

## KEY DEVELOPMENTS AND SOURCES OF FINANCIAL RISK IN THE MAJOR FINANCIAL CENTERS

*Financial conditions in mature markets stabilized somewhat since the beginning of the fourth quarter of 2002, although any improvements remain tentative. Major equity markets edged down in October before firming through December, but for the year as a whole posted the third consecutive annual decline. Trading in the first two months of 2003 gave back most of the late-year gains. Corporate bond markets came under some stress early in the fourth quarter but firmed up toward year-end, with both rates and spreads moving lower. A decreased attractiveness of U.S. fixed income securities contributed to a weakening of the dollar, particularly versus the euro. Performance in commercial banking was mixed, as retail franchises generally strengthened while wholesale business remained depressed. Insurance companies and pension funds were hurt by equity market declines. Balance sheets in some key nonfinancial sectors have stabilized and perhaps begun to improve. Monetary accommodation and caution on the part of investors have resulted in a buildup of cash positions in both retail and institutional portfolios, which has both favorable implications for financial stability as well as presenting new risks.*

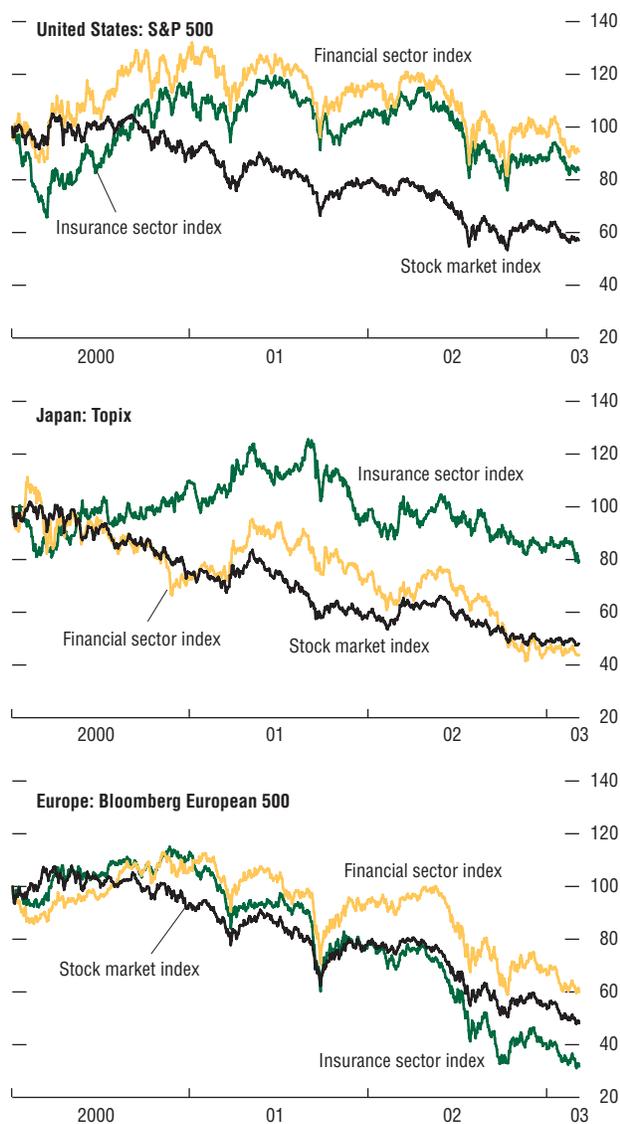
Financial conditions in mature financial markets have improved gradually since the end of the third quarter of 2002, and key sectors have started to rebuild their balance sheets. Boosted by the continuous rise in house prices and further reductions in the carrying cost of debt, U.S. household balance sheets improved marginally in the fourth quarter, after significant weakening in the previous two years. Nonfinancial corporations also strengthened their financial positions, mostly by refinancing short-term liabilities with longer-term bonds. By contrast, the overall financial health of financial institutions in both the United States and Europe revealed a mixed picture. While banks with strong retail franchises performed reasonably well, those that rely heavily on wholesale business saw profitability decline sharply.

Notwithstanding these relatively positive developments, there are significant areas of weakness. Hardest hit have been insurance companies, particularly in Europe. They continued to be squeezed by declining equity prices, low yields on fixed-income securities,

and potential losses on their derivatives positions, as well as by relatively high guaranteed rates of return on some insurance policies. The drop in equity prices and higher present values of pension liabilities as a result of lower interest rates have created substantial funding gaps in many defined-benefit corporate pension funds.

