All-Time High	All-Time Low
	Q1	Q2	Q3	Q4	2002	2003	2004	2005	2006				
EMBI Global	**191**	**218**	**208**	**171**	**725**	**403**	**347**	**237**	**171**	**237**	**170**	**1,631**	**170**
Latin America													
Argentina	344	385	342	216	6,342	5,485	4,527	504	216	504	216	7,222	216
Brazil	232	252	232	190	1,460	459	376	308	190	308	190	2,451	190
Chile	73	83	85	84	176	90	64	80	84	90	67	260	52
Colombia	174	239	202	161	633	427	332	244	161	265	146	1,076	146
Dominican Republic	278	299	250	196	499	1,141	824	378	196	378	192	1,750	192
Ecuador	503	506	608	920	1,801	799	690	661	920	920	436	4,764	436
El Salvador	171	217	201	159	411	284	245	239	159	. . .	. . .	. . .	. . .
Mexico	140	154	141	115	329	201	174	143	115	172	113	1,149	113
Panama	176	212	187	146	446	324	274	239	146	239	146	769	146
Peru	226	202	169	118	609	325	239	257	118	263	117	1,061	117
Uruguay	223	307	254	185	1,228	636	388	298	185	311	185	1,982	185
Venezuela	190	226	233	183	1,131	586	403	313	183	313	161	2,658	161
Asia													
China	68	65	67	51	84	58	57	68	51	70	50	364	39
Indonesia	213	220	205	153	. . .	. . .	244	269	153	273	153	433	153
Malaysia	86	97	89	66	212	100	78	82	66	99	65	1,141	65
Philippines	233	259	232	155	522	415	457	302	155	305	153	993	153
Vietnam	149	175	155	95	. . .	. . .	. . .	190	95	197	95	197	95
Europe, Middle East, & Africa													
Bulgaria	83	105	87	66	291	177	77	90	66	105	51	1,679	51
Côte d'Ivoire	2,568	2,713	2,895	3,325	3,195	3,013	3,121	3,070	3,325	3,325	2,496	3,609	582
Egypt	80	103	101	52	325	131	101	58	52	123	20	646	20
Hungary	75	90	79	58	52	28	32	74	58	90	55	196	−22
Iraq	465	444	514	526	. . .	. . .	. . .	. . .	526	549	376	549	376
Lebanon	172	189	366	395	776	421	334	246	395	419	158	1,082	111
Morocco	87	54	90	72	390	160	170	75	72	112	48	1,606	48
Nigeria	259	253	325	66	1,946	499	457	329	66	392	13	2,937	13
Pakistan	144	251	240	154	271	. . .	233	198	154	273	122	2,225	122
Poland	64	69	61	47	185	76	69	62	47	77	42	410	17
Russia	105	123	115	99	478	257	213	118	99	135	93	7,063	92
Serbia[1]	181	266	246	186	. . .	. . .	. . .	238	186	285	165	322	165
South Africa	85	123	99	84	250	152	102	87	84	138	65	757	65
Tunisia	92	121	90	83	273	146	91	81	83	124	49	394	48
Turkey	182	294	256	207	696	309	264	223	207	328	168	1,196	168
Ukraine	198	257	218	172	671	258	255	184	172	282	160	2,314	157
Latin America	208	231	218	180	981	518	415	272	180	272	179	1,532	179
Non-Latin America	164	198	193	159	444	248	239	179	159	210	150	1,812	150

Table 13 *(concluded)*

	2006 End of period				End of period				
	Q1	Q2	Q3	Q4	2002	2003	2004	2005	2006
EMBI Global	**−46**	**27**	**−10**	**−37**	**−3**	**−322**	**−56**	**−110**	**−66**
Latin America									
Argentina	−160	41	−43	−126	979	−857	−958	−4,023	−288
Brazil	−76	20	−20	−42	596	−1,001	−83	−68	−118
Chile	−7	10	2	−1	1	−86	−26	16	4
Colombia	−70	65	−37	−41	125	−206	−95	−88	−83
Dominican Republic	−100	21	−49	−54	53	642	−317	−446	−182
Ecuador	−158	3	102	312	568	−1,002	−109	−29	259
El Salvador	−68	46	−16	−42	. . .	−127	−39	−6	−80
Mexico	−3	14	−13	−26	23	−128	−27	−31	−28
Panama	−63	36	−25	−41	42	−122	−50	−35	−93
Peru	−31	−24	−33	−51	88	−284	−86	18	−139
Uruguay	−75	84	−53	−69	944	−592	−248	−90	−113
Venezuela	−123	36	7	−50	1	−545	−183	−90	−130
Asia									
China	0	−3	2	−16	−15	−26	−1	11	−17
Indonesia	−56	7	−15	−52	. . .	. . .	. . .	25	−116
Malaysia	4	11	−8	−23	5	−112	−22	4	−16
Philippines	−69	26	−27	−77	56	−107	42	−155	−147
Vietnam	−41	26	−20	−60	. . .	. . .	. . .	. . .	−95
Europe, Middle East, & Africa									
Bulgaria	−7	22	−18	−21	−142	−114	−100	13	−24
Côte d'Ivoire	−502	145	182	430	777	−182	108	−51	255
Egypt	22	23	−2	−49	−35	−194	−30	−43	−6
Hungary	1	15	−11	−21	−41	−24	4	42	−16
Iraq	. . .	−21	70	12	. . .	. . .	. . .	. . .	. . .
Lebanon	−74	17	177	29	131	−355	−87	−88	149
Morocco	12	−33	36	−18	−128	−230	10	−95	−3
Nigeria	−70	−6	72	−259	843	−1,447	−42	−128	−263
Pakistan	−54	107	−11	−86	−844	. . .	233	−35	−44
Poland	2	5	−8	−14	−10	−109	−7	−7	−15
Russia	−13	18	−8	−16	−191	−221	−44	−95	−19
Serbia[1]	−57	85	−20	−60	. . .	. . .	. . .	. . .	−52
South Africa	−2	38	−24	−15	−69	−98	−50	−15	−3
Tunisia	11	29	−31	−7	. . .	−127	−55	−10	2
Turkey	−41	112	−38	−49	−6	−387	−45	−41	−16
Ukraine	14	59	−39	−46	−269	−413	−3	−71	−12
Latin America	−64	23	−13	−38	93	−463	−103	−143	−92
Non-Latin America	−15	34	−5	−34	−79	−196	−9	−60	−20

Source: JPMorgan Chase & Co.
[1]Data prior to 2006 refer to Serbia and Montenegro.

Table 14. Emerging Market External Financing: Total Bonds, Equities, and Loans
(In millions of U.S. dollars)

	2000	2001	2002	2003	2004	2005	2006	2006 Q1	Q2	Q3	Q4
Total	**216,841.9**	**148,946.0**	**133,282.8**	**195,744.8**	**276,541.2**	**401,288.8**	**483,460.0**	**101,324.5**	**121,399.9**	**97,267.0**	**163,468.5**
Africa	**10,006.9**	**6,169.3**	**7,014.0**	**10,862.0**	**11,359.9**	**11,601.3**	**11,650.7**	**4,529.4**	**3,816.2**	**1,914.3**	**1,390.8**
Algeria	. . .	50.0	150.0	40.0	271.7	412.7	. . .	. . .	. . .	. . .	. . .
Angola	. . .	455.0	350.0	1,522.0	2,900.0	3,122.7	88.0	38.8	37.1	12.1	. . .
Botswana	. . .	22.5	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Burkina Faso	. . .	. . .	. . .	. . .	. . .	11.0	. . .	. . .	. . .	. . .	. . .
Cameroon	. . .	53.8	. . .	100.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Chad	. . .	300.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Congo, Dem. Rep. of	20.8	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Côte d'Ivoire	. . .	15.0	. . .	. . .	100.0	. . .	. . .	. . .	. . .	. . .	. . .
Djibouti	. . .	. . .	. . .	. . .	40.0	. . .	. . .	. . .	. . .	. . .	. . .
Ethiopia	. . .	. . .	. . .	. . .	40.0	. . .	. . .	. . .	. . .	. . .	. . .
Gabon	. . .	. . .	. . .	. . .	22.0	. . .	34.3	14.4	20.0	. . .	. . .
Ghana	320.0	291.0	420.0	650.0	870.0	662.5	846.0	50.0	. . .	796.0	. . .
Guinea	. . .	. . .	. . .	. . .	70.0	. . .	. . .	. . .	. . .	. . .	. . .
Kenya	7.5	80.2	. . .	134.0	. . .	23.5	16.8	16.8	. . .	. . .	. . .
Malawi	. . .	. . .	. . .	. . .	4.8	. . .	. . .	. . .	. . .	. . .	. . .
Mali	. . .	. . .	150.4	287.6	288.9	. . .	. . .	. . .	. . .	. . .	. . .
Mauritius	. . .	. . .	. . .	. . .	. . .	. . .	180.0	100.0	. . .	80.0	. . .
Morocco	56.4	136.1	. . .	474.7	. . .	. . .	147.6	3.4	8.1	136.0	. . .
Mozambique	. . .	160.0	. . .	35.5	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Namibia	. . .	. . .	. . .	35.0	. . .	50.0	100.0	. . .	. . .	50.0	50.0
Niger	. . .	. . .	. . .	27.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nigeria	. . .	95.0	960.0	488.0	225.0	618.8	480.0	. . .	. . .	. . .	480.0
Senegal	. . .	. . .	40.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Seychelles	40.5	. . .	150.0	. . .	80.0	. . .	. . .	. . .	. . .	. . .	. . .
South Africa	8,869.3	3,977.7	4,053.1	6,553.1	5,492.2	6,118.0	9,104.3	4,306.0	3,202.4	840.1	755.8
Sudan	. . .	. . .	. . .	. . .	31.0	. . .	. . .	. . .	. . .	. . .	. . .
Tanzania	135.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Tunisia	557.4	533.0	740.5	485.2	924.4	582.1	473.5	. . .	473.5	. . .	. . .
Zambia	. . .	. . .	. . .	30.0	. . .	. . .	105.0	. . .	. . .	. . .	105.0
Zimbabwe	. . .	. . .	. . .	. . .	. . .	. . .	75.1	. . .	75.1	. . .	. . .
Asia	**84,015.3**	**55,888.3**	**52,129.0**	**85,939.6**	**116,367.8**	**145,731.1**	**194,248.8**	**37,313.5**	**46,989.0**	**33,934.9**	**76,011.4**
Bangladesh	. . .	. . .	. . .	. . .	176.8	. . .	32.6	. . .	32.6	. . .	. . .
Brunei Darussalam	. . .	. . .	129.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
China	9,226.9	4,254.8	4,256.1	12,842.9	22,850.1	34,914.2	51,748.0	3,435.6	17,167.3	5,673.9	25,471.1
Hong Kong SAR	30,191.1	9,306.4	6,591.9	7,693.4	13,050.2	14,569.5	18,927.5	1,351.8	7,381.6	3,673.7	6,520.4
India	3,428.0	2,065.5	1,360.0	3,775.7	13,059.7	18,829.5	31,163.9	7,153.9	4,141.0	3,937.9	15,931.1
Indonesia	1,185.1	971.9	618.0	5,198.2	3,636.1	5,255.2	6,316.9	2,102.0	521.5	365.8	3,327.7
Korea	15,105.2	16,181.2	15,909.3	17,244.1	23,916.0	34,985.6	37,442.3	11,761.0	8,997.7	8,268.1	8,415.6
Lao P.D.R.	. . .	. . .	. . .	. . .	210.0	500.0	. . .	. . .	. . .	. . .	. . .
Macao SAR	29.5	. . .	. . .	. . .	357.0	. . .	1,480.3	. . .	800.0	680.3	. . .
Malaysia	4,116.9	3,878.3	4,142.1	5,550.1	6,300.9	5,547.9	7,826.3	2,487.2	469.1	2,687.4	2,182.7
Marshall Islands	. . .	. . .	34.7	. . .	. . .	24.0	170.0	170.0	. . .	. . .	. . .
Mongolia	. . .	. . .	. . .	. . .	. . .	30.0	. . .	. . .	. . .	. . .	. . .
Pakistan	. . .	182.5	85.0	. . .	800.0	591.8	2,713.0	900.0	119.8	. . .	771.0
Papua New Guinea	. . .	. . .	. . .	153.7	. . .	. . .	. . .	. . .	. . .	. . .	922.2
Philippines	4,548.1	3,263.8	5,396.2	5,727.3	6,056.3	5,681.6	8,876.1	2,468.3	58.3	1,698.4	4,651.1
Singapore	8,200.9	11,331.6	3,094.6	6,857.6	8,934.8	7,678.4	15,957.6	3,050.4	3,847.9	4,502.4	4,556.9
Sri Lanka	100.0	105.0	. . .	186.0	135.0	367.0	128.7	9.7	. . .	19.0	100.0
Taiwan Province of China	6,382.1	3,662.8	9,198.4	18,337.1	12,986.3	11,221.6	6,362.7	1,387.4	1,338.7	2,062.9	1,573.8
Thailand	1,484.5	684.4	930.1	2,322.4	3,784.6	4,520.8	4,328.1	831.3	1,951.2	297.2	1,248.3
Vietnam	17.0	. . .	383.5	51.0	114.0	1,014.0	774.7	204.8	162.5	68.0	339.4
Europe	**41,018.8**	**21,727.4**	**29,940.0**	**46,459.3**	**72,717.6**	**102,213.1**	**139,298.0**	**27,058.6**	**30,502.3**	**35,175.7**	**46,561.4**
Azerbaijan	. . .	16.0	. . .	. . .	1,005.0	383.7	911.2	750.0	35.0	0.3	126.0
Belarus	. . .	. . .	. . .	24.0	. . .	32.0	298.0	45.3	47.7	121.3	83.8
Bulgaria	8.9	230.4	1,260.8	322.5	818.1	573.7	507.5	. . .	50.5	. . .	457.0
Croatia	1,456.6	1,724.2	1,384.1	1,944.4	2,196.9	637.2	1,268.2	. . .	. . .	475.6	792.6
Cyprus	384.6	633.0	547.9	648.2	1,174.0	1,453.8	3,660.9	318.1	1,201.4	1,300.5	840.9
Czech Republic	127.1	485.1	453.4	1,518.8	2,904.1	2,169.5	1,435.6	105.0	. . .	285.8	1,044.8
Estonia	232.4	202.1	333.9	457.3	1,187.7	693.5	449.4	. . .	449.4	. . .	. . .

