

Financial markets are adjusting with equanimity to the onset of the interest rate tightening cycle. The well-crafted communications strategy of the U.S. Federal Reserve Board prepared markets fully for the first measured rise in U.S. policy rates in June 2004. The backdrop of resurgent and broad-based economic growth, rising corporate earnings, and stronger corporate balance sheets have helped support equity and corporate bond prices, notwithstanding the prospect of further interest rate increases. Limited inflationary pressure to date has moderated expectations for the pace and degree of tightening in the United States and Europe. Market participants are now focused on the sustainability of the recovery, and its impact on interest rates and asset valuations.

This chapter analyzes key developments in mature and emerging financial markets, focusing on potential sources of risk, especially those arising from changing expectations on the degree and pace of monetary tightening in the United States. It considers developments in the external environment for new issuance by emerging markets and also assesses improvements in the soundness of major emerging market banking systems. It concludes with a review of structural issues in mature markets, focusing on hedge fund activities and the evolution of sectoral balance sheets in Europe, Japan, and the United States.

### Overview

Throughout much of 2003, the combination of stimulative monetary policies and strengthening fundamentals contributed to a strong rally in asset prices and a compression of credit spreads on mature and emerging market bonds. In some cases, it appeared that

in their quest for yield investors were motivated as much by the push of abundant liquidity as the pull of fundamental valuations. Abundant global liquidity and the steep yield curve for U.S. treasuries had created strong incentives for investors to borrow at low short-term rates to invest in higher-yielding assets. The April 2004 issue of the *Global Financial Stability Report* stressed that the unwinding of these carry trade positions had potential to trigger turbulence in a number of financial markets. It urged investors not to assume that extraordinarily low interest rates would continue indefinitely, and it called on the authorities to be vigilant for excessively leveraged or concentrated positions.

Early this year, as investors adjusted to the prospect of a less accommodative monetary stance, they became more cautious. In the process, some investments that had been encouraged by last year's abundant global liquidity were partly unwound. The resulting adjustments, though pronounced in some emerging and higher-risk markets, resulted in fewer disruptions than had earlier been feared, with all markets so far remaining orderly.

The start of the tightening cycle in the United States was widely anticipated, and investors and intermediaries have had ample opportunity to adjust to a rising interest rate environment. However, some investors may find that the hedges they established are imperfect, and they may have to make adjustments. In addition, considerable uncertainty continues to surround the pace and path of tightening that will be needed to bring interest rates to a cyclically neutral level. Most notably, there is uncertainty about underlying inflationary pressures. Although core inflation remains low, oil and other commodity prices, especially base metals, have risen strongly.

Market expectations of longer-term inflation remain subdued, but the persistence of this view cannot be taken for granted, in particular if the output gap in the main industrialized countries continues to close. The financial authorities in several mature markets have appropriately stressed that they will respond if core inflation rises to levels that threaten price stability. In some cases, the authorities are also concerned about speculative bubbles developing in certain sectors, notably housing.

Emerging markets have weathered the transition in interest rate expectations relatively well. Borrowers had taken advantage of the strong appetite for emerging market assets around the turn of last year to raise the lion's share of their financing needs of the current year. They could afford to be patient when conditions were less favorable in April and May of this year. In the event, appetite returned quickly with some investors, notably life insurers and pension funds, taking advantage of the lower prices of emerging market debt to enter the market, although with a noticeable preference for less risky assets.

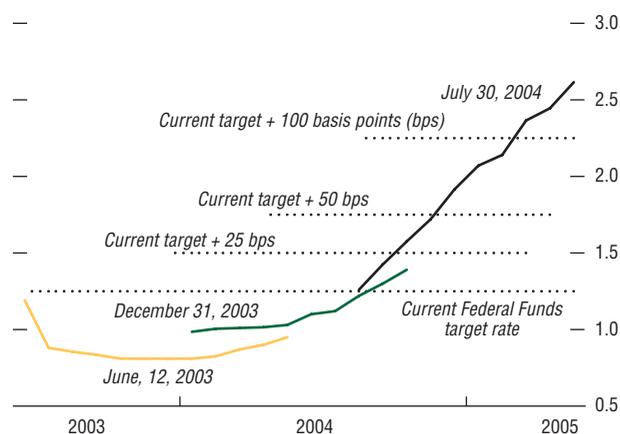
Against this backdrop, policymakers can draw some comfort that tightening has commenced with such little disruption. They should also be encouraged that leveraged positions appear to have been reduced, and that financial institutions generally appear well positioned to withstand the move to a higher interest rate environment. At the same time, a number of important risks remain:

- An unanticipated increase in inflation could transform the market's assumptions about the likely pace of tightening and has potential to cause market turbulence. The perception that the U.S. Federal Reserve has fallen "behind the curve" and is chasing, rather than shaping, market expectations for interest rate increases could cause markets to assume interest rates will have to overshoot cyclically neutral levels in order to rein in inflation. Previous episodes have shown that such rapid changes to expecta-

tions can be unsettling. In such a scenario, risk management strategies would be severely tested. Investor assumptions about the ease with which they can exit from carry trades could prove optimistic. Yields and credit spreads could overshoot. For the moment, however, this risk appears remote.

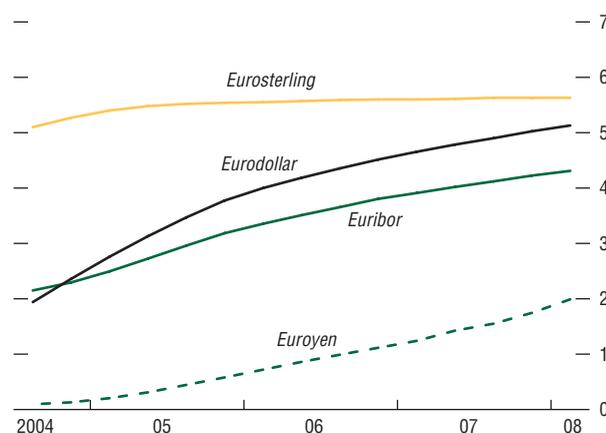
- Extraordinarily low interest rates have encouraged a variety of carry trades and increasing interest in alternative investments. These factors have contributed to an increase in leverage and a proliferation of hedge funds, whose assets under management are estimated to have doubled since 1998 to about \$1 trillion. There is a risk of investor herding as particular speculative positions gain wide favor across a number of hedge funds and other leveraged investors. A reversal of such positions could result in a reduction of market liquidity and disproportionate price movements.
- The orderly adjustment of global imbalances remains a challenge. The persistence of these imbalances and the magnitude of the flows involved remain a potential source of vulnerability in currency markets that could spill over to other asset classes.
- Geopolitical concerns remain an imponderable risk factor. In recent months, security concerns have put pressure on oil prices. A further spike in oil prices would dampen economic activity and pressure the external accounts of oil importers. Geopolitical concerns have the potential to heighten risk aversion, leading to widening credit spreads and lower asset prices. Terrorist activity could disrupt the infrastructure supporting financial markets, although a significant amount of work has been undertaken in the major financial centers to assess potential vulnerabilities and put in place procedures and infrastructure in the event of disruptions.
- Rising interest rates in the major financial centers have often resulted in a less hospitable financing environment for emerging markets. History suggests that abundant

**Figure 2.1. One-Month Federal Funds Futures Rate**  
(In percent)



Source: Bloomberg L.P.

**Figure 2.2. Strip Curve Interest Rate Expectations**  
(Three-month LIBOR futures, in percent, as of July 30, 2004)



Source: Bloomberg L.P.

global liquidity is a major factor influencing the attractiveness of emerging market assets. Strong growth and the modest financing requirements of some emerging markets will probably mitigate the impact of higher mature market interest rates initially. However, as rates rise, emerging markets may find it increasingly difficult to attract the financing they need. In particular, investors may discriminate between those emerging markets that have made progress on their reform agendas, or are locked into a broader process that is likely to see them converge over time with more mature markets. Increased attention is also being given to debt structures and other balance sheet mismatches as potential sources of risk (Box 2.1, page 13). Although a number of countries have taken steps to improve the structure of their debt by extending maturities and reducing the share of debt indexed to foreign exchange or short-term interest rates, unstable debt structures and mismatched balance sheet positions remain potential sources of instability in a number of key emerging markets.

## Developments and Vulnerabilities in Mature Markets

### Markets Anticipate Higher Short-Term Interest Rates

Changing policy rate expectations have been the main driver of global financial markets this year. At the start of the year, markets were still anticipating that policy interest rates in the United States would remain, for most of the year, at or close to the exceptionally low levels to which they had been pushed to forestall deflation and stimulate growth.

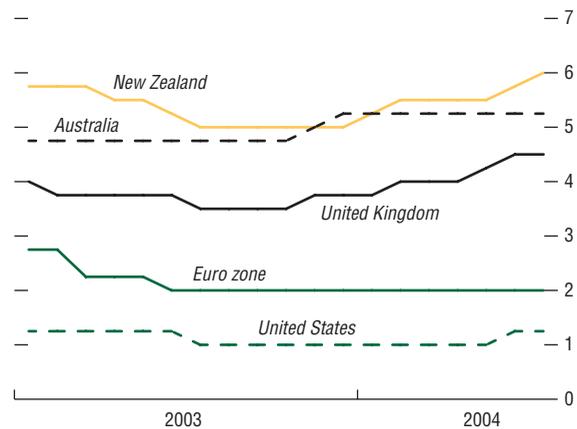
However, the revised language in the January and March statements of the Federal Open Market Committee (FOMC), combined with strong economic data and signs of stronger employment growth, transformed market expectations for the degree and pace

of tightening (Figure 2.1). By the end of July, markets were expecting the federal funds target rate to rise to 2 percent by the end of 2004, following the 25 basis point increase of the federal funds rate to 1.25 percent at the end of June.

In the euro zone, expectations for a possible reduction in interest rates evaporated amid a recent uptick in inflation and as it became increasingly clear that U.S. interest rates were set to rise. Futures markets are now discounting an increase in euro short-term interest rates, although at a slower pace than in the United States (Figure 2.2). Interest rate expectations in Japan remained anchored by the authorities' repeated commitment to the zero interest rate policy and their willingness to supply large amounts of liquidity to the financial system. However, as further evidence of the sustainability of the recovery emerged, and as the yen stopped strengthening even when intervention ceased, markets began to contemplate an exit from the zero interest rate policy. The authorities in Australia, New Zealand, Switzerland, and the United Kingdom had all initiated their tightening cycles before the United States made its first move (Figure 2.3).

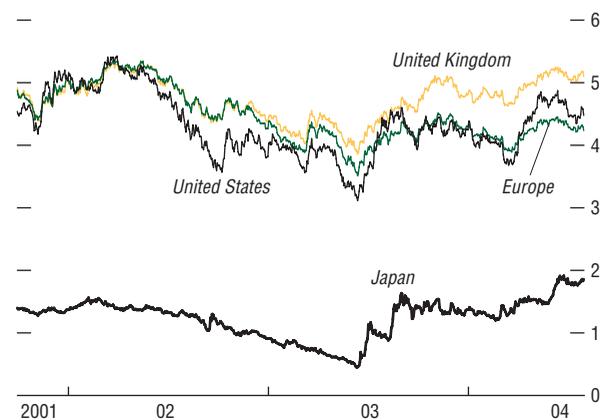
Longer-term interest rates rebounded from their lows in mid-March, reflecting expectations of both stronger growth and higher inflation (Figure 2.4). The increase was sharpest in the United States, but was echoed in the euro area and later in Japan. Expectations for long-term inflation—calculated as the yield difference between inflation-indexed and non-inflation-indexed bonds—continued to increase early in the year, although there has been some moderation in recent months, and expected inflation rates remain low by historical standards (Figure 2.5). Until recently, longer-term inflationary expectations were well above actual inflation, but in the United States, actual inflation has now overtaken expectations derived from bond markets. This has yet to happen in Europe, however, as the increase in actual inflation has so far been less

**Figure 2.3. Selected Central Bank Policy Rates**  
(In percent)



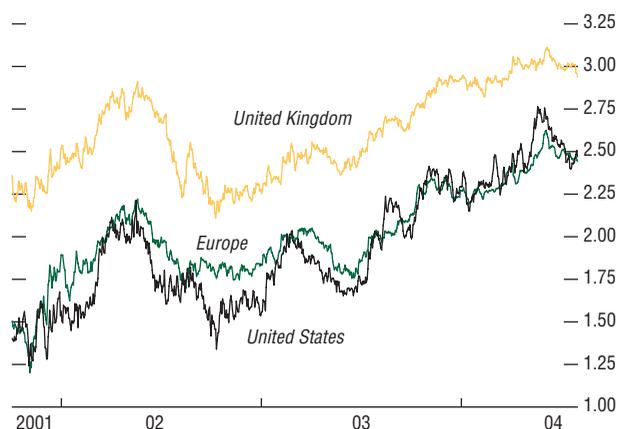
Source: Bloomberg L.P.

**Figure 2.4. Ten-Year Government Bond Yields**  
(In percent)



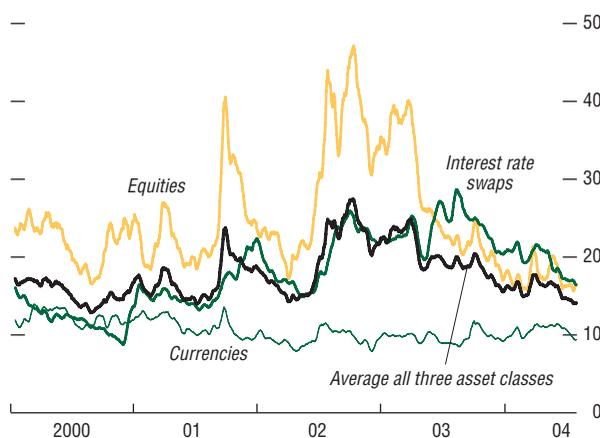
Source: Bloomberg L.P.

**Figure 2.5. Long-Term Inflation Expectations**  
(In percent)



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

**Figure 2.6. Implied Volatilities**  
(In percent)



Source: Bloomberg L.P.

marked. In Japan, inflation-indexed bonds are new, and the market for those bonds does not have the depth of those in the United States or Europe. In any case, deflationary expectations have eased in Japan.

As indicated in the April 2004 *Global Financial Stability Report*, low short-term interest rates and the steep yield curve created strong incentives to establish carry trades and other speculative positions. There was a risk that these positions were motivated largely by expectations that short-term interest rates would remain at extraordinarily low levels for an extended period. As interest rate expectations were adjusted in April and May, there is evidence that some of these positions were reduced (Box 2.2, page 15).

### Market Volatility Remains Subdued

Nevertheless, options markets were not pricing in major market movements (Figure 2.6). The volatilities implied by the pricing of currency options remained generally low, and those for equity options rose only briefly before falling back to the low levels seen at the end of last year. The volatility priced into options to enter into swaps has also fallen. Low volatility in bond markets reflected in part more continuous and well-diversified hedging activity by holders of mortgage backed securities (MBS). As the pace of prepayments dropped amid rising interest and mortgage rates, and MBS durations increased, only a limited surge in bond option volatility was apparent this year compared to 2003.

A number of factors have contributed to the relatively smooth adjustment of markets to the prospect of higher short-term interest rates. First, the large official purchases of U.S. dollar-denominated bonds, in particular, by Asian central banks, have provided a stabilizing influence in the bond and foreign exchange markets. Second, as already noted, the communications of the U.S. Federal Reserve gave abundant warning to investors and financial institutions to prepare themselves for the start

### Box 2.1. Stocks, Flows, and Vulnerability Assessments

While aberrant flows characterize capital account crises, increasing attention is being given to the balance sheet exposures that can engender them. Balance sheet analysis focuses on shocks to stocks of assets and liabilities that can trigger large adjustments in capital account flows. The Asian crisis of 1997–98, in which private sector balance sheet mismatches rather than fiscal imbalances played a key role, gave impetus to research on the risks posed by potentially unstable positions. Such analysis can complement the traditional flow analysis that focuses on the gradual buildup of unsustainable fiscal and current account positions and may be insufficient in fully explaining the dynamics underlying modern day capital account crises.

Balance sheet analysis seeks to identify existing mismatches on the aggregated balance sheet of the corporate, financial, and public sectors. The analysis focuses largely on five sources of vulnerability:

- currency mismatches that may leave a balance sheet vulnerable to a depreciation of the domestic currency;
- maturity mismatches (e.g., long-term, potentially illiquid assets with short-term liabilities) that expose a balance sheet to risks related both to rollover and to interest rates;
- rollover risk if liquid assets do not cover maturing debts;
- interest rate risk, where a sharp increase in interest rates can lead to capital losses to investors and increase the cost to borrowers of rolling over short-term liabilities and cause a rapid increase in debt service; and
- capital structure mismatches if debt-to-equity ratios become too high.

Shocks to interest rates, exchange rates, or market sentiment can bring about a deterioration in the value of a sector's assets compared to its liabilities and lead to a reduction of its net worth. In the extreme case, net worth may turn negative and the sector may become insolvent.

Sectoral analysis is important since the liabilities of one sector are often the assets of another sector and risks can be transferred across balance sheets in severe crisis situations. If a shock

causes the corporate sector or the government to be unable to satisfy upcoming liabilities, banking sector assets can be impaired. For example, balance sheet crises that originated in the corporate sector (as in several Asian countries during 1997–98) or the public sector (as in Russia 1998 and recently in Latin America) eventually caused a deterioration in the banking sector. By the same token, if banks restrict credit to prevent further deterioration in banking system assets, risks can feed back into the corporate and government sectors, which may be in need of new financing (as in Turkey in 2001).

The IMF has been using insights based on balance sheet analysis in its surveillance as well as its program work for some time.<sup>1</sup> For example, there has been increased emphasis on adequate levels of official reserves in relation to short-term debt and money aggregates. Balance sheet techniques are also employed in debt sustainability analysis to measure the sensitivity of a country's fiscal and external (private and public) debt to variations in the exchange rate, interest rate, and other variables. Finally, Financial Sector Assessment Programs (FSAP) often include stress testing of the sensitivity of the financial sector's balance sheets to various shocks.

Balance sheet analysis also underpins modern risk management techniques, including credit risk and value-at-risk methodology. The accounting-based approach maps a reduced set of financial accounting variables—such as leverage, liquidity, and profitability—to a risk scale to discriminate between repayment and non-repayment at the corporate level.<sup>2</sup>

A variant of balance sheet analysis called the contingent claims approach (CCA), combines balance sheet information with current financial

<sup>1</sup>A recent example is Allen and others (2002).

<sup>2</sup>A prominent accounting-based approach was developed by Altman (1968), who used a linear combination of five accounting and market variables to produce a credit score—the so-called “Z-score.” A subsequent seven factor “Zeta model” was later introduced by Altman, Haldeman, and Narayanan (1977) and another variant, the “O-score,” was introduced by Ohlson (1980).

**Box 2.1 (concluded)**

market prices to compute probability of default. CCA was developed from modern finance theory and has been widely applied by financial market participants, most notably Moody's KMV, in assessing firm credit risk. CCA can also be applied to aggregated balance sheets to estimate similar risk indicators for the corporate, financial, and public sectors.<sup>3</sup> Extending the contingent claims methodology to a multisector framework allows for examination of the linkages between the corporate, financial, and public sectors, where the potential feedback effects between sectors can be estimated and valued.

CCA uses standard option pricing techniques to derive a measure called the distance to distress. For a firm financed with debt and equity, this measure is defined as the difference between the implied market value of firm assets and the distress barrier based on the book value of debt—or the net worth of the firm—divided by the implied volatility of the market value of assets. The resulting measure yields the number of standard deviations the firm's asset value is from the distress barrier, which can be translated into a default probability. The higher the net worth of the firm, or the lower the volatility of the firm's assets and liabilities, the larger the distance to distress, and the lower the probability of default.

Since market prices represent the collective views and forecasts of many investors, CCA is forward looking unlike analysis based only on a

<sup>3</sup>Examples include Gapen and others (2004); Gray, Merton, and Bodie (2003); and Gray (2002).

review of past financial statements. Furthermore, CCA takes into account the volatility of assets when estimating default risk, and this incorporation of nonlinearity is crucial in increasing the predictive power of CCA over standard accounting-based measures. The ability to translate continuously adjusting financial market price information into current estimates of vulnerability is important given the speed with which economic conditions change relative to the time span between releases of consolidated accounting balance sheet information.

Gapen and others found the CCA approach to be useful in identifying vulnerabilities in the corporate sector and in estimating the potential for risk transfer between the corporate, financial, and public sectors. They used the Moody's Macro Financial Risk (MfRisk) model—which is a practical application of the CCA methodology—to assess vulnerabilities retroactively in the corporate sector as well as in a multisector setting for Brazil and Thailand. Their results show the CCA approach holds promise as an early warning indicator of firm credit risk. Naturally, a useful extension of this work is to apply the CCA approach to a wider set of emerging market countries. Here, the analysis does not have to be limited only to assessing corporate sector vulnerabilities but can be usefully applied to estimate the potential for sovereign distress. The CCA approach provides an integrated framework within which policymakers can analyze policy mixes and evaluate which are best suited to countering vulnerabilities.

of the tightening cycle. As a result, markets had widely anticipated the first interest rate hike in the United States, and the process of price discovery was short as markets swiftly found their new levels. Third, the message that the pace of interest rate increases will be measured is consistent with the market expectations that inflationary pressure is likely to remain subdued. Finally, higher economic growth is supporting the credit quality and

earnings prospects of corporations in the mature markets.

### **Stronger Corporate Balance Sheets and Earnings Contribute to Stability**

Corporate balance sheets have continued to improve, although the strength of the U.S. corporate sector tended to surpass the strength of the corporate sector in Europe.

### Box 2.2. Market Repositioning and Deleveraging

While the onset of the latest U.S. monetary tightening cycle was widely anticipated, the financial markets' outlook remained overshadowed by concerns that rising interest rates might spark sudden sales of assets as leverage was unwound. These concerns were reminiscent of 1994, when the rate tightening cycle resulted in elevated financial market volatility and triggered a number of prominent financial failures.

There were at least three reasons to believe that leverage loomed large before interest rate expectations started to rise earlier this year. First, U.S. policy rates were at a 45-year low and leveraged carry trades are a hallmark of low interest rate environments. Second, earnings derived from fixed-income activities of investment banks grew at a rapid pace in recent years. Third, assets under management by the hedge fund industry doubled to an estimated \$1 trillion since 1998. Against this backdrop, this box attempts to shed some light on the extent of deleveraging that may have taken place in anticipation of monetary tightening.

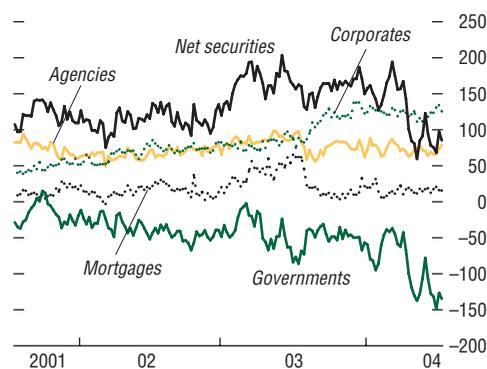
#### Repositioning of U.S. Dealers

Global recoveries spell good and bad news for financial markets. The good news of rising economic returns tends to be accompanied by the bad news of increasing costs of capital. Responding to these forces, investors' portfolio allocations change, thereby setting in motion far-reaching repositioning across financial markets. The nuts and bolts of such a repositioning include the hedging of risks associated with rising interest rates and the attempt to capitalize on potentially higher returns generated by the economic recovery.

Such repositioning appeared to be under way in U.S. fixed-income markets. Security holdings by primary dealers fell by \$55 billion from their peak in March 2004 to \$68 billion on a net basis at end-June (see the first Figure). This adjustment reflected to a large extent stepped-up hedging activity. Primary dealers built larger short positions in U.S. treasury bonds in order to hedge their interest rate risk on higher-yielding bonds, including corporate and agency

#### Primary Dealer Securities Positions

(In billions of U.S. dollars)



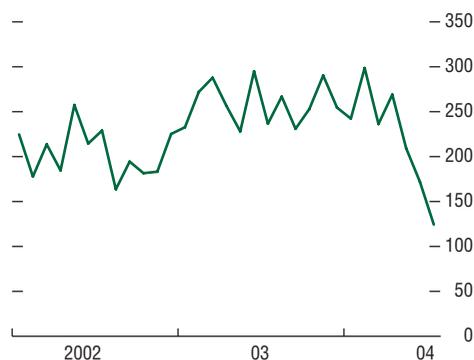
Source: Federal Reserve Bank of New York, Primary Dealers Transactions.

bonds. In doing so, primary dealers captured the yield spread offered by these bonds over U.S. treasuries, while containing duration risk.

The repositioning appeared to have gone hand in hand with some deleveraging. U.S. primary dealers reduced their secured borrowing by \$145 billion to \$124 billion since the onset of the repositioning in mid-March to end-June (see the second Figure). Primary dealers, however, represent only one—albeit important and agile—segment of U.S. financial markets. Moreover, commercial banks built up large security portfolios, while risk and leverage can also exist in other less regulated parts of the financial system or through off-balance sheet positions and structured products.

#### Repositioning in Futures Markets

Leverage and speculation are often intertwined. Many institutional fund managers operate within investment policies that limit or prohibit leverage, while proprietary trading desks at investment banks and hedge funds often have mandates to build leveraged positions. Futures markets provide a useful barometer of overall speculative activity. Trades that take place at the Chicago Mercantile Exchange are distinguished according to their speculative

**Box 2.2 (concluded)****Secured Financing of Primary Dealers, Net**  
(In billions of U.S. dollars)

Source: Federal Reserve Bank of New York, Primary Dealers Transactions.

or commercial character. Based on this distinction, the share of speculative positions taken in open futures contracts can be derived for contracts traded on this exchange.

The repositioning and deleveraging observed by primary dealers coincided with a marked reduction of speculative positions in futures markets, although these only capture a small share of overall speculative activity. While high levels of speculative activity prevailed when the Federal Open Markets Committee (FOMC) meeting in January sparked a shift in interest rate expectations, speculative activity eased by mid-year across most major future contracts,

**Share of Speculative Positions in Futures Markets<sup>1</sup>**  
(In percent)

	January FOMC Meeting	June 29, 2004	Change
<b>Interest Rates</b>			
3-month eurodollars	6.8	-9.3	-16.0
10-year U.S. treasury notes	-5.8	-16.4	-10.6
<b>Foreign Exchange Rates</b>			
Euro	25.8	12.9	-12.9
Pound sterling	27.9	27.9	0.1
Japanese yen	36.1	8.5	-27.6
Swiss franc	31.0	31.6	0.5
Canadian dollar	20.8	0.4	-20.3
Mexican peso	50.4	-29.9	-80.3
<b>Commodities</b>			
Gold	31.2	17.7	-13.5
Silver	49.5	28.2	-21.3
Platinum	45.6	-7.3	-52.9
Copper	29.9	11.2	-18.6
Cotton	37.6	-38.1	-75.7
<b>Energy</b>			
Crude oil (WTI)	7.7	2.1	-5.6
Natural gas	-10.2	0.3	10.5
Unleaded gasoline	28.9	7.6	-21.3

Source: Commodities Futures Trading Commission; Bloomberg, L.P.; and IMF staff estimates.

<sup>1</sup>Plus (+) sign denotes a net long position, while a negative (-) sign denotes a net short position.

especially currency and commodity futures. Speculative activity in interest rate and bond futures, however, heightened, reflecting the shift in interest rate expectations (see the Table). Hedge funds appear to have been particularly sensitive to the first signs of shifting interest rate expectations.

For many firms, sales picked up during the first half of 2004, but they were able to meet the higher demand with existing capacity, or with only limited fresh hiring and investment. As a result, cash flows were strong, and much of the higher revenues fed through to earnings. With interest rates still low, many firms were able to reduce the cost of servicing their debt, and lengthen the maturity of their liabilities. The balance sheets for many companies therefore looked considerably healthier by

mid-year than was the case at the start of the year, and this was reflected in a preponderance of ratings agency upgrades. Even some companies that had looked severely strained last year came back from the brink as they have regained access to borrowing. The rate of corporate defaults dropped and credit spreads fell sharply last year as investors positioned themselves in anticipation of the balance sheet strengthening this year. Even as the tightening cycle started, and the cost of

financing rose, corporate bond spreads in Europe and the United States have held on to most of last year's gains (Figures 2.7 and 2.8).

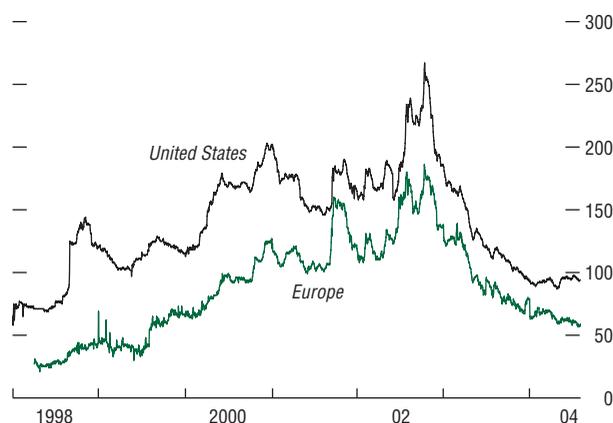
The improvements in cash flows and earnings also supported equity prices in mature markets (Figure 2.9). Coming into the year, expectations of impressive earnings growth buoyed equity markets. The technology sector, in particular, was bid up temporarily as it appeared that the long-awaited cycle of reinvestment in technology infrastructure was restarting. Earnings in the first half of 2004 lived up to those high expectations, rising by about 20 percent for the S&P 500 on year-ago levels.