The accommodative monetary policy stance in the major economies, together with less risk taking in the wake of the bursting of the equity bubble, have contributed to a sizable buildup of positions of high-quality, short-dated liquid instruments in investors' portfolios. This "risk capital" is waiting on the sidelines and could be deployed into riskier investments once geopolitical concerns are resolved and the economic recovery accelerates. The temporary rally in equity markets during the fourth quarter may have been a foretaste of this possibility. This rally was, however, reversed in January as investor sentiment became overshadowed by geopolitical concerns. The current fragile sentiment highlights the need for policies to foster market

**Figure 2.1. Stock Market Performance**  
(January 3, 2000 = 100)



Source: Bloomberg L.P.

confidence, which, if effective, could trigger the redeployment of some of the considerable cash positions into riskier assets and a revival in asset markets.

This chapter is organized into three main sections. The first section documents and analyses the major developments in the mature markets. The second section assesses the impact of these developments on the financial condition of key sectors. The chapter concludes by analyzing the sizable buildup of cash positions since the bursting of the equity price bubble. It compares the present buildup to previous periods during which there was a withdrawal from risk taking and then considers the positive and negative scenarios most likely to ensue.

### Major Developments in the Mature Markets

#### Continued Volatility in the Repricing and Reallocation of Corporate Risk

Markets in which corporate financial instruments—equities, bonds, credit derivatives—are traded continued to exhibit considerable volatility in the reporting period, but mostly within the range established during the preceding 12 months. After a rally in the fourth quarter of 2002, which may have signaled improved appetite for risk taking, markets weakened in early 2003. These market dynamics reflected both the uncertainty about the economic recovery and corporate earnings, as well as geopolitical concerns. Nonetheless mature capital markets remained resilient and broadly open to funding needs in both the United States and European financial centers.

#### *Equity markets moved sideways as corporate earnings improved less than expected*

Equity prices in the mature markets reached multiyear lows in early October 2002 on a spate of disappointing news about the economic recovery (Figure 2.1). Most markets

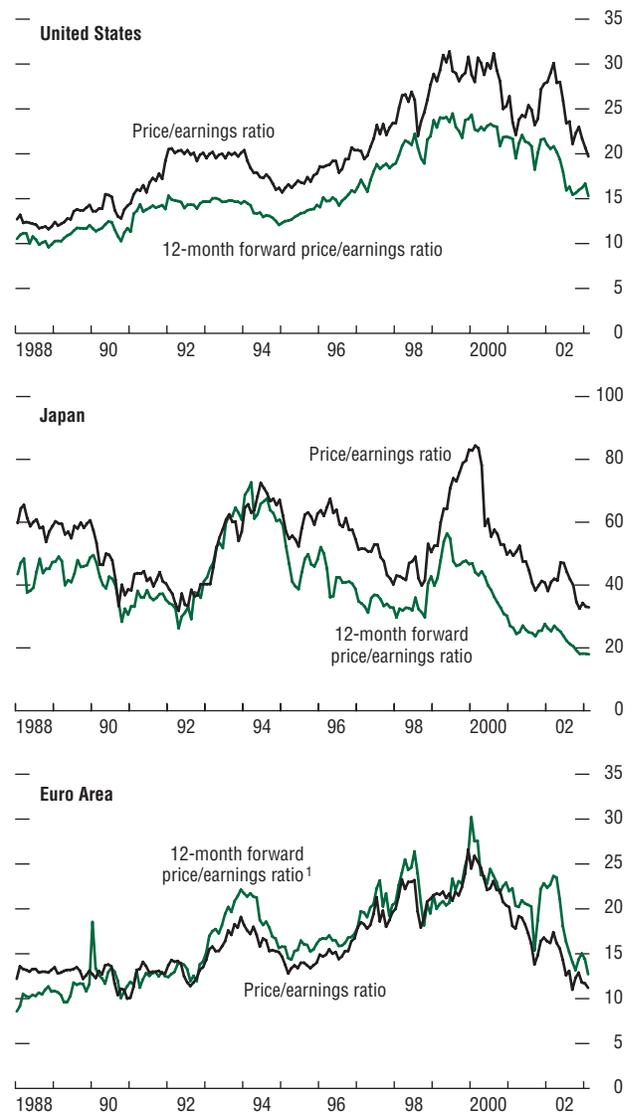
then staged a broad recovery through the fourth quarter, spurred by a benign corporate reporting period and hopes for a sustained recovery in 2003. But sentiment soon turned negative again, with all major indexes posting significant declines, particularly as war in Iraq appeared to become increasingly likely. Concern about the solvency of U.K. insurers and possible forced selling of equities contributed to a 10 percent slide in the FTSE in January. In Japan, equity price indexes have dropped to 20-year lows and have moved largely sideways since early October 2002.