Table 14 *(concluded)*

	2000	2001	2002	2003	2004	2005	2006	2006 Q1	Q2	Q3	Q4
Europe *(continued)*											
Faroe Islands	. . .	. . .	. . .	. . .	. . .	85.3	206.2	. . .	. . .	. . .	206.2
Georgia	. . .	. . .	. . .	6.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Gibraltar	80.0	1,319.5	. . .	. . .	. . .	2,168.9	2,371.7	1,934.2	437.5	. . .	. . .
Hungary	1,252.9	1,347.2	1,040.2	3,870.4	8,134.5	8,687.5	7,597.4	3,490.5	1,002.4	1,072.6	2,031.9
Kazakhstan	449.6	573.5	1,043.5	2,200.0	5,093.2	5,457.9	15,929.0	1,883.1	2,125.4	3,737.9	8,182.6
Kyrgyz Republic	. . .	. . .	95.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Latvia	23.0	212.1	74.6	70.7	889.3	391.3	1,401.3	237.5	293.5	656.5	213.8
Lithuania	679.4	247.3	374.3	431.7	888.2	1,222.0	1,241.7	485.4	. . .	. . .	756.2
Macedonia	. . .	. . .	. . .	. . .	17.4	. . .	. . .	. . .	. . .	. . .	. . .
Malta	. . .	85.0	. . .	114.7	392.7	. . .	256.0	. . .	60.0	196.0	. . .
Moldova	. . .	. . .	. . .	. . .	. . .	1.0	. . .	. . .	. . .	. . .	. . .
Poland	4,468.5	3,135.1	5,941.2	8,550.3	4,909.3	14,949.6	6,761.0	3,653.1	431.6	108.0	2,568.2
Romania	589.4	1,347.2	1,442.2	1,738.8	659.0	2,229.8	564.3	86.1	120.9	127.4	230.0
Russia	8,312.5	2,831.2	8,534.5	12,238.8	22,532.1	37,062.1	60,941.1	9,042.8	12,809.2	20,554.4	18,534.7
Serbia[1]	. . .	. . .	19.4	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Slovak Republic	1,293.9	219.9	143.1	940.6	1,315.7	579.3	1,217.1	1,217.1	. . .	. . .	. . .
Slovenia	672.7	827.2	309.3	394.8	1,430.8	1,881.5	1,672.5	215.5	1,124.9	. . .	332.1
Turkey	19,819.8	6,271.3	6,382.5	9,549.5	14,734.5	18,521.6	25,501.3	3,070.3	10,193.1	5,383.2	6,854.7
Ukraine	1,127.4	15.0	514.0	1,400.0	2,434.9	3,031.8	5,101.7	524.5	120.0	1,156.2	3,301.0
Uzbekistan	40.0	5.0	46.0	37.8	. . .	. . .	4.9	. . .	. . .	. . .	4.9
Middle East	**15,412.5**	**11,247.3**	**10,943.0**	**8,954.3**	**22,553.4**	**56,601.2**	**73,032.7**	**15,666.4**	**26,198.2**	**11,237.7**	**19,930.5**
Bahrain	1,477.0	202.0	922.6	2,326.6	1,767.0	3,070.9	3,787.1	795.0	819.1	670.0	1,503.0
Egypt	909.5	2,500.0	670.0	155.0	1,138.7	3,395.1	3,323.2	257.8	2,777.9	200.0	87.5
Iran, I.R. of	757.7	887.0	2,666.4	700.0	1,942.7	1,928.8	134.8	73.8	43.3	17.7	. . .
Iraq	. . .	. . .	. . .	. . .	. . .	107.8	2,877.0	2,877.0	. . .	. . .	. . .
Israel	3,150.0	1,897.6	344.4	766.6	3,514.0	3,986.4	4,331.6	1,729.7	128.0	339.1	2,134.8
Jordan	60.0	. . .	80.9	. . .	199.4	. . .	60.0	. . .	. . .	. . .	60.0
Kuwait	250.0	770.0	750.0	365.0	1,282.5	4,783.0	4,761.3	1,271.4	2,821.4	468.5	200.0
Lebanon	1,932.4	3,300.0	990.0	160.0	4,383.0	1,780.0	2,956.5	248.4	2,613.1	. . .	95.0
Libya	50.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oman	600.0	. . .	2,332.0	818.3	1,328.6	4,747.1	3,245.4	250.0	. . .	2,970.4	25.0
Qatar	1,980.0	895.0	1,536.7	880.8	2,042.7	10,418.5	11,425.4	2,765.2	2,283.2	2,241.6	4,135.4
Saudi Arabia	2,200.9	275.0	280.0	839.5	2,214.0	4,981.0	8,772.7	2,007.0	5,650.2	89.5	1,026.0
United Arab Emirates	2,045.0	520.7	370.0	1,942.6	2,741.0	17,402.6	27,357.7	3,391.0	9,062.1	4,240.9	10,663.8
Latin America	**66,388.5**	**53,913.8**	**33,256.8**	**43,529.5**	**53,542.4**	**85,142.1**	**65,229.7**	**16,756.7**	**13,894.2**	**15,004.4**	**19,574.5**
Argentina	16,643.5	5,017.9	824.2	130.0	1,882.4	22,180.6	2,814.9	969.4	550.0	325.5	970.0
Bolivia	. . .	10.0	90.0	. . .	116.0	123.0	. . .	. . .	. . .	. . .	. . .
Brazil	21,454.1	19,265.6	11,119.4	12,908.6	15,834.0	24,962.2	25,837.9	7,383.1	5,868.5	6,368.9	6,217.4
Chile	5,747.5	4,335.3	2,959.6	4,631.0	6,439.9	5,956.0	5,279.3	1,048.5	1,760.4	1,117.1	1,353.3
Colombia	3,028.2	4,974.8	2,096.0	1,911.2	1,626.8	2,780.9	4,915.6	238.1	365.0	2,300.1	2,012.4
Costa Rica	250.0	365.0	250.0	490.0	310.0	117.2	1.7	. . .	. . .	1.7	. . .
Cuba	. . .	. . .	. . .	. . .	69.8	1.9	. . .	. . .	. . .	. . .	. . .
Dominican Republic	74.0	531.1	258.0	650.4	140.5	244.4	721.9	304.9	40.0	112.0	265.0
Ecuador	. . .	910.0	10.0	. . .	. . .	712.5	. . .	. . .	. . .	. . .	. . .
El Salvador	160.0	421.5	1,391.5	381.0	467.0	454.5	1,309.6	. . .	400.0	721.6	188.0
Grenada	. . .	. . .	100.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Guadeloupe	. . .	. . .	17.4	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Guatemala	505.0	325.0	44.0	300.0	439.3	365.0	. . .	. . .	. . .	. . .	. . .
Haiti	. . .	. . .	. . .	. . .	. . .	. . .	96.5	. . .	56.5	. . .	40.0
Honduras	. . .	. . .	. . .	. . .	169.0	4.6	. . .	. . .	. . .	. . .	. . .
Jamaica	421.0	821.5	345.0	49.6	903.2	1,466.6	1,268.4	350.0	568.4	150.0	200.0
Mexico	14,299.4	12,348.0	10,040.6	16,964.3	18,832.8	16,314.4	16,315.4	4,745.6	3,351.4	2,011.9	6,206.5
Nicaragua	. . .	. . .	. . .	. . .	22.0	. . .	. . .	. . .	. . .	. . .	. . .
Paraguay	. . .	70.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Peru	465.4	237.5	1,993.0	1,375.0	1,475.7	2,184.2	1,478.8	305.0	101.9	150.0	921.9
St. Lucia	. . .	. . .	. . .	20.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Trinidad and Tobago	280.0	70.0	303.0	46.0	415.0	100.0	2,454.4	400.0	812.1	1,242.3	. . .
Uruguay	797.1	1,147.4	400.0	. . .	. . .	1,061.3	2,700.0	1,000.0	. . .	500.0	1,200.0
Venezuela	2,263.3	3,063.4	1,015.0	3,672.5	4,399.1	6,112.6	35.3	12.1	20.0	3.2	. . .

Source: Data provided by the Bond, Equity and Loan database of the International Monetary Fund sourced from Dealogic.
[1]Data prior to 2006 refer to Serbia and Montenegro.

Table 15. Emerging Market External Financing: Bond Issuance
(In millions of U.S. dollars)

	2000	2001	2002	2003	2004	2005	2006	2006 Q1	Q2	Q3	Q4
Developing Countries	**82,994.7**	**80,710.7**	**64,628.1**	**100,538.9**	**135,345.4**	**188,542.2**	**174,841.2**	**49,646.3**	**35,387.2**	**32,640.8**	**57,167.0**
Africa	**2,119.4**	**1,509.6**	**2,161.1**	**4,357.8**	**2,495.4**	**3,059.2**	**5,904.6**	**1,948.8**	**2,411.9**	**840.1**	**703.7**
Morocco	...	...	...	464.9	...	...	...	...	...	...	...
South Africa	1,656.3	1,047.7	1,511.1	3,535.9	1,950.9	2,568.3	5,904.6	1,948.8	2,411.9	840.1	703.7
Tunisia	463.1	462.0	650.0	357.0	544.5	490.9	...	...	...	...	...
Asia	**23,067.7**	**27,946.0**	**24,336.7**	**37,076.9**	**52,125.4**	**52,601.1**	**55,784.3**	**14,913.2**	**12,761.3**	**13,471.5**	**14,638.3**
China	652.7	2,341.9	340.0	2,039.2	4,888.1	3,953.9	3,057.0	333.3	499.6	695.7	1,528.5
Hong Kong SAR	3,998.3	2,950.3	1,923.3	2,160.6	3,725.3	6,457.9	5,057.0	565.6	2,539.4	225.0	1,727.0
India	689.3	99.3	153.0	450.0	4,631.0	4,247.7	5,979.5	2,396.9	1,334.1	1,169.5	1,079.0
Indonesia	...	137.0	275.0	609.0	1,363.5	3,217.7	3,000.0	2,000.0	...	...	1,000.0
Korea	8,505.6	7,279.7	9,071.5	11,880.1	17,529.2	19,426.9	20,375.2	3,928.6	5,008.6	6,394.0	5,043.9
Malaysia	1,119.7	1,816.1	1,280.0	1,142.5	1,414.5	2,303.1	3,372.4	1,200.0	...	1,772.4	400.0
Pakistan	...	...	...	...	...	500.0	1,050.0	800.0	...	...	250.0
Philippines	2,467.3	1,842.4	4,773.8	4,449.6	4,458.1	3,900.0	4,619.0	2,214.8	...	1,654.2	750.0
Singapore	3,886.8	9,048.2	826.3	4,534.8	4,856.0	3,203.2	5,820.3	684.0	2,654.5	816.8	1,665.0
Sri Lanka	...	...	...	...	100.0	...	...	...	...	...	...
Taiwan Province of China	1,748.0	2,152.4	5,645.8	9,511.0	7,259.7	2,898.1	2,289.0	400.0	525.0	634.0	730.0
Thailand	...	278.6	48.0	300.0	1,400.0	2,242.6	1,165.0	390.0	200.0	110.0	465.0
Vietnam	...	...	...	...	...	750.0	...	...	...	...	...
Europe	**18,521.8**	**10,981.3**	**15,342.0**	**24,173.1**	**37,169.3**	**54,692.3**	**57,596.6**	**16,774.2**	**10,110.2**	**8,664.1**	**22,048.2**
Azerbaijan	...	...	...	...	...	...	...	...	...	...	...
Bulgaria	...	223.4	1,247.8	62.1	10.0	385.4	221.4	...	...	...	221.4
Croatia	858.0	934.0	847.5	983.6	1,651.0	...	383.5	...	...	191.8	191.7
Cyprus	...	480.5	479.8	648.2	1,174.0	1,133.1	1,601.4	...	1,201.4	400.0	...
Czech Republic	...	50.7	428.4	337.7	2,538.6	1,324.5	908.3	...	...	274.9	633.4
Estonia	171.4	65.5	292.6	323.3	964.8	427.3	...	...	...	...	...
Gibraltar	...	1,319.5	...	...	...	...	...	...	...	...	...
Hungary	540.8	1,247.8	70.5	2,447.5	5,751.0	7,340.3	7,537.3	3,490.5	1,002.4	1,012.5	2,031.9
Kazakhstan	370.0	250.0	509.0	825.0	3,225.0	2,850.0	6,354.5	1,706.1	1,600.0	1,182.5	1,865.9
Latvia	...	180.8	...	...	536.1	125.4	246.8	...	246.8	...	...
Lithuania	376.2	222.4	355.6	431.7	815.7	780.6	1,241.7	485.4	...	...	756.2
Poland	724.9	1,155.8	2,679.9	5,220.3	3,526.5	11,812.8	4,632.4	3,628.0	181.7	...	822.7
Romania	259.5	908.6	1,062.2	813.6	...	1,199.0	...	...	...	...	...
Russia	4,660.0	1,073.7	3,430.0	4,455.0	7,129.9	15,436.7	20,826.8	3,307.0	4,585.1	2,652.2	10,282.5
Slovak Republic	809.5	219.9	143.1	861.3	1,198.8	...	1,217.1	1,217.1	...	...	...
Slovenia	384.7	490.0	30.2	...	66.3	156.7	...	...	...	...	...
Turkey	8,239.3	2,158.7	3,266.3	5,453.8	6,266.5	9,621.9	9,310.4	2,493.4	1,292.9	2,291.7	3,232.4
Ukraine	1,127.4	...	499.0	1,310.0	2,315.0	2,098.4	3,115.1	446.6	...	658.5	2,010.0
Middle East	**4,875.6**	**6,285.7**	**3,964.2**	**2,706.6**	**10,155.0**	**17,907.3**	**24,641.5**	**5,746.4**	**6,785.7**	**2,290.2**	**9,819.2**
Bahrain	288.5	...	582.6	1,326.6	292.0	1,299.7	1,120.0	720.0	...	300.0	100.0
Egypt	...	1,500.0	...	...	...	1,250.0	...	...	...	...	...
Iran, I.R. of	...	...	986.3	...	...	...	...	...	...	...	...
Iraq	...	...	...	...	...	...	2,700.0	2,700.0	...	...	...
Israel	1,254.7	1,485.7	344.4	750.0	2,520.0	905.1	2,892.5	1,392.5	...	...	1,500.0
Jordan	...	...	80.9	...	145.0	...	...	...	...	...	...
Kuwait	...	...	750.0	200.0	500.0	500.0	534.7	19.3	515.3	...	...
Lebanon	1,932.4	3,300.0	990.0	160.0	4,383.0	1,780.0	2,613.1	...	2,613.1	...	...
Oman	...	...	...	...	250.0	...	25.0	...	...	...	25.0
Qatar	1,400.0	...	...	...	665.0	2,250.0	3,040.0	...	650.0	1,550.0	840.0
Saudi Arabia	...	...	...	270.0	...	1,300.0	1,951.8	...	1,393.3	58.5	500.0
United Arab Emirates	...	...	230.0	...	1,400.0	8,622.4	9,764.4	914.5	1,614.0	381.7	6,854.2
Latin America	**34,410.1**	**33,988.1**	**18,824.1**	**32,224.4**	**33,400.4**	**60,282.3**	**30,914.3**	**10,263.8**	**3,318.1**	**7,374.8**	**9,957.6**
Argentina	13,024.8	3,094.5	...	100.0	1,115.4	19,092.6	1,745.5	200.0	250.0	325.5	970.0
Brazil	10,607.1	12,053.4	6,809.5	11,718.8	9,573.2	17,683.2	11,699.7	4,039.1	875.0	3,524.2	3,261.3
Chile	679.7	1,936.0	1,728.9	2,900.0	2,350.0	900.0	1,100.0	200.0	200.0	200.0	500.0
Colombia	1,547.2	4,343.1	1,000.0	1,765.0	1,543.8	2,432.1	3,176.6	238.1	170.0	2,300.1	468.4
Costa Rica	250.0	250.0	250.0	490.0	310.0	...	...	...	...	...	...
Dominican Republic	...	500.0	...	600.0	...	196.6	550.0	300.0	...	...	250.0
Ecuador	...	...	...	...	...	650.0	...	...	...	...	...
El Salvador	50.0	353.5	1,391.5	348.5	286.5	375.0	625.0	...	400.0	225.0	...
Grenada	...	...	100.0	...	...	...	...	...	...	...	...
Guatemala	...	325.0	...	300.0	380.0	200.0	...	...	...	...	...
Jamaica	421.0	815.7	300.0	...	806.9	1,050.0	880.0	350.0	180.0	150.0	200.0
Mexico	6,453.4	7,881.7	4,914.1	9,082.1	11,369.0	8,455.7	7,109.4	3,436.6	760.0	150.0	2,762.8
Peru	...	100.0	1,930.0	1,250.0	1,305.7	2,157.1	445.0	100.0	...	...	345.0
Trinidad and Tobago	250.0	...	...	...	100.0	100.0	883.1	400.0	483.1	...	...
Uruguay	637.6	1,106.1	400.0	...	...	1,061.3	2,700.0	1,000.0	...	500.0	1,200.0
Venezuela	489.4	1,229.1	...	3,670.0	4,260.0	5,928.7	...	...	...	...	...