Nevertheless, equity markets have been largely range bound, resulting in modest losses or gains in most major markets during the first seven months of the year. Trading levels were low, and implied volatilities priced into options suggest market participants did not anticipate sharp moves in either direction. Even relatively strong second quarter earnings failed to arrest a general downward drift in major indices. Stronger earnings and lackluster price movements resulted in improved valuations. By mid-2004, forward earnings multiples fell back to levels below their 10-year average in most of the major markets (Figure 2.10). However, the valuation of global technology shares still appeared stretched.

### External Imbalances Remain a Potential Source of Volatility

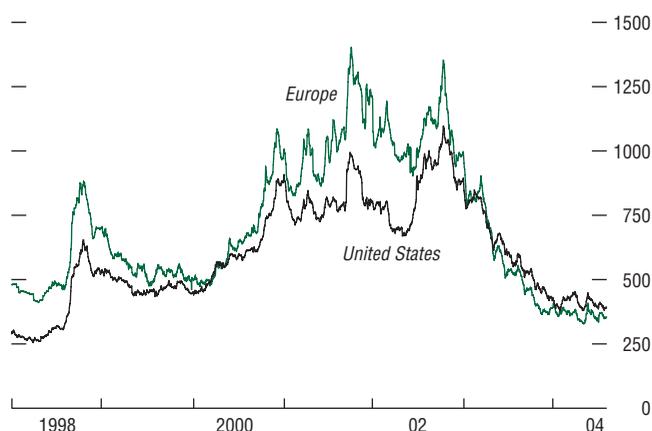
Throughout much of 2003, the level of capital inflows needed to finance the U.S. external current account deficit weighed on the dollar (Figure 2.11). These concerns waned in early 2004 as strong U.S. growth and expectations for higher U.S. interest rates contributed to an appreciation of the dollar. In addition, as investors reduced leverage and unwound carry trades, they reduced long speculative positions in Asian currencies and equity markets and in commodity currencies, and contributed to dollar demand. As a result, currency market

**Figure 2.7. High-Grade Corporate Bond Spreads**  
(In basis points)

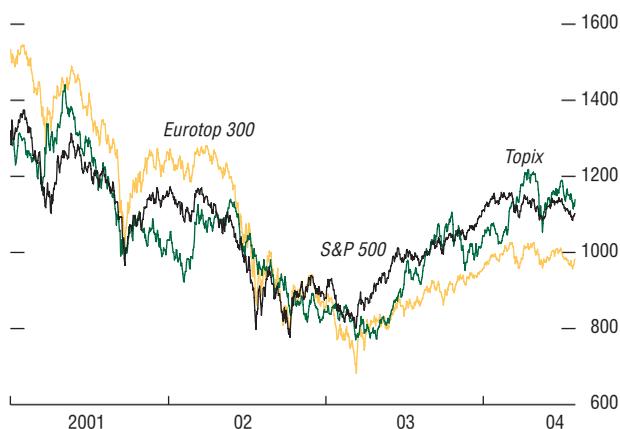


Source: Merrill Lynch.

**Figure 2.8. High-Yield Corporate Bond Spreads**  
(In basis points)



Source: Merrill Lynch.

**Figure 2.9. Equity Indices**

Source: Bloomberg L.P.

movements were subdued and implied volatility on currency options remained low. Nevertheless, the scale and structure of the financing flows to the United States represent potential sources of instability (Box 2.3, page 35).

### Developments and Vulnerabilities in Emerging Markets

The April 2004 GFSR warned of the risk that the transition to higher interest rates in the mature markets and deleveraging could unsettle emerging bond markets. Besides fundamentals and investor attitudes toward risk, the analysis found low policy rates in the major financial centers were a key determinant of the decline in emerging bond market spreads during the rally that began in October 2002 (Figure 2.12).

In the event, shifting interest rate expectations and a temporary heightening of risk aversion triggered an abrupt end to the rally this year that had led spreads to 10-year lows. In a matter of weeks, the results of almost one year of spread compression dissipated, with the spread of the EMBI Global rising to 549 basis points in May 2004. As a result, emerging market bonds experienced a loss in the second quarter this year for the first time since the third quarter of 2002.

Incidentally, the model presented in the April 2004 GFSR, subject to a minor modification, forecast the spread widening that occurred in April and May relatively well (Figure 2.13). In this context, Box 2.4 (page 39) discusses further research on the determinants of emerging bond market spreads.

Changing interest rate expectations—as reflected by the slope of the eurodollar futures strip curve (Figure 2.14)—appear to have contributed to recent spread changes.<sup>1</sup> A

<sup>1</sup>The slope of the eurodollar futures strip curve is calculated as the difference in yields (in basis points) between the fifth contract (12–15 months out) and the front contract for immediate delivery (up to 3 months).

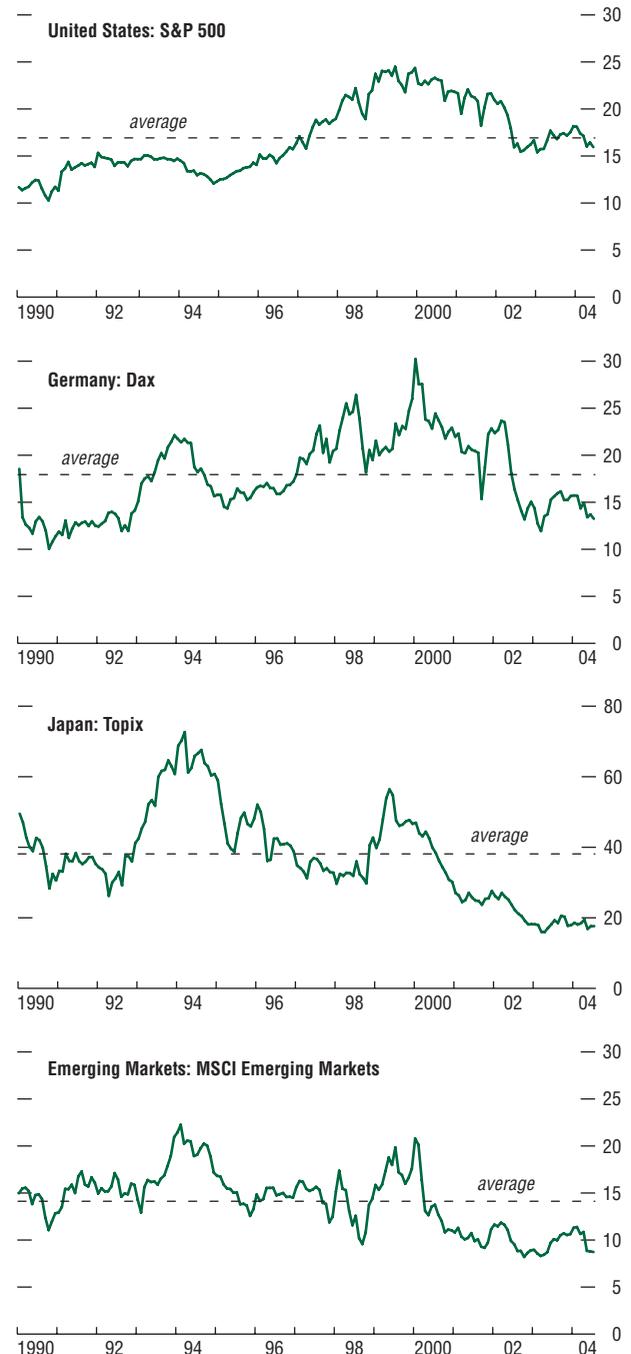
brief steepening of the eurodollar futures strip curve at end-January, following a change in language in a statement issued by the FOMC, coincided with an initial widening of emerging market spreads. Subsequently, interest rate expectations started to rise sharply with a further change in language by the FOMC in its statement issued in mid-March. This set the stage for the sell-off in emerging market debt in April and May. Once interest rate expectations stabilized in mid-May, emerging market spreads began to tighten again.

Mounting expectations for higher interest rates affected spreads in part through the unwinding of carry trades. Although data on the extent of these leveraged investments are difficult to come by, investor surveys showed a sizable unwinding of positions by “trading accounts” during April when emerging debt markets suffered substantial declines (losing 5½ percent). These accounts include hedge funds and proprietary trading desks, which are prone to rely on leverage.

In addition to trading accounts, dedicated and crossover investors also reduced their risk during the sell-off by increasing cash levels, moving up in the credit quality spectrum, and reducing the duration of their portfolios. Market commentary and surveys suggest they did so primarily owing to fears over increases in global interest rates, rather than because of concerns about credit fundamentals. In fact, domestic country fundamentals have remained robust and in some cases strengthened for a variety of reasons, including:

- a significant pickup in demand for emerging market exports as the global economy entered a broadly synchronized recovery, notwithstanding a more muted recovery in the euro area;
- higher commodity prices fueled by the global economic recovery and particularly strong demand from China;
- reduced external vulnerabilities stemming from the greater prevalence of floating exchange rates, more dependence on local

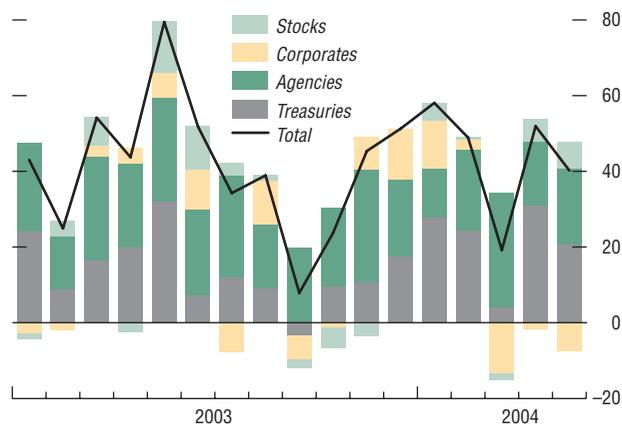
**Figure 2.10. Twelve-Month Forward Price/Earnings Ratios**



Source: I/B/E/S International.

**Figure 2.11. Net Foreign Purchases of U.S. Financial Assets**

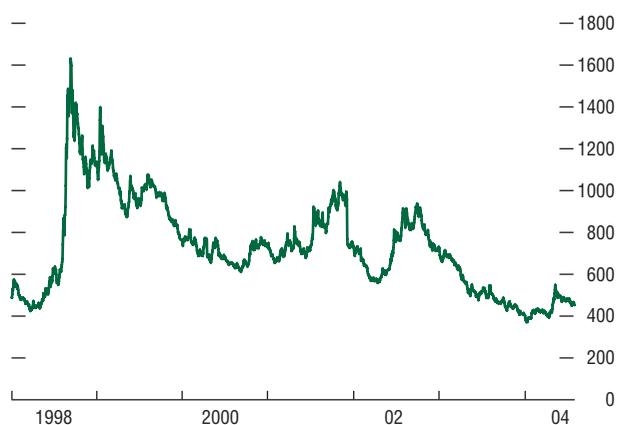
(In billions of U.S. dollars)



Source: U.S. Department of the Treasury.

**Figure 2.12. Emerging Market Debt Spreads**

(In basis points)



Source: J.P. Morgan Chase & Co.

financing, and higher international reserve levels; and

- active debt management operations by a number of emerging market countries that reduced balance sheet vulnerabilities and/or led to savings on debt-servicing costs. To cite two prominent examples: Brazil has pursued a policy of reducing its dollar-linked liabilities, bringing them down to less than 15 percent of total net public debt from 30 percent at the end of 2002. Mexico implemented an innovative debt swap of global bonds to take advantage of inefficiencies in its global bond yield curve, generate savings, and provide greater liquidity to investors.<sup>2</sup>

The maintenance of overall good country fundamentals has helped the adjustment to higher interest rates remain orderly; there were no severe dislocations for either investors or issuers. However, the brunt of the sell-off was born by higher-yielding credits. Notwithstanding a subsequent recovery, by end-July the Dominican Republic, Brazil, Peru, and Turkey still showed losses year-to-date. (Figure 2.15). The shake up in Russia’s banking sector, however, also weighed on bond markets in Russia and the Ukraine.

Nevertheless, sub-investment grade credits outperformed in the rally that followed the sell-off and continued through July this year. The differential between average spreads on B-rated sovereigns compared to BB-rated or investment grade sovereigns began to narrow again following the sell-off in April and May (Figure 2.16).

Looking ahead, the main external risk for the asset class remains the possibility of another round of deleveraging. Expectations for a significantly faster pace of monetary tightening in the United States could lead to further risk aversion and higher spreads on emerging market bonds as speculative posi-

<sup>2</sup>See the April 2004 *Global Financial Stability Report*, Box 2.3 (IMF, 2004a) for case studies of liability management operations by Brazil and Mexico.

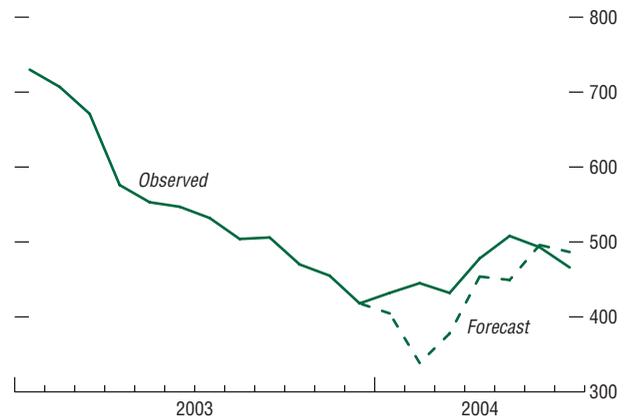
tions are reduced. Of less concern is a sharp slowdown in Chinese economic growth, which would most likely affect only selected emerging market countries with resource-intensive exports. Following the renewed spread tightening mid-year, emerging bond market valuations appeared once more stretched. By end-July, emerging bond market spreads relative to U.S. corporate bonds had fallen substantially from their peak in May 2004 (Figure 2.17), although they remained above their lows.

Finally, while the supply and demand balance in primary markets appears largely favorable, excess supply represents a potential concern, in particular due to the still large remaining financing needs in parts of the emerging market corporate sector. There is also a possibility of further Paris Club-related issuance by bilateral creditors, akin to the ARIES deal that liquefied German Paris Club claims on Russia (Box 2.5, page 42). While this transaction allowed Germany to raise deficit financing without issuing debt, a strengthening of public finances would have been more prudent.

Despite these risks, a number of factors are likely to support a favorable external financing environment for emerging markets going forward:

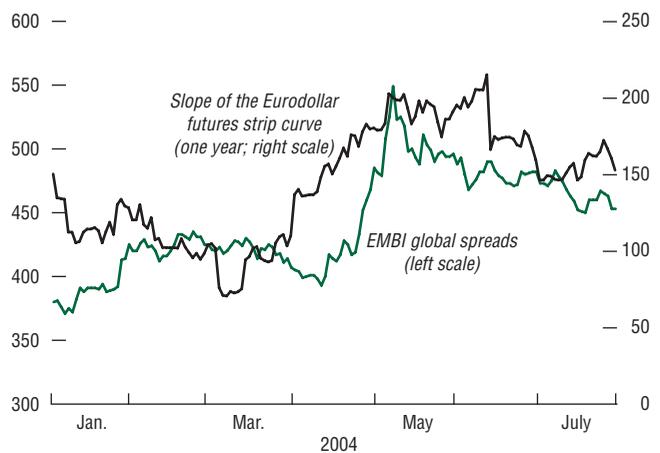
- Financing needs for the remainder of the year are moderate. An estimated 80 percent of planned 2004 issuance for emerging market sovereigns was completed in the first half of the year, despite the temporary lull in issuance by sub-investment grade sovereign borrowers during the second quarter of 2004.
- The credit quality of emerging market sovereigns seems poised to improve. Credit ratings have remained broadly flat since 2002, despite a good deal of progress on fundamentals (Figure 2.18). Thus, there appears to be further scope for upgrades moving forward. Indeed, market participants are anticipating some key upgrades, an expectation buttressed by the results of credit ratings models.

**Figure 2.13. Observed and Forecast EMBI+ Spreads**  
(In basis points)



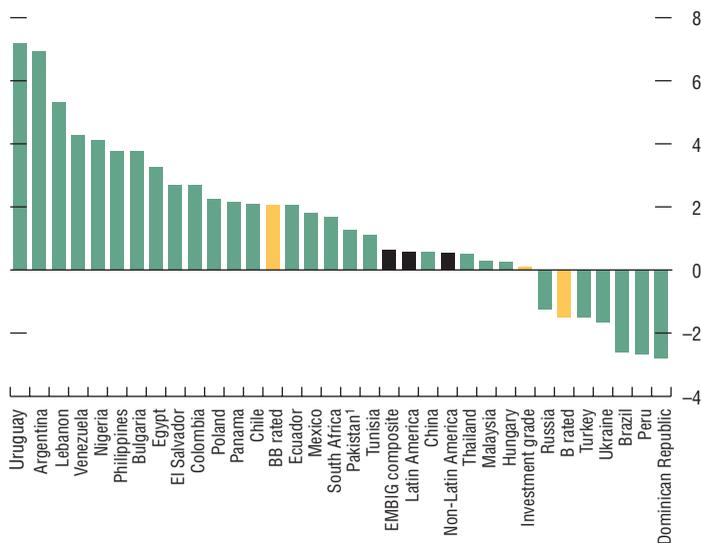
Sources: J.P. Morgan Chase & Co.; and IMF staff estimates.

**Figure 2.14. EMBI Global Spreads vs. Eurodollar Interest Rate Expectations**  
(In basis points)



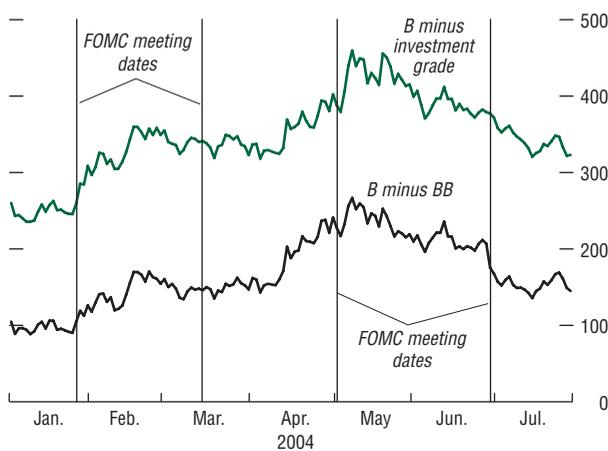
Source: Bloomberg L.P.

**Figure 2.15. Emerging Market Debt Returns**  
(In percent, year-to-date through July 30, 2004)



Source: J.P. Morgan Chase & Co.  
<sup>1</sup>From inception of the index.

**Figure 2.16. Spread Differentials in Emerging Market Debt**  
(In basis points)



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

To the extent that interest rates eventually reach cyclically neutral levels and yield curves flatten, the incentives for leveraged carry trades will diminish. Hence, the importance of domestic fundamentals as the dominant driver of emerging debt markets is likely to reassert itself. This underscores the need to persevere with efforts to reduce balance sheet vulnerabilities, remain vigilant about macroeconomic stability, and push forward with growth-enhancing structural reforms.

### Shifting Interest Rate Expectations and Local Emerging Markets

The impetus to risk taking provided by low interest rates in the major financial centers was also reflected in local emerging markets. In an environment of abundant global liquidity, foreign flows into local emerging equity and bond markets appear to have been quite strong prior to April of this year. The main beneficiaries of such flows were Asian equity markets and, in the case of local bond markets, countries with the highest yields and deepest markets, including Brazil, Hungary, Indonesia, Mexico, Poland, South Africa, and Turkey.<sup>3</sup> Equity markets experienced a significant reduction in foreign flows in the second quarter of this year, amid changing interest rate expectations in the United States. The effect on flows into local emerging bond markets, however, seemed smaller and largely concentrated on high-yielding markets, particularly Brazil and Turkey. Market feedback suggests that leverage was concentrated in these markets.

Local emerging equity markets sold off with mature markets in April and May in the wake

<sup>3</sup>This analysis focuses on countries with liquid local markets and those appearing to provide the highest potential for carry trades. It only covers a subset of the possible ways in which foreigners invest in local markets. Increasingly, foreign investments in local markets are carried out by taking positions in currency or interest rate linked derivatives, the flows of which are more difficult to measure.

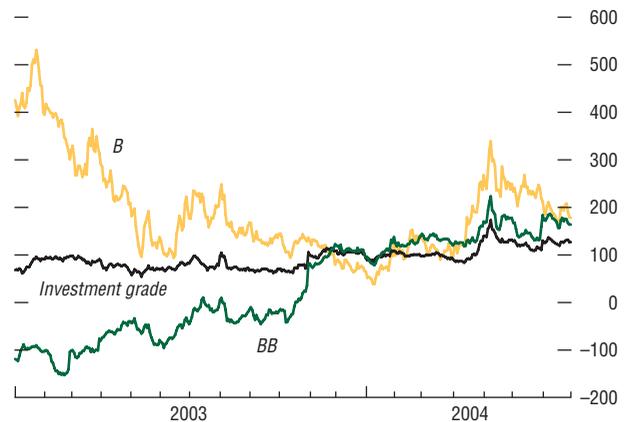
of changing interest rate expectations and fears of a slowdown in China. Reflecting the concerns over China, the sell-off was particularly strong in Asia. While portfolio equity inflows to emerging Asia were buoyant in the first quarter of 2004, they slowed significantly in the second quarter. This is evident in the net flows into U.S.-based equity funds investing in Asia (excluding Japan), which reached a record of \$1.1 billion in the first quarter but then experienced outflows of \$410 million, the highest four-week outflow since July 1997, between April and May this year (IMF, 2004b).

The decline in emerging market equities was highly correlated with the decline in mature equity markets, suggesting that global factors, including shifting interest rate expectations, had ripple effects through mature and emerging markets (Figure 2.19). In fact, equity markets fell across emerging Europe, the Middle East, Africa, Latin America, and Asia.

Unlike emerging equity markets, the sell-off in local bond markets was more differentiated. Spreads of local currency bonds issued by Brazil and Turkey rose sharply in April and May (Table 2.1 and Figures 2.20 and 2.21), while their respective currencies experienced depreciation. Other local markets, however, were not materially affected. This differentiation reflected a combination of factors, including a shift out of the riskier sub-investment grade credits into the less volatile investment grade credits, the varying share of foreign ownership in local markets, and the concentration of leverage in high-yielding credits.

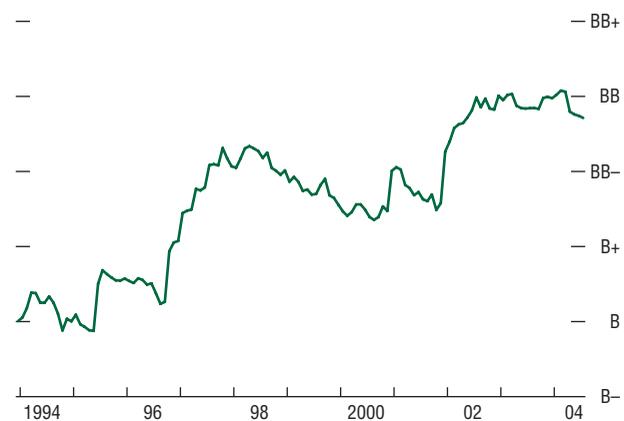
Although offering the third highest yields among select local markets, Hungary's local debt spreads fell during April and May 2004. This reflected its investment grade status and expectations of a continued easing of monetary policy even in the face of rising international interest rates. In South Africa and Poland, local spreads increased marginally in reaction to rising inflation expectations and, in the case of Poland, uncertainty about the

**Figure 2.17. Differentials Between Corporate and Emerging Market Spreads**  
(In basis points)



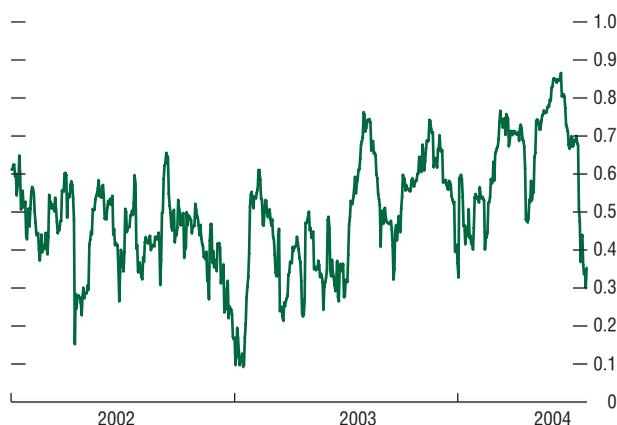
Sources: J.P. Morgan Chase & Co.; Merrill Lynch; and IMF staff estimates.

**Figure 2.18. Emerging Market Credit Quality**



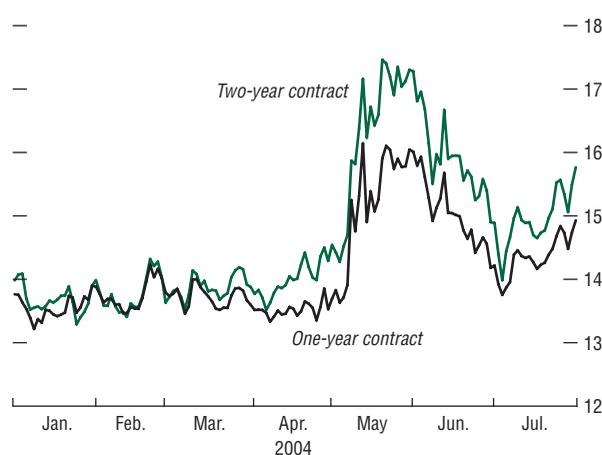
Sources: J.P. Morgan Chase & Co.; Moody's; Standard & Poor's; and IMF staff estimates.

**Figure 2.19. Correlations of MSCI World and Emerging Market Indices**  
(Thirty-day rolling window)



Sources: Morgan Stanley Capital International; and IMF staff estimates.

**Figure 2.20. Brazil: Local Market Spreads over U.S. Treasuries**  
(In percentage points)



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

**Table 2.1. Selected Local Currency Bond Spreads**  
(In percentage points, monthly average over U.S. treasuries or German Bunds)

	Latin America	
	Brazil 2-yr	Mexico 5-yr
January	13.68	5.38
February	13.78	5.46
March	13.87	5.71
April	14.00	5.35
May	16.26	5.83
June	15.95	6.09
July	14.71	6.24
Change in Spreads—March to May	2.39	0.12

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

fiscal outlook. Similarly, spreads of Mexican local instruments rose marginally due to an increased perception of inflation risk and an unexpected tightening of monetary policy by the central bank in April. In Indonesia, spreads fell over the period as monetary policy remained largely accommodative.

Portfolio outflows suggest that high-yielding local currency debt markets appear to have been subject to deleveraging in April and May this year. Nonresident purchases and holdings of local currency debt issued by Brazil increased sharply during the fourth quarter last year and the first quarter this year, before declining in the second quarter (Figure 2.22). Mirroring these developments, nonresident holdings of government debt peaked in April 2004, before declining in May and June (Figure 2.23).

Portfolio flows into Turkey exhibit a similar pattern. Portfolio flows rose sharply toward the end of last year and remained high in the first quarter of 2004 (Figure 2.24). A decline in April proved temporary, however, and inflows resumed in May. Foreign holdings of local currency bonds continued to increase in June and early July (Figure 2.25).

The temporary reduction in foreign holdings of local debt securities issued by Brazil and Turkey suggests that deleveraging in high-yielding local debt markets was limited. Moreover, there is little evidence of substantial

Emerging Europe, Middle East & Africa				Asia
Turkey 1-yr	Hungary 5-yr	South Africa 10-yr	Poland 5-yr	Indonesia 1-yr
22.20	6.20	5.88	3.34	7.99
22.90	6.43	6.18	3.48	6.99
22.05	5.92	6.52	3.57	6.49
20.99	5.48	6.52	3.79	5.70
27.13	5.72	6.74	4.08	5.73
26.10	5.99	6.77	3.92	5.27
24.97	6.15	6.60	4.07	5.14
5.08	-0.20	0.21	0.51	-0.76

outflows from lower-yielding markets, including Hungary, Indonesia, Poland, and South Africa. Against this background, a renewed unwinding of leverage in mature markets may prove once more unsettling for local debt markets.

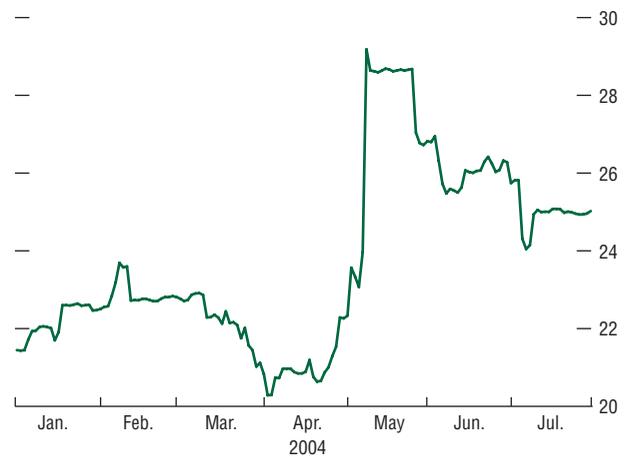
### Emerging Market Financing

Gross issuance of bonds, equities, and loans by emerging market countries through June 2004 compares favorably with previous years, despite a lull in issuance in April and May as markets adjusted to the prospect of higher U.S. short-term interest rates (Table 2.2 and Figure 2.26). Bond issuance was particularly strong, although sub-investment grade borrowers encountered an unreceptive market in April and May. Equity issuance in the first two quarters of 2004 has also exceeded previous years, despite the lull in April and May. As usual, Asia dominated new equity issuance. Syndicated lending to emerging markets followed a similar pattern, and the level of such lending through June 2004 has been broadly in line with previous years.

On a net basis, emerging market issuance has also been strong, notwithstanding heavy redemptions. In the second quarter of 2004, however, net issuance in Latin America turned sharply negative as some sub-investment grade issuers remained temporarily out of the mar-

**Figure 2.21. Turkey: Local Market Spreads over German Bunds**

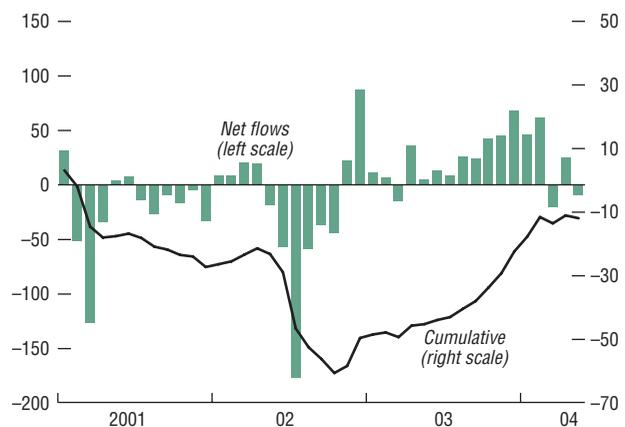
(In percentage points, one-year note)



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

**Figure 2.22. Brazil: Portfolio Investment in Local Currency Debt Instruments**

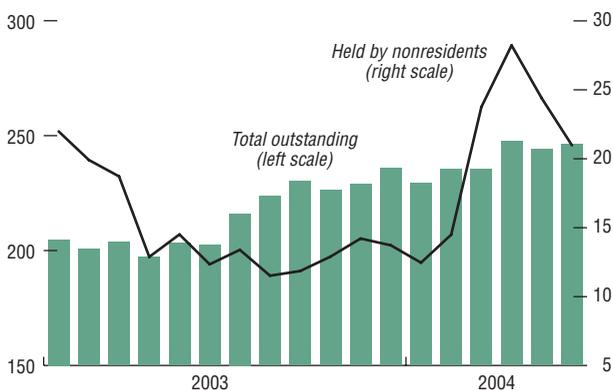
(In millions of U.S. dollars)



Sources: Central Bank of Brazil; and IMF staff estimates.

**Figure 2.23. Brazil: Nonresident Holdings of Government Debt Instruments**

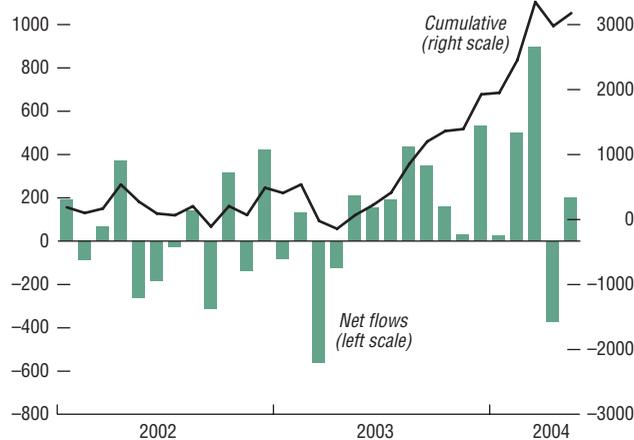
(In billions of reais)



Source: Brazil Ministry of Finance.

**Figure 2.24. Turkey: Portfolio Investment in Local Currency Debt**

(In millions of U.S. dollars)



Source: Central Bank of Turkey.

ket and issuance in loan and equity markets was negligible (Figure 2.27). This was the third successive quarter of negative net issuance for Latin America.

**Bond Issuance**

After gross bond issuance soared to a record \$38.4 billion in the first quarter, issuance dipped sharply in the second quarter only to rebound strongly in late June. Gross bond issuance through June 2004 was well above levels of previous years and has further accelerated in July to start the third quarter at a record pace of some \$19 billion (Figure 2.28). Early in the year, strong demand for emerging market assets, low global bond yields, and record low emerging market bond spreads created strong incentives for issuers to accelerate funding plans. Issuers were keen to lock in low financing costs as expectations of a turn in global interest rates became more pronounced. As a result, net bond issuance in the first quarter reached a multi-year high of \$13.4 billion, despite record amortization payments. The inclusion of collective action clauses seems now to be widely accepted as industry standard (Box 2.6, page 44).

Primary market access turned decidedly more difficult in late April, causing borrowing costs for many emerging markets to rise rapidly. Several issuers cancelled planned bond issues, and by mid-June, net bond issuance for the quarter had turned negative. Sovereign and corporate issuers in Latin America faced particular difficulties. During the month of May, not a single Latin American bond was launched. By late June, however, bond markets again appeared receptive to new issues from sub-investment grade borrowers as Brazil and Turkey launched bonds that were well received. Turkey came to the market with a \$750 million seven-year fixed-rate bond that was heavily oversubscribed. Brazil launched a well-received \$750 million five-year floating-rate note (FRN). The FRN capitalized on the growing appetite of investors for protection

against rising interest rates. Sovereign and corporate issuers in Chile, Mexico, Russia, and Venezuela also issued FRNs.

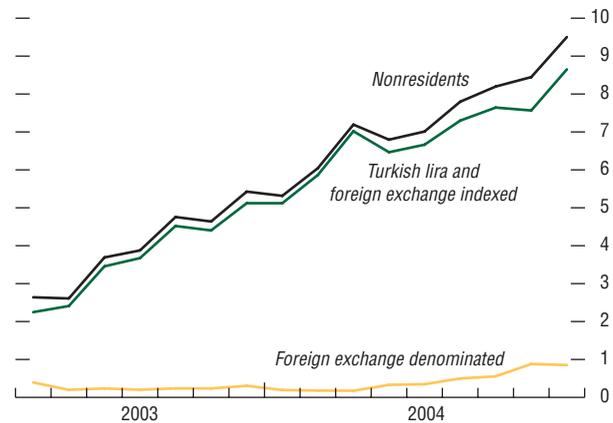
The bond issues by Brazil and Turkey notwithstanding, issuance in the second quarter was dominated by higher-grade borrowers. In a high-profile transaction, Mexico successfully launched an innovative debt management operation involving the older, off-the-run global bonds for more liquid, on-the-run global bonds. The \$3 billion transaction was well received by the markets, as it made the Mexican yield curve more efficient by replacing higher-yielding bonds with instruments that traded more in line with the sovereign yield curve. As suggested earlier, July was a bumper month for primary market issuance, with many sub-investment grade borrowers returning to the market.

In Europe, high-grade issuers successfully capitalized on positive market sentiment toward new EU members. The Czech Republic and Slovak Republic saw solid demand for their respective debut issues in the international bond market, while Poland (in May) and Hungary (in June) returned successfully to the Samurai bond market to issue ¥50 billion (\$462 million) each in foreign bonds. The Samurai market saw a burst of activity as Japanese investor appetite for such bonds grew as a yield pickup over domestic yen interest rates. From the issuer's perspective, yield spreads on yen-denominated Samurai bonds were comparatively low due to their limited supply.

### Equity Issuance

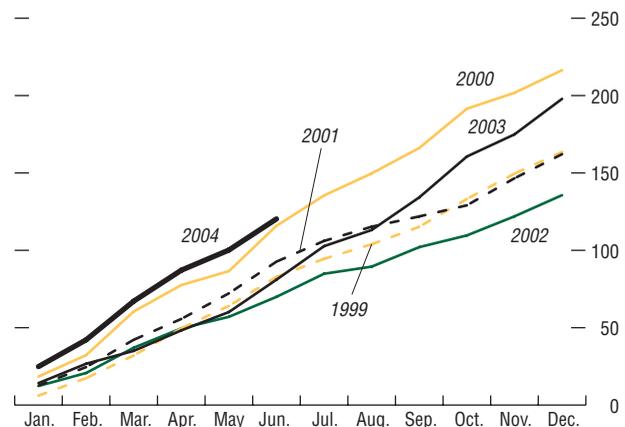
Driven by robust new issuance in Asia, equity issuance has been on track to top the \$41.8 billion in emerging market equity financing raised in 2000 (Figure 2.29). While increased market volatility in April and May triggered a brief pullback in new equity issuance, June saw a solid rebound in equity financing, mainly by Asian issuers. Chinese firms accounted for most of the region's new

**Figure 2.25. Turkey: Nonresident Holdings of Government Debt Instruments**  
(In quadrillions of Turkish lira)



Sources: Turkey Ministry of Finance; and IMF staff estimates.

**Figure 2.26. Cumulative Gross Annual Issuance of Bonds, Loans, and Equity**  
(In billions of U.S. dollars)



Source: Capital Data.

**Table 2.2. Emerging Market Financing**

	2000	2001	2002	2003	2003				2004				Year to Date <sup>1</sup>	
					Q1	Q2	Q3	Q4	Q1	Q2	Apr.	May		Jun.
<i>(In billions of U.S. dollars)</i>														
<b>Gross issuance by asset</b>	<b>216.4</b>	<b>162.1</b>	<b>135.6</b>	<b>197.9</b>	<b>35.0</b>	<b>46.0</b>	<b>53.2</b>	<b>63.7</b>	<b>67.3</b>	<b>56.5</b>	<b>20.0</b>	<b>13.0</b>	<b>23.4</b>	<b>140.6</b>
Bonds	80.5	89.0	61.6	97.4	20.1	27.9	24.6	24.7	38.4	26.9	11.3	6.6	9.0	74.0
Equities	41.8	11.2	16.4	28.7	1.2	2.0	7.1	18.4	13.2	10.3	1.6	2.2	6.5	25.2
Loans	94.2	61.9	57.6	71.8	13.7	16.1	21.5	20.6	15.7	19.3	7.1	4.2	8.0	41.5
<b>Gross issuance by region</b>	<b>216.4</b>	<b>162.1</b>	<b>135.6</b>	<b>197.9</b>	<b>35.0</b>	<b>46.0</b>	<b>53.2</b>	<b>63.7</b>	<b>67.3</b>	<b>56.5</b>	<b>20.0</b>	<b>13.0</b>	<b>23.4</b>	<b>140.6</b>
Asia	85.9	67.5	53.9	86.2	12.9	15.7	25.1	32.5	32.6	26.3	6.4	6.5	13.4	67.0
Latin America	69.1	53.9	33.4	42.8	7.8	12.1	9.1	13.8	12.5	8.3	5.7	0.7	1.9	24.8
Europe, Middle East, Africa	61.4	40.8	48.3	69.0	14.3	18.2	19.1	17.4	22.2	21.9	7.9	5.9	8.1	48.9
<b>Amortization by asset</b>	<b>114.3</b>	<b>148.0</b>	<b>129.3</b>	<b>124.2</b>	<b>22.1</b>	<b>34.3</b>	<b>29.6</b>	<b>38.2</b>	<b>38.4</b>	<b>33.2</b>	<b>12.6</b>	<b>7.7</b>	<b>12.9</b>	<b>n.a.</b>
Bonds	52.2	60.0	59.8	61.8	10.5	17.5	15.6	18.2	25.0	17.9	6.7	3.3	8.0	n.a.
Equities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n.a.
Loans	62.1	88.0	69.5	62.4	11.6	16.8	14.0	20.0	13.5	15.3	6.0	4.4	4.9	n.a.
<b>Amortization by region</b>	<b>114.3</b>	<b>148.0</b>	<b>129.3</b>	<b>124.2</b>	<b>22.1</b>	<b>34.3</b>	<b>29.6</b>	<b>38.2</b>	<b>38.4</b>	<b>33.2</b>	<b>12.6</b>	<b>7.7</b>	<b>12.9</b>	<b>n.a.</b>
Asia	57.1	66.5	56.2	49.4	8.3	12.0	14.5	14.7	16.1	13.2	5.5	3.0	4.8	n.a.
Latin America	32.3	45.9	41.2	40.8	7.6	10.1	8.0	15.1	12.7	13.4	6.2	2.8	4.4	n.a.
Europe, Middle East, Africa	24.9	35.5	31.9	33.9	6.2	12.2	7.1	8.4	9.6	6.6	1.0	1.9	3.7	n.a.
<b>Net issuance by asset</b>	<b>102.2</b>	<b>14.2</b>	<b>6.4</b>	<b>73.8</b>	<b>12.9</b>	<b>11.7</b>	<b>23.6</b>	<b>25.5</b>	<b>28.8</b>	<b>23.3</b>	<b>7.4</b>	<b>5.3</b>	<b>10.6</b>	<b>n.a.</b>
Bonds	28.3	29.1	1.8	35.6	9.6	10.4	9.0	6.6	13.4	9.0	4.6	3.3	1.0	n.a.
Equities	41.8	11.2	16.4	28.7	1.2	2.0	7.1	18.4	13.2	10.3	1.6	2.2	6.5	n.a.
Loans	32.1	-26.1	-11.8	9.4	2.1	-0.7	7.5	0.5	2.2	4.0	1.2	-0.2	3.1	n.a.
<b>Net issuance by region</b>	<b>102.2</b>	<b>14.2</b>	<b>6.4</b>	<b>73.8</b>	<b>12.9</b>	<b>11.7</b>	<b>23.6</b>	<b>25.5</b>	<b>28.8</b>	<b>23.3</b>	<b>7.4</b>	<b>5.3</b>	<b>10.6</b>	<b>n.a.</b>
Asia	28.8	0.9	-2.3	36.7	4.7	3.7	10.6	17.8	16.5	13.0	0.9	3.5	8.6	n.a.
Latin America	36.9	7.9	-7.8	1.9	0.2	2.0	1.0	-1.3	-0.3	-5.1	-0.5	-2.1	-2.5	n.a.
Europe, Middle East, Africa	36.5	5.3	16.4	35.1	8.1	6.0	12.0	9.0	12.5	15.3	6.9	3.9	4.4	n.a.
<b>Secondary markets</b>														
<b>Bonds</b>														
EMBI Global														
(spread in basis points) <sup>2</sup>	735	728	725	403	626	515	486	403	414	482	468	482	490	453
Merrill Lynch High Grade														
(spread in basis points)	890	795	871	418	757	606	543	418	438	404	388	404	390	393
Merrill Lynch High Yield														
(spread in basis points)	200	162	184	93	156	120	110	93	94	97	89	97	96	94
U.S. 10 yr. treasury yield														
(yield in %)	5.12	5.05	3.82	4.25	3.80	3.52	3.94	4.25	4.30	4.33	4.51	4.58	4.48	4.78
<i>(In percent)</i>														
<b>Equity</b>														
DOW	-6.2	-7.1	-16.8	25.3	-4.2	12.4	3.2	12.7	-0.9	0.8	-1.3	-0.4	2.4	-3.0
NASDAQ	-39.3	-21.1	-31.5	50.0	0.4	21.0	10.1	12.1	-0.5	2.7	-3.7	3.5	3.1	-5.8
MSCI Emerging Market Free	-31.8	-4.9	-8.0	51.6	-6.8	22.2	13.5	17.3	8.9	-10.3	-8.5	-2.3	0.2	-4.4
Asia	-42.5	4.2	-6.2	47.1	-9.3	21.4	14.9	16.3	7.6	-12.2	-6.3	-4.7	-1.6	-9.3
Latin America	-18.4	-4.3	-24.8	67.1	-0.9	22.6	12.4	22.4	6.2	-9.2	-10.9	-1.2	3.2	-0.1
EMEA	-22.3	-20.9	4.7	51.3	-5.3	23.7	11.6	15.8	13.2	-7.4	-11.0	2.0	2.0	2.7

Sources: Bloomberg L.P.; Capital Data; J.P. Morgan Chase & Co.; Morgan Stanley Capital International; and IMF staff estimates.

<sup>1</sup>Gross issuance data (net of U.S. trust facility issuance) are as of July 16, 2004 close-of-business London, and Secondary markets data are as of July 30, 2004 c.o.b. New York.

<sup>2</sup>On April 14, 2000, the EMBI+ was adjusted for the London Club agreement for Russia. This resulted in a one-off (131 basis points) decline in average measured spreads.

share issues during the second quarter, led by China Telecom's \$1.7 billion share issue in May and the \$1.9 billion initial public offering (IPO) by China's Ping Ang Insurance. The two

transactions were the largest share issues in the second quarter, boosting the region's share in global emerging equity financing to some 80 percent. In June, firms in the Emerging

Europe, Middle East, and Africa (EMEA) region also returned to primary equity markets, after having been largely absent for most of the second quarter. In sharp contrast, new equity issuance by Latin American firms remained quite low, following limited issuance in 2003. With only five of the region's corporates having been able to raise funds during the entire first half of the year, Latin America's share in total emerging market equity issues remained stuck at a mere 3 percent.

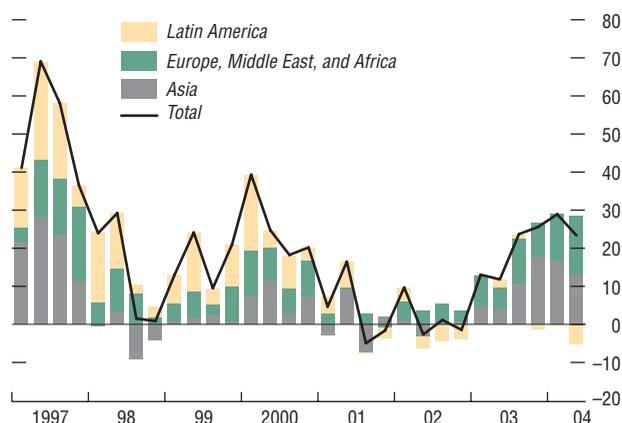
### Syndicated Lending

After a strong first quarter, gross lending to emerging market borrowers slowed in May, but rebounded sharply in late June, in line with activity in primary equity and bond markets (Figure 2.30). On a net basis, lending to emerging markets contracted in May as lenders reduced market exposure in response to the global market sell-off. During the second quarter slowdown, lending to Asian corporates held up well. Loans to firms in the EMEA region declined markedly, however, and lending to Latin American borrowers slowed to a trickle.

### Foreign Direct Investment

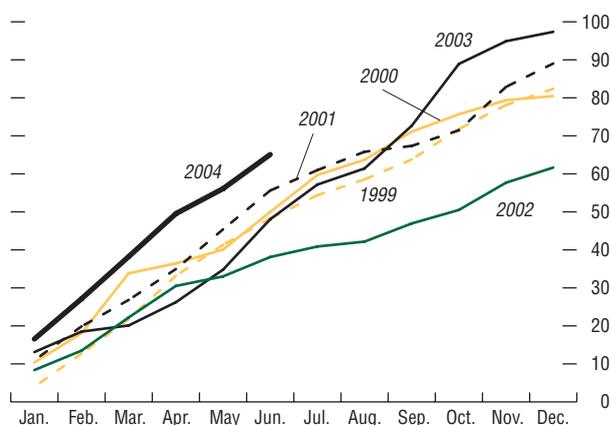
There are preliminary signs of a modest recovery in foreign direct investment (FDI) flows to emerging markets this year, following declines in 2002 and 2003. FDI flows to Latin America are estimated by the World Bank to have increased significantly in the first quarter of 2004 compared with the first quarter of 2003, led by flows to Chile and Mexico, and to a lesser extent Brazil (Figure 2.31). Asian FDI flows also increased over the same period, and continued to account for the bulk of global FDI flows to emerging economies. Within Asia, flows to China remained dominant. FDI flows to Eastern European countries and Turkey also show signs of increase. On the basis of these initial trends and the prospect of stronger global growth, FDI flows to emerg-

**Figure 2.27. Quarterly Net Issuance**  
(In billions of U.S. dollars)



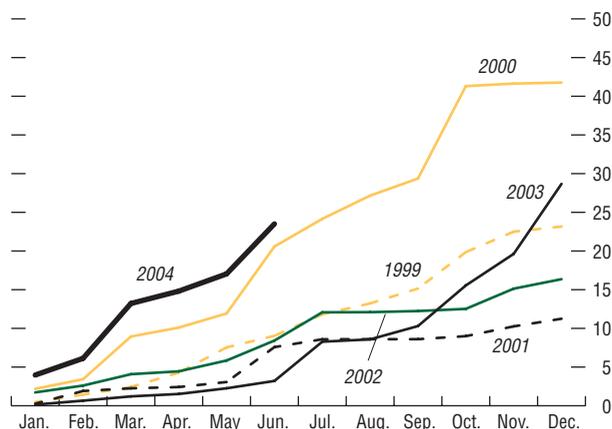
Sources: Capital Data; and IMF staff estimates.

**Figure 2.28. Cumulative Gross Annual Issuance of Bonds**  
(In billions of U.S. dollars)



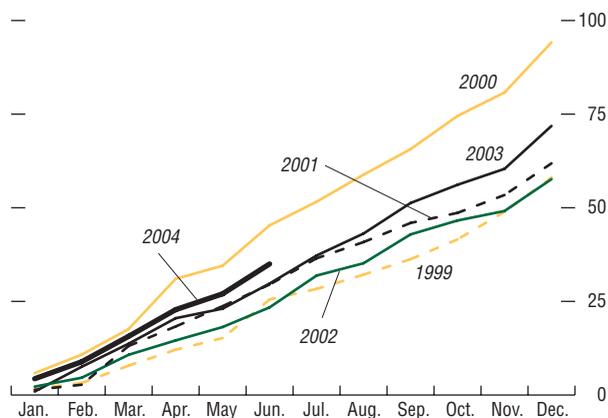
Source: Capital Data.

**Figure 2.29. Cumulative Gross Annual Issuance of Equity**  
(In billions of U.S. dollars)



Source: Capital Data.

**Figure 2.30. Cumulative Gross Annual Issuance of Loans**  
(In billions of U.S. dollars)



Source: Capital Data.

ing markets are forecast by the World Bank to recover moderately this year. This view is also supported by private sector surveys suggesting increased readiness to undertake cross-border acquisitions and investments.

### Banking Sector Developments in Emerging Markets

Since the last GFSR, banking systems in the major emerging markets have continued to recover, with generally improving capital positions, asset quality, and earnings (Table 2.3). In most countries, domestic banks have expanded lending, funded by deposit growth and interbank credits from major international banks. Performance varies across regions, however. In Asia, the financial position of banks has generally strengthened further with the economic recovery, except in a few countries where underlying weaknesses have not been fully addressed. The stabilization of banking systems in Latin America is being sustained, but full normalization is contingent on a supportive global environment and fundamental restructuring to restore solvency of distressed institutions. Banks in emerging markets in Europe continue to perform well, with adequate capital, although rapid credit expansion is a source of risk in a number of countries. In the Middle East and Africa, there has been little change since the last GFSR, but there are encouraging indications of efforts to deal with structural weaknesses in state-owned banks in some countries.

Emerging market banking systems face risks associated with a reversal of the low interest rate environment experienced in recent years. In many countries, low interest rates have allowed a strengthening of banks' balance sheets through capital gains on their interest sensitive assets while the reduction in funding costs probably contributed to a widening of interest rate margins. To the extent that these gains have been distributed and on lent rather than added to capital or reserves, banks would need to adjust to opposite effects on their bal-

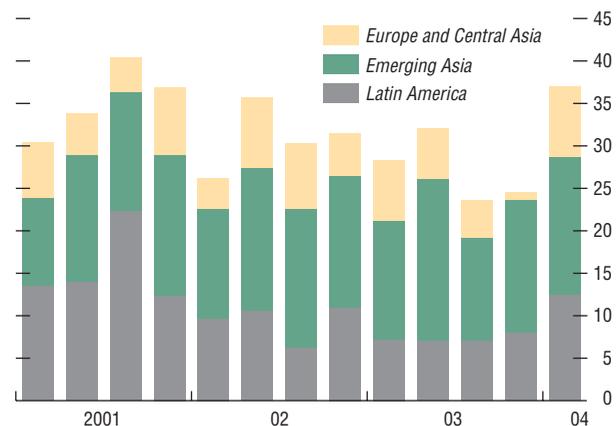
ance sheets as interest rates rise. Also, profits could be squeezed by a compression of interest margins to the extent that funding costs rise and banks are unable to fully pass this increase on to customers.

Supervisory authorities in emerging markets are also evaluating the implications for their banking systems of the revised Basel Accord (Basel II), which was endorsed by the Basel Committee on Banking Supervision in June 2004 for implementation in 2007. The precise impact of the new accord on banking systems in emerging markets is difficult to gauge. On the one hand, banks from these countries, which are likely to follow the standardized approach, may need to increase capital to allow for greater weighting of riskier credit exposures and to cover operational risk. On the other hand, they could adapt their portfolios to limit the need to provide additional capital. Supervisory authorities may need to ensure their banks have the capacity to meet the additional capital requirements. In addition, they may need to consider the impact of Basel II on the activities of international banks in their banking systems. International banks are more likely to operate under the internal ratings based (IRB) approach and will face higher risk weights on their emerging market exposures.

There are indications of a shift in the pattern of lending activities of major international banks in emerging markets toward interbank and government lending in foreign currency (Table 2.4). The rise in interbank lending is consistent with signs of recovery in many emerging market banking systems. Overall credit extended by these institutions to emerging markets rose on average but the share of foreign currency lending to the non-financial private sector declined noticeably in some regions. However, a significant portion of the increase in interbank lending may have funded part of the increase in lending to this sector by emerging market banks, possibly contributing to their currency and maturity mismatches.

**Figure 2.31. Foreign Direct Investment to Emerging Markets**

(In billions of U.S. dollars)



Source: World Bank.

**Table 2.3. Emerging Market Countries: Selected Financial Soundness Indicators**  
(In percent)

	Return on Assets				Nonperforming Loans to Total Loans				Capital to Assets				Moody's Financial Strength Index <sup>1</sup>			
	2000	2001	2002	2003	2000	2001	2002	2003	2000	2001	2002	2003	2001	2002	2003	May 2004
<b>Asia<sup>2</sup></b>																
Mean	0.3	0.5	0.7	1.0	15.2	14.8	13.3	10.3	6.8	6.8	7.4	7.8	25.9	26.7	27.5	28.4
Median	0.3	0.6	0.8	1.0	16.0	11.4	15.8	10.8	5.7	5.3	6.1	7.5	16.7	18.5	19.4	19.6
Standard deviation	0.9	0.4	0.4	0.4	9.0	9.7	8.8	6.5	3.1	3.2	3.2	3.3	25.4	24.0	23.5	23.1
<b>Latin America</b>																
Mean	0.5	0.4	0.2	1.1	9.5	9.6	10.7	9.6	10.6	10.7	10.3	10.6	27.8	19.7	18.7	19.8
Median	0.9	0.7	1.0	1.4	9.2	9.2	8.6	7.8	10.3	10.0	10.8	10.2	26.9	19.4	15.8	24.2
Standard deviation	1.5	2.2	3.6	2.0	7.1	6.8	9.0	7.7	1.6	2.2	4.2	3.4	12.2	17.0	18.7	19.2
<b>Emerging Europe<sup>3</sup></b>																
Mean	0.7	0.1	1.5	1.6	12.6	12.3	9.9	8.6	9.8	10.2	10.3	10.4	29.2	28.9	29.8	30.5
Median	0.9	1.0	1.2	1.4	11.1	8.3	8.6	6.0	9.5	9.5	9.8	9.8	29.8	32.1	32.1	33.3
Standard deviation	1.4	3.1	0.9	0.7	9.1	9.1	6.6	7.4	3.5	3.2	3.1	2.6	12.9	13.6	13.3	13.4
<b>Middle East</b>																
Mean	1.2	1.2	1.2	1.2	14.3	14.2	14.6	14.6	8.9	8.7	8.5	8.0	29.8	28.6	28.6	28.6
Median	1.2	0.9	0.7	0.7	13.6	15.6	15.3	14.3	9.2	9.3	8.9	7.3	31.7	29.2	29.2	29.2
Standard deviation	0.6	0.9	0.8	0.9	5.1	3.9	4.8	5.7	2.7	2.8	2.8	2.4	8.9	9.6	9.6	9.6
<b>Sub-Saharan Africa</b>																
Mean	3.7	3.6	2.7	3.4	15.7	13.3	12.2	10.9	9.2	9.4	9.3	9.1	...	...	...	...
Median	3.2	3.3	2.3	3.0	14.6	11.7	8.9	8.0	9.1	9.1	9.4	9.0	...	...	...	...
Standard deviation	3.1	2.7	2.1	2.5	9.2	8.3	9.6	8.5	1.4	1.4	1.3	2.0	...	...	...	...

Sources: National authorities; and IMF staff estimates.

<sup>1</sup>Constructed according to a numerical scale assigned to Moody's weighted average bank ratings by country. "0" indicates the lowest possible average rating and "100" indicates the highest possible average rating.<sup>2</sup>Excluding Japan.<sup>3</sup>Includes Central and Eastern Europe, Israel, Malta, and Turkey.

## Asia

Banking systems in emerging markets in Asia have continued to strengthen with the economic recovery. Earnings, asset quality, and capital adequacy show a steady improvement on average, helped by better interest margins and operational efficiency. These positive developments are also reflected in higher ratings of banks by private sector rating agencies and stronger relative market valuations of bank stocks, which have trended upwards after a slight correction early in the year (Figure 2.32).

Authorities in a number of countries in the region are moving to address structural issues in their banking systems. In China, the authorities are making efforts to address weaknesses at state-owned banks and two of them have been recapitalized. In addition, they have been required to undertake external audits, tighten provisioning, and maintain

higher capital ratios. Similarly, prospects for commercial banks in India have brightened with the steps taken by the authorities to address key vulnerabilities, including, in particular, the tightening of loan classification requirements. Following market reaction to a proposed securities transactions tax, the authorities have modified the proposal and taken steps to reassure markets.

In Thailand, while distressed assets still constrain banks' balance sheets, profitability of private banks has improved and some banks have been able to raise capital. The Thai Asset Management Company's (TAMC) executive committee has approved resolutions of 90 percent of the assets, but since not all agreements have been signed by debtors and several cases that are currently classified as foreclosure are likely to re-enter the debt negotiation phase, substantial work remains before all of TAMC's nonperforming loans (NPLs) are resolved.