Source: Data provided by the Bond, Equity and Loan database of the International Monetary Fund sourced from Dealogic.

Table 16. Emerging Market External Financing: Equity Issuance
(In millions of U.S. dollars)

	2000	2001	2002	2003	2004	2005	2006	2006 Q1	Q2	Q3	Q4
Developing Countries	**46,192.1**	**12,098.7**	**16,571.9**	**27,825.1**	**45,343.2**	**78,490.1**	**119,809.2**	**22,348.6**	**30,083.9**	**20,782.6**	**46,594.0**
Africa	**103.3**	**150.9**	**340.5**	**919.6**	**1,855.7**	**924.7**	**2,367.7**	**2,107.2**	**75.1**	**133.3**	**52.1**
Côte d'Ivoire	. . .	. . .	. . .	. . .	100.0	. . .	. . .	. . .	. . .	. . .	. . .
Morocco	56.4	6.8	. . .	. . .	. . .	. . .	133.3	. . .	. . .	133.3	. . .
South Africa	46.9	144.1	340.5	919.6	1,724.7	924.7	2,159.2	2,107.2	. . .	. . .	52.1
Sudan	. . .	. . .	. . .	. . .	31.0	. . .	. . .	. . .	. . .	. . .	. . .
Zimbabwe	. . .	. . .	. . .	. . .	. . .	. . .	75.1	. . .	75.1	. . .	. . .
Asia	**35,177.8**	**10,339.1**	**12,554.6**	**24,252.5**	**35,273.6**	**58,531.0**	**77,598.6**	**11,879.1**	**25,267.4**	**6,691.8**	**33,760.3**
China	7,554.2	1,570.0	2,475.0	6,415.7	14,406.6	26,003.9	41,985.6	2,140.8	14,029.2	2,396.4	23,419.2
Hong Kong SAR	17,601.1	1,638.0	2,880.6	2,962.2	5,247.8	4,675.3	8,527.3	75.3	3,738.7	1,367.3	3,346.0
India	1,791.0	467.2	264.8	1,299.7	3,937.6	6,708.4	7,772.3	2,030.9	1,878.2	286.9	3,576.3
Indonesia	27.8	347.2	281.0	1,096.7	535.2	1,283.5	665.9	. . .	52.0	204.3	409.7
Korea	978.6	3,676.4	1,553.7	1,222.6	3,223.3	7,814.9	7,329.8	4,586.2	2,577.0	97.6	69.0
Macao SAR	29.5	. . .	. . .	. . .	. . .	. . .	0.3	. . .	. . .	0.3	. . .
Malaysia	. . .	15.4	888.4	618.1	887.2	735.2	217.3	. . .	. . .	197.5	19.7
Pakistan	. . .	. . .	. . .	. . .	. . .	. . .	922.2	. . .	. . .	. . .	. . .
Papua New Guinea	. . .	. . .	. . .	153.7	. . .	. . .	. . .	. . .	. . .	. . .	922.2
Philippines	194.6	. . .	11.3	. . .	114.9	535.8	756.0	253.6	58.3	. . .	444.2
Singapore	2,949.9	1,272.9	929.6	1,168.7	2,472.7	2,635.9	3,687.6	1,757.8	712.3	678.6	538.9
Sri Lanka	. . .	. . .	. . .	. . .	. . .	55.5	. . .	. . .	. . .	. . .	. . .
Taiwan Province of China	4,007.1	1,126.6	3,213.9	8,276.3	3,350.0	7,602.6	3,644.5	720.3	758.1	1,374.4	791.8
Thailand	44.0	225.3	56.3	1,038.7	1,098.4	479.7	1,772.4	109.4	1,351.2	88.5	223.3
Vietnam	. . .	. . .	. . .	. . .	. . .	. . .	317.3	204.8	112.5	. . .	. . .
Europe	**3,784.4**	**259.4**	**1,681.7**	**1,809.0**	**5,287.3**	**10,276.1**	**24,592.4**	**2,487.9**	**1,479.6**	**12,401.9**	**8,223.0**
Croatia	. . .	22.3	. . .	. . .	. . .	. . .	220.0	. . .	. . .	. . .	220.0
Cyprus	298.4	. . .	. . .	. . .	. . .	320.7	1,181.7	233.1	. . .	107.7	840.9
Czech Republic	. . .	. . .	. . .	824.6	174.4	295.1	287.2	. . .	. . .	. . .	287.3
Estonia	. . .	. . .	41.3	. . .	. . .	266.2	. . .	. . .	. . .	. . .	. . .
Gibraltar	. . .	. . .	. . .	. . .	. . .	2,168.9	437.5	. . .	437.5	. . .	. . .
Hungary	19.1	. . .	. . .	13.2	884.7	. . .	. . .	. . .	. . .	. . .	. . .
Kazakhstan	. . .	. . .	. . .	. . .	. . .	. . .	3,953.8	. . .	. . .	2,255.4	1,698.4
Latvia	. . .	. . .	22.7	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Lithuania	150.5	. . .	. . .	. . .	. . .	51.2	. . .	. . .	. . .	. . .	. . .
Poland	403.2	. . .	245.4	602.6	841.4	944.0	712.1	25.2	41.9	108.0	537.1
Romania	. . .	. . .	. . .	. . .	. . .	. . .	172.5	. . .	. . .	. . .	172.5
Russia	476.2	237.1	1,301.0	368.7	2,480.1	6,210.0	17,596.3	2,229.7	1,000.2	9,905.5	4,460.9
Turkey	2,437.1	. . .	71.4	. . .	906.5	. . .	6.0	. . .	. . .	. . .	6.0
Ukraine	. . .	. . .	. . .	. . .	. . .	19.9	25.3	. . .	. . .	25.3	. . .
Middle East	**1,974.7**	**86.8**	**. . .**	**16.6**	**868.5**	**2,963.3**	**3,365.6**	**2,154.4**	**780.2**	**31.5**	**399.5**
Bahrain	. . .	. . .	. . .	. . .	. . .	81.2	581.8	. . .	581.8	. . .	. . .
Egypt	319.4	. . .	. . .	. . .	141.0	678.3	257.8	257.8	. . .	. . .	. . .
Israel	1,655.3	86.8	. . .	16.6	624.0	1,157.5	342.3	57.2	125.2	. . .	159.8
Jordan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Lebanon	. . .	. . .	. . .	. . .	. . .	. . .	248.4	248.4	. . .	. . .	. . .
Oman	. . .	. . .	. . .	. . .	23.6	148.4	. . .	. . .	. . .	. . .	. . .
Qatar	. . .	. . .	. . .	. . .	. . .	. . .	1,133.2	1,133.2	. . .	. . .	. . .
Saudi Arabia	. . .	. . .	. . .	. . .	80.0	. . .	59.2	59.2	. . .	. . .	. . .
United Arab Emirates	. . .	. . .	. . .	. . .	. . .	898.0	742.8	398.5	73.1	31.5	239.6
Latin America	**5,151.9**	**1,262.5**	**1,995.0**	**827.4**	**2,058.2**	**5,795.2**	**11,884.8**	**3,720.1**	**2,481.5**	**1,524.0**	**4,159.3**
Argentina	393.1	34.4	. . .	. . .	. . .	. . .	769.4	769.4	. . .	. . .	. . .
Brazil	3,102.5	1,228.1	1,148.5	287.4	1,651.0	3,433.1	8,713.0	2,059.4	2,366.7	1,524.0	2,763.0
Chile	. . .	. . .	. . .	. . .	266.4	522.7	603.3	. . .	. . .	. . .	603.3
Dominican Republic	74.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mexico	1,582.3	. . .	846.6	540.0	140.8	1,839.3	1,222.3	891.4	114.8	. . .	216.1
Peru	. . .	. . .	. . .	. . .	. . .	. . .	576.9	. . .	. . .	. . .	576.9

Source: Data provided by the Bond, Equity and Loan database of the International Monetary Fund sourced from Dealogic.

Table 17. Emerging Market External Financing: Loan Syndication
(In millions of U.S. dollars)

	2000	2001	2002	2003	2004	2005	2006	2006 Q1	Q2	Q3	Q4
Total	87,655.1	56,136.7	52,082.8	67,380.8	95,852.7	134,256.5	188,809.6	29,329.7	55,928.8	43,843.6	59,707.5
Africa	7,784.2	4,508.8	4,512.4	5,584.6	7,008.9	7,617.4	3,378.4	473.4	1,329.2	940.8	635.0
Algeria	...	50.0	150.0	40.0	271.7	412.7	...	...	...	...	...
Angola	...	455.0	350.0	1,522.0	2,900.0	3,122.7	88.0	38.8	37.1	12.1	...
Botswana	...	22.5	...	...	...	...	...	...	...	...	...
Burkina Faso	...	...	...	...	...	11.0	...	...	...	...	...
Cameroon	...	53.8	...	100.0	...	...	...	...	...	...	...
Chad	...	300.0	...	...	...	...	...	...	...	...	...
Congo, Dem. Rep. of	20.8	...	...	...	...	...	...	...	...	...	...
Côte d'Ivoire	...	15.0	...	...	...	...	...	...	...	...	...
Djibouti	...	...	...	...	40.0	...	...	...	...	...	...
Ethiopia	...	...	...	...	40.0	...	...	...	...	...	...
Gabon	...	...	...	...	22.0	...	34.3	14.4	20.0	...	...
Ghana	320.0	291.0	420.0	650.0	870.0	662.5	846.0	50.0	...	796.0	...
Guinea	...	...	...	...	70.0	...	...	...	...	...	...
Kenya	7.5	80.2	...	134.0	...	23.5	16.8	16.8	...	...	...
Malawi	...	...	...	...	4.8	...	...	...	...	...	...
Mali	...	...	150.4	287.6	288.9	...	...	...	...	...	...
Mauritius	...	...	...	...	...	...	180.0	100.0	...	80.0	...
Morocco	...	129.3	...	9.8	...	...	14.2	3.4	8.1	2.7	...
Mozambique	...	160.0	...	35.5	...	...	...	...	...	...	...
Namibia	...	...	...	35.0	...	50.0	100.0	...	...	50.0	50.0
Niger	...	...	...	27.0	...	...	...	...	...	...	...
Nigeria	...	95.0	960.0	488.0	225.0	618.8	480.0	...	...	...	480.0
Senegal	...	...	40.0	...	...	...	...	...	...	...	...
Seychelles	40.5	...	150.0	...	80.0	...	...	...	...	...	...
South Africa	7,166.1	2,786.0	2,201.5	2,097.5	1,816.6	2,625.0	1,040.5	250.0	790.5	...	...
Tanzania	135.0	...	...	...	...	...	...	...	...	...	...
Tunisia	94.3	71.0	90.5	128.2	379.9	91.2	473.5	...	473.5	...	...
Zambia	...	...	...	30.0	...	...	105.0	...	...	...	105.0
Asia	25,769.7	17,603.3	15,237.7	24,610.2	28,968.9	34,599.1	60,866.0	10,521.3	8,960.3	13,771.6	27,612.8
Bangladesh	...	...	...	...	176.8	...	32.6	...	32.6	...	...
Brunei Darussalam	...	...	129.0	...	...	...	...	...	...	...	...
China	1,020.0	343.0	1,441.2	4,388.1	3,555.3	4,956.3	6,705.4	961.5	2,638.6	2,581.8	523.5
Hong Kong SAR	8,591.6	4,718.1	1,788.0	2,570.6	4,077.2	3,436.3	5,343.2	710.9	1,103.5	2,081.4	1,447.4
India	947.6	1,499.0	942.2	2,025.9	4,491.2	7,873.4	17,412.1	2,726.1	928.7	2,481.5	11,275.9
Indonesia	1,157.3	487.6	62.0	3,492.5	1,737.4	754.0	2,651.0	102.0	469.5	161.5	1,918.0
Korea	5,621.0	5,225.1	5,284.2	4,141.3	3,163.4	7,743.8	9,737.4	3,246.2	1,412.0	1,776.4	3,302.7
Lao P.D.R.	...	...	...	...	210.0	500.0	...	...	...	...	...
Macao SAR	...	...	...	...	357.0	...	1,480.0	...	800.0	680.0	...
Malaysia	2,997.2	2,046.7	1,973.6	3,789.4	3,999.2	2,509.7	4,236.7	1,287.2	469.1	717.5	1,762.9
Marshall Islands	...	...	34.7	...	...	24.0	170.0	170.0	...	...	...
Mongolia	...	...	...	...	...	30.0	...	...	...	...	...
Pakistan	...	182.5	85.0	...	300.0	591.8	740.8	100.0	119.8	...	521.0
Philippines	1,886.2	1,421.4	611.1	1,277.7	1,483.4	1,245.8	3,501.2	...	...	44.2	3,457.0
Singapore	1,364.2	1,010.6	1,338.8	1,154.1	1,606.1	1,839.2	6,449.7	608.6	481.0	3,007.0	2,353.1
Sri Lanka	100.0	105.0	...	186.0	35.0	311.5	128.7	9.7	...	19.0	100.0
Taiwan Province of China	627.0	383.7	338.7	549.8	2,376.6	720.8	429.2	267.1	55.6	54.5	52.0
Thailand	1,440.5	180.5	825.7	983.7	1,286.2	1,798.6	1,390.7	331.9	400.0	98.7	560.0
Vietnam	17.0	...	383.5	51.0	114.0	264.0	457.4	...	50.0	68.0	339.4
Europe	18,712.6	10,486.7	12,916.3	20,477.2	30,261.1	37,244.8	57,109.0	7,796.6	18,912.5	14,109.7	16,290.2
Armenia	...	...	...	...	...	...	...	...	...	...	...
Azerbaijan	...	16.0	...	...	1,005.0	383.7	911.2	750.0	35.0	0.3	126.0
Belarus	...	...	...	24.0	...	32.0	298.0	45.3	47.7	121.3	83.8
Bulgaria	8.9	7.0	13.0	260.4	808.1	188.2	286.1	...	50.5	...	235.6
Croatia	598.6	768.0	536.6	960.8	545.9	637.2	664.7	...	...	283.8	380.9
Cyprus	86.3	152.5	68.1	...	...	...	877.8	85.0	...	792.8	...
Czech Republic	127.1	434.4	25.0	356.5	191.1	549.9	240.0	105.0	...	10.9	124.1
Estonia	61.0	136.6	...	133.9	222.9	...	449.4	...	449.4	...	...
Faroe Islands	...	...	...	...	...	85.3	206.2	...	...	...	206.2

Table 17 *(concluded)*

	2000	2001	2002	2003	2004	2005	2006	2006 Q1	Q2	Q3	Q4
Europe *(continued)*											
Georgia	. . .	. . .	. . .	6.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Gibraltar	80.0	. . .	. . .	. . .	. . .	. . .	1,934.2	1,934.2	. . .	. . .	. . .
Hungary	693.0	99.4	969.7	1,409.7	1,498.8	1,347.3	60.1	. . .	. . .	60.1	. . .
Kazakhstan	79.6	323.5	534.5	1,375.0	1,868.2	2,607.9	5,620.7	177.0	525.4	300.0	4,618.3
Kyrgyz Republic	. . .	. . .	95.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Latvia	23.0	31.3	51.9	70.7	353.2	265.8	1,154.5	237.5	46.7	656.5	213.8
Lithuania	152.7	24.9	18.8	. . .	72.5	390.2	. . .	. . .	. . .	. . .	. . .
Macedonia	. . .	. . .	. . .	. . .	17.4	. . .	. . .	. . .	. . .	. . .	. . .
Malta	. . .	85.0	. . .	114.7	392.7	. . .	256.0	. . .	60.0	196.0	. . .
Moldova	. . .	. . .	. . .	. . .	. . .	1.0	. . .	. . .	. . .	. . .	. . .
Poland	3,340.5	1,979.3	3,016.0	2,727.4	541.4	2,192.8	1,416.4	. . .	208.0	. . .	1,208.4
Romania	329.9	438.6	380.0	925.2	659.0	1,030.8	391.8	86.1	120.9	127.4	57.5
Russia	3,176.3	1,520.4	3,803.5	7,415.1	12,922.1	15,415.3	22,518.0	3,506.2	7,223.8	7,996.6	3,791.3
Serbia[1]	. . .	. . .	19.4	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Slovak Republic	484.4	. . .	. . .	79.3	117.0	579.3	. . .	. . .	. . .	. . .	. . .
Slovenia	288.0	337.2	279.0	394.8	1,364.5	1,724.8	1,672.5	215.5	1,124.9	. . .	332.1
Tajikistan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Turkey	9,143.4	4,112.6	3,044.8	4,095.7	7,561.5	8,899.7	16,184.9	576.9	8,900.2	3,091.5	3,616.3
Ukraine	. . .	15.0	15.0	90.0	119.9	913.6	1,961.3	77.8	120.0	472.5	1,291.0
Uzbekistan	40.0	5.0	46.0	37.8	. . .	. . .	4.9	. . .	. . .	. . .	4.9
Middle East	**8,562.2**	**4,874.7**	**6,978.8**	**6,231.2**	**11,530.0**	**35,730.6**	**45,025.6**	**7,765.6**	**18,632.2**	**8,915.9**	**9,711.9**
Bahrain	1,188.5	202.0	340.0	1,000.0	1,475.0	1,690.0	2,085.2	75.0	237.2	370.0	1,403.0
Egypt	590.1	1,000.0	670.0	155.0	997.7	1,466.8	3,065.4	. . .	2,777.9	200.0	87.5
Iran, I.R. of	757.7	887.0	1,680.1	700.0	1,942.7	1,928.8	134.8	73.8	43.3	17.7	. . .
Iraq	. . .	. . .	. . .	. . .	. . .	107.8	177.0	177.0	. . .	. . .	. . .
Israel	240.0	325.0	. . .	. . .	370.0	1,923.8	1,096.8	280.0	2.7	339.1	475.0
Jordan	60.0	. . .	. . .	. . .	54.4	. . .	60.0	. . .	. . .	. . .	60.0
Kuwait	250.0	770.0	. . .	165.0	782.5	4,283.0	4,226.7	1,252.1	2,306.1	468.5	200.0
Lebanon	. . .	. . .	. . .	. . .	. . .	. . .	95.0	. . .	. . .	. . .	95.0
Libya	50.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oman	600.0	. . .	2,332.0	818.3	1,055.0	4,598.7	3,220.4	250.0	. . .	2,970.4	. . .
Qatar	580.0	895.0	1,536.7	880.8	1,377.7	8,168.5	7,252.2	1,632.0	1,633.2	691.6	3,295.4
Saudi Arabia	2,200.9	275.0	280.0	569.5	2,134.0	3,681.0	6,761.7	1,947.8	4,256.9	31.0	526.0
United Arab Emirates	2,045.0	520.7	140.0	1,942.6	1,341.0	7,882.3	16,850.5	2,077.9	7,375.0	3,827.6	3,570.0
Latin America	**26,826.5**	**18,663.2**	**12,437.6**	**10,477.7**	**18,083.9**	**19,064.6**	**22,430.6**	**2,772.8**	**8,094.6**	**6,105.6**	**5,457.6**
Argentina	3,225.6	1,889.0	824.2	30.0	767.0	3,088.0	300.0	. . .	300.0	. . .	. . .
Bolivia	. . .	10.0	90.0	. . .	116.0	123.0	. . .	. . .	. . .	. . .	. . .
Brazil	7,744.6	5,984.0	3,161.4	902.4	4,609.8	3,845.9	5,425.3	1,284.7	2,626.8	1,320.7	193.1
Chile	5,067.8	2,399.3	1,230.7	1,731.0	3,823.5	4,533.3	3,576.0	848.5	1,560.4	917.1	250.0
Colombia	1,481.0	631.7	1,096.0	146.2	83.0	348.8	1,739.0	. . .	195.0	. . .	1,544.0
Costa Rica	. . .	115.0	. . .	. . .	. . .	117.2	1.7	. . .	. . .	1.7	. . .
Cuba	. . .	. . .	. . .	. . .	69.8	1.9	. . .	. . .	. . .	. . .	. . .
Dominican Republic	. . .	31.1	258.0	50.4	140.5	47.8	171.9	4.9	40.0	112.0	15.0
Ecuador	. . .	910.0	10.0	. . .	. . .	62.5	. . .	. . .	. . .	. . .	. . .
El Salvador	110.0	68.0	. . .	32.5	180.5	79.5	684.6	. . .	. . .	496.6	188.0
Guadeloupe	. . .	. . .	17.4	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Guatemala	505.0	. . .	44.0	. . .	59.3	165.0	. . .	. . .	. . .	. . .	. . .
Haiti	. . .	. . .	. . .	. . .	. . .	. . .	96.5	. . .	56.5	. . .	40.0
Honduras	. . .	. . .	. . .	. . .	169.0	4.6	. . .	. . .	. . .	. . .	. . .
Jamaica	. . .	5.8	45.0	49.6	96.3	416.6	388.4	. . .	388.4	. . .	. . .
Mexico	6,263.7	4,466.3	4,280.0	7,342.2	7,323.0	6,019.3	7,983.7	417.6	2,476.6	1,861.9	3,227.6
Nicaragua	. . .	. . .	. . .	. . .	22.0	. . .	. . .	. . .	. . .	. . .	. . .
Paraguay	. . .	70.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Peru	465.4	137.5	63.0	125.0	170.0	27.1	456.9	205.0	101.9	150.0	. . .
St. Lucia	. . .	. . .	. . .	20.0	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Trinidad and Tobago	30.0	70.0	303.0	46.0	315.0	. . .	1,571.3	. . .	329.0	1,242.3	. . .
Uruguay	159.5	41.3	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Venezuela	1,773.9	1,834.2	1,015.0	2.5	139.1	184.0	35.3	12.1	20.0	3.2	. . .

Source: Data provided by the Bond, Equity and Loan database of the International Monetary Fund sourced from Dealogic.
[1]Data prior to 2006 refer to Serbia and Montenegro.

Table 18. Equity Valuation Measures: Dividend-Yield Ratios

	2000	2001	2002	2003	2004	2005	2006	2006 Q1	Q2	Q3	Q4
Argentina	4.62	5.16	3.42	1.08	1.00	1.72	0.83	1.36	1.06	1.13	0.83
Brazil	3.18	4.93	5.51	3.46	4.43	3.89	3.13	3.53	3.23	3.37	3.13
Chile	2.33	2.31	2.76	1.76	3.01	2.96	1.91	2.88	2.69	2.53	1.91
China	0.95	1.95	2.41	2.19	2.26	2.66	1.45	2.26	2.33	1.97	1.45
Colombia	11.12	5.63	4.78	3.92	2.52	1.71	2.46	1.73	2.45	2.46	2.46
Czech Republic	0.95	2.28	2.36	6.85	4.29	1.32	3.30	1.24	2.32	3.65	3.30
Egypt	5.75	6.48	7.53	4.69	1.98	1.41	2.31	1.19	2.88	2.21	2.31
Hong Kong SAR	2.58	3.25	3.85	2.82	2.74	3.18	2.57	3.10	3.04	2.85	2.57
Hungary	1.46	1.30	1.40	0.94	1.95	2.16	2.45	1.97	2.79	2.80	2.45
India	1.59	2.03	1.81	1.47	1.53	1.25	1.01	1.11	1.27	1.10	1.01
Indonesia	3.05	3.65	4.17	3.83	3.23	3.25	2.34	2.80	2.86	2.72	2.34
Israel	2.26	2.24	1.47	1.10	1.43	1.95	2.04	1.95	2.32	2.09	2.04
Jordan	4.54	3.51	3.77	2.36	1.57	1.05	3.42	1.26	3.10	3.14	3.42
Korea	2.05	1.54	1.38	1.82	2.40	1.69	1.62	1.67	1.82	1.71	1.62
Malaysia	1.70	1.87	2.04	2.38	2.22	2.89	2.59	2.76	2.78	2.90	2.59
Mexico	1.63	1.98	2.30	1.83	1.87	1.62	1.23	1.48	1.49	1.41	1.23
Morocco	3.59	3.97	4.84	4.18	3.61	3.84	3.45	2.84	3.90	3.55	3.45
Pakistan	5.12	16.01	10.95	8.63	7.04	5.04	5.80	4.18	4.73	4.72	5.80
Peru	3.38	3.16	2.37	1.75	3.28	5.05	5.58	5.62	5.91	5.80	5.58
Philippines	1.44	1.43	1.97	1.43	1.65	2.24	2.25	2.26	2.50	2.45	2.25
Poland	0.68	1.87	1.84	1.28	1.28	2.69	4.16	2.69	4.05	4.74	4.16
Russia	0.92	1.11	1.87	2.38	3.12	1.59	1.03	1.24	1.38	1.17	1.03
Singapore	1.40	1.80	2.27	2.03	2.25	2.58	2.29	2.39	2.80	2.66	2.29
South Africa	2.75	3.47	3.83	3.22	2.63	2.49	2.38	2.32	2.40	2.67	2.38
Sri Lanka	5.59	4.79	3.35	2.51	2.63	1.72	1.41	1.45	1.93	1.80	1.41
Taiwan Province of China	1.71	1.42	1.60	1.86	2.95	3.92	3.53	3.86	3.75	3.91	3.53
Thailand	2.13	2.02	2.48	1.69	3.03	3.66	3.90	3.75	4.11	4.00	3.90
Turkey	1.91	1.15	1.35	0.89	1.93	2.00	2.89	2.08	3.07	3.03	2.89
Venezuela	5.05	3.89	2.38	3.68	5.75	7.29	2.29	5.03	6.73	6.29	2.29
Emerging Markets	2.09	2.30	2.43	2.25	2.61	2.55	2.15	2.38	2.47	2.39	2.15
EM Asia	1.71	1.73	1.81	1.96	2.48	2.58	2.13	2.44	2.51	2.40	2.13
EM Latin America	2.69	3.37	3.64	2.61	3.30	3.03	2.40	2.81	2.66	2.65	2.40
EM Europe & Middle East	1.84	1.69	1.71	1.81	2.15	1.88	1.81	1.72	2.10	1.98	1.81
ACWI Free	1.46	1.72	2.25	1.99	2.08	2.05	2.08	2.05	2.22	2.16	2.08

Source: Data are from Morgan Stanley Capital International.
Note: The countries above include the 27 constituents of the Emerging Markets index as well as Hong Kong SAR and Singapore. Regional breakdowns conform to Morgan Stanley Capital International conventions. All indices reflect investable opportunities for global investors by taking into account restrictions on foreign ownership. The indices attempt to achieve an 85 percent representation of freely floating stocks.