**Table 2.4. Exposure of Foreign Banks to Emerging Markets<sup>1</sup>**  
(In percent)

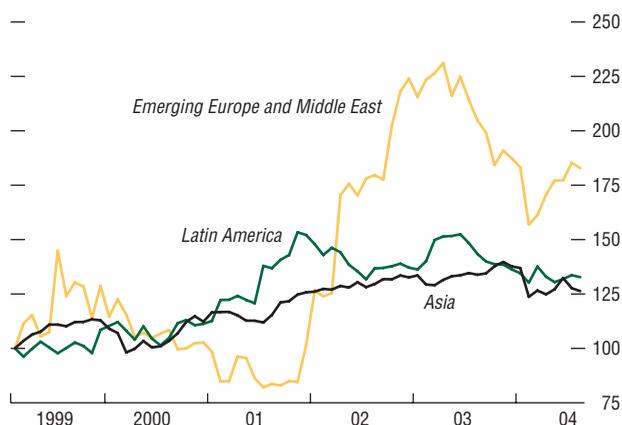
	Total Foreign Exposure as a Percent of Domestic Credit		Foreign Currency Exposure as a percent of Total Exposure to the Country		Of Which Foreign Currency Exposure to:					
					Banking sector as a percent of total foreign currency exposure		Public sector as a percent of total foreign currency exposure		Nonbanks as a percent of total foreign currency exposure	
	Dec. 2002	Dec. 2003	Dec. 2002	Dec. 2003	Dec. 2002	Dec. 2003	Dec. 2002	Dec. 2003	Dec. 2002	Dec. 2003
<b>Asia</b>	<b>18</b>	<b>18</b>	<b>54</b>	<b>55</b>	<b>43</b>	<b>44</b>	<b>9</b>	<b>10</b>	<b>46</b>	<b>44</b>
China	2	3	89	88	42	43	14	13	41	42
Hong Kong SAR	106	116	33	37	40	43	2	2	57	54
India	13	16	45	54	21	30	20	15	53	51
Indonesia	31	29	84	81	9	9	27	32	64	59
Korea	16	18	70	71	60	61	10	8	28	29
Malaysia	46	49	40	40	15	15	20	26	64	56
Philippines	49	57	77	79	30	33	20	24	49	43
Singapore	186	172	66	64	66	65	1	1	33	34
Thailand	28	27	49	46	19	21	9	12	71	63
<b>Latin America</b>	<b>82</b>	<b>73</b>	<b>50</b>	<b>50</b>	<b>13</b>	<b>17</b>	<b>15</b>	<b>19</b>	<b>71</b>	<b>64</b>
Argentina	68	56	71	67	9	19	20	25	71	56
Bolivia	40	21	89	84	42	15	18	2	40	83
Brazil	46	36	51	52	19	23	13	16	67	59
Chile	89	81	48	45	15	23	8	11	77	66
Colombia	61	47	68	60	13	14	24	30	63	56
Dominican Republic	64	63	89	83	33	16	15	30	48	51
Mexico	114	116	31	33	8	13	23	28	69	59
Paraguay	107	120	55	62	15	14	13	13	63	58
Uruguay	45	45	79	75	13	16	20	23	67	61
Venezuela	160	218	71	61	6	3	25	33	69	64
<b>Emerging Europe</b>	<b>60</b>	<b>64</b>	<b>65</b>	<b>64</b>	<b>26</b>	<b>29</b>	<b>19</b>	<b>20</b>	<b>55</b>	<b>51</b>
Bulgaria	72	85	72	65	28	19	26	24	46	57
Croatia	116	122	64	64	31	36	20	18	49	45
Czech Republic	122	131	33	27	33	33	4	6	54	54
Hungary	91	97	65	66	32	30	30	34	38	36
Israel	11	13	95	94	28	26	22	26	50	47
Poland	105	108	43	46	19	18	23	29	58	53
Romania	102	109	77	78	15	17	16	25	69	58
Russia	43	45	95	93	27	35	15	12	58	52
Slovak Republic	97	110	38	42	29	33	23	28	47	39
Turkey	35	28	94	94	16	20	24	24	60	56
Ukraine	12	15	79	83	33	29	7	17	60	55
<b>Middle East</b>	<b>26</b>	<b>28</b>	<b>77</b>	<b>77</b>	<b>45</b>	<b>43</b>	<b>12</b>	<b>14</b>	<b>43</b>	<b>42</b>
Egypt	13	16	74	76	35	25	35	43	29	32
Jordan	19	18	71	69	26	24	29	33	45	43
Lebanon	15	17	79	80	31	23	6	7	62	70
Morocco	36	32	52	47	18	15	20	28	63	57
Pakistan	22	20	39	37	13	20	12	27	75	53
Saudi Arabia	19	17	100	100	42	40	13	19	45	41
<b>Sub-Saharan Africa</b>	<b>32</b>	<b>26</b>	<b>73</b>	<b>72</b>	<b>26</b>	<b>22</b>	<b>19</b>	<b>26</b>	<b>55</b>	<b>52</b>
Kenya	43	44	52	56	6	6	14	17	80	77
South Africa	22	15	82	79	40	35	20	27	39	37
Zimbabwe	24	34	33	37	5	1	47	58	48	41
<b>Total</b>	<b>30</b>	<b>29</b>	<b>57</b>	<b>58</b>	<b>31</b>	<b>33</b>	<b>13</b>	<b>15</b>	<b>55</b>	<b>51</b>

Sources: BIS, *Consolidated Banking Statistics*; IMF, *International Financial Statistics*.

<sup>1</sup>These BIS bank data are cross-border consolidated and therefore capture both banks' direct cross-border exposures and exposures incurred through the subsidiaries and branches located in the country (both in foreign and local currency). They include both loan and securities exposures.

**Figure 2.32. Emerging Market Countries: Bank Market Valuations**

(February 1999 = 100)



Sources: Datastream; and IMF staff estimates.

Overall, indicators of bank soundness in Malaysia remain solid and systemic risks seem well contained. While the economic recovery there has helped lower the ratio of nonperforming to total loans, provisioning against such loans remains below 50 percent. In Korea, banks have weathered the credit card debt problem without systemic repercussions. In May, the government established a new “bad bank,” Hanmaeum Financial, to take over defaulted credit card debts and facilitate their resolution. The banking systems in Hong Kong and Singapore continue to perform well, with improved profitability supported by the ongoing economic recovery.

Bank profitability has improved in Indonesia, helped by reduced funding costs, but financial and governance problems persist in the large state banks. Bank Indonesia has moved to strengthen the banking system in preparation for the removal of the blanket deposit guarantee by intervening in several small banks. However, legislation for a deposit insurance scheme has been stalled due to elections. In the Philippines, scope for remedial action to address potential banking system vulnerabilities is hampered by weaknesses in the regulatory and supervisory framework, including the lack of an effective prompt corrective action framework and legal protection for supervisory intervention.

### Latin America

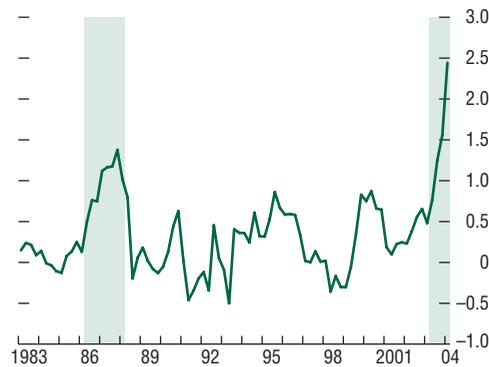
Reflecting the return of stability in the troubled banking systems in the region, banks’ earnings, nonperforming loan ratios, and reported capital positions show improvement. Market indicators and ratings, however, suggest that concerns have not abated. Ratings of banks by private rating agencies weakened on average in 2003 before recovering in 2004, and relative market valuations have declined slightly since April 2003. Foreign bank penetration is generally high in Latin America, although there has been a pronounced decline in lending by interna-

**Box 2.3. Financing Flows and Global Imbalances**

Amid heightening concerns over the sustainability of the financing of the U.S. current account deficit, the U.S. dollar has weakened from its 2002 high. Foreign exchange market intervention coincided in 2003 and early 2004 with pressure on many currencies to appreciate, especially in emerging Asia and Japan. Reminiscent of the late 1980s (see the first Figure at right), surging global foreign exchange reserves boosted official purchases of U.S. treasuries, notwithstanding the notable absence of concerted foreign exchange market interventions that were the hallmark of the 1987 Louvre Accord (see the second Figure below).

In a marked contrast from the late 1980s, concerns over deflation and financial market pressure have been major concerns for policymakers in recent years, most notably in Japan. On signs that a recovery was finally taking hold, global investors started to raise their portfolio weightings in Japan more closer to its weight in benchmark indices. Consequently, foreign purchases of Japanese equities surged in the second half of 2003 and early 2004. Expectations of exchange rate appreciation reportedly resulted in further speculative and leveraged position building, especially in the months following the Septem-

**Group of Seven (excluding United States) Reserve Changes**  
(In percent of U.S. GDP)

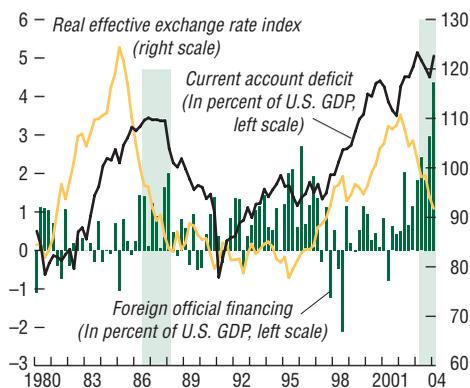


Sources: International Monetary Fund, *International Financial Statistics*; and IMF staff estimates.

ber 2003 Group of Seven (G-7) Communiqué (see the third Figure).

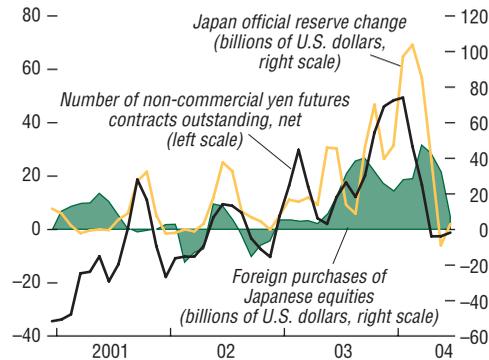
Large-scale foreign currency market interventions by Japan in 2003 and early 2004 were undertaken with a view to smooth out undue currency fluctuations. Market participants tended to attribute these interventions also to

**U.S. Current Account and Foreign Official Financing**

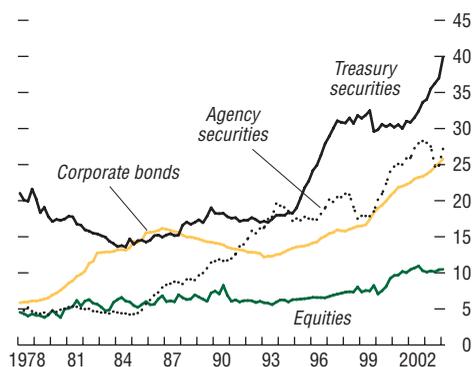


Sources: IMF, *International Financial Statistics*; and U.S. Bureau of Economic Analysis.

**Speculation and Intervention in Japan**  
(Three-month cumulative changes)



Sources: U.S. Commodity Futures Trading Commission; and Japan Ministry of Finance.

**Box 2.3 (concluded)****Foreign Ownership of U.S. Securities**  
(In percent of total market)

Sources: Board of Governors of the Federal Reserve System, *Flow of Funds*; and IMF staff estimates.

the desire to overcome deflation and to minimize the risk that a premature tightening of monetary conditions resulting from currency appreciation could derail the nascent economic recovery. Interventions coincided with a rise in speculative long yen positions registered by the Chicago Mercantile Exchange from September 2003 through mid-February this year. While futures markets capture only a small share of speculative activity, this suggests surging speculative inflows may have contributed to the volatility of the yen.

**The Financing of Global Imbalances**

- Foreign exchange reserves held by industrial countries and developing countries swelled during the interventions in 1986–88 and 2003–04.<sup>1</sup> The accumulation of reserves, however, was more concentrated during the latter period, with the reserve increase experienced by Japan accounting for most of the increase

<sup>1</sup>The analysis is focused on periods marked by high official financing flows to the United States, namely April 1986 through March 1988 and April 2003 through March 2004; these periods are referred to as 1986–88 and 2003–04.

in industrial country foreign exchange reserves (see the Table).

- The rapid increase of foreign exchange reserves fuelled official purchases of U.S. securities on a large scale during both periods (see the fourth Figure). Nevertheless, official financing flows to the United States rose from 1.2 percent of U.S. GDP in 1986–88 to 2.9 percent of U.S. GDP in 2003–04. This increase outpaced the rise in global foreign exchange reserve holdings in relation to GDP over the past two decades.<sup>2</sup>
- Reflecting the shift from concerted to unilateral interventions, the sources of official financing flows have become significantly more concentrated, with Japan's share in official flows rising particularly strongly.
- Private sector financing flows to the U.S. remained largely stable, averaging nearly 2 percent of GDP during 1987–88 and 2003–04. Nevertheless, foreign direct investment flows have turned negative on a net basis since the first quarter of 2003, as U.S. companies have stepped up their operations abroad. Mirroring these trends, U.S. equity investors have increasingly diversified their portfolios by increasing their foreign equity holdings. FDI and equity outflows on a net basis averaged 1.9 percent of GDP during 2003–04 compared with a 0.8 percent inflow in 1987–88.

**Risks to an Orderly Resolution of Global Imbalances**

The global imbalances, reflecting the U.S. current account deficit and large surpluses in other parts of the world, pose a continued risk. While the U.S. current account deficit is likely to adjust, the timing and nature of the adjustment are difficult to predict. Even though capital flows to the U.S. have remained buoyant, a slowdown cannot be ruled out, especially in light of the high share of foreign ownership of U.S. assets. Nevertheless, it is not easy to see why investors would engage in a wholesale shift away

<sup>2</sup>Global foreign exchange reserves rose sixfold during 1984–2003, while worldwide nominal GDP grew threefold over the same period.

**U.S. Current Account Financing***(Annual rates)*

	1986:Q3–1988:Q2	2003:Q2–2004:Q1	1986:Q3–1988:Q2	2003:Q2–2004:Q1
	<i>(In billions of U.S. dollars)</i>		<i>(In percent of U.S. GDP)</i>	
Current account balance	-153.3	-537.3	-3.3	-4.8
Official assets, net	57.2	326.8	1.2	2.9
U.S. official reserve assets	5.5	2.0	0.1	0.0
Foreign official reserve assets in the U.S.	51.6	324.8	1.1	2.9
Private assets, net	96.1	210.5	2.1	1.9
Direct investment, net	22.3	-164.8	0.5	-1.5
Inflows	49.4	25.4	1.1	0.2
Outflows	-27.1	-190.2	-0.6	-1.7
Portfolio flows, net	44.7	359.1	1.0	3.2
Inflows	48.8	420.0	1.0	3.8
Outflows	-4.0	-60.9	-0.1	-0.5
Equity flows, net	14.3	-44.7	0.3	-0.4
Inflows	13.3	44.1	0.3	0.4
Outflows	1.1	-88.8	—	-0.8
Bond flows, net	30.4	403.8	0.7	3.6
Inflows	35.5	376.0	0.8	3.4
Treasury <sup>1</sup>	0.4	163.4	—	1.5
Agencies	n.a.	-10.6	n.a.	-0.1
Corporates & Others <sup>2</sup>	35.1	223.2	0.6	2.0
Outflows	-5.1	27.9	-0.1	0.2
Other <sup>3</sup>	34.6	16.2	0.6	0.1
<i>Memorandum items:</i>				
Industrial country reserve change	196.9	349.6	4.2	3.1
of which, Japanese official reserves change	55.4	328.2	1.2	2.9
of which, German/ECB official reserves change <sup>4</sup>	47.9	-20.0	1.0	-0.2
Developing country reserves change	70.1	438.1	1.5	3.9
of which, Asia excluding Japan				
U.S. nominal GDP, billions of U.S. dollars	4,671.9	11,166.7		

Sources: Bureau of Economic Analysis; and International Monetary Fund, *International Financial Statistics*.<sup>1</sup>Reported as "Other private investment in U.S. securities" during 1986:Q3–1988:Q2.<sup>2</sup>Including Agencies during 1986:Q3–1988:Q2.<sup>3</sup>Net short term, U.S. official non-reserve assets, and discrepancy.<sup>4</sup>German reserves 1986:Q3–1988:Q2; ECB reserves 2003:Q2–2004:Q1.

from U.S. dollar assets, in the absence of a compelling alternative to dollar assets in a high growth area, without undermining the rationale of their investment decisions.

- The composition of inflows represents a further risk. Foreign direct investment flows turned negative, and the financing of the U.S. current account deficit increasingly relied on portfolio flows. In addition, there was a shift in the composition of portfolio financing flows from equity to fixed income related flows, which paralleled the growing structural U.S. fiscal deficit.
- The high share of foreign ownership of U.S. assets, in particular U.S. bonds, raises the pos-

sibility that a lack of confidence in the U.S. dollar could result in higher yields. These could, in turn, call into question the discounted value of other assets and lead to price declines in other markets.

- The unusually rapid growth of international reserves has facilitated the financing of the U.S. current account deficit. However, a shift in the currency composition, especially by those countries experiencing a continued large buildup or with large holdings of foreign exchange reserves, could undermine the strength of official financing flows to the United States.

tional banks to the nonfinancial private sector and a shift toward interbank and government credit. Local banks' interbank foreign currency exposures may therefore have increased and may need to be more carefully monitored.

The overall regional picture masks continued improvements in the stronger systems and only tentative recovery in the crisis afflicted countries. Financial soundness indicators (FSIs) indicate that the Brazilian banking system is sound and prospects have improved further in light of the ongoing economic recovery. Credit quality and risk management is likely to be enhanced in the future with the recent introduction of the credit rating system by the central bank. FSIs for banks in Mexico have been strengthening steadily. The banking system in Chile remains robust with improved capital adequacy and profitability and stable and low nonperforming loan ratios.

The banking system in Argentina has stabilized but remains fragile. Its prospects hinge critically on increasing profits, given the lack of public sector resources and the unwillingness of shareholders to invest in Argentine banks. Similarly, notwithstanding some progress in restructuring, the banking system in Uruguay remains vulnerable to the need for continued restructuring of the largest bank. Difficulties have also emerged at a smaller cooperative bank. Ongoing political uncertainties in Venezuela have contributed to concerns about the soundness of the banking system, where weaknesses may be masked to some extent by foreign exchange controls and regulatory forbearance.

In the Dominican Republic, conditions in the financial system seemed to have stabilized despite macroeconomic uncertainties. Significant efforts, however, are still needed to increase provisioning and capital. The liquidity drain experienced by banks in Bolivia early this year has stopped, but the system remains vulnerable to liquidity shocks. The authorities are making progress in their efforts to deal with weak banks and facilitate

corporate restructuring. In Ecuador the consolidation of the banking system continues despite persistent structural weaknesses. However, the system remains vulnerable to domestic and external shocks, which would have to be absorbed without the benefit of a lender of last resort.

### Emerging Europe

Several indicators point to continued good performance of banking systems in the European emerging markets. The strong earnings shown on average in 2002 were sustained in 2003, and asset quality and capital adequacy strengthened. The favorable developments and prospects are also reflected in continued strong bank ratings and improving relative market valuation of bank stocks, following some retrenchment in the second half of 2003. On the whole, banking systems in the region seem poised to gain further from the economic recovery, although rapid credit growth, especially to the retail sector, poses a risk in some countries. The credit expansion is being intermediated by foreign banks, which have a large presence in many countries in the region. The Bank for International Settlements (BIS) data indicate that their lending in domestic currency has increased substantially, although there has been a shift away from credit to the nonfinancial private sector.

Variation in the situation of banking systems across the region reflects the differing structural issues they face. The restructuring of the banking system in Turkey has progressed and the impending replacement of the blanket guarantee by a limited deposit insurance scheme should provide an important signal and help limit moral hazard. A number of structural issues, however, still remain to be addressed, including privatization of state-owned banks, the sale of nonperforming loans held by the state asset management company, and rationalization of taxation in the banking system.

### Box 2.4. Emerging Market Spread Compression: Is It Real or Is It Liquidity?

As the monetary tightening cycle begins and industrial country interest rates rise, calibrating how much of the compression in emerging market spreads was due to improvements in “real” fundamentals and how much was due to excess liquidity could have important ramifications.<sup>1</sup> The impact of an interest rate rise on spreads may be fairly benign if the lower spreads have been primarily the result of improved fundamentals, but a reversal could be quite abrupt if excessive liquidity were to blame, and could be even more pronounced if the excessive liquidity also led to leveraged positions.

To examine this issue, a forecasting model was constructed that takes into account several features of emerging market spreads and how they adjust to domestic fundamentals and interest rates.<sup>2</sup> First, observe that to the extent that rates paid by emerging market borrowers follow industrial country interest rates, a decline in interest rates, all else being equal, implies lower debt burdens for emerging market countries and an improvement in fundamentals as measured by debt service ratios, debt-to-GDP ratios, and the likelihood of default. Thus, in observing an improvement in fundamentals the model should control for the interaction between industrial country interest rates and the domestic fundamentals—improvements in fundamentals need to be *in addition* to the effects of lower interest rates in order to distinguish the effects of liquidity.

Second, many studies use credit ratings as a proxy representing fundamentals as they encapsulate a host of economic variables.<sup>3</sup> While a handy and efficient measure, the measure is “coarse”—there are a fixed number of categories (e.g., AAA, AA+, A, . . . C–, and SD, referring to default) and alterations among them are not associated with a fixed (or linear) response in

spreads. The model below attempts to enrich the informational content of ratings by: (1) using the indications for future up- or downgrades represented by the rating outlook to account for possible future ratings changes; (2) scaling the ratings variable using logarithms to account for their non-linear relation with spreads; and (3) computing predicted values of ratings depending on three types of “fundamentals.”<sup>4</sup>

The model proceeds in two steps. First, the ratings with outlooks are regressed on three measures of “fundamentals,” which include an overall variable for economic risks, one for political risks, and one for financial risks.<sup>5</sup> A short-term interest rate, as measured by the current level of the U.S. federal funds target rate, is additionally included so that in the second stage any effect of interest rates on spreads will be independent of such effects influencing the fundamentals as proxied by the predicted ratings. Second, the predicted credit rating from the first stage is used in a second stage where the log of spreads at time  $t$  is regressed on the following additional variables: time  $t$  futures rate for federal funds three months in advance; a dummy variable representing, at time  $t$ , an expected rise in the U.S. policy rate three-months ahead; the time  $t$  volatility of expected

<sup>4</sup>Empirically, markets react first and foremost to hints of future ratings changes rather than the actual event when it occurs. Sy (2002) observes that when spreads are “excessively high” a rating downgrade frequently follows, similarly “excessively low” ratings are often followed by upgrades, suggesting market spreads anticipate future ratings changes.

<sup>5</sup>The *International Country Risk Guide* (2003) releases monthly ratings covering three types of risks—political, economic, and financial. The political variable includes various measures of political risk. The economic risk rating includes variables such as annual inflation, budget balance/GDP, and the current account/GDP. The financial variable includes variable such as foreign debt/GDP, foreign debt service/(exports of goods and services), net international liquidity as months of import cover, and a measure of exchange rate stability. The higher the rating, the lower the risk. The rating takes a numerical value between 0 and 100.

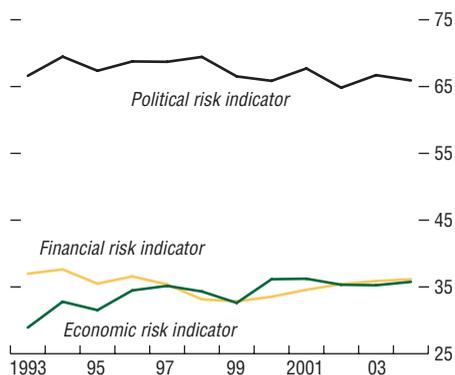
<sup>1</sup>See Kashiwase and Kodres (forthcoming).

<sup>2</sup>The model represents a reduced-form model for spreads and, as such, does not distinguish between supply and demand factors for debt securities and their influence on spreads.

<sup>3</sup>See, for example, IMF (2004a) and Sy (2002).

**Box 2.4 (concluded)**

**Fundamentals of the Emerging Market Economies<sup>1</sup>**



Sources: J.P. Morgan Chase & Co.; The PRS Group, Inc., *International Country Risk Guide*; and IMF staff estimates.  
<sup>1</sup>The data are a monthly average through May 2004, representing a weighted average of the countries in the EMBI Global Index.

U.S. monetary policy; an interaction term between the volatility and expectations; and time  $t$  implied volatility of the stock market (VIX), which serves as a proxy for risk aversion. The interest-rate related variables can be viewed as representing liquidity effects.

The model is run as a panel data set with fixed effects using monthly data from January 1994 through May 2004 for 30 countries within the EMBI Global universe (excluding Argentina). In the first stage regression, all three types of fundamentals are statistically significant, even though the improvement in fundamentals has not been very dramatic for the sample as a whole (see the first Figure). The additional use of the ratings outlook adds several percentage points of explanatory power. In the second stage, the coefficient on the predicted credit ratings variable is the largest and most statistically significant: a one-notch degradation in rating increases spreads by 190 basis points (see the Table). The

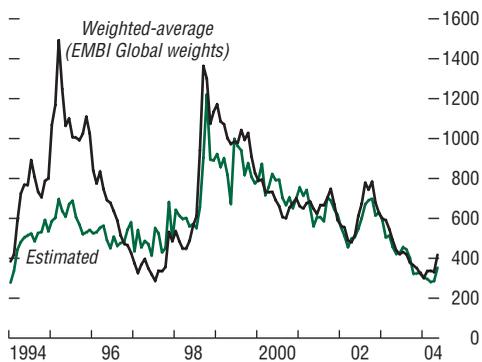
**Emerging Market Bond Spreads: Fixed-Effect Panel Regression Model**

	Unit	Coefficient	Standard Error	t-statistics	Impact on the spread (bp.) by one standard deviation increase <sup>1</sup>
Dependent variable: EMBI spreads (bp.)	log				
Explanatory variable:					
(1) Credit ratings predicted <sup>2</sup>	log	0.271	0.009	30.7	190 <sup>3</sup>
(2) 3-month ahead Fed Funds futures rate	percent	0.070	0.005	15.4	85
(3) Volatility of 3-month ahead Fed Funds futures minus target rate <sup>4</sup>	log	0.163	0.014	11.8	69
(4) Expectation of rate increase <sup>5</sup>	0 or 1	0.151	0.076	2.0	52
(5) Interaction between the volatility and the expectation	log	0.121	0.031	3.9	99
(6) VIX	level	0.019	0.001	13.3	80
(7) Constant	log	2.452	0.112	22.0	n.a.
R squared:					
Within		0.462			
Between		0.778			
Overall		0.676			
Number of observations:		2,275			

Sources: Bloomberg, J.P. Morgan Chase, The PRS Group, Inc.; *International Country Risk Guide*; and IMF staff estimates.  
<sup>1</sup>Given an initial spread of 700 bp, an average across countries over the sample period, the number indicates how much the spread will change in basis points from one standard deviation increase in the variable, ceteris paribus.  
<sup>2</sup>An aggregate index of credit ratings and their outlook is regressed in the first stage against economic, financial, and political fundamentals as well as the U.S. policy rate.  
<sup>3</sup>Based on a one-notch decline in the long-term sovereign credit rating from BB to BB-.  
<sup>4</sup>This volatility measure is based on the 90-day rolling standard deviation of the difference between 3-month ahead Fed Funds futures and target rate.  
<sup>5</sup>This dummy variable takes a value of 1 when investors price in more than 50 percent of a 25 basis point increase at the frequency of more than half of the total number of trading days in any given month.

### Emerging Market Bond Spreads (Excluding Argentina)

(In basis points)



Sources: Bloomberg L.P.; J.P. Morgan Chase & Co.; The PRS Group, Inc.; *International Country Risk Guide*; and IMF staff estimates.

coefficient on the anticipated federal funds rate suggests that a fall in the federal funds futures rate results in a fall in spreads and vice versa, as would be predicted by a liquidity effect.<sup>6</sup> But the coefficient is much smaller than that for ratings and is also smaller than the effect of a market “surprise”—the volatility of interest rate expectations. Although the appropriate calibration is not obvious, translated into the effect of a one standard deviation move, both effects as well as the interaction term have sizable impacts on spreads. Thus, if a tightening in the U.S. policy

<sup>6</sup>Other studies have used interest rates (short-term, long-term, and their difference) as an explanatory variable for spreads. The outcomes have not been uniform, with some—Eichengreen and Mody (1998); Kamin and von Kleist (1999); Sløk and Kennedy (2004); and McGuire and Schrijvers (2003)—finding a negative or inconclusive relationship.

rate is not anticipated the effect on spreads of the two coefficients involving the “surprises” is much larger than an anticipated increase.