Table 19. Equity Valuation Measures: Price-to-Book Ratios

	2000	2001	2002	2003	2004	2005	2006	2006 Q1	Q2	Q3	Q4
Argentina	1.04	0.86	1.20	1.79	2.24	3.10	3.54	3.30	3.09	2.68	3.54
Brazil	1.18	1.11	1.24	1.81	1.84	2.37	2.46	2.38	2.38	2.12	2.46
Chile	1.49	1.39	1.15	1.55	1.78	1.90	2.27	2.01	1.91	1.95	2.27
China	2.75	1.88	1.30	2.16	1.98	2.05	3.24	2.46	2.35	2.39	3.24
Colombia	0.49	0.53	1.18	1.34	1.92	3.42	1.88	3.40	2.64	1.72	1.88
Czech Republic	1.00	0.81	0.84	1.06	1.64	2.47	2.66	2.61	2.38	2.39	2.66
Egypt	2.32	1.39	1.05	2.17	3.89	8.02	4.67	5.49	3.22	4.43	4.67
Hong Kong SAR	1.67	1.38	1.01	1.47	1.71	1.62	1.97	1.68	1.72	1.75	1.97
Hungary	2.33	2.03	1.91	1.97	2.62	2.97	2.98	3.05	2.82	2.51	2.98
India	2.71	2.13	2.15	3.79	3.63	4.39	5.18	4.81	4.13	4.70	5.18
Indonesia	1.03	2.72	2.23	2.26	3.01	3.09	4.40	3.47	3.21	3.81	4.40
Israel	3.04	2.22	1.74	2.46	2.62	3.05	2.26	2.79	2.39	2.22	2.26
Jordan	1.02	1.38	1.26	1.98	3.01	4.71	2.21	3.29	2.86	2.51	2.21
Korea	0.82	1.33	1.21	1.52	1.36	1.91	1.73	1.78	1.69	1.69	1.73
Malaysia	1.59	1.76	1.54	1.85	1.95	1.83	2.20	1.90	1.88	1.94	2.20
Mexico	1.91	1.99	1.77	2.20	2.58	3.26	3.61	3.20	3.06	3.14	3.61
Morocco	2.56	1.79	1.40	1.50	2.42	2.67	4.17	3.79	3.77	4.06	4.17
Pakistan	1.41	0.88	2.04	2.31	2.39	3.59	2.88	4.00	3.05	3.08	2.88
Peru	1.13	1.29	1.84	2.77	2.28	2.87	3.93	2.88	3.37	3.80	3.93
Philippines	1.27	1.11	0.85	1.40	1.61	2.01	2.77	2.12	1.97	2.29	2.77
Poland	2.10	1.33	1.37	1.72	2.11	2.62	2.57	2.55	2.33	2.25	2.57
Russia	0.90	1.27	1.22	1.33	1.11	2.44	2.68	2.61	2.64	2.47	2.68
Singapore	2.05	1.63	1.26	1.62	1.70	1.80	2.19	1.93	1.82	1.88	2.19
South Africa	2.68	1.81	1.72	1.95	2.43	3.23	3.25	3.65	3.49	3.23	3.25
Sri Lanka	0.60	0.83	1.22	1.52	1.43	1.95	2.59	2.20	2.01	1.94	2.59
Taiwan Province of China	1.87	1.98	1.53	2.10	1.88	2.03	2.18	1.96	1.82	1.98	2.18
Thailand	1.51	1.68	1.83	2.94	2.41	2.35	1.90	2.26	1.97	2.00	1.90
Turkey	2.72	3.80	1.76	2.02	1.92	2.19	2.07	2.29	1.89	1.92	2.07
Venezuela	0.67	0.48	0.87	1.41	1.63	1.02	2.24	1.37	1.43	1.64	2.24
Emerging Markets	1.64	1.59	1.45	1.90	1.91	2.38	2.55	2.42	2.27	2.28	2.55
EM Asia	1.53	1.68	1.41	1.95	1.81	2.13	2.38	2.15	2.01	2.11	2.38
EM Latin America	1.36	1.35	1.44	1.90	2.05	2.57	2.76	2.57	2.53	2.38	2.76
EM Europe & Middle East	2.15	1.70	1.42	1.67	1.78	2.59	2.56	2.62	2.48	2.36	2.56
ACWI Free	3.46	2.67	2.07	2.46	2.46	2.63	2.65	2.64	2.51	2.53	2.65

Source: Data are from Morgan Stanley Capital International.
   Note: The countries above include the 27 constituents of the Emerging Markets index as well as Hong Kong SAR and Singapore. Regional breakdowns conform to Morgan Stanley Capital International conventions. All indices reflect investable opportunities for global investors by taking into account restrictions on foreign ownership. The indices attempt to achieve an 85 percent representation of freely floating stocks.

Table 20. Equity Valuation Measures: Price/Earnings Ratios

	2000	2001	2002	2003	2004	2005	2006	2006			
								Q1	Q2	Q3	Q4
Argentina	20.68	19.13	−12.86	13.72	47.24	19.48	16.66	12.47	14.62	12.50	16.66
Brazil	12.83	8.49	11.23	10.34	10.80	12.39	12.83	10.96	10.95	10.39	12.83
Chile	31.96	18.02	17.16	30.81	23.06	21.67	23.61	23.61	21.42	20.29	23.61
China	40.60	14.09	12.14	17.11	13.83	12.16	20.96	14.64	15.02	15.19	20.96
Colombia	−103.44	64.91	9.55	8.94	17.67	29.70	20.14	24.90	20.80	18.43	20.14
Czech Republic	16.48	9.21	10.40	12.49	26.64	23.75	20.22	24.42	22.20	18.30	20.22
Egypt	9.35	6.28	7.33	10.90	14.23	31.49	19.05	25.14	15.46	17.41	19.05
Hong Kong SAR	7.64	20.47	14.91	20.00	19.89	16.39	19.14	14.26	12.60	16.63	19.14
Hungary	14.82	19.34	10.06	13.11	11.26	12.80	11.30	12.80	11.72	9.94	11.30
India	15.61	13.84	13.56	18.95	17.65	20.17	22.92	22.67	20.21	22.70	22.92
Indonesia	18.68	8.37	7.14	10.37	12.91	12.06	19.54	14.47	13.49	17.00	19.54
Israel	23.88	228.84	−46.62	34.05	20.11	21.08	17.87	18.01	15.34	17.63	17.87
Jordan	−107.11	15.10	12.39	21.38	32.50	41.54	15.29	31.44	27.21	17.64	15.29
Korea	8.12	15.23	11.44	13.93	8.24	12.28	11.85	11.61	11.42	11.60	11.85
Malaysia	20.62	22.62	13.21	16.33	16.05	14.51	18.43	15.27	14.76	16.24	18.43
Mexico	13.78	14.23	14.07	15.70	15.02	17.09	17.34	16.01	14.66	14.99	17.34
Morocco	9.30	10.77	9.87	22.45	15.55	19.51	22.80	25.75	24.96	22.18	22.80
Pakistan	8.39	4.53	8.07	8.68	9.45	12.90	10.04	14.29	10.80	11.02	10.04
Peru	15.44	14.08	20.42	26.45	11.88	12.07	11.18	10.42	11.42	11.23	11.18
Philippines	−35.06	43.72	18.21	20.18	14.87	15.68	17.67	17.46	13.96	15.17	17.67
Poland	14.30	18.32	−261.14	19.50	13.27	15.74	13.20	15.10	14.98	11.58	13.20
Russia	5.69	5.03	7.33	11.13	8.19	15.78	15.76	14.88	16.19	15.43	15.76
Singapore	18.94	16.53	21.07	21.38	14.33	15.95	18.51	16.80	16.10	15.82	18.51
South Africa	14.87	11.30	10.50	12.75	14.97	17.01	16.52	16.48	15.71	14.73	16.52
Sri Lanka	4.24	8.53	14.35	12.69	11.03	15.47	21.50	25.81	20.71	16.29	21.50
Taiwan Province of China	14.06	21.08	73.13	25.70	12.40	18.57	18.06	18.75	16.43	15.70	18.06
Thailand	−14.61	16.67	15.52	15.24	11.49	10.23	9.09	10.35	9.32	9.72	9.09
Turkey	11.77	25.51	101.33	11.01	13.61	16.54	12.64	16.29	11.93	12.16	12.64
Venezuela	21.76	18.43	13.43	24.40	12.44	7.82	14.05	14.13	8.54	10.27	14.05
Emerging Markets	14.85	13.99	13.95	15.03	12.15	14.98	15.69	14.62	14.01	13.97	15.69
EM Asia	15.47	16.73	14.85	16.72	11.23	14.22	16.08	14.67	13.92	14.28	16.08
EM Latin America	14.93	11.67	13.84	13.18	13.10	14.46	14.71	12.92	12.57	12.25	14.71
EM Europe & Middle East	14.05	13.10	16.27	14.65	12.64	17.06	15.20	16.04	15.36	14.64	15.20
ACWI Free	25.43	26.76	23.18	21.94	17.94	17.63	16.72	17.30	16.55	16.00	16.72

Source: Data are from Morgan Stanley Capital International.
Note: The countries above include the 27 constituents of the Emerging Markets index as well as Hong Kong SAR and Singapore. Regional breakdowns conform to Morgan Stanley Capital International conventions. All indices reflect investable opportunities for global investors by taking into account restrictions on foreign owner-ship. The indices attempt to achieve an 85 percent representation of freely floating stocks.

Table 21. Emerging Markets: Mutual Fund Flows
(In millions of U.S. dollars)

	2001	2002	2003	2004	2005	2006	2006 Q1	Q2	Q3	Q4
Bonds	−444.2	605.9	3,153.3	1,946.6	5,729.0	6,233.1	4,209.3	−1,240.1	31.9	3,232.1
Equities	−1,780.7	−1,512.2	8,500.0	2,783.6	21,706.1	22,440.8	23,257.1	−6,279.0	−1,813.2	7,275.9
Global	−66.9	−2,081.9	2,119.2	−5,348.3	3,147.7	4,208.6	8,056.4	−1,522.5	−2,701.9	376.5
Asia	−768.1	816.8	5,148.4	5,609.0	6,951.8	16,790.2	9,192.8	979.7	251.8	6,365.8
Latin America	−619.2	−311.9	375.9	338.1	4,019.5	3,319.5	3,003.9	−1,464.6	650.6	1,129.5
Europe/Middle East/Africa	−326.5	64.8	856.5	2,184.9	7,587.2	−1,877.4	3,004.0	−4,271.6	−13.7	−596.0

Source: Emerging Porfolio Fund Research, Inc.

Table 22. Bank Regulatory Capital to Risk-Weighted Assets
(In percent)

	2001	2002	2003	2004	2005	2006	Latest
Latin America							
Argentina	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Bolivia	14.3	16.1	15.3	14.9	14.6	14.5	March
Brazil	14.8	16.6	18.9	17.3	17.4	. . .	December
Chile	12.7	14.0	14.1	13.6	13.0	12.7	November
Colombia	13.0	12.6	13.1	13.8	13.5	13.0	September
Costa Rica	15.1	15.8	16.5	18.1	15.9	14.8	August
Dominican Republic	11.8	12.0	8.8	14.0	12.5	12.3	December
Ecuador	13.5	14.4	14.9	14.5	14.4	. . .	December
El Salvador	11.8	12.2	12.8	13.4	13.5	13.5	March
Guatemala	14.1	14.9	15.6	14.5	13.7	15.1	October
Mexico	13.9	15.5	14.2	14.1	14.3	15.2	September
Panama	14.0	18.5	18.1	17.6	16.8	16.2	September
Paraguay	16.9	17.9	20.9	20.5	20.4	20.1	December
Peru	12.8	12.5	13.3	14.0	12.0	12.5	December
Uruguay[1]	. . .	. . .	. . .	28.9	30.7	. . .	December
Venezuela	17.7	20.5	25.1	19.2	15.5	15.4	May
Emerging Europe							
Belarus	20.7	24.2	26.0	25.2	26.7	22.0	September
Bosnia and Herzegovina	25.1	20.5	20.3	18.7	17.8	16.6	September
Bulgaria	31.1	25.2	22.0	16.1	15.2	14.5	December
Croatia	18.5	17.2	16.2	15.3	13.4	12.9	June
Czech Republic	15.0	14.2	14.5	12.6	11.9	11.3	September
Estonia	14.4	15.3	14.5	13.4	11.7	13.2	December
Hungary	13.8	13.0	12.3	12.8	12.0	11.4	September
Israel	9.4	9.9	10.3	10.8	10.7	10.9	June
Latvia	14.2	13.1	11.7	11.7	10.1	10.5	June
Lithuania	15.7	14.8	13.3	12.3	9.8	9.5	December
Poland[2]	13.5	14.2	13.5	15.6	14.5	13.6	June
Romania	28.8	25.0	20.0	18.8	20.2	17.8	September
Russia	20.3	19.1	19.1	17.0	16.0	14.8	September
Serbia[3]	. . .	25.6	31.1	27.9	26.0	25.3	September
Slovak Republic	19.8	21.3	22.4	18.7	14.8	13.7	September
Turkey	15.3	25.1	30.9	28.8	24.2	18.6	June
Ukraine	20.7	18.0	15.2	16.8	15.0	14.2	December
Western Europe							
Austria	13.7	13.3	14.5	14.7	14.5	15.4	June
Belgium	12.9	13.2	12.9	12.9	11.5	12.0	June
Denmark[4]	. . .	12.4	12.6	13.1	12.6	12.4	June
Finland	10.5	11.7	18.9	19.6	17.3	. . .	December
France	12.1	11.5	11.9	11.5	11.4	. . .	December
Germany	12.0	12.7	13.4	13.2	12.2	. . .	December
Greece	12.4	10.5	12.0	12.8	13.2	12.3	June
Iceland	11.4	12.2	12.3	12.8	12.8	13.3	June
Ireland[5]	13.2	14.4	15.0	14.6	13.6	. . .	December
Italy	10.4	11.2	11.4	11.6	10.6	. . .	December
Luxembourg	13.7	15.0	17.1	17.5	15.9	14.9	June
Netherlands	11.7	12.0	12.3	12.3	12.6	11.7	September
Norway	12.6	12.2	12.4	12.2	11.9	11.2	September
Portugal[6]	9.5	9.8	10.0	10.4	11.3	. . .	December
Spain[7]	12.9	12.5	12.6	12.3	12.2	11.5	June
Sweden[8]	7.0	7.1	7.4	7.7	7.1	7.0	September
Switzerland	12.4	12.6	12.4	12.6	12.4	12.7	June
United Kingdom	13.2	13.1	13.0	12.7	12.8	. . .	December

Table 22 *(concluded)*

	2001	2002	2003	2004	2005	2006	Latest
Asia							
Bangladesh	6.7	7.5	8.4	8.8	7.3	8.0	June
China	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Hong Kong SAR	16.5	15.8	15.3	15.4	15.3	15.0	September
India	11.4	11.9	12.9	13.4	12.8	12.4	September
Indonesia	18.2	20.1	22.3	19.4	19.3	19.2	September
Korea	11.7	11.2	11.1	12.1	13.0	13.3	September
Malaysia	13.0	13.2	13.8	14.3	13.7	12.7	November
Philippines[9]	15.6	16.9	17.4	18.4	17.6	. . .	December
Singapore	18.2	16.9	17.9	16.1	15.8	15.4	September
Thailand	13.3	13.0	13.4	12.4	13.2	14.3	November
Middle East and Central Asia							
Armenia	13.6	30.5	33.8	32.3	33.7	33.7	June
Egypt	9.9	11.0	11.1	13.8	14.5	. . .	December
Georgia	33.1	21.9	20.3	18.8	17.5	. . .	December
Jordan	17.5	16.6	15.9	17.8	17.6	20.3	June
Kazakhstan	18.6	17.2	16.9	15.9	15.1	15.0	September
Kuwait	22.0	19.7	18.4	17.3	21.3	22.0	September
Lebanon	18.0	19.4	22.3	22.2	23.1	24.0	August
Morocco	12.6	12.2	9.3	10.2	11.5	. . .	December
Oman	15.6	17.1	17.6	17.6	18.1	17.2	June
Pakistan	8.8	8.8	8.5	10.5	11.3	12.7	September
Saudi Arabia	20.3	21.3	19.4	17.8	17.8	. . .	December
Tunisia	10.6	9.8	9.3	11.6	12.4	. . .	December
United Arab Emirates	19.8	19.0	18.6	16.9	17.4	16.3	September
Sub-Saharan Africa							
Gabon	17.2	17.6	19.9	17.8	24.0	. . .	August
Ghana	14.7	13.4	9.3	13.7	16.2	. . .	December
Kenya	13.2	13.9	11.7	11.8	13.4	. . .	December
Lesotho	. . .	. . .	. . .	22.0	22.0	25.0	March
Mozambique	8.4	14.0	17.0	18.7	16.0	. . .	December
Namibia	15.5	14.1	14.8	15.4	14.6	14.8	June
Nigeria	16.2	18.1	17.8	14.6	14.3	. . .	June
Rwanda	16.6	12.5	14.6	18.3	14.7	. . .	December
Senegal	16.8	15.5	11.7	11.5	10.8	14.1	August
Sierra Leone	. . .	32.5	27.3	25.1	26.4	. . .	December
South Africa	11.4	12.6	12.2	13.3	12.3	12.4	June
Swaziland	. . .	. . .	14.0	14.0	15.0	19.0	September
Uganda	23.1	20.7	16.9	20.5	18.3	18.3	June
Other							
Australia	10.4	9.6	10.0	10.4	10.4	10.6	September
Canada	12.3	12.4	13.4	13.3	12.9	12.6	September
Japan[10]	10.8	9.4	11.1	11.6	12.2	12.3	September
United States	12.9	13.0	13.0	13.2	13.0	13.1	September

Sources: National authorities; and IMF staff estimates.

[1]Banking sector excludes the state mortgage bank.

[2]Data for the 10 largest commercial banks.

[3]Data prior to 2006 refer to Serbia and Montenegro.

[4]Group 1–3 banks; half-year results.

[5]All banks.

[6]For 2005 the figures are for the sample of institutions that are already complying with IAS, accounting for about 87 percent of the usual aggregate considered (as of December 2004).

[7]For 2006 a simple average of the indicators for the large Spanish banks; not strictly comparable with previous years.

[8]Tier 1 ratio; not comparable with the rest of the table.

[9]On a consolidated basis.

[10]For the end of the fiscal year, i.e., March of the following calendar year; for major banks.

Table 23. Bank Capital to Assets
(In percent)

	2001	2002	2003	2004	2005	2006	Latest
Latin America							
Argentina	. . .	. . .	11.9	11.8	13.0	13.2	November
Bolivia	10.5	11.9	12.1	11.5	11.3	10.0	December
Brazil	8.9	8.6	9.2	9.7	9.2	9.3	March
Chile	7.2	7.2	7.3	7.0	6.8	6.7	November
Colombia	9.4	9.3	9.7	10.3	11.3	10.8	November
Costa Rica	12.9	12.6	13.6	11.9	12.2	12.7	December
Dominican Republic	10.1	10.7	7.9	9.0	9.4	10.0	December
Ecuador	10.1	9.6	10.2	9.9	9.6	10.4	December
El Salvador	6.9	7.5	7.5	8.0	8.5	8.1	May
Guatemala	8.3	8.9	9.0	8.9	8.5	8.8	October
Mexico	9.4	11.1	11.4	11.2	12.0	11.8	September
Panama	9.6	10.2	12.2	13.2	12.8	11.3	November
Paraguay	12.1	10.9	9.5	10.5	11.0	12.5	December
Peru	9.8	10.1	9.3	9.8	7.7	9.5	December
Uruguay[1]	7.2	−10.0	7.2	8.3	8.6	8.7	May
Venezuela	14.1	15.9	14.3	12.5	11.1	9.8	December
Emerging Europe							
Belarus	15.1	18.7	20.4	18.8	18.8	16.1	September
Bosnia and Herzegovina	20.1	19.1	17.0	15.7	14.4	13.8	October
Bulgaria	13.5	13.3	13.1	11.0	10.5	10.4	September
Croatia	10.4	9.4	9.2	8.7	8.8	9.2	June
Czech Republic	5.2	5.2	5.7	5.6	5.7	5.8	September
Estonia	13.3	12.1	11.3	9.8	10.6	8.6	November
Hungary	9.3	8.8	8.5	8.6	8.2	8.6	November
Israel	4.9	4.9	5.3	5.5	5.6	5.9	June
Latvia	9.1	8.8	8.6	8.2	7.9	8.0	December
Lithuania	11.5	12.1	10.9	9.8	8.2	9.8	September
Poland	8.0	8.7	8.3	8.0	7.8	7.9	March
Romania	12.1	11.6	10.9	8.9	9.2	8.6	November
Russia	. . .	14.4	14.8	14.0	13.2	12.5	September
Serbia[2]	. . .	18.3	22.5	18.8	16.2	16.1	September
Slovak Republic	11.1	10.2	10.7	8.7	7.6	6.0	September
Turkey	7.9	11.9	14.2	15.0	13.5	10.9	June
Ukraine	15.6	14.7	12.3	13.1	11.5	12.1	December
Western Europe							
Austria	5.1	5.6	5.8	6.0	7.4	7.6	December
Belgium	2.7	3.0	3.1	3.1	2.7	3.7	June
Denmark	5.9	5.2	5.6	5.2	5.0	5.8	December
Finland[3]	5.9	5.6	9.7	8.7	8.8	8.6	June
France	6.7	6.8	6.9	6.6	5.8	5.8	December
Germany	4.4	4.6	4.6	4.4	4.4	4.7	December
Greece[4]	8.5	6.9	6.9	5.0	5.8	5.2	June
Iceland[5]	. . .	. . .	. . .	8.3	7.4	6.8	June
Ireland	5.9	5.5	5.2	4.9	4.7	4.3	December
Italy	6.8	6.7	6.4	6.4	6.9	. . .	December
Luxembourg	4.0	4.6	4.8	4.8	4.5	4.6	December
Netherlands	4.8	4.7	4.3	3.9	4.2	4.0	December
Norway	6.5	6.2	5.9	5.9	5.2	5.0	September
Portugal[6]	5.5	5.6	5.8	6.2	5.1	. . .	December
Spain	8.1	8.2	7.8	8.3	7.6	7.2	December
Sweden	6.5	6.2	6.2	6.3	5.8	5.4	December
Switzerland	5.6	5.5	5.7	5.3	5.1	4.9	June
United Kingdom	9.7	9.9	9.8	9.6	9.1	8.9	December

Table 23 *(concluded)*

	2001	2002	2003	2004	2005	2006	Latest
Asia							
Bangladesh	3.5	4.1	3.2	2.7	2.6	4.0	September
China[7]	. . .	. . .	4.9	4.9	5.5	6.1	June
Hong Kong SAR	9.2	10.1	10.6	10.8	11.8	11.8	November
India	5.3	5.5	5.7	5.9	6.4	6.6	March
Indonesia	6.4	8.8	9.6	10.8	10.2	10.7	November
Korea	4.8	4.7	4.6	5.6	6.8	6.6	September
Malaysia	8.3	8.7	8.5	8.2	7.7	7.6	November
Philippines	13.6	13.4	13.1	12.6	12.0	11.5	June
Singapore	10.0	11.0	10.7	10.3	10.4	10.2	September
Thailand	5.9	6.1	7.4	8.0	9.6	9.2	May
Middle East and Central Asia							
Armenia	8.8	18.4	18.1	17.8	21.5	22.0	June
Egypt	. . .	. . .	4.9	4.8	5.0	5.2	September
Georgia	30.5	28.3	26.2	21.9	18.8	. . .	December
Jordan	6.6	6.2	6.4	7.2	8.2	10.2	June
Kazakhstan[8]	11.0	9.0	9.0	8.0	8.0	9.0	September
Kuwait	11.2	10.3	10.7	12.1	12.7	12.0	July
Lebanon	6.2	6.3	6.1	5.7	6.0	7.6	November
Morocco	8.7	8.5	7.6	7.6	7.7	. . .	December
Oman[9]	12.6	12.8	12.6	12.9	13.7	13.2	June
Pakistan	3.8	4.8	5.5	6.7	7.9	8.8	September
Saudi Arabia	9.3	9.3	8.8	8.0	8.8	9.3	November
Tunisia	7.5	7.7	7.6	7.5	7.7	. . .	December
United Arab Emirates	13.0	12.9	12.6	12.1	12.8	13.7	June
Sub-Saharan Africa							
Gabon	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Ghana	12.5	12.0	12.0	12.5	13.0	12.4	August
Kenya	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Lesotho	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mozambique	10.2	18.4	14.9	10.0	7.9	6.8	June
Namibia	8.7	7.5	8.3	8.8	7.8	. . .	June
Nigeria	10.2	10.7	9.6	9.3	13.1	14.7	September
Rwanda	8.5	8.1	8.9	10.1	9.4	9.2	April
Senegal	9.7	10.3	7.8	7.7	7.6	8.1	August
Sierra Leone	22.9	21.4	21.1	22.5	20.0	19.0	November
South Africa	9.0	9.3	8.0	8.2	7.9	7.8	May
Swaziland	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Uganda	10.0	9.6	9.0	10.5	8.4	9.7	November
Other							
Australia[8]	5.3	5.3	5.2	5.1	5.2	4.9	September
Canada	4.6	4.6	4.7	4.4	4.4	4.6	November
Japan[10]	3.9	3.3	3.9	4.2	4.9	4.9	September
United States	9.0	9.2	9.2	10.3	10.3	10.5	September

Sources: National authorities; and IMF staff estimates.

[1]Banking sector excludes the state mortgage bank.

[2]Data prior to 2006 refer to Serbia and Montenegro.

[3] 2006 preliminary; for large banks.

[4]Data on a non-consolidated basis. From 2004 in accordance with IFRS.

[5]Large banks.

[6]For 2005 the figures are for the sample of institutions that are already complying with IFRS, accounting for about 87 percent of the usual aggregate considered (as of December 2004).

[7]Data for six of the large banks.

[8]Tier 1 capital to total assets.

[9]Tier 1 and Tier 2 capital to total assets.

[10]For the end of the fiscal year, i.e., March of the following calendar year; for all banks.

Table 24. Bank Nonperforming Loans to Total Loans
(In percent)

	2001	2002	2003	2004	2005	2006	Latest
Latin America							
Argentina	13.1	18.1	17.7	10.3	5.0	3.4	November
Bolivia	16.2	17.6	16.7	14.0	11.2	9.6	December
Brazil	5.6	4.8	4.8	3.8	4.4	. . .	December
Chile	1.6	1.8	1.6	1.2	0.9	0.8	November
Colombia	9.7	8.7	6.8	3.3	3.2	2.7	September
Costa Rica	2.4	3.2	1.7	2.0	1.5	1.6	August
Dominican Republic	2.5	4.9	9.0	7.4	5.9	4.5	December
Ecuador	13.4	8.4	7.9	6.4	4.9	3.3	December
El Salvador	4.3	15.8	12.3	2.3	1.9	1.9	December
Guatemala	8.1	7.9	6.5	7.1	4.2	6.2	October
Mexico	5.1	4.6	3.2	2.5	1.8	2.0	September
Panama	2.8	3.5	2.5	1.8	1.8	1.5	September
Paraguay	16.5	19.7	20.6	10.8	6.6	3.3	December
Peru	9.0	7.6	5.8	3.7	2.1	1.6	December
Uruguay[1]	12.4	37.2	9.4	3.8	2.7	1.7	June
Venezuela	7.0	9.2	7.7	2.8	1.2	1.1	December
Emerging Europe							
Belarus	14.9	9.0	3.7	3.2	2.3	2.0	September
Bosnia and Herzegovina	17.9	11.0	8.4	6.1	5.3	4.9	September
Bulgaria	3.4	2.6	3.2	2.0	2.2	2.2	December
Croatia	7.3	5.9	5.2	4.6	4.0	3.5	June
Czech Republic	13.7	10.6	4.9	4.1	4.3	4.1	September
Estonia	1.3	0.8	0.4	0.3	0.2	0.2	December
Hungary	3.6	3.7	3.0	2.9	2.7	2.7	September
Israel	. . .	2.4	2.6	2.5	2.3	2.2	June
Latvia	2.8	2.0	1.4	1.1	0.7	0.5	June
Lithuania	8.3	6.5	3.0	2.3	0.6	1.1	December
Poland	. . .	. . .	10.4	9.2	7.7	6.6	June
Romania	. . .	. . .	8.3	8.1	8.3	8.4	September
Russia	6.2	5.6	5.0	3.8	3.2	2.7	September
Serbia[2]	. . .	21.6	22.5	23.3	23.2	21.4	September
Slovak Republic	12.3	7.9	3.7	2.6	5.0	3.7	August
Turkey	29.3	17.6	11.5	6.0	4.8	3.7	June
Ukraine[3]	25.1	21.9	28.3	30.0	19.6	17.8	December
Western Europe							
Austria	. . .	3.0	3.0	2.7	2.6	. . .	December
Belgium	2.9	3.0	2.6	2.3	2.0	1.8	June
Denmark	0.7	0.9	0.8	0.7	0.4	. . .	December
Finland[4]	0.6	0.5	0.5	0.3	0.3	0.3	June
France[5]	4.1	4.2	4.0	3.7	3.3	3.2	June
Germany[6]	4.6	5.0	5.3	5.1	4.1	4.0	June
Greece	5.6	5.5	5.1	5.4	5.5	5.5	June
Iceland	1.2	1.2	1.4	0.8	0.3	. . .	December
Ireland[6]	1.0	1.0	0.9	0.8	0.7	0.7	June
Italy	6.7	6.5	6.7	6.6	5.3	. . .	December
Luxembourg	0.4	0.4	0.3	0.3	0.2	0.2	June
Netherlands[6]	2.3	2.4	2.0	1.5	1.2	1.0	June
Norway	1.3	1.8	1.6	1.0	0.7	0.6	September
Portugal[6,7]	2.2	2.3	2.4	2.0	1.5	1.5	June
Spain	1.2	1.1	1.0	0.8	0.8	0.7	November
Sweden	1.5	1.2	1.2	0.9	0.7	0.6	September
Switzerland	2.3	1.9	1.4	0.9	0.5	. . .	December
United Kingdom	2.6	2.6	2.5	1.9	1.0	. . .	December