The model is then used to forecast through June 2005 assuming the following: (1) no change in fundamentals; (2) federal funds futures rates predict future policy interest rates as accurately as they were predicted in 1999 when markets “got it right;” and (3) stock market volatility remains the same as in the first six months of 2004. The second Figure shows the models’ predictions and the current EMBI Global index. Looking back, the model predicts relatively well, especially in recent times. Thus, the period leading up to the Asian crisis and most of 2000 suggests spreads were even lower than future federal funds (and other variables) would have predicted. However, like some other models, the model suggests that much of the “overshoot” is gone by 2002, with the elements of the model determining spreads fairly closely even through the reversal in early 2004. Looking forward, the model suggests that if the federal funds rate should rise by 275 basis points by mid-2005 as forecast by futures markets, the EMBI Global spread (excluding Argentina) should rise by another 100 basis points or so. Of course, this conclusion rests on the observation that fundamentals remain the same and the ability of markets to predict future movements in interest rates as accurately as they did in 1999 repeats itself. What is clear from the model is the accuracy of markets’ predictions of future interest rates is important and thus the Federal Reserve can play a role in reducing the risk of any disruptions in the emerging bonds market. A clear communication strategy by the Federal Reserve that helps guide market expectations can promote financial stability by keeping the volatility of the expected U.S. monetary policy low, thus contributing a more modest widening in emerging market spreads.

Russia’s banking system experienced disruptions in May–July, despite generally strong economic conditions (Box 2.7, page 46). The

authorities were able to contain turbulence and staunch runs on banks, which had only a limited impact on banks in other countries in

### Box 2.5. German Issue of Russian Federation Credit-Linked Notes

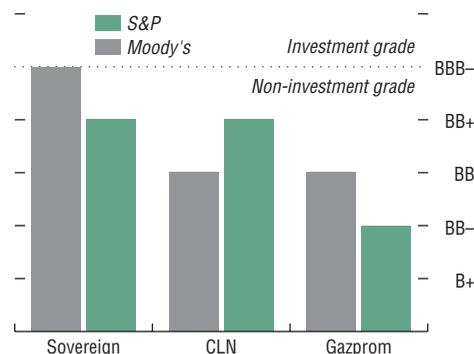
On July 1, 2004, Germany liquefied €5 billion of its holdings of Russian Paris Club debt (PCD) through the issuance of credit-linked notes (CLNs) by a special purpose vehicle.<sup>1</sup> By issuing new notes to investors linked to Russia's performance on its PCD obligations to Germany, the German authorities generated cash for deficit financing without issuing debt. The issue is the first public transfer of PCD in six years since the securitization by France and Italy of PCD in 1998.

The deal involved some innovative features. In the transaction, Germany agreed to pay ARIES—a special purpose vehicle—the flow of principal and interest it is due on a portion of its PCD. In return, Germany receives an up-front payment from the note issue, effectively monetizing the PCD. There is no change in PCD ownership. Since the PCD has an amortizing schedule giving rise to a different cash flow, the payments the special purpose vehicle receives from Germany have to be swapped into cash flows corresponding to those of the issued bullet bonds. For an event of default to occur, Russia has to be more than 60 days late in payments above a certain size and Germany must decide to publicly announce that Russia has failed to service its PCD. In this event, investors in the CLNs will receive a recovery value of 20 percent in cash.

The CLNs were judged to be inferior in credit quality and recovery value to other Russian sovereign debts. At times of payment difficulties, sovereigns have tended to default on PCD as a first resort. Furthermore, the guaranteed recovery value is below the market's perception of the recovery value on Russian marketable debt. Reflecting these considerations, Moody's rates the CLNs two notches below the sovereign at

<sup>1</sup>The issue comprises three tranches. A €2 billion euro-denominated three-year floating rate note was priced at Euribor plus 325 basis points, a €1 billion five-year fixed-rate euro-denominated note was priced to yield 7.76 percent or 420 basis points over euro area government bonds, and a \$2.4 billion 10-year fixed rate dollar-denominated note was priced to yield 9.71 percent, or 500 basis points over U.S. treasury bonds.

#### Russian Bond and Credit-Linked Note Ratings



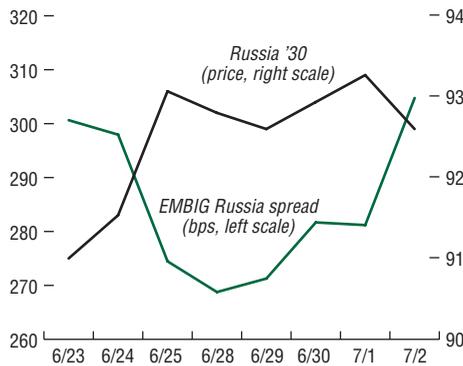
Source: Bloomberg L.P.

“Ba2” (same rating as Gazprom), although Standard & Poor's awards a comparable rating to the sovereign of “BB+” (see the first Figure).<sup>2</sup>

Even though Russia's indebtedness and credit profile are unaffected by the transaction, the issuance of CLNs increased market exposure to Russian sovereign credit risk. Moreover, Germany could issue up additional CLNs. Germany's claims on Russia amount to €14 billion, although not all of these obligations can be transformed into CLNs. The issuance of the CLNs and the potential further additional supply of Russian-linked securities contributed initially to a modest widening of spreads on Russian external debt (see the second Figure). Russian sovereign and corporate markets sold-off when the monetization was announced, but have since recovered, reflecting strong demand for the notes and an easing of concern about the extent of additional supply from such transactions. Nevertheless, further transactions may crowd out borrowing or raise the cost of borrowing for Russian entities, while it would also lower

<sup>2</sup>Standard & Poor's apparently considers only the probability of default on the CLNs and not the expected recovery rate in determining its rating.

**Russian Bond Market Developments**



Sources: Bloomberg L.P.; and J.P. Morgan Chase & Co.

debt payments from Russia to Germany in the future.

It is possible that other countries will follow the German example and seek to monetize their PCD. In the case of Russian PCD, additional supply outside of Germany will be somewhat restricted since no other Paris Club creditor has similarly large claims on Russia (see the Table).

**Russia's Paris Club Creditors**

(In billions of U.S. dollars)

Paris Club debt	48
Of which:	
Germany	20
Italy	5
Japan	4
France	3

**Countries with Large Debts to the Paris Club<sup>1</sup>**

(In billions of U.S. dollars)

Argentina	3.3
Brazil	9.4
Ecuador	2.5
Peru	8.4
Poland	15.6
Egypt	19.6
Morocco	5.6
Nigeria	23.1
Indonesia	33.6

<sup>1</sup>Approximate Paris Club debt based on debt to official bilateral creditors

There is also potential for similar transactions involving the PCD of other countries. Overall size of the PCD and its concentration in the hands of creditors will determine the likely volume of any transaction.

the region. Passage of interim deposit insurance will help to underpin confidence as the banking system continues to restructure and consolidate. While the authorities' recent measures were successful in calming the situation, more effective bank resolution processes, improved crisis management tools, and a clear and consistent public communications strategy are needed to minimize the impact of individual banks' problems on confidence in the sector as a whole. Elsewhere in the region, rapid credit expansion is the main concern and warrants close monitoring in a number of countries, including the Baltics, Bulgaria, the Czech Republic, Hungary, Romania, Russia, the Slovak Republic, and Ukraine. The associated risks are greater in countries—for example, Ukraine—where a high degree of dollariza-

tion, including of loans, exposes banks to direct exchange rate and related credit risk.

**Middle East and Africa**

Data limitations suggest greater caution in interpreting regional aggregate financial soundness indicators in the Middle East and Africa. Such data tend to be strongly influenced by a few large countries. Against this backdrop, financial soundness indicators (FSIs) point to a marginal weakening in banks' performance in the Middle East, although individual country experiences vary. Favorable economic developments augur well for the banking system in Egypt, where the authorities are also moving to address structural weaknesses in the system, including in

### Box 2.6. Collective Action Clauses

Following the first Mexican issue in New York in March 2003, there has been a clear shift toward the use of collective action clauses (CACs) in international sovereign bonds issued under New York law. Since March 2004, sovereign issues containing CACs grew to represent more than 90 percent of total value of new issues, and 40 percent of the value of the outstanding stock of bonds from emerging market countries, largely reflecting the increase in sovereign bonds issued under New York law that included CACs.

After a relatively brief period of uncertainty regarding the degree of standardization between investment grade and non-investment grade countries, it now appears that market practice for bonds issued under New York law has rapidly converged toward a 75 percent voting threshold for majority restructuring provisions. In particular, Brazil lowered the voting threshold in its recent sovereign issues to 75 percent from 85 percent, reflecting the practice followed by a number of non-investment grade countries.

Market acceptance of CACs has continued with no observable impact on pricing even after international liquidity conditions toward emerging market debt gradually tightened in the sec-

ond quarter of 2004. Market reports no longer focus on the inclusion of CACs in bonds issued under New York law, reflecting the acceptance of CACs as market practice.

Since March 2004, seven emerging market countries—Brazil, Israel, Lebanon,<sup>1</sup> Mexico, Peru, the Philippines, and Turkey—again included CACs in their bonds issued under New York law. When reopening a bond issued under New York law in 2002, Jamaica did not include CACs in its New York law bond. Among mature market countries only Italy issued under New York law, and again included CACs in these issues.

There have been several issues that included CACs under English and Japanese law, as it is market practice in those jurisdictions. Cyprus, Croatia, the Czech Republic, Hungary, the Slovak Republic, the Philippines, Ukraine and Thailand, among emerging market countries, and Austria, Greece, New Zealand, and Sweden, among mature market countries, issued under U.K. law. Both Poland and Hungary issued under Japanese law. Jamaica was the only country that issued under German law.

<sup>1</sup>Bonds issued by Lebanon include majority restructuring provisions.

#### Emerging Market Sovereign Bond Issuance by Jurisdiction<sup>1</sup>

	2002				2003				2004		
	Q1	Q2 <sup>2</sup>	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3 <sup>3</sup>
<b>With CACs<sup>4</sup></b>											
Number of issuance	6	5	2	4	9	31	10	5	25	20	5
of which: New York law					1	22	5	4	14	13	1
Volume of issuance	2.6	1.9	0.9	1.4	5.6	18.0	6.4	4.3	18.5	15.4	2.5
of which: New York law					1.0	12.8	3.6	4.0	10.6	9.0	0.8
<b>Without CACs<sup>5</sup></b>											
Number of issuance	17	12	5	10	14	4	7	7	2	1	2
Volume of issuance	11.6	6.4	3.3	4.4	8.1	2.5	3.5	4.2	1.5	0.9	1.5

Source: Capital Data.

<sup>1</sup>Number of issuance is in number. Volume of issuance is in billions of U.S. dollars.

<sup>2</sup>Includes issues of resturctured bonds by Uruguay.

<sup>3</sup>Data for 2004:Q3 are as of July 30, 2004.

<sup>4</sup>English and Japanese laws, and New York law where relevant.

<sup>5</sup>German and New York laws.

the legal and regulatory areas, nonperforming loans (NPLs) at state-owned banks, and the need to strengthen capital adequacy. In Lebanon, capitalization and profitability have improved and the trend deterioration in the quality of the loan portfolio has ceased. Large exposure to the sovereign and high degree of dollarization remain the main risks. The banking system in Pakistan is performing well and has undergone significant restructuring and privatization. Market and credit risks are the emerging concerns going forward. The banking system in Saudi Arabia remains highly liquid, profitable, and well capitalized, but faces some risk from the potential for a reversal in the rise in oil prices. In Kuwait, the blanket government guarantee of bank deposits was removed in April 2004, which should lessen moral hazard.

Financial soundness indicators (FSIs) for banks in South Africa have improved and the recent robust credit growth has abated. The authorities are also seeking to re-align legislation to be consistent with international best practice. The banking system in Kenya continues to be burdened by a high level of nonperforming loans and weaknesses in supervision, and implementation of reform measures remains slow. Banks in Zimbabwe have shown resilience in the face of adverse macroeconomic developments, but the possibility of systemic difficulties in the near term cannot be ruled out.

### Structural Issues in Mature Markets

This section covers six structural issues:

- An update on the insurance industry, following the discussion in Chapter III of the April 2004 GFSR (Box 2.8, page 48).
- The hedge fund industry—developments and practices.
- An introduction to energy trading markets.
- Balance sheets in major mature markets.
- The Basel II Framework.
- Market and credit risk indicators for the mature market banking system.

### Hedge Fund Industry: Developments and Practices

Interest in the hedge fund industry by institutional investors has grown significantly in the last five years, resulting in large capital inflows, even as the industry continues to address earlier public and private sector recommendations. The significant growth of hedge funds, driven by institutional investors (e.g., pension funds, foundations, and endowments), has heightened the desire by the official sector to better understand hedge funds and their activities. The hedge fund industry is important to financial stability considerations for several reasons: (1) it is an active and leveraged counterparty to systemically important and regulated financial institutions; (2) broadly speaking, hedge funds can employ leverage much more extensively and diversely than other investment vehicles; and (3) industry assets are growing rapidly, and it is an increasingly important investor base in the international capital markets. As such, people continue to ask if hedge funds may again be a source of systemic vulnerability or market dislocations, similar to the events of 1998 and Long Term Capital Management (LTCM).

The hedge fund industry is composed of a heterogeneous group of pooled investment vehicles—there is no “typical” hedge fund. Nevertheless, hedge funds share several characteristics that distinguish them from traditional asset managers:

- they employ a wider range of financial instruments and investment strategies, including the use of leveraged positions;
- the manager’s particular investment strategy is more important to performance than asset class or geographic market selection;
- they may hold large short positions, and often employ active trading strategies; and
- hedge fund managers rely primarily on performance fees for much of their revenue.

In general, the hedge fund structure seeks to ease constraints typically faced by traditional fund managers.

Our study examines how we may achieve a better understanding of hedge funds and

**Box 2.7. Russia: Recent Turbulence in the Banking Sector**

Despite strong macroeconomic fundamentals, Russia's emerging private banking system endured a period of uncertainty in May–July. The closure of a small bank, Sodbiznessbank, in early May on account of alleged breaches of anti-money laundering laws sparked the turbulence. The subsequent announcement of a default and voluntary liquidation by another small bank and concerns about capital adequacy and money laundering in some other banks added to market nervousness. The events triggered a tightening of interbank credit lines, deposit withdrawals at some banks, and a run-up in interbank interest rates.

To some extent the nervousness in the banking system can be understood as a hard-to-avoid counterpart to the restructuring and consolidation of banks under a desirable reform process. The authorities recognize the tensions entailed by the reform process and during the recent turbulence took steps to reassure depositors. The central bank ensured ample liquidity by halving reserve requirements to 3.5 percent. And, on July 10, the Duma passed emergency legislation extending deposit insurance to all household

deposits under 100,000 rubles (about \$3,500) at all banks. The deposit insurance provides a safety net while the process of admitting banks to the system is completed. By mid-July, these measures appeared to have contained the situation and restored confidence, with the banking system regaining deposits and international reserves continuing to increase.

The recent developments also underscored the need for the central bank to have sharper and more independent instruments to resolve problem banks and manage liquidity. This would include more effective bank resolution processes, improved crisis management tools, and a clear and consistent public communications strategy. In this respect, recent passage of deposit insurance for household accounts at all banks and a strengthened bank bankruptcy law aims to make the process of resolving banks more speedy and avoid delays in paying out deposit insurance, which undermine confidence. Russia's central bank should also review its facilities for liquidity management so that more targeted support could be provided to illiquid but solvent banks that face runs in the future.

their market activities, particularly for financial stability considerations. We will not examine issues concerning investor protection, particularly relevant to retail investors, or safeguards against fraud. This study will review and update developments in the hedge fund industry since the previous IMF study in 1998, and consider what progress has been made to satisfy various recommendations and proposals from that time.<sup>4</sup> Our objective is to address the broadly held view that not enough is known about hedge fund activities (i.e., to

“de-mystify” the hedge fund industry). Our operating assumption is that markets work, and that market discipline can be very effective in such areas. However, in conducting our review of progress since the earlier studies, we note that such studies largely concluded that market discipline failed in 1998 with regard to LTCM. Pursuant to our study, we focus on the following issues: (1) counterparty exposure; (2) use of leverage; (3) disclosure and transparency; (4) market discipline; and (5) the impact of hedge funds on smaller and devel-

<sup>4</sup>This study is a continuation of an overview of hedge fund activity published in the April 2004 *Global Financial Stability Report* (IMF, 2004a), where we reviewed the industry's growth since 1998 (Eichengreen and Mathieson, 1998). Earlier studies included a broad range of recommendations, seeking to improve counterparty risk management, enhance disclosure and transparency, and strengthen market discipline to improve industry surveillance. See, for example, President's Working Group on Financial Markets (1999), Counterparty Risk Management Policy Group (CRMPG, 1999), and FSF (2000 and 2002).

oping markets. A concluding section discusses the possible future direction of further industry and policy actions.<sup>5</sup> We plan to continue this project, aiming to provide more detail regarding particular hedge fund and counterparty practices, and to cooperate with other official bodies on related work.

### *Growth of the Industry*

The desire by institutional investors to improve risk-adjusted returns has led to significant capital flows into hedge funds. Assets under management among hedge funds were estimated to be over \$800 billion at end-2003, and are projected to rise to approximately \$1 trillion in 2004, growing on average 15 percent a year since 1999 and accelerating since 2002 (Table 2.5). The number of hedge funds was estimated to be 8,100 at end-2003, compared with approximately 6,000 in 1998. Industry representatives and previous studies have also noted that proprietary trading desks of banks and securities firms have increasingly engaged in trading activities similar to those of hedge funds. While hedge fund assets remain small compared with traditional asset managers, such as mutual funds (approximately \$5 trillion in the United States alone), the increasing interest from pension funds and other institutional investors means hedge funds will likely continue to receive significant capital flows into the foreseeable future.<sup>6</sup>

Institutional investors have increased their focus on active asset management. Many large institutional investors have historically pursued passive investment strategies, focused on various broad equity or fixed-income benchmark indices. However, increasingly these investors are looking to integrate investment and risk management practices, and thus seek a blend of “strategies” to meet their invest-

**Table 2.5. Hedge Funds: Number of Funds and Assets Under Management<sup>1</sup>**

	1999	2000	2001	2002	2003	2004
<b>United States</b>						
Number of funds	4,150	4,250	4,400	4,600	4,875	...
Assets under management <sup>2</sup>	225	280	315	340	420	...
<b>Europe and Japan/Asia</b>						
Number of funds	2,050	2,250	2,600	2,900	3,225	...
Assets under management <sup>2</sup>	225	240	285	310	400	...
<b>Global</b>						
Number of funds	6,200	6,500	7,000	7,500	8,100	8,800
Assets under management <sup>2</sup>	480	520	600	650	820	970

Source: Van Hedge Fund Advisors International.

<sup>1</sup>Historical data and projections for 2004 are estimates by Van Hedge Fund Advisors International.

<sup>2</sup>In billions of U.S. dollars.

ment objectives, while aiming to maintain risks at acceptable levels. A greater emphasis on diversification and asset correlations is reflected in portfolio construction. As such, investors increasingly seek to isolate and enhance returns from active asset management (alpha), and wish to reduce the volatility and returns associated with general market risks (beta). Such investment objectives have encouraged greater hedge fund exposure.

Given the rapid industry growth, market participants question the capacity of some strategies and large funds to generate “alpha.” Due to the significant flow of capital and new fund managers into the industry, most market participants anticipate diminishing returns in some hedge fund strategies. From a policy perspective, the concern is that managers will employ more leverage to enhance or maintain historical performance, and some evidence of this exists today. Without adequate transparency, it is often difficult to determine if such activity is taking place or whether it may be destabilizing in some markets. Consequently, many policymakers, regulators, and market participants

<sup>5</sup>Our views on the issues discussed in this section were developed through numerous meetings with fund managers and risk managers from hedge funds, funds of hedge funds, and the main banks and prime brokers in the hedge fund industry, as well as national authorities in several of the major financial centers.

<sup>6</sup>Non-money market mutual fund shares, as reported in U.S. flow of funds accounts (U.S. Board of Governors of the Federal Reserve System, 2004).

### Box 2.8. Insurance Industry Update

The April 2004 GFSR discussed the reallocation of risk from banks to the insurance industry, and the factors influencing insurers' willingness and capability to hold and manage risks. It noted that the ability of insurance companies to hedge liabilities and how they invest could be explained by differences in market structure and regulatory frameworks, with accounting standards and credit rating agencies also playing important roles.

The global recovery in equity markets and improvements in credit quality during 2003 and early 2004 have improved insurance company balance sheets, including solvency levels. Insurers have also continued to enhance their risk management techniques, including the adoption of advanced financial risk management techniques from the banking industry. A number of insurers, particularly in Europe, have strengthened their balance sheets by continuing to reduce equity allocations and increase credit exposure.

While risk management practices have improved, insurers continue to face difficulties hedging the complex risks in some legacy and newly developed products. In the 1980s and 1990s, many insurers marketed products (e.g., annuities and universal life policies) with high guaranteed rates of return and other product features with high optionality that were difficult to hedge in the financial markets. Newer products have attempted to shift more of these risks to policyholders. However, weaker demand has prompted insurers to reintroduce some guarantees (e.g., guaranteed minimum income and surrender benefits). These guaranteed benefits are difficult to hedge or properly price, and many reinsurance companies are unwilling to reinsure these products, reflecting in part the difficulty to hedge the exposures.

#### *Regulatory and Reporting Developments*

In the United States, the National Association of Insurance Commissioners (NAIC) has proposed measures to streamline the current state-based system of insurance regulation.<sup>1</sup> The framework seeks to promote state adoption of national regulatory standards, including life insurance products, to

<sup>1</sup>For details, see NAIC (2004), which can be found at [http://www.naic.org/docs/naic\\_framework.pdf](http://www.naic.org/docs/naic_framework.pdf).

ease administrative burdens and make regulation more effective. Some market participants think the NAIC may also consider methods to improve its risk-based capital framework, possibly by introducing different risk weights for different categories of equity holdings.

The U.K. FSA has moved forward in implementing risk-based capital requirements. The FSA released in July 2004, the Prudential Sourcebook (PSB) for insurers, which codifies the changes proposed in CP 195 released in 2003 (see April 2004 GFSR for details of CP 195). As noted in our previous study, the FSA is attempting to link capital requirements for insurance companies more closely to market risk principles, particularly for with-profits products. One investment bank foresaw a likely increase in the use of credit derivatives by insurers to manage credit risks in the investment portfolio.

The European Union's Solvency II project, which seeks to formulate a Basel II-like risk-based capital framework, moved forward with the release in April 2004 of a discussion paper (MARKT/2502/04). Industry representatives indicated that developing appropriate risk models for insurers remained a considerable challenge, including the appropriate role diversification may have in the calculation of risk-based capital requirements. In addition, and as noted in our April report, there is continued concern that national supervisors may not have sufficient resources to evaluate and develop standards for internal risk management models as part of Solvency II.

The International Accounting Standards Board (IASB) recognized that consultation on a completely new international reporting framework for insurance accounting could not be completed in the timetable previously proposed. In particular, it noted that consultation could not be completed on Phase II of its project in time to meet the starting date of 2005 set by the European Union and other jurisdictions. In response to concerns over conceptual and practical issues related to insurance accounting, including the implementation of fair value accounting principles (such as IAS 39), the IASB announced that, before restarting Phase II, it would assemble a small working group of senior insurance professionals to help analyze the issues, starting work in September 2004. In the meantime, it has issued interim guidance on accounting for insurance contracts.

have raised the question of how to monitor hedge fund activities, and whether regulation may be required.<sup>7</sup> We attempt to address these questions in the context of the five factors that are the focus of our review.

### *Counterparty Exposure and Risk Management*

Counterparty risk management by banks and prime brokers with regard to hedge funds has improved during the last five years.<sup>8</sup> As in the past, collateral remains a cornerstone of risk management at prime brokers and banks, and their trading and credit activities with hedge funds, particularly equity market activities.<sup>9</sup> In contrast, financing for fixed-income transactions may be more fragmented, with an individual counterparty (often a bank) extending credit with relatively less collateral protection.<sup>10</sup> The collateral coverage relative to the credit extended (i.e., the haircut),

credit terms, and trading margin are now usually set by formal and established credit assessment procedures. Discussions with leading counterparties (banks and brokers) suggest that such assessments generally include many of the following factors: (1) the transparency of the investment strategy; (2) the amount of leverage required by the strategy to be economically viable; (3) the underlying liquidity, concentration, and volatility of investment positions; (4) the amount of liquidity (i.e., cash and equivalents) held by the fund; (5) the size and operational infrastructure of the fund; (6) the degree of “strategy drift” detected in the fund or the fund manager’s operating history; and (7) the length and quality of a fund manager’s track record.

Established banks and brokers use collateral and other credit terms in an effort to achieve AA or AAA credit quality. Banks and brokers

<sup>7</sup>The SEC Commissioners voted on July 14, 2004 to publish for comment a proposed rule that would require the registration of hedge fund advisors under the Investment Advisers Act of 1940. Many of the largest hedge funds are already registered with the SEC (and, for those that are commodity pool operators and commodity trading advisors, with the U.S. Commodity Futures Trading Commission). Requiring the registration of hedge fund advisors would allow the SEC to collect more information about hedge funds, such as the number of funds that an advisor manages, the amount of assets in hedge funds, the number of employees and types of clients, and the identity of persons that control or are affiliated with the advisor. Through this requirement, the SEC staff would have access to all funds with assets in excess of \$25 million. However, the threshold amount is one of several issues on which the SEC has requested industry comment until September 15, 2004.

<sup>8</sup>CRMPG (1999) called for the development of liquidation-based estimates of potential credit exposures when assessing credit, and integrated risk management combining market and credit risk, which the FSF also endorsed. Today, credit procedures most often evaluate current and potential exposures, and risk management techniques employed by banks and prime brokers address multiple sources of risks, as well as their correlations. Current exposure is evaluated by marking to market the value of liabilities. Potential exposure uses the calculated value at risk (VaR) for a given period, typically 10 days, and sets loss limits with a confidence interval, typically 95 or 99 percent, of likely losses. This risk management approach contrasts sharply with the silo approach of dividing market, credit, and operational risk commonly practiced in the past.

<sup>9</sup>Prime brokerage traditionally focused on equity trading. For historical reasons, the risk “buckets” into which hedge fund clients are often classified by prime brokers are relatively conservative. Based on a rolling 10-day VaR, margin is set by some brokers to cover potential losses at the 95 percent confidence level for the highest-quality customers, and at the 99 percent level for the lowest-quality counterparty. Margin limits are further adjusted by scrutinizing the portfolio for other sources of risks and characteristics (e.g., liquidity, concentrations, and how positions fit into the broader book at a prime broker).

<sup>10</sup>In contrast to equity transactions, funds engaged in fixed-income trades tend to have more counterparties to trade with, and collateral arrangements may only cover 95 percent of potential losses, as calculated by a rolling 10-day VaR. The principal difficulty is that each leg of a fixed-income transaction is likely to be financed separately. For example, creating a fixed-income position could require a certain amount of collateral from the hedge fund. The fund may then hedge the purchase using a swap arrangement obtained at another bank or broker. The fund could then ask that less collateral be charged on the first transaction because it is now hedged. In addition, the fund could seek further swap or futures trades related to this position, thereby creating different exposures. Most banks and brokers would prefer to finance most or all legs of such transactions; however, hedge funds continue to resist such pressures. Ideally, collateral should reflect the risk profile of the entire trade, not each individual leg. However, in some cases, a more collateralized position on each leg or a particular leg may make the transaction uneconomic.

actively manage counterparty exposure using multiple sources of information, including trading and other relationships, and a variety of risk management tools, including derivatives.<sup>11</sup> Some prime brokers (dealing particularly with equity trades) maintain less than 1 percent uncollateralized exposure to all counterparties (not just hedge funds) on a current and potential exposure basis.<sup>12</sup>

Most prime brokers and banks believe that “hard” requirements for collateral and other credit terms may be inappropriate. Such hard limits may force hedge funds to liquidate positions at the worst time, and possibly exacerbate deteriorating market conditions and weaken the counterparty’s position.

Consequently, counterparties actively monitor these exposures, requiring more detailed and frequent reporting of portfolio positions, and use qualitative judgments to complement quantitative rules to proactively adjust exposures. In this regard, the larger banks and established brokers seek to combine traditional credit analytics with trading and market experience, and often encourage hedge funds (by offering preferential trading terms) to bring more of their overall business to them in order to gain a fuller picture of their risk profile (albeit with relatively little success to date).

Market participants emphasized that liquidity risk continues to represent a significant challenge. One of the lessons from the failure of LTCM is that liquidity can disappear quickly during periods of market stress, espe-

cially when hedge funds and similar activities by proprietary trading desks within banks and securities firms accumulate significant and/or concentrated positions.<sup>13</sup> To manage their liquidity risks, most hedge funds seek to limit concentrations with specific counterparties and instruments, and have explicit (often hard) exit strategies on positions in anticipation of possible market disruptions. Nevertheless, many fund and risk managers, as well as investors, question whether such strategies are realistic for less liquid asset classes or markets dominated by hedge funds and bank trading desks (e.g., distressed securities, and fixed-income or convertible arbitrage strategies). Typically, hedge funds also utilize “lock-up” agreements, often for extended periods (up to two or three years), to manage investor or fund liquidity and capital withdrawals, which is another way that hedge funds manage liquidity risk—thereby transferring or sharing this risk with investors.

#### *Use and Measurement of Leverage*

Since 1998, credit providers and hedge funds have developed a better understanding of leverage and, broadly speaking, hedge fund leverage is at relatively moderate levels today. At present, many equity hedge funds report leverage typically less than two times capital, and other styles and strategies are similarly reporting leverage at or below historical norms.<sup>14</sup> Nevertheless, leverage can magnify liquidity, market, and credit risks, as well as returns, and is one of the most important fac-

<sup>11</sup>In addition to the steps outlined in footnotes 9 and 10, several brokers recently have attempted to use information from the credit derivatives market to manage collateral requirements—using spread movements on credit default swaps to adjust collateral requirements and exposures.

<sup>12</sup>It should also be noted that Basel II and its market risk approach has also positively influenced the analysis and management of hedge fund exposure by the larger banks and brokers.