Table 24 *(concluded)*

	2001	2002	2003	2004	2005	2006	Latest
Asia							
Bangladesh	31.5	28.1	22.1	17.6	13.6	13.2	December
China	29.8	26.0	20.4	12.8	9.8	7.5	December
Hong Kong SAR	6.5	5.0	3.9	2.3	1.4	1.2	September
India	11.4	10.4	8.8	7.2	5.2	3.3	March
Indonesia[8]	31.9	24.0	19.4	14.2	15.6	16.0	September
Korea	3.4	2.4	2.6	1.9	1.2	0.9	September
Malaysia[9]	17.8	15.9	13.9	11.7	9.6	8.7	November
Philippines[10]	27.7	26.5	26.1	24.7	19.7	18.6	June
Singapore	8.0	7.7	6.7	4.0	3.0	2.4	September
Thailand	11.5	16.5	13.5	11.9	9.1	8.9	September
Middle East and Central Asia							
Armenia	. . .	. . .	5.4	2.1	1.9	3.0	June
Egypt	16.9	20.2	24.2	26.3	25.0	. . .	December
Georgia	11.6	7.9	7.5	6.2	3.8	. . .	December
Jordan	19.3	21.0	19.7	13.6	9.3	7.7	June
Kazakhstan	. . .	11.9	13.1	11.9	9.6	10.2	March
Kuwait	10.3	7.8	6.1	5.3	5.0	3.9	September
Lebanon	10.0	12.4	12.8	10.1	15.8	. . .	December
Morocco	16.8	17.2	18.1	19.4	15.7	. . .	December
Oman	10.6	11.3	15.5	13.5	9.1	7.8	June
Pakistan	23.4	21.8	17.0	11.6	8.3	7.7	September
Saudi Arabia	10.1	8.8	5.4	2.8	1.9	. . .	December
Tunisia	21.0	21.4	24.2	23.6	20.9	20.7	December
United Arab Emirates	15.7	15.3	14.3	12.5	8.3	6.9	September
Sub-Saharan Africa							
Gabon	8.6	11.4	13.8	15.8	15.1	. . .	August
Ghana	19.6	22.7	18.3	16.1	13.0	. . .	December
Kenya	13.1	18.1	17.7	10.7	5.2	. . .	December
Lesotho	. . .	. . .	. . .	1.0	2.0	1.0	March
Mozambique	23.4	20.8	26.8	6.4	3.8	. . .	December
Namibia	3.4	3.5	3.9	2.4	2.3	2.9	June
Nigeria	19.7	21.4	19.8	21.6	21.9	. . .	June
Rwanda	74.1	57.0	52.0	27.0	27.2	. . .	December
Senegal	17.8	18.5	13.3	12.6	11.9	16.0	August
Sierra Leone	. . .	11.0	7.4	12.1	20.9	. . .	December
South Africa	3.1	2.8	2.4	1.8	1.5	1.2	June
Swaziland	. . .	. . .	2.0	3.0	2.0	2.0	September
Uganda	6.5	3.0	7.2	2.2	2.3	2.8	June
Other							
Australia[11]	0.6	0.4	0.3	0.2	0.2	0.2	September
Canada	1.5	1.6	1.2	0.7	0.5	0.4	September
Japan[12]	8.4	7.2	5.2	2.9	1.8	1.5	September
United States	1.3	1.4	1.1	0.8	0.7	0.7	September

Sources: National authorities; and IMF staff estimates.
[1]Banking sector excludes the state mortgage bank.
[2]Data prior to 2006 refer to Serbia and Montenegro.
[3]The increase in NPLs in 2003 reflects a revision in the official definition.
[4]Net of provisions.
[5]Gross doubtful debts.
[6]2006 figure is preliminary; for large banks and not strictly comparable with previous years.
[7]For 2005 the figures are for the sample of institutions that are already complying with IFRS, accounting for about 87 percent of the usual aggregate considered (as of December 2004).
[8]Compromised assets ratio; includes reported NPLs, restructured loans and foreclosed assets for the 16 largest banks. Not directly comparable to the other indicators in the table.
[9]Gross NPLs.
[10]Nonperforming assets ratio; includes NPLs plus real and other properties owned or acquired.
[11]Figures exclude loans in arrears that are covered by collateral.
[12]For the end of the fiscal year, i.e., March of the following calendar year; for major banks.

Table 25. Bank Provisions to Nonperforming Loans
(In percent)

	2001	2002	2003	2004	2005	2006	Latest
Latin America							
Argentina	66.4	73.8	79.2	102.9	124.6	128.5	March
Bolivia	63.7	63.7	74.0	84.3	81.1	87.1	December
Brazil	126.6	143.6	144.6	162.1	145.4	. . .	December
Chile	146.5	128.1	130.9	165.5	177.6	200.4	November
Colombia	77.5	86.5	98.5	149.2	167.3	148.1	September
Costa Rica	113.2	102.6	145.9	122.6	153.0	145.7	August
Dominican Republic	143.6	68.2	65.6	102.4	127.6	144.9	December
Ecuador	115.5	131.4	127.3	119.0	143.7	182.7	December
El Salvador	103.1	115.1	129.8	129.8	130.0	116.4	December
Guatemala	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mexico	123.8	138.1	167.1	201.8	232.1	213.0	September
Panama	87.9	132.1	150.3	149.4	116.2	127.9	September
Paraguay	37.0	46.6	54.8	54.6	57.7	59.1	December
Peru	63.0	69.1	67.1	68.7	80.3	100.4	December
Uruguay[1]	49.9	55.0	66.1	56.2	50.8	. . .	December
Venezuela	92.4	97.9	103.7	130.2	196.3	229.1	December
Emerging Europe							
Belarus	37.7	15.8	29.9	32.4	48.4	55.4	September
Bosnia and Herzegovina	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Bulgaria[2]	61.6	59.6	50.0	48.5	45.3	47.6	September
Croatia	71.9	68.1	60.6	60.1	58.2	55.5	June
Czech Republic	60.3	77.5	76.7	69.4	63.2	62.2	September
Estonia	110.2	130.6	214.5	276.9	215.0	153.6	November
Hungary	57.9	50.8	47.3	51.3	54.4	. . .	December
Israel	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Latvia	61.7	78.3	89.4	99.1	98.8	110.0	June
Lithuania	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Poland	. . .	56.3	53.4	61.3	61.6	57.8	September
Romania[3]	. . .	. . .	. . .	45.6	45.6	47.1	September
Russia[4]	108.1	112.5	118.0	139.5	156.3	159.3	September
Serbia[5]	. . .	. . .	54.0	58.9	47.8	. . .	September
Slovak Republic	75.0	82.5	85.8	86.4	85.1	99.0	September
Turkey	47.1	64.2	88.5	88.1	89.8	89.6	March
Ukraine	39.2	37.0	22.3	21.1	25.0	23.1	December
Western Europe							
Austria[6]	85.1	76.9	73.5	62.0	63.8	64.1	December
Belgium	57.0	51.8	52.8	54.2	51.6	52.4	June
Denmark	76.5	66.5	63.0	66.0	75.7	. . .	December
Finland	72.8	66.8	77.7	78.5	85.8	. . .	December
France	59.9	58.4	57.7	57.6	59.7	58.7	June
Germany	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Greece	45.7	46.9	49.9	51.4	61.9	60.9	June
Iceland[7]	79.6	66.8	77.5	80.9	112.9	. . .	December
Ireland	114.0	105.0	90.0	70.0	50.0	. . .	December
Italy	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Luxembourg	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Netherlands[7]	67.6	65.2	74.1	69.6	65.4	. . .	December
Norway[7]	80.2	63.1	59.1	65.1	51.5	. . .	December
Portugal[8]	66.8	62.8	73.0	83.4	75.0	. . .	December
Spain	. . .	197.2	245.4	219.6	251.8	. . .	December
Sweden[7]	79.0	83.3	79.4	84.9	88.0	. . .	December
Switzerland	. . .	89.4	89.9	90.9	116.0	. . .	December
United Kingdom[7]	72.2	75.0	71.2	64.5	56.1	. . .	December

Table 25 *(concluded)*

	2001	2002	2003	2004	2005	2006	Latest
Asia							
Bangladesh	. . .	. . .	18.3	18.9	25.3	26.3	June
China	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Hong Kong SAR	. . .	. . .	. . .	. . .	. . .	. . .	. . .
India	. . .	. . .	46.4	56.6	60.3	58.9	March
Indonesia[9]	. . .	130.0	137.5	138.1	60.1	. . .	December
Korea	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Malaysia	37.6	38.1	38.9	41.0	45.4	50.1	November
Philippines	29.6	30.1	30.9	33.2	38.3	39.2	June
Singapore	60.1	61.2	64.9	76.0	80.9	86.9	September
Thailand	47.1	62.9	72.8	79.8	83.7	79.4	September
Middle East and Central Asia							
Armenia	. . .	. . .	34.3	77.0	70.7	51.5	June
Egypt	67.5	62.3	57.0	53.1	54.9	. . .	December
Georgia	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Jordan	33.6	37.7	37.0	45.0	53.5	57.8	June
Kazakhstan	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Kuwait	53.7	64.3	77.7	82.5	107.2	100.6	September
Lebanon	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Morocco	52.9	54.7	54.9	59.3	67.1	. . .	December
Oman	59.2	75.6	59.8	75.3	72.7	77.6	June
Pakistan	54.7	60.6	63.9	70.4	76.7	77.8	September
Saudi Arabia	107.0	110.4	136.0	164.0	178.0	. . .	December
Tunisia	47.4	43.9	43.1	45.8	46.4	. . .	December
United Arab Emirates	87.0	87.5	88.5	94.6	95.7	98.2	September
Sub-Saharan Africa							
Gabon	63.0	66.5	78.8	78.4	80.7	. . .	August
Ghana	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Kenya	66.4	73.8	79.2	102.9	115.6	115.6	September
Lesotho	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mozambique	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Namibia	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nigeria	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Rwanda	. . .	. . .	58.4	60.2	56.7	. . .	December
Senegal	70.2	70.5	75.3	75.7	75.4	56.4	August
Sierra Leone	. . .	84.2	65.0	56.6	44.2	. . .	December
South Africa	46.0	46.0	54.2	61.3	64.3	. . .	December
Swaziland	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Uganda	70.0	81.5	76.5	97.8	103.8	93.7	June
Other							
Australia	107.1	106.2	131.8	182.9	203.0	204.5	September
Canada	44.0	41.1	43.5	47.7	49.3	55.3	September
Japan[10]	36.5	39.1	43.1	47.3	37.1	37.1	September
United States	128.8	123.7	140.4	168.1	155.0	148.4	September

Sources: National authorities; and IMF staff estimates.

[1]Private banks.

[2]Provisions to nonstandard loans.

[3]Coverage of doubtful and loss loans by total provisions.

[4]Change in definition in 2004; not strictly comparable with previous years.

[5]Data prior to 2006 refer to Serbia and Montenegro.

[6]2005–06 data cover two of the large banks only; not strictly comparable with previous years.

[7]Large banks.

[8]For 2005 the figures are for the sample of institutions that are already complying with IFRS, accounting for about 87 percent of the usual aggregate considered (as of December 2004).

[9]Largest 12 banks by assets.

[10]For the end of the fiscal year, i.e., March of the following calendar year; coverage of doubtful loans by provisions for major banks.