<sup>13</sup>The report of the President’s Working Group on Financial Markets (1999) observed that risk management weaknesses revealed by the LTCM episode “. . . were also evident, albeit to a lesser extent, in investment and commercial banks’ dealings with other highly leveraged counterparties, including other investment and commercial banks.” Industry representatives have said that obtaining information about leverage and risk positions among hedge funds alone would provide only a partial picture. Indeed, the FSF broadened its analysis to include proprietary trading desks of regulated banks and securities firms.

<sup>14</sup>By comparison, the report of the President’s Working Group on Financial Markets (1999) stated that LTCM leveraged their capital as much as 28 times in 1997 and 1998.

**Table 2.6. Leverage Estimates by Hedge Fund Strategy<sup>1</sup>**

Fund Strategies <sup>2</sup>	Total Number of Funds	Simple Average Leverage Within Each Strategy	Asset-Weighted Average Leverage Within Each Strategy	Leverage		Volatility of Returns Within Each Strategy <sup>3</sup> (percent)
				Minimum	Maximum	
Fixed income: diversified	21	5.4	8.3	1.0	18.0	6.7
Fixed income: mortgage-backed	30	3.9	4.3	1.0	10.0	10.0
Fixed income: high yield	7	3.0	3.3	1.3	5.2	10.3
Convertible arbitrage	108	2.5	3.0	1.0	7.0	4.9
Equity nonhedge	74	2.2	2.9	1.0	12.0	8.1
Fixed income: arbitrage	74	2.0	2.1	1.0	12.0	7.5
Global macro	54	2.0	2.4	1.0	5.0	11.2
Equity market neutral	36	1.7	1.8	1.0	3.0	6.4
Event-driven multi-strategy	68	1.5	1.4	1.0	10.0	12.4
Merger/risk arbitrage	80	1.4	1.6	1.0	10.0	6.0
Equity hedge	499	1.4	1.4	0.7	20.0	14.5
Distressed securities	89	1.3	1.2	1.0	3.0	4.9
Emerging markets	118	1.3	1.4	1.0	3.0	27.3
Short selling	19	1.2	1.1	1.0	2.0	15.2
Sector composite	103	1.2	1.2	1.0	2.0	17.1
<i>Memorandum item:</i>						
Fund of funds	482	1.2	1.2	1.0	25.0	9.1

Source: Center for International Securities and Derivatives Markets, CIDMHedge database.

<sup>1</sup>Leverage may not be reported consistently across hedge funds. This number can refer to the current reporting period or to some period average, as reported by the hedge fund. In addition, no specific guidance is available as to how the figure is computed. Data for the period December 1997–December 2003, and at December 2003, as appropriate.

<sup>2</sup>See Box 2.9 for strategy definitions.

<sup>3</sup>Volatility is calculated as the standard deviation of the data reported by hedge funds within each strategy.

tors contributing to a hedge fund's overall risk profile. Moreover, hedge fund and risk managers have noted that leverage has shifted to newer and riskier strategies. Many sophisticated investors carefully assess the use and appropriate degree of leverage, which varies from strategy to strategy, and are cautious about investing in highly leveraged strategies. However, increased competition among prime brokers, particularly newer entrants, has made it easier for hedge funds to obtain leverage.<sup>15</sup>

Market participants recognize that leverage must be monitored against acceptable norms for different strategies (Table 2.6 and Box 2.9). As noted above, leverage varies from strategy to strategy, and certain strategies (typically fixed-income and various arbitrage strategies) generally employ more leverage. Despite best practices recommended by hedge

fund associations, most hedge funds only report accounting leverage, which is often stated as the market value of gross exposures (the sum of long and short positions) relative to a fund's net asset value.<sup>16</sup> One limitation of this measure is that it does not gauge how underlying market risks are affected by changes in asset prices, which is what an economic measure of leverage would provide. Economic measures of leverage generally begin with a VaR calculation, and may incorporate stress scenarios and some measures of concentration and liquidity of a fund's positions.

Market participants have become concerned about leverage being introduced at the fund of hedge funds (FOFs) and investor levels. Recently, some FOFs have used leverage to compensate for diminishing returns (e.g., due

<sup>15</sup>Recently, 11 of the 36 hedge funds that responded to a Greenwich Associates survey reported an increase in their use of leverage, although not dramatically higher, spurred in part by easier credit terms and more margin credit provided by prime brokers (Greenwich Associates, 2004).

<sup>16</sup>See Managed Funds Association (2003) for a recent compendium of alternative measures of leverage.

### Box 2.9. Hedge Fund Strategy Definitions

#### *Relative Value Strategies*

##### 1. *Equity Market Neutral*

Seeks to profit by exploiting pricing inefficiencies between related securities, neutralizing exposure to market risk by combining long and short positions.

##### 2. *Convertible Arbitrage*

Involves purchasing a portfolio of convertible securities and hedging a portion of the equity risk by selling short the underlying common stocks.

##### 3. *Fixed Income*

Fixed-Income Composite funds include funds that invest in Fixed-Income Arbitrage, Fixed-Income Diversified, Fixed-Income High-Yield, Fixed-Income Mortgage-Backed.

3a. *Fixed-Income: Arbitrage.* A market neutral hedging strategy that seeks to profit by exploiting pricing inefficiencies between related fixed-income securities, while neutralizing exposure to interest rate risk.

3b. *Fixed-Income.* These funds invest in non-investment grade debt. Objectives may range from high current income to acquisition of undervalued instruments. Emphasis is placed on assessing credit risk of the issuer. Some of the available high-yield instruments include extendible/reset securities, increasing-rate notes, pay-in-kind securities, step-up coupon securities, split-coupon securities and usable bonds.

3c. *Fixed-Income: Mortgage-Backed.* These funds invest in mortgage-backed securities. Many funds focus solely on AAA-rated bonds. Instruments include government agency, government-sponsored enterprise, private-label fixed- or adjustable-rate mortgage pass-through securities, fixed- or adjustable-rate collateralized mortgage obligations (CMOs), real estate mortgage investment conduits (REMICs), and stripped mortgage-backed securities

Source: Center for International Securities and Derivatives Markets (CISDM), Hedge Fund database.

(SMBSs). Funds may look to capitalize on security-specific mispricings. Hedging of prepayment risk and interest rate risk is common. Leverage may be used, as well as futures, short sales, and options.

#### *Event Driven Strategies*

##### 4. *Distressed Securities*

Strategies invest in, and may sell short, the securities of companies where the security's price has been affected by a distressed situation like reorganization, bankruptcy, distressed sales, and other corporate restructuring.

##### 5. *Merger Arbitrage/Risk Arbitrage*

Merger Arbitrage, sometimes called Risk Arbitrage, involves investment in event-driven situations such as leveraged buyouts, mergers, and hostile takeovers.

#### *Other Strategies*

##### 6. *Equity Hedge*

The strategy is comprised of long stock positions with short sales of stock or stock index options/futures. The strategy has a long market bias.

##### 7. *Sector Composite*

Sector funds invest in specific sectors. Investments are primarily long energy, financial, healthcare/biotechnology, real estate, and technology sectors.

##### 8. *Emerging Markets*

Involves investing in securities of companies or the sovereign debt of developing or emerging countries. Investments are primarily long.

##### 9. *Global Macro*

Macro strategies involves leveraged investments on anticipated price movements of stock markets, interest rates, foreign exchange, and physical commodities. Macro managers employ a "top-down" global approach.

##### 10. *Short Selling*

Short Selling involves the sale of a security not owned by the seller; a technique used to take advantage of an anticipated price decline.

to diversification effects or capacity constraints), and presumably to address potential investor concerns related to their double fee structure.<sup>17</sup> Despite the diversification achieved by FOFs, leverage employed at the FOFs level only serves to amplify the risk of leveraged hedge fund activity. Several established prime brokers indicated that they do not extend credit to FOFs, since they cannot effectively monitor the underlying hedge fund activities, with collateral once removed. Nevertheless, it is understood that FOFs are increasingly employing leverage to enhance returns. Similarly, some retail and institutional investors are being offered leveraged equity interests in hedge funds and FOFs, as well as a variety of structured products, including principal protected or capital guarantee products.<sup>18</sup> In short, these multiple layers of leverage increase the risk profile of these institutions and investors.

### *Disclosure and Transparency*

In general, disclosure has not changed significantly, and has become more varied since the recommendations of the President's Working Group on Financial Markets (1999). The goal of disclosing more information for investors and counterparties to better assess the risk profiles of hedge fund portfolios, while not revealing proprietary information, generally remains elusive.<sup>19</sup> Disclosure stan-

dards vary considerably depending on the target audience, such as investors, counterparties, or regulators, and to some degree improvements to disclosure practices have been cyclical, depending on the need for fund managers to accommodate investor and counterparty requests.<sup>20</sup> Historically, large institutional investors were able to request and receive a high level of transparency. However, more recently, in large part because investor demand is so strong, many hedge funds do not wish to accept added administrative or reporting burdens. Although there was broad support for prior recommendations to improve disclosure practices by hedge funds, follow-through has been less enthusiastic. For example, in a recent update regarding the recommendations of the Multidisciplinary Working Group on Enhanced Disclosure concerning the disclosure of financial risks, the Joint Forum noted: ". . . the Working Group was unsuccessful in obtaining the cooperation of a sufficient number of hedge funds to provide a meaningful basis for further review."<sup>21</sup>

Banks, prime brokers, and administrators have access to more information and receive greater transparency than most investors. The vast majority of industry participants agree that in general hedge fund counterparties have much better transparency today, including data with reasonably granular detail (e.g.,

<sup>17</sup>FOFs charge investors administrative and performance fees (often 1 percent of total assets under management and a 10 percent performance fee), in addition to passing along the fees of the underlying hedge funds (e.g., generally 1 to 2 percent of assets, and 20 percent (or more) for performance).

<sup>18</sup>Interestingly, several hedge funds and FOF managers we met believed the recent poor performance of convertible arbitrage strategies was exacerbated in part due to FOFs withdrawing capital from this non-core strategy to satisfy liquidity requirements related to principal or capital protected products. It should also be noted that a few insurance companies have begun to market these structured credit products to FOFs in competition with traditional bank providers.

<sup>19</sup>As part of our study, we reviewed a variety of reports for investors and counterparties. We found that a typical hedge fund's monthly or quarterly report provides a summary update on performance, exposure represented by the top 5 or 10 positions, attribution of returns, aggregated exposures by sector and/or geographic area, concentrations of these sectoral breakdowns, and, for some, an assortment of risk management metrics, including volatility and VaR. Those funds providing monthly or quarterly risk management data represent a growing minority—and are considered best practice by larger hedge funds.

<sup>20</sup>The availability of hedge fund products to retail investors in Western Europe (e.g., France, Germany, and Italy), Hong Kong, and Singapore has raised regulatory attention concerning disclosure standards for retail investors.

<sup>21</sup>See Joint Forum (2004), page 3.

many credit institutions measure particular exposures across the entire institution, broken down by asset class or sometimes by fund strategy). As such, some market participants believe industry-wide or strategy aggregation of certain risk parameters is feasible. However, many hedge funds avoid allowing any counterparty to obtain full transparency to its trading and investment strategies, based largely on a desire to protect proprietary information and avoid front-running by trading desks within these institutions. Therefore, while better information and transparency appear available, a degree of coordination would be required to compile a reasonable risk profile of particular strategies or market activities.

### *Market Discipline*

Earlier studies identified market discipline as the principal means by which risk-taking is controlled in a market-based economy.<sup>22</sup> A key requirement for effective market discipline is the availability of relevant information. The improvements in risk management and counterparty practices discussed earlier must be complemented with greater transparency for market discipline to be effective. Moreover, such studies also recognized that as the demand for hedge funds grew, the desire to diversify across many hedge funds would bolster the role of FOFs and weaken the incentive or ability of investors to perform sufficient due diligence, placing more of the responsibility on FOF managers.<sup>23</sup>

Industry participants expressed skepticism about the ability of investors and other market forces to exert material discipline on

hedge funds. Most simply, market participants believe the strong demand from investors for hedge fund capacity and increasing competition among regulated counterparties may undermine these sources of market discipline. Many market participants noted that the current strong demand to place capital with hedge funds by institutional investors (including FOFs) may limit their ability to gain greater transparency or to monitor hedge fund activities in a comprehensive manner.<sup>24</sup>

Banks and prime brokers also have been viewed as sources of market discipline. Many of these institutions actively monitor hedge fund activity and receive much better transparency than in the 1990s. However, this effort is, by its nature, focused on the hedge funds they service and is intended to manage their own exposures, which the largest banks and brokers seem to do well. Nevertheless, the picture obtained from the improved bilateral transparency and monitoring is unlikely to fully address financial stability issues (e.g., it does not evaluate broader aggregate market, credit, and liquidity risks, as well as concentrations, amplified by the use of leverage, across particular strategies or asset classes, or the potential for disruptive market dynamics). Moreover, with significant competition among banks and brokers for hedge fund business, there is potential for this form of discipline to disappoint. Therefore, at least at present, it would seem inappropriate to rely on market discipline as the primary source of surveillance and monitoring of hedge fund activities, particularly regarding potential systemic risks.

<sup>22</sup>The President's Working Group on Financial Markets (1999) and FSF (2000) are two prominent examples. Indeed, the President's Working Group on Financial Markets (1999) concluded that it was the breakdown of market discipline that led to an unusually large buildup of leveraged positions in LTCM's portfolio, and high risk exposures for its investors and counterparties (p. viii).

<sup>23</sup>See FSF (2000) for further discussion.

<sup>24</sup>FOFs often require monthly reporting by hedge funds so as to update their own valuations and reports to their investors. However, a more thorough review of a hedge fund for strategic shifts and changes in risk profile generally occurs once or twice a year for newer hedge fund investments, and may only be triggered by specific events or poor performance for older investments.

### *Hedge Fund Impact on Smaller and Developing Markets*

Market participants, including hedge fund managers, agree that hedge fund activity can produce adverse market volatility in smaller and less liquid markets. There is broad agreement in the market that hedge funds, like other large investors, may be disruptive in smaller and developing markets. However, there is little empirical evidence that hedge funds have been a primary source of disruption during periods of emerging market turbulence, such as the Mexican or Asian currency crises of 1994 and 1998.<sup>25</sup>

Market participants emphasized that hedge fund impact on market volatility should not be solely assessed according to national or regional markets. While hedge fund managers agreed that active trading in relatively smaller markets may be disruptive, many managers also emphasized that the diversity of investors in a given market (or asset class or strategy) is a more significant determinant of market dynamics. For example, convertible arbitrage and many fixed-income strategies are dominated by hedge funds (often estimated to represent 80–90 percent of market activity), which are likely to behave in a broadly similar fashion in response to market developments. As such, these markets are likely to experience significantly greater volatility than a market populated by a more diverse investor group (e.g., insurance companies, mutual funds, and pension funds). In recent years, traditional emerging markets have benefited from a more dedicated and diverse investor base. As smaller markets develop and become more liquid, and thereby more attractive to hedge funds, efforts to further diversify and broaden the investor base should enhance financial stability in those markets. Most hedge fund man-

agers cited particular asset classes and strategies (as above), not national or regional markets, as those markets most likely to suffer from significant hedge fund concentration. For policymakers, this implies that financial market surveillance could benefit from an operational metric to gauge the diversity of players in a particular market, in addition to those for depth and liquidity.

### *Preliminary Conclusions*

The demand by institutional investors to place capital with hedge funds continues to grow, and is likely to continue for some time. This trend is fueled by investors' desire to enhance returns from active asset management, and to seek greater portfolio diversification. Institutional investors should be encouraged to press for more information from hedge funds and FOFs (e.g., as a product of fiduciary duties to their underlying investors), to ensure that they understand the factors contributing to investment returns and portfolio risks.

Since 1998, banks and prime brokers have improved their management of hedge fund exposures, as well as their credit and risk management practices. Best practices have emerged and are more broadly adopted. Consistent with Basel II implementation, we find the established brokers and larger banks (and hedge funds) are using sophisticated credit and market metrics to measure and monitor counterparty exposures, including hedge fund exposure. However, it is doubtful whether regulated counterparties have sufficient transparency to allow them to fully assess risks across all of a large hedge fund's activities (particularly potential systemic risks) or across a particular trading strategy (e.g., fixed-income or convertible arbitrage).

<sup>25</sup>See Eichengreen and Mathieson (1998) and Chapter IV of IMF (2004a) for further details. Eichengreen and Mathieson (1998) noted that while hedge funds sometimes take sizable positions, so do banks and other institutional investors. Moreover, hedge funds are concerned about the liquidity and other risks of their positions, not just returns, and are therefore less inclined to take large positions in small, relatively illiquid markets. Fung, Hsieh, and Tsatsaronis (2000) also present similar empirical evidence on the role of hedge funds during the Asian crisis.

Despite the relatively moderate use of leverage by hedge funds today, there is the potential for leverage to rise. In an attempt to maintain performance, funds may pursue more risky strategies, supported by more leveraged positions. Moreover, with new entrants and strong competition among brokers, credit is more readily available to hedge funds today. In addition, FOFs have begun to employ leverage to enhance returns. This layering of leverage may significantly increase the potential for amplifying volatility and market disruptions.

Disclosure and transparency are core issues, and without better transparency it is doubtful market discipline can be relied upon to effectively monitor hedge fund activity. Improving disclosure and transparency on a broader basis would support the effectiveness of market discipline.<sup>26</sup> Banks and brokers generally receive much better transparency today from their hedge fund counterparties, which helps to manage bilateral exposures, but not necessarily systemic risk. The largest hedge funds utilize multiple counterparties, and remain uncomfortable with broad transparency. In part, this may be justified, as many counterparties are also competitors through their proprietary trading desks. Likewise, there is a large variance in investor disclosure, and given the current strong demand for hedge fund investments we question investors' ability to impose market discipline. In short, the hedge fund industry has not embraced earlier recommendations to develop improved standards for disclosure and reporting. Consequently, many in the official sector have questioned whether hedge fund regulation, or monitoring of their activities through regulated financial institutions, may be needed to provide adequate financial surveillance.

The primary goal of most official bodies is to better understand hedge fund operations and

their potential impact on systemic risk, not necessarily to regulate these funds. Gaining a greater knowledge of hedge fund activities seems a logical ambition, particularly since hedge funds represent a significant counterparty to systemically important financial institutions. As such, it seems appropriate to monitor their market activities. Similarly, we believe it would be in the best interest of the hedge fund industry to more broadly and proactively encourage increased transparency, particularly as it grows and matures. In those cases where wholesale regulation of even institutional hedge fund activity is advocated, we question such an approach at this time, and whether the appropriate resources will be applied.

Despite the challenges, we believe hedge fund activities and potential systemic risks can be monitored in the main financial centers.<sup>27</sup> A monitoring exercise could occur in two ways. First, as the hedge fund industry becomes more mature, with many managers institutionalizing their investment management businesses, we found managers of some of the largest hedge funds willing to provide risk information to national authorities on a voluntary basis. If many of the hedge funds with \$2 billion or more in assets under management provided such information (covering approximately 70 hedge fund groups, representing approximately 40 percent of industry assets, and located primarily in New York and London), a substantial picture of the risk profile of hedge fund activity (by strategy and other criteria) would be available to better monitor systemic risks. Second, and independently, while perhaps challenging to implement, we believe the major prime brokers and banks may be able to provide supervisors with sufficient disaggregated information to allow officials to obtain a more complete assessment of particular risk profiles, potentially at the level

<sup>26</sup>The FSF, in the 2000 Report of the Working Group on Highly Leveraged Institutions, noted that "A number of conditions are necessary for market discipline to operate effectively . . . [including] information on counterparties' liabilities and risks."

<sup>27</sup>The FSF (2000) noted that "National monetary authorities, supervisors and regulators should consider proactive market surveillance as a means to help provide useful early warning signals about speculative activity in financial markets."

of particular hedge fund strategies and financial instruments. Supervisors have always focused on various industry exposures and market risks that they believed required special review. As such, the supervisory structure already exists to monitor hedge fund exposure and activity. Of course, hedge funds operate across national and legal jurisdictions, so a reasonable level of cross-border cooperation would be required among financial supervisors. It is not clear that sufficient cooperation and coordination exists today. In either case, agreement about a common matrix of information, which would include qualitative observations and assessments as well as quantitative data, to properly aggregate and analyze available information would be a significant step forward.<sup>28</sup> Given the improvement in risk management techniques by the largest hedge funds and their regulated bank and broker counterparties, we believe the opportunity exists to improve our understanding of hedge fund activities and potential systemic risks.

Some argue that to regulate or to monitor hedge funds would create moral hazard. The regulation or monitoring of hedge fund activities may be perceived as providing an implicit safeguard for investors, and regulated banks and brokers, possibly leading to more risk taking. Some authorities also worry that monitoring may be more problematic than regulation, particularly concerning how a regulator should act upon information or data obtained. We understand these concerns; however, we do not believe they differ in this context from the general supervisory process, or outweigh the benefits of better understanding hedge fund activities. Moreover, reacting to concerns through regulated entities may also prove the most effective means to influence hedge fund behavior and practices, including immediate risk positions and longer-term transparency issues.

Looking forward, as the hedge fund industry continues to grow and mature, we observe several themes likely to emerge in relation to our work. In particular, given the current and expected capital flows from traditional institutional investors into hedge funds, the largest banks and brokers are increasingly organizing themselves to attract this capital and participate in the “institutionalization” of the hedge fund industry. It is estimated that many of the largest banks and brokers will each manage \$20 billion to \$30 billion of hedge fund capital within five years. As such, the regulation or monitoring of such activities would become subsumed within existing supervisory mechanisms of the parent institutions. Moreover, some of these institutions also anticipate stronger retail demand for hedge fund products, which may contribute to the U.S. SEC’s recent initiative. Among the larger and more established hedge funds, we observe a similar institutionalization of activities, and they broadly anticipate a period in which lower returns produce a shakeout in the industry. While we share much of this view of future industry developments, we remain focused on the potentially sloppy and volatile transition process, and related financial stability issues.

We support efforts to develop a broader understanding of hedge fund activities, which we believe will enhance financial stability. Hedge funds are an established investor group in international capital markets, and a constructive influence on efficient market behavior. Nevertheless, they are a leveraged and active counterparty to systemically important financial institutions, and efforts by authorities to better monitor and influence their activities, including through regulated financial institutions, should be encouraged. Hedge funds, like other institutional investors,

<sup>28</sup>We recognize that it may be challenging to design and maintain such a common matrix. However, we remain hopeful that authorities can cooperate and agree on a set of at least basic common and useful information. Furthermore, we believe, from a financial stability perspective, that much can be gained from a more comprehensive view and understanding of regulated institutions’ exposures to hedge funds and those entities engaged in related activities.

can contribute to or may adversely impact financial stability. As such, we still do not know what we do not know about hedge funds, and efforts to improve our surveillance and understanding of their market activities should be supported.

### **An Introduction to Energy Trading Markets**

Energy trading markets have become more important to financial stability in recent years as trading volume and the diversity of instruments and participants have grown rapidly. They have become more interconnected with other financial markets as investment banks, hedge funds, and other institutional investors have become more involved. We discuss below the main features of these highly volatile markets.

The growth in the financial energy trading markets has been tremendous over recent years, with energy-related contracts now being the second most heavily traded category of futures contracts on organized exchanges, after more traditional financial products. The structure of the energy market has also changed, as trading in electricity contracts, mainly over-the-counter (OTC), has grown significantly, particularly with the recent deregulation of electricity generation and transmission in the United States and Europe. Moreover, the range of participants actively trading energy-related financial instruments has expanded over the last three to four years. In addition to the traditional actors, such as oil and gas producers, utilities, refiners, and other industrial consumers, the market now also includes global investment banks as well as hedge funds. While the higher activity by investment banks and hedge funds likely increases the liquidity, depth, and efficiency of the energy markets, it also implies an

increase in exposure to energy market risks. Consequently, there is an increased need for authorities to understand the dynamics of these energy markets, as they are more likely to impact the performance and stability of global financial intermediaries. In what follows, we review the types of instruments traded and of activities undertaken by traditional and newer market participants.

Deregulation is the main catalyst for much of the development of financial energy trading activity, which is largely centered on exchange-traded and OTC derivative contracts.<sup>29</sup> Deregulation of domestic petroleum products and natural gas occurred in the 1970s and 1980s, and in the 1990s for wholesale electricity. Prior to that time, stable and regulated prices were the norm, and producers and consumers of these commodities faced little price risk. With deregulation, traditional energy firms faced greater spot price volatility, and energy derivatives became a natural outgrowth of this process, as firms sought to manage (hedge) the new or increased price risk.

### ***Growth and Characteristics of Energy Markets***

Energy prices tend to vary more than the prices of many other commodities and financial instruments, such as stocks and bonds. Table 2.7 compares the daily price volatility of oil, natural gas, and electricity to the euro-dollar exchange rate, S&P 500, and U.S. bond indices, as well as a few other commodities. Financial instruments tend to demonstrate the lowest volatility, while electricity has by far the highest level of volatility. The higher volatility of wholesale electricity and natural gas is in part related to the impact on these prices of nonfinancial market events, like weather. Demand can increase quickly in response to weather, and it is impossible or very costly to

<sup>29</sup>This section focuses on financial energy trading rather than physical trading. These are forward dated (derivative) contracts, whereas physical or spot trading is on a more “traditional” customer-to-supplier basis. However, on some organized exchanges, particularly in Europe, financial energy contracts tend to be traded in parallel with “spot” or physical markets.

**Table 2.7. Price Volatility for Energy and Other Financial and Nonfinancial Instruments**  
(In percent)

Product	Volatility	Period
<b>Energy</b>		
Electricity (peak-load) <sup>1</sup>	403.3	1995–2003
Natural gas <sup>2</sup>	78.0	1992–2001
WTI crude oil	42.1	1990–2003
<b>Financial</b>		
S&P 500	14.3	1970–2003
U.S. Bond <sup>3</sup>	7.7	1980–2003
U.S. dollar/euro	10.2	1980–2003
<b>Other commodities<sup>2</sup></b>		
Copper	32.3	1989–August 2001
Gold	12.0	1989–2001
Cattle	13.3	1989–August 2001
Corn	37.7	1994–2001

Sources: Bloomberg L.P.; Datastream; U.S. Department of Energy (2002); and IMF staff estimates.

<sup>1</sup>Electricity volatility is based on peak-load prices for the Pennsylvania-New Jersey-Maryland region.

<sup>2</sup>Natural gas and other commodities volatility measures are from Table 3 of U.S. Department of Energy (2002).

<sup>3</sup>U.S. bond volatility is based on 7- to 10-year bond index prices.

increase production in the short run for these commodities. Second, and related, neither electricity nor natural gas can be easily transferred or delivered to meet short-term demand spikes, and local storage capacity is either limited (gas) or nonexistent (electricity).

After deregulation, energy trading began in petroleum products, followed by gas and then electricity. The New York Mercantile Exchange (NYMEX) and the International Petroleum Exchange (IPE) have become the dominant organized exchanges for oil and gas trading, with on average 9 million and 2.7 million futures and options contracts traded per month in 2003 on the NYMEX and IPE,

respectively.<sup>30</sup> The growth in energy derivatives trading has been substantial, as exchange-traded options and futures have grown on the NYMEX from a monthly average of 3 million contracts in 1989 to its current level (see Figure 2.33). The exchanges are also expanding their energy contract offerings. In April of 2003, NYMEX introduced a futures contract on electricity and the IPE is planning to do so in 2004.<sup>31</sup>

Although these figures pale in comparison to the turnover of interest rate, currency, and equity index futures and options trading—with an average North American monthly turnover of 109 million contracts—energy is nonetheless the second most active category of futures and options trading. Moreover, open interest in non-bullion commodities rose from \$445 billion in 2000 to \$608 billion in 2003, with oil and gas accounting for roughly 70 percent of global non-bullion commodity market growth.<sup>32</sup>

Because exchange-traded futures and options specify delivery at a particular location, traders desiring delivery or price protection at other locations must contend with locational differentials, a specific form of basis risk. This is particularly important for natural gas and (even more so) for electricity, where location arbitrage does not work well, since transportation is limited by pipeline (gas) or grid (electricity) infrastructures.<sup>33</sup> Consequently, energy market participants look to the OTC market, especially specialized energy traders within this market, for hedging instruments (Box 2.10, page 61). The greater flexibility of OTC con-

<sup>30</sup>The underlying monetary value of this trading activity is significant. For example, the IPE traded a record 2.07 million Brent futures contracts in April 2004, which represents 2.07 billion barrels of crude oil and an underlying value of approximately \$73 billion. In June of 2004, roughly 3.3 million oil futures contracts traded on the NYMEX. This translates to an underlying value of approximately \$129 billion.

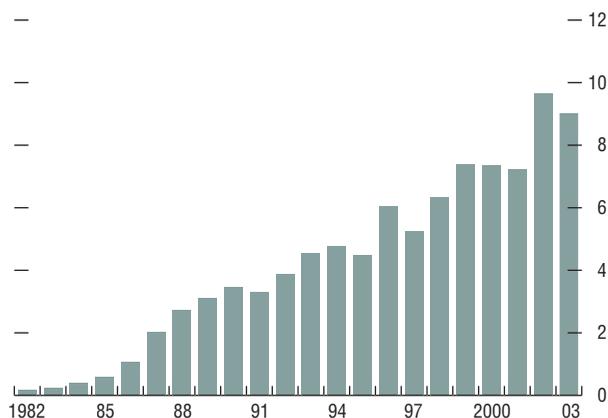
<sup>31</sup>NYMEX also lists several other electricity futures and options contracts on ClearPort, its electronic trading system. The IPE is slated to introduce a new electricity futures contract in 2004.

<sup>32</sup>Figures taken from Davey (2004).