Table 26. Bank Return on Assets
(In percent)

	2001	2002	2003	2004	2005	2006	Latest
Latin America							
Argentina	0.0	−8.9	−3.0	−0.5	0.9	1.7	November
Bolivia	−0.4	0.1	0.3	−0.3	0.6	1.2	December
Brazil	−0.1	1.9	1.5	1.8	2.1	2.3	March
Chile	1.3	1.1	1.3	1.2	1.3	1.3	December
Colombia	0.1	1.1	1.9	2.8	2.8	3.0	March
Costa Rica[1]	1.9	1.8	2.1	2.0	2.5	2.5	August
Dominican Republic	2.1	2.5	−0.1	1.9	1.8	1.9	December
Ecuador	−0.6	1.6	1.5	1.6	1.8	2.0	December
El Salvador	0.9	1.1	1.1	1.0	1.2	1.5	December
Guatemala	. . .	0.8	1.1	1.3	1.6	1.5	October
Mexico	0.8	−1.1	1.7	1.5	2.4	3.1	September
Panama[1]	1.0	0.5	2.1	2.3	2.1	2.3	September
Paraguay[1]	2.2	1.0	0.4	1.7	2.1	3.0	December
Peru	0.4	0.8	1.1	1.2	2.2	2.2	December
Uruguay[2]	0.0	−25.3	−1.1	−0.1	0.7	1.0	June
Venezuela	2.8	5.3	6.2	5.9	3.7	2.8	December
Emerging Europe							
Belarus	0.8	1.0	1.5	1.5	1.3	1.3	September
Bosnia and Herzegovina	−1.1	−0.3	0.4	0.7	0.7	0.7	September
Bulgaria	2.9	2.1	2.4	2.1	2.1	2.2	December
Croatia[1]	0.9	1.6	1.6	1.7	1.7	1.5	June
Czech Republic	0.7	1.1	1.2	1.3	1.4	1.3	September
Estonia[1]	2.7	1.6	1.9	2.2	2.0	1.7	December
Hungary	1.3	1.4	1.5	2.0	1.9	1.8	September
Israel	0.6	0.3	0.7	1.0	1.1	1.1	June
Latvia	1.5	1.5	1.4	1.7	2.1	1.9	June
Lithuania[1]	−0.1	1.0	1.4	1.3	1.2	1.6	December
Poland	0.9	0.5	0.5	1.4	1.6	1.7	June
Romania	2.5	2.7	2.7	2.5	1.9	1.7	September
Russia	2.4	2.6	2.6	2.9	3.2	2.5	September
Serbia[3]	. . .	−8.4	−0.3	−1.0	0.9	−0.5	September
Slovak Republic	1.0	1.2	1.2	1.2	1.2	1.4	August
Turkey	−5.5	1.1	2.3	2.3	1.7	1.7	June
Ukraine	1.2	1.2	1.0	1.1	1.3	1.6	December
Western Europe							
Austria	0.5	0.7	0.7	0.8	0.8	. . .	December
Belgium[4]	0.5	0.5	0.5	0.6	0.7	1.1	June
Denmark	0.8	0.7	0.9	0.9	1.0	. . .	December
Finland	0.7	0.6	0.7	0.8	0.9	. . .	December
France	0.5	0.5	0.4	0.5	0.6	. . .	December
Germany[5]	0.2	0.1	−0.1	0.1	0.3	0.5	June
Greece	1.0	0.5	0.6	0.3	0.9	1.2	June
Iceland	0.8	1.1	1.3	1.8	2.3	. . .	December
Ireland	0.9	1.0	0.9	1.0	1.4	. . .	December
Italy	0.6	0.5	0.5	0.7	0.7	. . .	December
Luxembourg	0.8	0.7	0.6	0.7	0.7	0.8	June
Netherlands	0.5	0.5	0.5	0.4	0.4	0.4	September
Norway[1]	1.0	0.6	0.8	1.2	1.4	1.2	September
Portugal[6]	0.9	0.7	0.8	0.8	0.9	. . .	December
Spain[5]	0.9	0.9	0.9	0.9	0.9	1.1	June
Sweden	0.6	0.5	0.6	0.7	0.8	0.8	December
Switzerland[4]	0.5	0.3	0.5	0.7	0.7	. . .	December
United Kingdom[1]	0.5	0.4	0.6	0.7	0.8	. . .	December

Table 26 *(concluded)*

	2001	2002	2003	2004	2005	2006	Latest
Asia							
Bangladesh	0.7	0.5	0.5	0.7	0.6	0.8	December
China[7]	. . .	. . .	. . .	0.8	0.8	. . .	December
Hong Kong SAR[8]	1.4	1.5	1.9	1.7	1.7	1.8	September
India	0.5	0.8	1.0	1.1	0.9	0.9	March
Indonesia[1]	0.6	1.4	1.6	3.5	2.5	2.6	September
Korea	0.7	0.6	0.2	0.9	1.3	1.3	March
Malaysia[1]	1.0	1.3	1.3	1.4	1.4	1.3	September
Philippines	0.4	0.8	1.1	0.9	1.1	1.1	June
Singapore	1.0	0.8	1.1	1.3	1.2	1.3	September
Thailand[1]	. . .	. . .	. . .	1.7	1.9	2.3	September
Middle East and Central Asia							
Armenia	−9.1	3.9	2.7	3.2	3.1	3.6	June
Egypt	0.7	0.5	0.5	0.6	0.6	0.7	September
Georgia	1.6	4.2	4.0	2.4	3.1	. . .	December
Jordan	0.7	0.6	0.7	1.0	1.8	1.8	June
Kazakhstan[1]	0.9	2.0	2.0	1.4	1.8	. . .	December
Kuwait	2.0	1.8	2.0	2.5	3.0	2.6	September
Lebanon	0.5	0.6	0.7	0.7	0.7	0.6	August
Morocco	0.9	0.3	−0.2	0.8	0.5	. . .	December
Oman	0.2	1.5	0.3	1.9	2.7	1.5	June
Pakistan[1]	−0.5	0.9	1.8	1.9	2.8	3.1	September
Saudi Arabia	2.2	2.3	2.3	2.5	3.4	4.0	December
Tunisia[5]	1.1	0.7	0.6	0.4	0.6	0.5	June
United Arab Emirates	2.6	2.2	2.3	2.1	2.7	2.5	September
Sub-Saharan Africa							
Gabon	2.4	1.8	0.7	2.7	. . .	. . .	December
Ghana[1]	8.7	6.8	6.4	6.2	4.5	. . .	December
Kenya[1]	0.0	−8.9	−2.9	−0.5	1.0	. . .	December
Lesotho	. . .	. . .	. . .	3.0	2.0	1.0	March
Mozambique	0.1	1.6	1.2	1.4	1.8	. . .	December
Namibia	4.6	4.5	3.6	2.1	3.5	2.9	June
Nigeria	3.3	2.4	1.7	3.1	0.5	. . .	June
Rwanda	0.4	−5.0	1.4	2.2	1.5	. . .	December
Senegal	1.6	1.8	1.8	1.8	. . .	. . .	December
Sierra Leone	11.9	10.0	10.5	9.7	7.9	. . .	December
South Africa	0.8	0.4	0.8	1.3	1.2	1.2	June
Swaziland	. . .	. . .	4.0	3.0	3.0	4.0	September
Uganda	4.4	2.7	4.5	4.3	3.6	3.5	June
Other							
Australia[4]	1.3	1.4	1.6	1.5	1.8	. . .	December
Canada	0.7	0.4	0.7	0.8	0.7	1.0	October
Japan[9]	−0.6	−0.7	−0.1	0.2	0.5	. . .	March
United States	1.1	1.3	1.4	1.3	1.3	1.3	September

Sources: National authorities; and IMF staff estimates.

[1]Before tax.
[2]Banking sector excludes the state mortgage bank.
[3]Data prior to 2006 refer to Serbia and Montenegro.
[4]Gross profits.
[5]Simple average for large banks in 2006; not strictly comparable with previous years.
[6]For 2005 the figures are for the sample of institutions that are already complying with IFRS, accounting for about 87 percent of the usual aggregate considered (as of December 2004).
[7]Simple average for the reformed state-owned commercial banks (two banks in 2004, three banks in 2005). Aggregate data are not available.
[8]Net interest margin, not comparable with the other indicators in the table.
[9]For the end of the fiscal year, i.e., March of the following calendar year; all banks.

Table 27. Bank Return on Equity
(In percent)

	2001	2002	2003	2004	2005	2006	Latest
Latin America							
Argentina	−0.2	−59.2	−22.7	−3.8	7.2	14.0	November
Bolivia	−4.1	0.6	2.4	−2.3	5.5	12.3	December
Brazil	−1.2	21.8	17.0	18.8	22.8	24.5	March
Chile	17.7	14.4	16.7	16.7	17.9	18.4	December
Colombia	1.1	9.6	16.9	23.2	22.5	25.9	March
Costa Rica[1]	18.7	17.1	19.5	20.7	25.0	24.3	August
Dominican Republic	21.5	23.7	−1.2	22.1	19.3	19.7	December
Ecuador	−5.5	16.1	15.0	16.2	18.1	24.0	December
El Salvador	10.7	12.2	11.5	10.9	11.8	14.6	December
Guatemala	11.6	8.5	12.2	14.0	19.1	17.1	October
Mexico	8.6	−10.4	14.2	13.0	19.5	25.0	September
Panama	. . .	. . .	16.9	16.7	15.7	18.5	March
Paraguay[1]	21.2	9.0	4.5	18.3	22.6	31.7	December
Peru	4.3	8.3	10.7	11.6	22.2	23.6	December
Uruguay	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Venezuela	20.3	35.6	44.0	45.2	32.6	30.7	December
Emerging Europe							
Belarus	4.9	6.5	8.4	7.8	6.9	7.2	September
Bosnia and Herzegovina	−3.5	2.5	3.4	5.8	6.2	2.8	March
Bulgaria	. . .	14.9	22.7	20.6	22.1	21.7	September
Croatia	6.6	13.7	14.5	16.1	15.6	13.7	June
Czech Republic	16.6	27.4	23.8	23.3	25.2	23.8	September
Estonia	20.7	11.9	14.2	20.3	23.2	19.4	December
Hungary	15.8	16.2	19.3	25.3	24.6	21.7	September
Israel[2]	5.1	2.1	8.1	12.3	13.7	9.2	June
Latvia	19.0	16.4	16.7	21.4	27.1	24.2	June
Lithuania[1]	−1.6	9.2	12.0	13.8	16.0	. . .	December
Poland	12.4	6.1	5.7	16.7	19.9	21.3	June
Romania[3]	. . .	. . .	. . .	23.7	17.3	15.3	September
Russia	19.4	18.0	17.8	20.3	24.2	20.1	September
Serbia[4]	. . .	−60.6	−1.2	−5.2	5.9	. . .	December
Slovak Republic	8.0	11.5	10.8	11.9	16.9	19.5	August
Turkey	−69.4	9.3	16.0	16.4	11.8	12.5	June
Ukraine	7.5	8.0	7.6	8.4	10.4	13.5	December
Western Europe							
Austria	9.8	5.4	6.3	9.3	11.4	. . .	December
Belgium[5]	19.2	17.1	17.1	21.1	23.8	17.7	June
Denmark[1,6]	. . .	8.9	10.0	8.6	10.5	10.6	June
Finland	13.5	10.7	11.3	8.6	10.0	. . .	December
France	9.6	9.1	8.5	10.6	11.9	. . .	December
Germany	4.6	2.9	−1.5	1.9	9.0	. . .	December
Greece	12.4	6.8	8.9	5.6	16.2	21.7	June
Iceland[1]	13.5	18.1	22.1	30.9	41.7	42.3	June
Ireland	16.0	18.0	17.8	20.7	21.8	. . .	December
Italy	8.6	7.1	7.4	9.3	8.6	. . .	December
Luxembourg	40.7	36.4	34.9	39.8	37.8	. . .	December
Netherlands	14.7	10.9	14.0	16.0	16.0	15.9	September
Norway	11.6	6.2	9.6	14.4	17.3	15.9	September
Portugal[7]	14.9	11.7	13.9	12.8	14.6	. . .	December
Spain[8]	13.5	12.1	13.2	14.1	16.9	17.5	June
Sweden	13.6	10.9	13.1	15.0	17.7	18.5	September
Switzerland[5]	8.3	5.1	9.5	13.0	14.3	. . .	December
United Kingdom[1]	7.7	6.1	8.6	10.9	11.8	. . .	December

Table 27 *(concluded)*

	2001	2002	2003	2004	2005	2006	Latest
Asia							
Bangladesh	15.9	11.6	9.8	13.0	12.4	14.1	December
China[9]	. . .	. . .	. . .	13.7	15.1	. . .	December
Hong Kong SAR[10]	17.9	17.2	17.8	20.3	19.1	. . .	December
India	10.4	15.3	18.8	20.8	13.3	12.7	March
Indonesia[11]	12.0	19.0	19.2	25.4	17.5	28.0	November
Korea	12.8	10.9	3.4	15.2	22.5	21.0	March
Malaysia[10]	13.3	16.7	17.1	16.6	14.1	. . .	December
Philippines	3.2	5.8	8.5	7.1	8.7	9.3	June
Singapore	9.7	7.6	10.1	11.8	11.1	12.4	September
Thailand	32.8	4.2	10.5	16.8	14.2	15.1	September
Middle East and Central Asia							
Armenia	−78.6	21.6	14.4	18.4	15.5	16.6	June
Egypt	12.4	8.9	9.8	10.6	10.6	12.1	September
Georgia	5.0	14.9	15.0	10.0	14.9	. . .	December
Jordan	10.7	9.3	11.3	15.3	25.0	20.6	June
Kazakhstan[1]	5.4	13.8	14.2	11.2	14.1	. . .	December
Kuwait	18.2	17.4	18.6	20.9	22.9	21.6	September
Lebanon	9.1	9.4	10.9	10.6	11.9	. . .	December
Morocco	10.2	1.9	−2.1	10.9	6.3	. . .	December
Oman	0.9	11.0	1.7	12.9	16.6	. . .	June
Pakistan[1]	. . .	21.1	35.4	30.5	38.2	38.2	September
Saudi Arabia	21.9	22.2	22.7	31.7	38.5	43.4	December
Tunisia[8]	13.2	7.6	7.3	5.1	6.9	6.4	June
United Arab Emirates	16.7	15.6	16.4	18.6	22.5	20.4	September
Sub-Saharan Africa							
Gabon	15.4	11.8	14.4	17.1	. . .	. . .	December
Ghana	49.7	36.9	54.0	. . .	34.5	. . .	December
Kenya	−0.2	−59.2	−22.7	−4.2	3.1	. . .	September
Lesotho	. . .	. . .	. . .	27.0	15.0	7.0	March
Mozambique	3.5	22.1	16.3	18.7	27.4	. . .	December
Namibia	52.6	59.8	43.2	24.2	45.6	34.9	June
Nigeria	43.7	28.1	19.8	27.4	7.2	. . .	June
Rwanda	5.1	−125.3	31.1	21.6	16.5	. . .	December
Senegal	18.6	21.1	22.1	17.6	. . .	. . .	December
Sierra Leone	. . .	. . .	67.1	73.2	52.5	. . .	December
South Africa	8.9	5.2	11.6	16.2	15.2	16.0	June
Swaziland	. . .	. . .	29.0	20.0	20.0	20.0	September
Uganda	45.8	24.6	33.1	32.9	. . .	. . .	December
Other							
Australia[12]	20.1	20.2	24.2	22.8	25.3	. . .	December
Canada	13.9	9.3	14.7	16.7	14.9	20.9	October
Japan[13]	−14.3	−19.5	−2.7	4.1	11.3	. . .	March
United States	13.0	14.1	15.0	13.2	12.7	12.8	September

Sources: National authorities; and IMF staff estimates.

[1]Before tax.

[2]Data are for four of the largest financial groups; 2006 figure is not annualized.

[3]Operating return on equity.

[4]Data prior to 2006 refer to Serbia and Montenegro.

[5]Gross profit.

[6]Group 1–3 banks; half-year results.

[7]For 2005 the figures are for the sample of institutions that are already complying with IFRS, accounting for about 87 percent of the usual aggregate considered (as of December 2004).

[8]Simple average for large banks in 2006; not strictly comparable with previous years.

[9]Simple average for the reformed state-owned commercial banks (two banks in 2004, three banks in 2005). Aggregate data are not available.

[10]2005 figure on domestic consolidation basis; not strictly comparable with previous years.

[11]Largest 12 banks by assets. 2006 figure is return on capital through November for all banks; not strictly comparable with previous years.

[12]2005 figure on cross-border cross-sector basis; not strictly comparable with previous years.

[13]For the end of the fiscal year, i.e., March of the following calendar year; all banks.

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