<sup>33</sup>That is, gas and electricity customers and producers are constrained, as they cannot buy/sell supplies transported via means other than through pipeline and grid systems that have a limited number of delivery points (gas) or regionally organized distribution systems (electricity). As a result, price differences can persist between more or less independent, localized markets. Roughly speaking, gas is less localized than electricity, with oil being the least localized market.

**Figure 2.33. Total Number of Energy Options and Futures Contracts<sup>1</sup>**

*(Average monthly volume; in millions)*



Source: New York Mercantile Exchange (NYMEX).

<sup>1</sup>The total volume of options and futures contracts traded on NYMEX.

tracts allows users to negotiate contract terms that more closely reflect their hedging needs. However, the increased contract flexibility comes at a cost of greater counterparty risk exposure and lower liquidity.

Traditionally, in most financial OTC derivative markets, such as interest rate swap contracts, large investment banks dominate, as these intermediaries are best able to hedge the risk from the derivatives contracts. However, it was only with the advent of the internet and the entrance in 2000 of energy traders (also known as merchant energy traders, distributors, or marketers), such as Enron or Duke Energy, that OTC energy trading really grew and began to encompass the broader energy complex. Enron in particular established an internet based trading platform (EnronOnline), in which all trades with Enron as a counterparty were executed. As a result, at that time, the energy derivative affiliates of the investment banks were less dominant in the gas and electricity OTC markets than the energy trading firms.

The energy traders specialized in providing OTC hedging instruments to traditional energy producers and consumers who needed protection from, for example, locational basis risk. The trading firms, who were in general affiliates of traditional energy firms, leveraged their physical assets (mainly wholesale unregulated power generation plants) to become essentially OTC dealers (market-makers) in electricity and, to a lesser extent, in oil and gas.<sup>34</sup> Many of these energy trading firms have fallen from prominence since 2002 and the Enron debacle. As energy dealers, these firms relied upon strong credit ratings and funding liquidity. As such, their trading operations were particularly sensitive to negative credit

<sup>34</sup>These firms were structured substantially differently from typical integrated utilities, in that their assets consisted to a large extent of stand-alone (unregulated) electricity power plants in various locations, primarily selling electricity to (regional) wholesale markets.

### Box 2.10. Sample of Popular Energy Contracts

The following are some popular energy contracts. The descriptions are largely based on U.S. Department of Energy (2002).

#### *Forwards*

These are similar to futures contracts traded on the energy commodity exchanges, except that they offer a greater variety of future delivery dates and locations than is available with exchange-traded contracts. Natural gas and electricity are more likely to be traded in the forward market than oil, for which forward hedging needs tend to be met via exchange-traded futures contracts.

#### *Basis Swaps*

There are a variety of basis contracts that allow participants to hedge locational, product, or even temporal differences between, typically, exchange-traded energy futures and options contracts, and the circumstances of the contract buyer or seller. For example, an OTC trader could agree to pay a local industrial gas consumer the difference between the Henry hub gas price, which is the delivery point for the NYMEX natural gas futures contract, and the gas price at its local gas delivery hub, in exchange for a fixed regular payment. Some other basis spreads of note in energy trading are Brent-WTI spreads (Brent crude oil versus West Texas Intermediate crude oil), gasoline-heating oil spreads, and crack and spark spreads, discussed below.

#### *Crack Spreads*

Typically, the profits of industrial users of oil, refiners, and petrochemical firms are significantly affected by the spread or difference in price between crude oil and the refined products they produce. Because industrial users of crude oil can predict their costs other than that of crude oil itself, the spread is their major price uncertainty. Crack spread contracts are in essence bundled forward positions in both crude oil and one or several refined products, such as heating oil and gasoline. For example, an oil refiner seeking to lock in future profits

would purchase (sell) crack spread contracts that implicitly bundle a long position in oil forward contracts with a short position in heating oil or gasoline forward contracts.

#### *Spark Spreads*

This contract has similar underpinnings as the crack spread contract, except it is producers of electricity that are typically trying to hedge their profit risk. The contracts are in essence a combination of forward contracts and are formulated as a long (short) position in wholesale electricity forward contracts and short (long) forward position in the electricity generators fuel input (typically natural gas, which is used in gas-turbine generators).

#### *Crack/Spark Spread Options*

These are options on the crack/spark spread that specify threshold spread levels over (under) which these options are in (out of) the money. This is useful for some industrial users, who are comfortable with price movements within certain limits. These options are somewhat unusual in that they protect the holder from the growth or shrinkage in the difference between prices rather than, as is typical, the movement of one underlying price (such as call options on the S&P 500).

#### *Swing Options*

These contracts provide flexibility as to quantity delivered—a swing feature or swing option. A typical swing contract may have the following form. Producer A agrees to sell to gas pipeline company B 100 gas units per day at a fixed price for a one-month period. B has the right the day before to alter the amount it purchases by 10 gas units from the previous day's level (the swing). However, B's purchases cannot be less than 50 gas units nor greater than 150 gas units. In addition, B must purchase 3,000 gas units over the month. The decisions rest entirely with company B. In this case, B will tend to choose the amount and the sequencing of purchases that maximize the value of this contract.

**Box 2.11. European Energy Trading**

As in the United States, Europe has also undergone a recent phase of energy deregulation that has led to the further development of energy trading markets. An interesting feature of European energy trading, which differs from the United States, is the development of organized electricity exchanges, the first created by the Norwegian and Swedish electricity stakeholders. The Nordic region was the first to experience electricity deregulation, leading to the creation in 1993 of the Nord Pool, a wholesale electricity exchange. Nord Pool is made up of three separate market operations: a physical-delivery market, a financial contracts market, and the clearing organization that deals with Nord Pool's financial contracts and external OTC bilateral wholesale Nordic electricity contracts. Total trading volume, including OTC clearing, was €55 billion in 2003, consisting of 9 percent in spot, 34 percent in financial, and 57 percent in OTC contracts. Another wholesale

electricity exchange, the European Energy Exchange (EEX), was established in Germany. In July, 2004, the EEX announced that monthly open interest reached €3.75 billion, which translates roughly to a total yearly figure of €45 billion. This figure is more than double the open interest observed over the same period on the EEX in 2003.

Of course, as is the case in the United States, the dominate share of trading activity (particularly for natural gas and electricity) occurs in OTC energy markets. Moreover, the evolution of European energy markets has taken on a similar pattern to that of the United States, in that it was specialized energy trading firms that initially dominated these markets. This was followed by a marked decline in market liquidity with the departure of these firms in 2002, and a renewed growth as new players, including investment banks, have recently expanded their trading business in European energy trading products.

events. Following Enron's collapse, many of these firms were forced to cease operations or be retrenched from the energy trading business, and OTC energy trading activity declined in both the United States and Europe (Box 2.11). However, the decline in activity was short-lived, as much of the market activity has shifted to internet-based OTC trading systems, interdealer brokers, and investment banks, which have recently expanded their OTC energy trading businesses.

***New Participants***

Although internet-based electronic trading platforms were established when the energy merchants were active, it was not until the collapse of Enron (and the withdrawal of energy traders from the market) that trading activity really grew on these trading systems. In the United States, the largest of these firms are TradeSpark, which posts U.S.-based gas and electricity contracts, and the Intercontinental Exchange (ICE), which posts U.S. and

European oil, gas, and electricity contracts. Trading on these systems has grown since being established in 2000, with between \$2.5 billion and \$4 billion per day (notional amounts) in mainly energy trading on the ICE in 2004. A fast-growing business line for the ICE is their clearing services for bilateral OTC trades, driven largely by the credit concerns that emerged post-Enron regarding the energy trading firms. Clearing reduces the credit risk inherent in bilateral OTC trading and reduces the amount of collateral required to back trading commitments. NYMEX has also introduced a popular clearing service for OTC energy trades.

The advent of cleared OTC trading also increases the number and diversity of potential counterparties for traditional energy trading. For example, the new OTC clearing services make it easier for investment banks to trade OTC oil derivative contracts with a utility. These clearing systems have facilitated the expansion of investment banks' energy trad-

ing activities. Moreover, it also makes it easier for traditional energy market participants to trade with institutional investors, such as hedge funds.

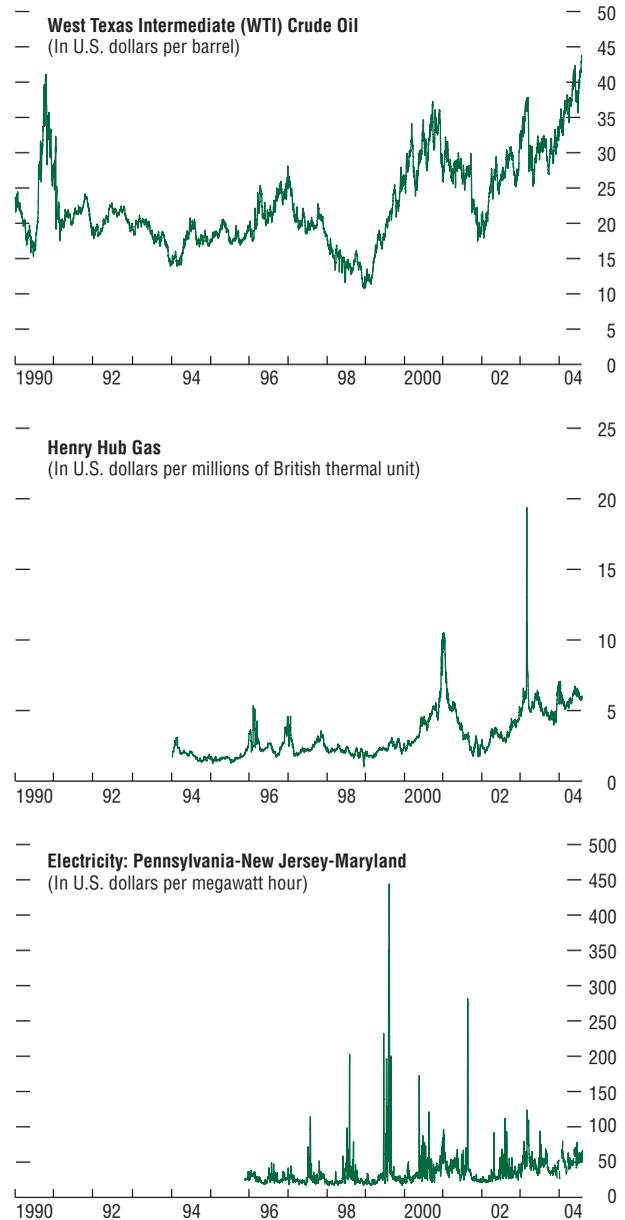
Over the last two to three years, just as energy trading firms dropped out of the energy trading markets, investment banks have expanded not only their dealer activities, but have also invested in physical energy assets. These assets are mainly power generation plants and long-term power supply contracts largely purchased from the fallen energy trading firms. Goldman Sachs has been particularly active in this area, purchasing over \$2.5 billion of mostly power plant assets in 2003.<sup>35</sup> Most of these acquisitions were viewed as “distressed” equity purchases, which the investment banks expect to gain in value as power prices rise. Morgan Stanley also owns three wholesale unregulated electricity plants.<sup>36</sup> Many of these purchases help the investment banks expand their dealer activities in the electricity trading markets, as these plants enable them to physically deliver on contracts rather than requiring them to seek out sometimes costly offsetting hedges.

Investment banks have also expanded (or reconstituted) their activities in the energy trading business in response to increased demand from nonfinancial corporations and institutional investors, including hedge funds, both to hedge against the rise in energy prices and to speculate (see Figure 2.34). Anecdotal evidence indicates that hedge funds were particularly active in the oil markets during the latter part of 2003 and early 2004, mainly taking long positions in derivative contracts, with the view that demand increases were of a more fundamental or structural nature, and therefore likely to persist. Other institutional

<sup>35</sup>Goldman Sachs purchased 26 power plants from Cogentrix Energy in October 2003.

<sup>36</sup>Morgan Stanley is an electricity power marketer in the United States and owns equity interests in three unregulated wholesale generators, from which Morgan Stanley (solely or acting with a joint venture partner) is the exclusive purchaser of electric power.

**Figure 2.34. Selected Energy Prices**



Source: Bloomberg L.P.

investors, such as pension funds, have also begun to invest in commodities, including energy, as low recent equity and bond market returns have led them to seek a wider range of asset classes, particularly those less correlated with their traditional portfolio allocations (see Chapter III for more on this subject).

The increased participation of traditional finance institutions, such as investment banks, hedge funds, and other institutional investors, in the energy markets implies that they now have greater exposure to energy risks, including the counterparty risk from transactions with traditional energy producers and consumers. This may also imply an increased need for policymakers to understand the dynamics of these energy markets, as they may impact the performance and stability of these financial intermediaries, as well as in a broader economic sense. Moreover, we tend to share the view of some analysts that many of these energy markets are undergoing significant structural changes, with the largest energy consuming and producing nations experiencing different, fundamental issues (including energy dependence, potential capacity constraints, national security, and environmental), as well as increasing demand from fast-growing emerging markets such as China and southeast Asia. For all of the above reasons, we will increase our efforts in monitoring energy trading and broader energy market developments.

## Sectoral Balance Sheets

### *Household Sector*

Household balance sheets improved during the first quarter of 2004, as rising equity prices and low interest rates proved supportive. Household debt, particularly mortgage debt, however, remained on a rising trend in the United States and in Europe, notably in the United Kingdom.

A lower flexibility of household balance sheets in the euro area and Japan, compared

to the United States and the United Kingdom, may be a factor behind the differences in debt-to-GDP ratios and savings ratios. In the United Kingdom and in the United States, a variety of financial products (e.g., mortgage equity withdrawal and home equity loans, mortgage refinancing, and reverse mortgages) allow households to more easily borrow against the value of their home. While the ability to obtain liquidity from housing assets may help sustain economic activity and, to some extent, help balance sheet restructuring, it may also increase the sensitivity of balance sheets to economic shocks, and precipitate or amplify downward trends.

With the rebound in equity markets, sustained increases in house prices, and further strong income growth, *household balance sheets in the United States* have continued to improve. In particular, the net worth of U.S. households posted its sixth consecutive quarterly increase in the first quarter of 2004 (see Figure 2.35). It rose by 14 percent over the first quarter of 2003, with much of the gain driven by a rise in home and equity prices.

Household debt accumulation has continued to decelerate. Relative to the previous quarter, the amount of consumer credit that U.S. households owed declined in the first quarter of 2004, while mortgage debt continued to grow at an 11 percent annualized rate, down from the 14 percent pace before the end of the mortgage refinancing boom in August 2003. Moreover, household leverage registered its first decline since 1999, as household asset growth outpaced that of debt.

Although household debt accumulation has decelerated, its growth continues to outpace GDP (see Figure 2.36). Many commentators have expressed concerns that, given these high debt levels, rising interest rates could lead to debt service problems for households. However, low interest rates have supported households' ability to service this debt and, as the recovery continues, the recent stronger income growth (up 6.1 percent from a year earlier in the first quarter of 2004 versus 4.7

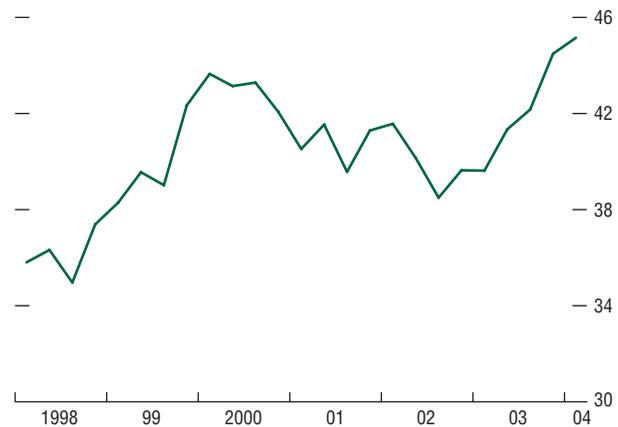
percent in 2003) should further alleviate the debt service burden. To a significant extent, the growth in household debt over the past few years has reflected sustained mortgage refinancing activity, which hit new records as interest rates declined (until most recently). This refinancing activity has allowed many households to lock in low long-term mortgage rates, not only lowering their interest costs but also partially shielding them from the effects of future interest rate increases. This latter factor makes U.S. household finances overall relatively insensitive to interest rate rises.

A related concern is the possibility that much slower growth, or even declines, in U.S. house prices might remove one of the underpinnings of households' improved net worth. Empirical work in the September 2004 *World Economic Outlook* estimates that expected interest rate rises over the last three quarters of 2004 would slow the growth of nominal house prices, but there is no compelling evidence that a drop in real house prices is in the offing.

In the *euro area*, bank lending to households grew at a 6.9 percent annual pace in May 2004 (from 6.4 percent at end-2003). Household debt/GDP, while significantly lower in the euro zone than in the United States and the United Kingdom, has increased, to reach 48 percent in early 2004 (Figure 2.37). Continuing low interest rates accelerated mortgage borrowing in the recent period, with the annual growth of bank lending for house purchases reaching 8.8 percent in May 2004, from 8.0 percent at end-2003. Consumer credit rebounded further, reaching an annual growth rate of 4.4 percent in the second quarter of 2004, albeit well below the 8 percent level that prevailed until late 2000.

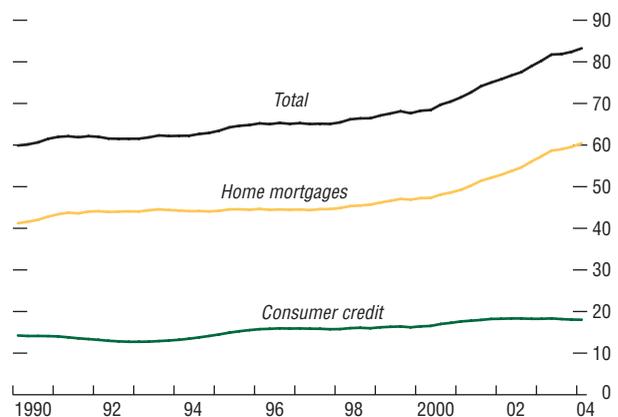
In the *United Kingdom*, borrowing by households has continued to increase sharply in recent months, fueling a continued rise in house prices. As a result, the debt-to-GDP ratio of U.K. households rose to 95 percent in the first quarter of 2004, up from 75 percent at end-2000. Growth in unsecured borrowing

**Figure 2.35. United States: Household Net Worth**  
(In trillions of U.S. dollars)



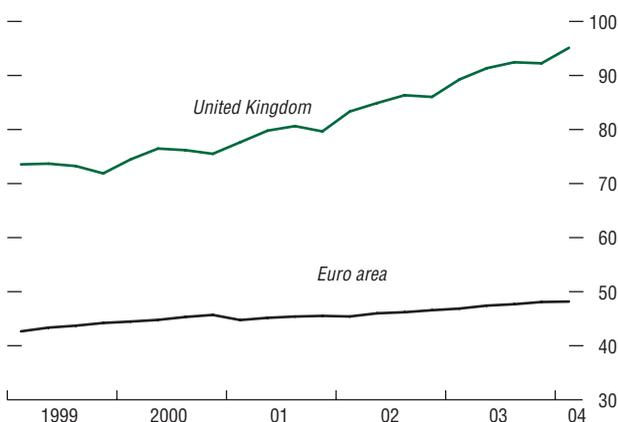
Source: Board of Governors of the Federal Reserve System, *Flow of Funds*.

**Figure 2.36. United States: Household Debt as a Percentage of GDP**  
(In percent)



Source: Board of Governors of the Federal Reserve System, *Flow of Funds*.

**Figure 2.37. Euro Area and United Kingdom: Ratio of Household Debt to GDP**  
(In percent)



Sources: European Central Bank, *Monthly Bulletin*; and U.K. Office for National Statistics.

**Figure 2.38. Japan: Household Net Worth**  
(In trillions of yen)



Source: Bank of Japan, *Flow of Funds*.

remained above a 12 percent annual rate in the first quarter of 2004, while secured borrowing was running at a 15 percent annual rate over the same period, the highest in more than a decade. Successive rises in official interest rates have thus far had little effect on overall household credit growth. According to the Nationwide Building Society index, in July 2004, house prices were rising 20.3 percent annually. However, in the most recent months, some indicators of housing activity point to a slowdown. As households increasingly turn to mortgages that are fixed-rate in the first years rather than the more standard variable-rate mortgages, the effective mortgage rate has remained low, below 5 percent at end-March 2004, muting the impact of higher short-term interest rates on households' debt service burden. U.K. monetary authorities recently warned that, although the risk of a market fall in real house prices was small, stress testing by banks for low-probability but high-impact scenarios for household balance sheets was important and, in the longer term, lower inflation meant that high levels of household debt and debt servicing would be eroded less quickly.<sup>37</sup>

The *Japanese household sector's* net worth continued to improve, albeit marginally, through the six months to the end of March 2004 (Figure 2.38). As in the previous period, the increase derived primarily from valuation gains in equity holdings. Households realized capital gains through the sale of equity (which still increased from 7.4 percent to 8.2 percent of their total assets) and diversified by investing in newly created retail-targeted government bonds (with total issue size of 6.5 trillion yen), securities investment trusts, and foreign currency deposits (asset classes that, in total, represent less than 4 percent of total assets). The slower growth of investment in traditional demand deposits in recent years also demonstrates greater diversification.

<sup>37</sup>See Bank of England (2004).

### Corporate Sector

Further improvement in nonfinancial corporate balance sheets, whether measured by leverage, financing gap or asset quality, was noticeable in early 2004. Progress appears uneven, however, from one country—or region—to another. In the United States and to a lesser extent in Japan, strong cash flow has allowed nonfinancial corporations to increase capital expenditures. In Europe, particularly the euro zone, the ongoing buildup of liquidity positions has not yet translated into increased investment.

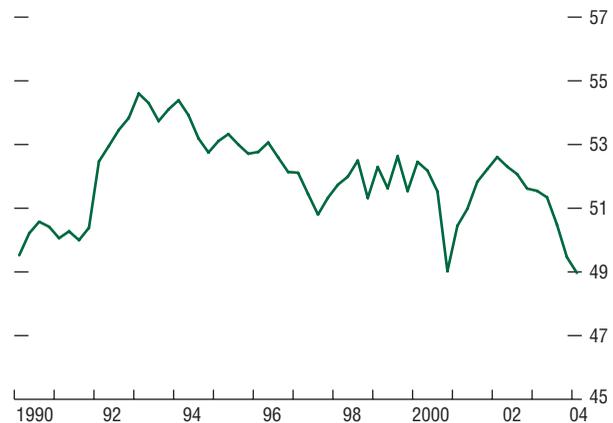
U.S. nonfinancial corporate balance sheets continued to strengthen since the last GFSR. In aggregate, these firms registered record profits, reflecting the rebound in economic activity. As a result, their leverage—measured by the debt to net worth ratio—continued to decline, reaching 49 percent at end-March 2004, its lowest point since the fourth quarter of 1989 (Figure 2.39).

Driven by strong profits, and cash flows that rose by 24 percent from a year earlier (see Figure 2.40), corporate debt growth was subdued during the period. The sharp rise in profits and cash flows reflected the rapid growth in sales and improved profit margins. Moreover, manufacturing activity continues to rebound and many analysts predict that it will get stronger still over the second half of 2004.

Capital expenditure continued to accelerate, growing by 14 percent over the same period in 2003, having remained at depressed levels through the second half of 2003. As such, the strong rebound in expenditures is likely a reflection, not only of increased economic activity, but also of an unwinding of pent-up capital investment demand in the corporate sector, making use of their currently strong cash position.

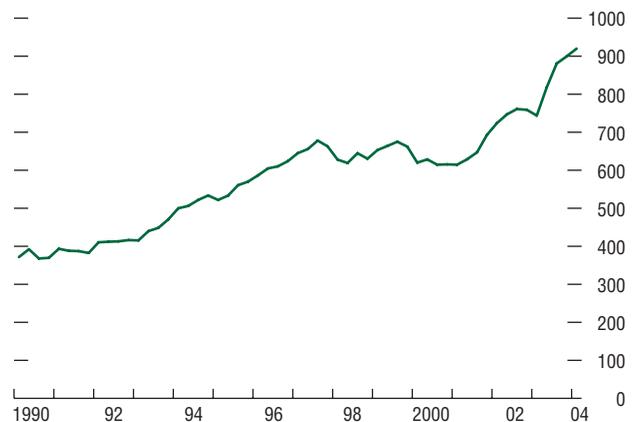
Despite the increase in capital expenditures, the financing gap—the difference between capital expenditures and cash flows—remained in negative territory in the first quarter of 2004 (for the fourth consecutive quarter), indicating that corporations con-

**Figure 2.39. United States: Debt to Net Worth Ratio of Nonfinancial Corporations**  
(In percent)



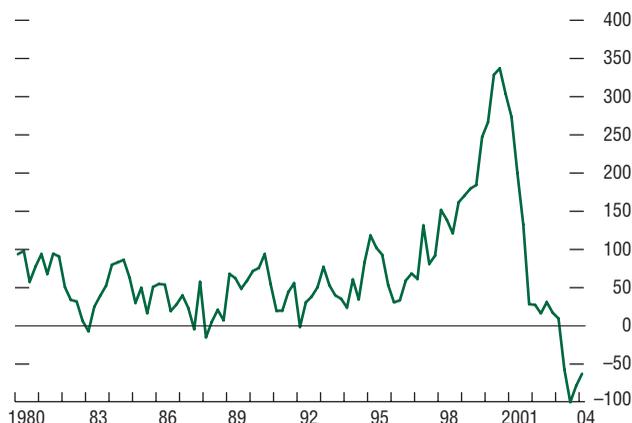
Source: Board of Governors of the Federal Reserve System, *Flow of Funds*.

**Figure 2.40. United States: Cash Flow of Nonfinancial Corporate Business**  
(In billions of U.S. dollars)



Source: Board of Governors of the Federal Reserve System, *Flow of Funds*.

**Figure 2.41. United States: Financing Gap of Nonfinancial Corporations**  
(In billions of U.S. dollars)



Source: Board of Governors of the Federal Reserve System, *Flow of Funds*.

**Figure 2.42. Euro Area and United Kingdom: Ratio of Nonfinancial Corporate Debt to GDP**  
(In percent)



Sources: European Central Bank, *Monthly Bulletin*; and U.K. Office for National Statistics.

tinue to enjoy high liquidity (see Figure 2.41). This excess liquidity is also an important contributory factor to the decline in leverage mentioned above.

*In the euro area and in the United Kingdom,* corporates continued to deleverage during the period. The debt-to-GDP ratio of nonfinancial corporations slightly decreased in the second half of 2003, reaching 75 percent in the United Kingdom and 61 percent in the euro area (Figure 2.42). But these ratios are still high by historical standards, and highlight the potential fragility of the corporate sector to higher interest rates (most notably in the United Kingdom) and/or disappointing economic activity (especially in the euro area). At the same time, nonfinancial corporations do not appear to be facing liquidity constraints and, in the euro area, at end-March 2004, deposits with banks by nonfinancial corporations were growing at a 9 percent annual rate. In the euro area, balance sheet restructuring has continued and slowing bank borrowing and securities issuance reflect cautious business investment by nonfinancial corporations as economic activity remains slow to pick up. Overall, the profitability of nonfinancial corporations continued to improve, with weakness mostly concentrated among small and medium-sized enterprises.

Reflecting the improvement of the corporate sector, the default rate of European speculative-grade issuers has dropped close to multi-year lows, to a mere 1.1 percent in the last six months, from 2.4 percent in 2003 and 13.9 percent in 2002. Despite the improving economy, fears have been expressed that tighter liquidity conditions ahead will lead to a sharp rise in the default rate for speculative-grade issuers that have, up to now, taken advantage of the low interest rate environment. During the first six months of 2004, more than 40 percent of corporate bond issuers in Europe were rated speculative grade.

*Japanese corporations* appear to have regained balance-sheet strength comparable to the

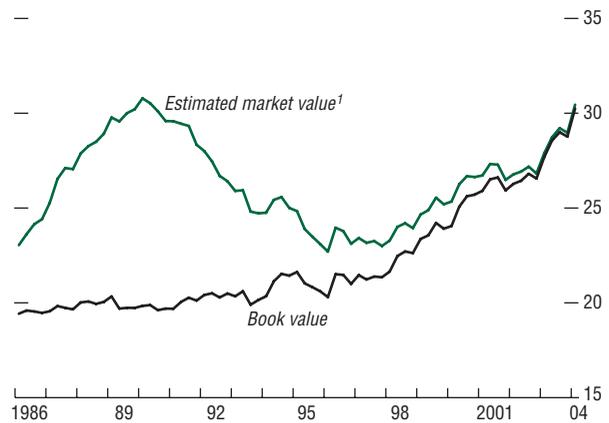
early 1980s pre-bubble period, though many still need to further improve profitability. The levels of both corporate capital and cash flow have recovered to historical peaks following a long but steady restructuring process. The capital/asset ratio of Japanese corporates has further improved in recent months, both on a book and a market value basis, primarily reflecting the continued accumulation of retained earnings (Figure 2.43). In fact, the mark-to-market capital/asset ratio of nonfinancial corporates is now restored to the 1990 peak, when capital values were significantly inflated. While their debt-to-GDP ratio remains roughly 25 percent above the 1984–85 pre-bubble level, their cash flow/GDP ratio has exceeded this level through a steady improvement since 1994, reflecting corporate restructuring efforts (Figure 2.44). The impact of any interest rate increase will likely be able to be absorbed within their improved profits.

Asset quality has also improved. Japanese corporations have reduced their holdings of inefficient and risky assets not directly related to their core businesses. The weight of receivables, inventory, and traded securities has declined by nearly a half to 26 percent of total assets, compared to the pre-bubble period. On the other hand, the proportion of assets that reflects ongoing corporate restructuring (intangible fixed assets, investment and other assets, and investment securities) has doubled to 29 percent of total assets. These assets include deferred tax credits from the sale of subperforming assets, goodwill from mergers and acquisitions, and equities invested in subsidiaries created by company splits. It should be noted, however, that these intangible assets could be seen to inflate asset values, albeit to a limited extent.

**Banking Sector**

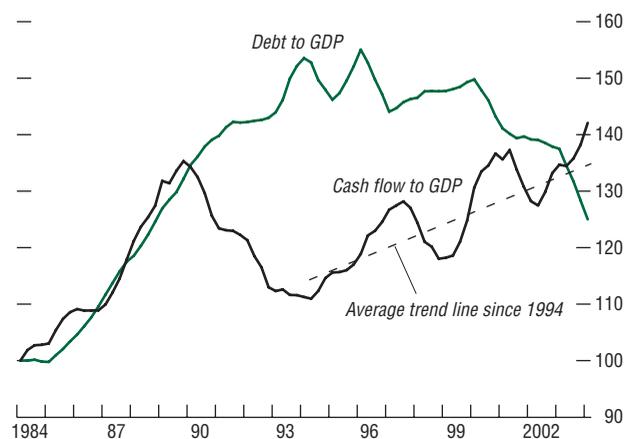
A milestone in the regulation of internationally active banks was reached in June 2004 with the Basel Committee on Banking Supervision’s issuance of the Revised Capital Framework (Basel II). Potential implications

**Figure 2.43. Japan: Capital to Asset Ratio of Corporate Sector**  
(In percent)



Sources: Ministry of Finance, *Financial Statements Statistics on Corporations by Industry*; and IMF staff estimates.  
<sup>1</sup>For capital and assets, equity and real estate are marked to the market.

**Figure 2.44. Japan: Corporate Debt and Cash Flow Relative to GDP**  
(March 1984 = 100)



Sources: Ministry of Finance, *Financial Statements Statistics on Corporations by Industry*; and IMF staff estimates.

**Box 2.12. The Revised Basel Capital Framework for Banks (Basel II)**

On June 26, 2004, the Basel Committee on Banking Supervision (BCBS) issued the Revised Capital Framework (Basel II), which may have a profound effect on the way banks and their supervisors measure and manage banking risks.<sup>1</sup> The Framework contains a mix of options of increasing sophistication and complexity. Most BCBS member countries are expected to implement the simpler of the new approaches (i.e., the standardized and foundation internal ratings based approaches for credit risk, and the basic approach to operational risk), from end-2006.<sup>2</sup> More advanced methodologies are to be implemented a year later, by end 2007, and two years of parallel capital calculation (comparison of old and new standards) will be applied until end 2009.

The revised Framework seeks to upgrade capital regulation, enhance risk measures, and explicitly address the issue of operational risk. Banks may choose from several approaches, tied to different levels of risk management. Basel II also incorporates guidance on the supervisory review process of bank risk management, and seeks to promote greater market discipline through enhanced disclosure requirements. Responding to extensive international consultations on earlier drafts, the published Framework incorporates many changes, such as a simplified standardized approach for less developed banking systems and, provided certain conditions are met, lower risk weights on retail lending, lending to small and medium-sized enterprises (SMEs), and residential mortgages.

<sup>1</sup>The Basel II framework comprises three pillars: Pillar 1 revises the 1988 Accord's guidelines by aligning the minimum capital requirements more closely to each bank's actual risk of economic loss. Pillar 2 recognizes the need for effective supervisory review of banks' internal assessments of their overall risks, and Pillar 3 looks to increase the effectiveness of market discipline by enhancing the degree of transparency in banks' public reporting.

<sup>2</sup>The BCBS member countries are Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, Netherlands, Spain, Sweden, Switzerland, United Kingdom, and the United States.

The development of the Basel II Framework was both prompted by and has itself encouraged significant improvements in the risk management practices of internationally active banks, and the Framework enhances the ability of supervisors to exercise better, more risk-oriented supervision. The BCBS will continue to refine the Framework, in particular after the first trial years, including the development of a more robust definition of capital, and address unresolved issues, such as the treatment of concentration risk and trading book issues.

Some observers believe that Basel II will foster significant changes in the strategy and market behavior of many banks. Most simply, banks may scale back business lines that could attract higher capital charges. These include securitization, non-OECD lending, equity holdings (particularly large cross-shareholdings), and nonbanking activities such as insurance and asset management. On the other hand, business lines such as retail and SME lending may generate lower capital charges, and could attract additional bank lending. The new capital Framework is also expected to facilitate the trading of credit derivatives, as part of broader credit risk management, where banks make up a significant proportion of trading activities.

Market participants broadly welcomed the Framework, but point to major implementation challenges, including the development of effective systems for cooperation between home and host supervisors.<sup>3</sup> Internationally active banks may be asked to compute capital requirements according to both home and host country criteria. This would add to the regulatory burden. At the same time, supervisors in host jurisdictions need to understand and be able to execute their supervisory responsibilities, regarding the capital adequacy of foreign banks and broader supervision within their jurisdiction.

Concerns have also been expressed that capital flows to developing and potentially lower-rated

<sup>3</sup>See press releases from the Institute of International Finance (2004) and the International Swaps and Derivatives Association (2004).

countries could be affected, as capital requirements for lending to such countries and domestic corporates may increase. However, many market observers believe the larger and more sophisticated banks have already incorporated such country and credit risks into their lending activities, independent of the new capital requirements. Competitive concerns have also been raised, as domestic banks in developing countries fear that foreign banks could gain advantage from lower group-wide capital requirements.

Finally, premature implementation of the Framework could weaken rather than strengthen banking systems. Countries may face major implementation challenges: insufficient market infrastructure (rating agencies, export

credit agencies, credit registers), insufficient human resources both at banks and at supervisory agencies, and insufficient data and technology required even for the simpler approaches. Countries should, therefore, first seek to strengthen their supervisory systems through improved compliance with the Core Principles of Effective Banking Supervision before attempting to implement Basel II.

The Basel Committee, as well as the IMF and World Bank, have reiterated in different fora that non-BCBS countries considering implementation of Basel II should do so at their own speed, and according to their own priorities, and neither the Bank nor the IMF is pushing countries to adopt Basel II.

for banks of the new framework are discussed in Box 2.12.

Meanwhile, in the most recent period, bank balance sheets in the United States, Japan, and Europe have continued to strengthen to varying degrees. Supportive financial markets during the first quarter of the year, improvements in asset quality, the ongoing dynamism of household loan demand, and continued cost-cutting and restructuring policies have sustained this process. Significant contrasts remain, however, between and within countries and regions.

*U.S. banks* continue to be well capitalized, displaying record profit levels. Improved returns largely reflect the pickup in capital market activities that began in 2003 as well as the sustained, albeit moderating, mortgage demand from households. As a result, commercial banks recorded a 9 percent increase in net income in the first quarter of 2004 over the same period in 2003. Loan growth, outside the household sector, continued to be lackluster, with demand for commercial and industrial loans declining further through the first quarter of 2004. Together with the low rate of delinquencies on loans, this illustrated

the strong financial and cash flow position of the corporate sector.

Loan portfolios at U.S. commercial banks displayed improved credit quality as nonperforming loans declined to 1.08 percent of total loans in the first quarter of 2004 from 1.28 percent in the third quarter of 2003. Moreover, delinquency rates in all major loan categories declined further, with the sharpest declines being in commercial and industrial loans, reflecting the improved health of U.S. corporate balance sheets.

*Japanese bank* balance sheets have continued to improve during the year to end-March 2004, as the economic recovery and the equity market surge continued. Nonperforming loans in the banking system have been reduced by 25 percent during the same period, reflecting improved corporate profitability and further progress in restructuring delinquent borrowers. Within this overall figure, regional banks showed a 13 percent reduction in nonperforming loans. Major banks remain on course to meet the government's target of halving their aggregate nonperforming loan ratio to approximately 4 percent by April 2005. The process of unwind-

ing cross-shareholdings is also in progress. Japanese banks, excluding trust banks, sold 12 percent of their stockholdings during the year to end-March 2004.

With the solvency crisis broadly viewed as behind them, major banks are increasingly focusing on efforts to improve profitability, and most look to retail banking, including small and medium-sized enterprise (SME) and mortgage loans, for attractive opportunities. This trend may likely prompt further consolidation among Japanese financial institutions, and recent mergers and the formation of alliances represent attempts to broaden retail franchises. Some industry observers point out that major banks have already started to penetrate regional bank markets and compete for SME borrowers. The recent introduction of the government scheme for injecting public capital into weakly capitalized banks should also promote consolidation among regional banks, as well as between regional and major banks, as the scheme is designed to provide a strong incentive for weaker regional banks to merge with healthier peers. The stock market has generally welcomed these developments, and bank shares have been rising generally.

*European banks'* earnings improved in the first quarter of 2004, continuing the trend of last year. Trading and capital market revenues, particularly from fixed income, contributed to the rise in bank income, especially for banks with substantial investment banking activities. Cost discipline has also been a continuing theme among European banks. In 2003, the average cost-to-income ratio among the major European banking groups declined by almost 4 percentage points, to 67 percent. Further reductions are expected in 2004, albeit at a diminishing pace. Meanwhile, the pickup in global activity and the stabilization of asset quality allowed provisioning to be scaled down by most banking groups.

Lending by large U.K. banks to the commercial property sector continued to grow sharply, at a 15.5 percent annual rate in the

first quarter of 2004. Concerns have been expressed over an excessive concentration of risk by U.K. banks in this sector, in light of rising interest rates, as close to 50 percent of all property loans in the commercial property market will mature (and thus need to be refinanced) within the next five years. In this context, the proposed development of Property Investment Funds, modeled on U.S. real estate investment trusts (REITs), is welcome, as it should increase the liquidity and the depth of the market.

Overall, return on equity ratios (RoEs) illustrate the improving situation of European banks, but also highlight significant differences from country to country, with U.K., Spanish, Benelux, and Swiss banks exhibiting the highest RoEs, while those of large German banks declined in 2002 and 2003 (Figure 2.45). While profitability of the large German banks has broadly improved in the first half of 2004, revenue generation is likely to remain an issue in the highly competitive and fragmented German commercial banking sector. The need to increase profitability and reorganize business lines will increasingly be the focus of the Landesbanks, as their funding costs are expected to rise after state guarantees are lifted in July 2005.

Banks' issuance on the European covered bond market has grown only slowly in recent months. For the first quarter of 2004, primary market activity is estimated to have been around €70 billion, down €12 billion from the same period last year. The decreasing supply of German Pfandbriefe, particularly by the public sector, accounts for most of the decline in issuance. German Pfandbrief jumbo issues were estimated to represent 69 percent of outstanding jumbo issues at end-March 2004, down from 77 percent in late 2003. With tight spreads between covered bonds and government securities, investor appetite for covered bonds may have diminished. However, the range of issuers in the euro covered bond market continues to expand, with additional U.K. issuers entering the market and the

arrival of Eastern European issuers. (FHB bank recently launched the first Hungarian euro-denominated covered bond issue—a five-year, €500 million issue.) Meanwhile, the securitization market continues to develop (see Box 2.13).

### Market and Credit Risk Indicators for the Mature Market Banking System

The last year has been a period of relatively low equity price volatility and tight credit spreads for financial institutions (as well as for the wider market). This reflects a generally benign current outlook for global financial markets, with reduced concern about financial stability. Nevertheless, past experience suggests that periods of very low levels of volatility (particularly prolonged periods) can be brought to an abrupt end, and a sudden increase in volatility can be a particular concern for financial stability (see Chapter III, of the September 2003 GFSR for a further discussion). We discuss below some newly developed measures of aggregate market conditions, which may also provide insight on current conditions.

There are several reasons to develop aggregate risk indicators for the mature market financial sector (i.e., banks and large complex financial institutions, or LCFIs). First, we wish to focus on measures that indicate the market's perception of the overall risk profile of the financial sector and certain subsectors. Second, we can develop a historical perspective from which to better understand the current environment, such as the current low market volatility of the equity values of financial institutions. Finally, by looking at the distinct behavior of different groups of financial institutions, we may gain a better understanding of these dynamics from a policy perspective.

We have constructed market indicators for banks and securities firms, and we intend to extend the analysis to insurance companies in future issues of the GFSR. Our approach is to

**Figure 2.45. Selected Countries: Banks' Return on Equity<sup>1</sup>**  
(In percent)



Source: ©2003 Bureau van Dijk Electronic Publishing-Bankscope.

<sup>1</sup>Return on average equity of five largest commercial banks.

<sup>2</sup>Composed of Belgium, Luxembourg, and the Netherlands.

### Box 2.13. Recent Developments in Securitization Markets in Europe and Japan

The euro-denominated securitization market remains dominated by Residential Mortgage-Backed Securities, which accounted for 56 percent of total issuance volume (€62 billion) during the first quarter of 2004. Italian, Spanish, and U.K. assets remain the primary source of ABS and MBS issuance, representing 14 percent, 17 percent, and 41 percent of the underlying assets.

In Germany, the infrastructure of the True Sale Initiative was formally established in April 2004, and the securitization platform is now able to start issuing securities. However, as German bank balance sheets have begun to improve, the immediate benefit and enthusiasm that could have been expected from the securitization of assets such as loans to small and medium-sized enterprises may have declined somewhat. At the same time, interest from nonbank financial service providers to securitize receivables appears to be growing.

In Japan, major banks are enhancing securitization and credit transfer techniques, with a view to improving credit portfolio management. In addition to sales of large corporate loans, major banks have steadily increased their use of credit derivatives. Last year, some major banks started the securitization of SME loan portfolios. Japanese banks also launched a domestic syndicated loan market. The Bank of Japan is actively promoting the development of these markets by accepting these instruments as collateral. However, these markets remain relatively small and illiquid. Many market analysts believe that loan valuation techniques are one of the key impediments to the development of these markets. Japanese banks are accustomed to evaluating loans based on underlying collateral value, while securitization requires loan valuation based on expected cash flows. Collateral-based valuations tend to overestimate the values of lower credit quality borrowers, especially in the case of distressed debt sales (see Box 4.3 in Chapter IV).

consider the financial sector as a portfolio of different institutions, and examine how the market perceives the risk of these portfolios in the context of two indicators: a Market Risk Index (MRI), based on the Value at Risk (VaR; see Box 2.14 for a definition) of the equity values, and a Credit Risk Index (CRI) as an indicator of default risk, based on Credit Default Swap (CDS) spreads.<sup>38,39</sup>

These two indicators can be viewed as two different perspectives from which to analyze the same phenomenon. They are connected at the theoretical level: asset volatility (and therefore equity volatility) is an important determinant of default risk embodied in credit spreads.<sup>40</sup> We should therefore expect these two measures to be highly correlated. At the same time the two indicators are complementary, since the MRI represents sector-wide risk, while the CRI has been designed to capture the credit risk profile of the individual institutions.

We examine a group of the largest internationally active banks and securities firms in mature market economies. In addition to a full portfolio of these institutions, we also look at subportfolios, distinguished by the main activities performed by the firms (e.g., investment banking versus commercial banking) and their geographic location. By focusing on these subportfolios, we can highlight the market perception of vulnerabilities to different types of market events.

<sup>38</sup>Some of the largest internationally active financial institutions release quarterly VaR figures, which attempt to measure levels of risk. Such measures are very useful to understand the evolution over time of the risk profile of a single institution but, at this stage, they are very difficult to use on a comparative basis, given the differing types and degree of financial activities at the different institutions.

<sup>39</sup>A complementary approach to define a credit risk indicator in terms of distance to default, derived from balance sheet and market data, has been recently developed by De Nicoló, Hayward, and Bhatia (2004). For an application to emerging market banks, see Chan-Lau, Jobert, and Kong (2004).

<sup>40</sup>Merton (1974).

The subgroups under review are, by type of institution:

- i) LCFIs,<sup>41</sup> and
  - ii) commercial banks;<sup>42</sup>
- and by geographic region:
- iii) Canada and the United States,
  - iv) Europe, and
  - v) Japan/Asia and Australia.

For the MRI, we collected, on a daily basis, the equity price for each institution since June 2000.<sup>43</sup> In our portfolio, each price has been weighted by the firm's relative market capitalization.

The CRI is constructed along similar lines. We collected the spreads for five-year (the most liquid contract) CDSs on senior debt. We weighted each spread in the CRI index in the same way as for the MRI. The time series for the CDS spreads are much shorter than for the equity prices, and due to limited data availability, we are restricted, for the time being, to the CDS prices of LCFIs only.

### **Market Risk Index**

During the period under review the impact of several major events can be examined by the MRI:

- the equity market decline in the spring of 2001;
- the events of September 11, 2001;
- the period of extreme volatility during 2002 caused by credit events, particularly in the United States and Latin America, and general fears of a global recession; and
- the sharp, but temporary, rise in interest rates during the summer of 2003.

<sup>41</sup>The definition of LCFIs is the same as applied by the Bank of England in the *Financial Stability Review*, December 2003, and comprises: ABN Amro, Bank of America, Barclays, BNP Paribas, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC Holdings, JP Morgan Chase, Lehman Brothers, Merrill Lynch, Morgan Stanley, Société Generale, and UBS.

<sup>42</sup>The Commercial Banks selected for our portfolio are: Bank One, Wachovia, HBOS, Royal Bank of Scotland, Royal Bank of Canada, Bank of Nova Scotia, Toronto Dominion, CIBC, Mizuho Financial, Mitsubishi Tokyo Financial, UFJ Holdings, Sumitomo Mitsui Financial, Fortis Group, KBC Bancassurance Holding, Credit Agricole, Commerzbank, HVB Group, Banca Intesa, Unicredito, Sanpaolo IMI, ING Groep, Banco Bilbao Vizcaya Argentaria, Santander Hispano Group, Skandinaviska Enskilda Banken, Svenska Handelsbanken, Nordea, National Australia Bank, Australia and New Zealand Banking Group, Westpac Banking Corporation, Development Bank of Singapore, and Bank of East Asia.

<sup>43</sup>The starting date was based on availability of data.

### **Box 2.14. Definition of Value at Risk**

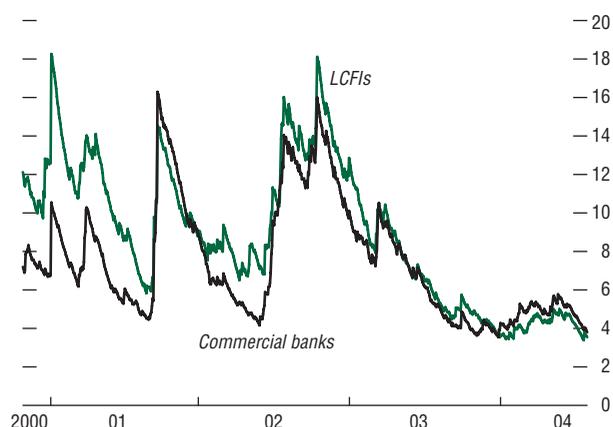
Value at Risk (VaR) is the maximum potential loss that can be incurred on a given financial position over a determined time period, and at a certain level of probability. This measure was originally developed for monitoring and managing the market risk of asset portfolios, and is widely used as the basis for financial institutions' internal risk management models. Here we use it as a monitoring tool, which provides us with a market-based measure of the combined risks of a group of institutions with correlated risk sensitivities.

### **Box 2.15. Volatility Estimation**

The graphs show at each point in time the maximum potential loss for our portfolio over a 10-day period at the 95 percent confidence level (i.e., the standard time horizon and confidence level for VaR analysis). The correlation matrix and the volatilities used in the VaR computations are, at each point in time, daily estimates over a 75-day rolling period. They are obtained using an exponential smoothing technique, which gives more weight to the most recent observations.

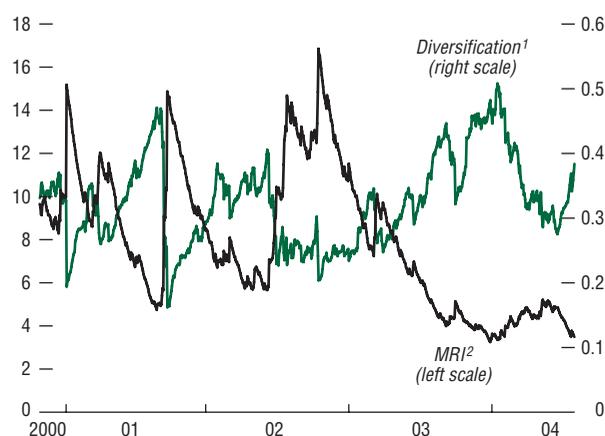
Following these events, financial markets have enjoyed a recovery phase, broadly characterized by low volatility (Box 2.15 describes how the volatility estimates were made).

**Figure 2.46. Large Complex Financial Institutions (LCFIs) and Commercial Banks: Market Risk Indicator (MRI)**  
(In percent of aggregate market capitalization)



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

**Figure 2.47. Entire Portfolio: Market Risk Indicator (MRI) and Diversification<sup>1</sup>**



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

<sup>1</sup>As a proportion of undiversified value at risk.

<sup>2</sup>In percent of aggregate market capitalization.

The VaR for the entire portfolio of financial institutions, as well as those shown for the LCFIs and commercial banks subportfolios, have three clear peaks corresponding to the first three events listed above (Figure 2.46). From October 2002 onward, with the exception of a smaller spike at the start of the war in Iraq, the VaRs have steadily declined. The effect of the interest rate volatility in summer 2003 is very minor, suggesting that the market believed that financial institutions were generally well hedged against relatively sharp interest rate moves.

The pattern of the VaR measures for the LCFIs and commercial banks shows great similarities, but there are some differences, partly reflecting the nature of their individual businesses. For example, the investment banking operations of the LCFIs made them more sensitive to the equity market decline in early 2001, but commercial banks were more impacted by the events of September 11. Although the interest rate spike of 2003 was in aggregate modest, there was particularly high sensitivity for a very small group of European commercial banks.

### Correlations

From a financial stability perspective, the degree of correlation within the financial sector is important. A high degree of correlation may imply an amplification of systemic volatility, particularly if it persists, and such correlation may pose severe problems in the event of an adverse shock.

We can analyze the effects of correlation by comparing two different VaR measures. We use the VaR computed thus far (i.e., by taking account of correlations), and the VaR calculated as the simple sum of the individual VaRs of each institution, the undiversified VaR, which will always be higher than the first measure. By taking the difference between these two VaR measures, we capture the diversification effect embedded in the portfolio. When this difference is small, it means that the equity prices are highly correlated, and

therefore shocks or short-term increases in volatility are more likely to impact (with amplifying effects) the financial sector and the market as a whole.

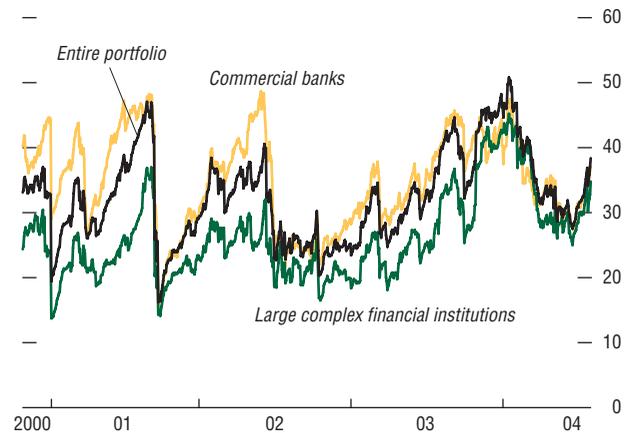
During periods of relative stability, the diversification effect (i.e., the difference between the two VaR measures) is usually quite high, and on average it is around 30–35 percent. This may be because with a lower level of broad market volatility, market participants are discriminating and valuing different strategies, credit strength, and relevant national or regional economic conditions of the different institutions. However, this measure is subject to wide variations. During periods of increased volatility, the diversification effect is strongly reduced (Figure 2.47). Interestingly, since the beginning of 2004, the diversification effect has been decreasing quite steadily from rather high levels, indicating at present an increasing level of correlation during this relatively prolonged period of low market volatility.

Figure 2.48 also shows that there is almost always less diversification effect among LCFIs than among commercial banks, perhaps reflecting greater national or regional variations between commercial bank activities than those of LCFIs. This may reflect the global nature of many of the LCFIs' operations and risk profiles, with a wide variety of business activities, while more traditional commercial banks continue to operate national or regional banking businesses. At the same time, the degree of correlation between commercial banks tends to rise sharply (approaching that of LCFIs) when a significant shock occurs, such as September 11 and the credit events of 2002. This may reflect the market's immediate reaction to such events as it perceived a common impact across the entire financial sector, or it may reflect the withdrawal of wholesale and broad market liquidity.

### The Geographic Dimension

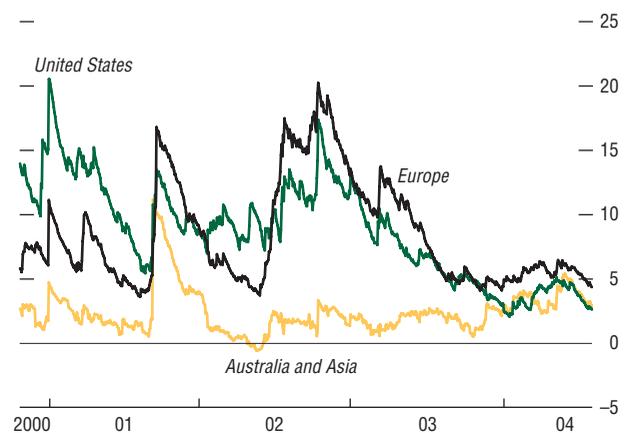
The various market events had different impacts on our geographic subgroups. U.S.

**Figure 2.48. Difference Between Undiversified and Diversified Value at Risk**  
(In percent of undiversified value at risk)



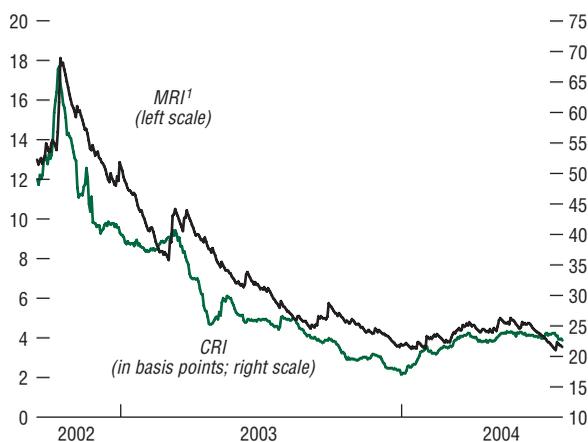
Sources: Bloomberg L.P.; and IMF staff estimates.

**Figure 2.49. Selected Countries: Value at Risk Sensitivity**  
(In percent of aggregate market capitalization)



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

**Figure 2.50. Large Complex Financial Institutions: Market Risk Indicator (MRI) and Credit Risk Indicator (CRI)**



Sources: Bloomberg L.P.; and IMF staff estimates.  
<sup>1</sup>In percent of aggregate market capitalization.

banks were more affected by the stock market fall of 2001 and the credit events of 2002, while the impact of September 11 was less significant, despite the location of the actual events (Figure 2.49). Within that group, the 2002 credit events had a stronger impact on institutions for which the commercial banking component of their activities was larger.

Within the portfolio, European firms had a lower sensitivity to the spring 2001 equity market fall; however, they were more sensitive than the U.S. firms to the 2002 credit events. Most affected were the Spanish banks, having high Latin American exposure, and U.K. banks. By contrast, the Scandinavian banks demonstrate the lowest level of volatility throughout the period of analysis. The pattern may reflect the differing degrees of international versus domestic exposure, with those banks operating on a more local basis experiencing less volatility.

The VaR of the Japanese, other Asian, and Australian banks is generally lower than for other regions throughout the sample period. The regional VaR level is similar to that of U.S. banks after September 11, but much lower for the 2001 stock market fall and the 2002 events. This is also reflected in the VaR measures for LCFIs and commercial banks (see Figure 2.46). Within the LCFI group, institutions with significant Asian operations show the lowest sensitivity to the 2002 credit events, suggesting that these events had a geographically differentiated impact. Meanwhile, part of the increase in the VaR in recent months is due to increased volatility among the Japanese banks, perhaps because of their China exposure and also the market response to regulatory actions relating to one bank's nonperforming loan portfolio.

#### *Credit Risk Index*

Movements in the CRI are generally consistent with those of the LCFIs' MRI (Figure 2.50), showing a strong reduction in per-

ceived credit risk since 2002.<sup>44</sup> However, from the beginning of 2004, there has been a somewhat gradual increase in credit spreads, more than represented by (MRI) equity market volatility. The increase in credit spreads predates the observed (slight) increase in MRI at the beginning of 2004, perhaps suggesting (as market participants often believe) that credit spreads may be a better indicator of changes in market sentiment.

### Conclusions

In conclusion, at present the market is characterized by a relatively low level of volatility, or perceived risk. This also can be seen in the broader S&P 500 index and other measures (see earlier in this Chapter 2). Nonetheless, our analysis also indicates that there is an increasing level of correlation between financial institutions' market prices. This may suggest that, if the current prolonged period of relatively low volatility in financial markets is disrupted, for any reason, by a significant rise in volatility, the relatively higher correlations among a large group of financial institutions may act to amplify that volatility and prove disruptive to broader market conditions. All else being equal, given higher correlations, a market shock could produce such amplified volatility.

We plan to continue to monitor and develop these indicators for the March 2005 GFSR, including the coverage of a wider range of financial institutions (such as insurance companies).

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<sup>44</sup>From the CRI, for a Loss Given Default level, one could also obtain a distance to default for the portfolio as implied by the market (see Duffie and Singleton, 2003, which can be compared with the one in De Nicoló, Hayward, and Bhatia, 2004).

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