Earnings reports for the fourth quarter were mixed. S&P 500 firms posted a gain of 10 percent over the previous year, according to First Call's estimates. This is a modest improvement from the previous year's results, which were 21.5 percent lower than in the final quarter of 2000. Looking forward, the sluggish economic recovery is prompting analysts to mark down expectations of earnings growth during the first half of 2003 to 8 percent in the first quarter and 5 percent in the second quarter, before improving in the second half to show an increase of 9 percent for 2003. Equity market valuations, generally, have come closer in line with historical valuations (Figure 2.2). However, the price-earnings ratio based on analyst expectations for earnings over the coming year for S&P 500 stocks is 16, still above the pre-bubble average. In Germany, end-2002 prices were 15 times estimated forward earnings, 4 percent above their 1988–96 average. In Japan, prices have fallen to the point where forward earnings are now converging to historic standards abroad at around 18 times forward earnings, which is 60 percent below the high market valuations of 1988–96.

**Corporate bond rates moved lower and spreads narrowed**

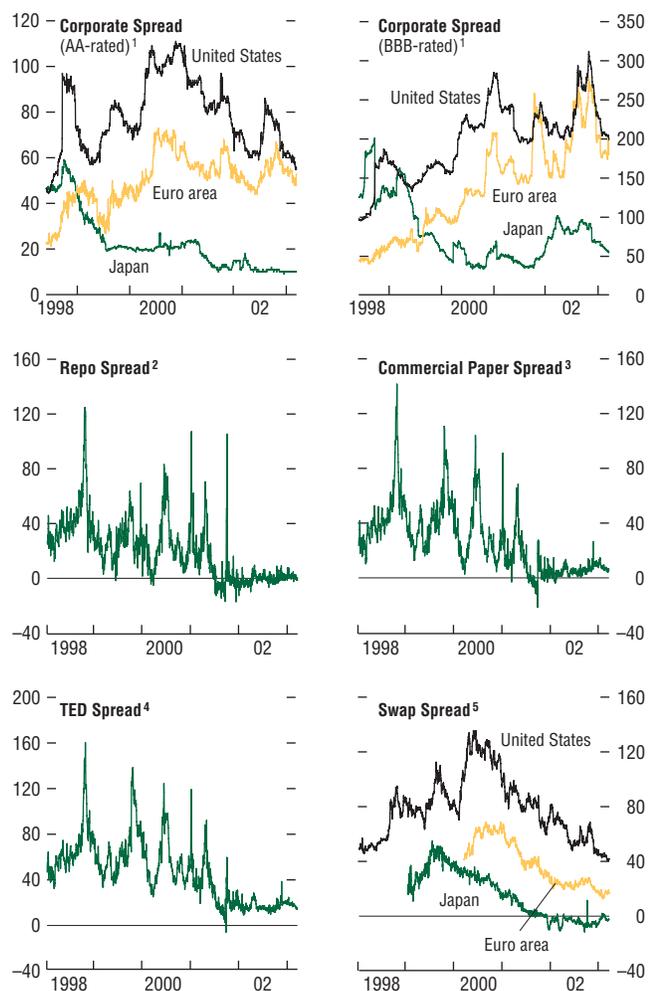
Conditions in corporate bond markets deteriorated at the outset of the fourth quarter, with spreads, especially on high-yield bonds, widening dramatically in early October (Figure 2.3, upper panels). The market subsequently

**Figure 2.2. Price/Earnings Ratios**



Sources: Datastream; and I/B/E/S.  
<sup>1</sup>Data refer to Germany.

**Figure 2.3. Selected Spreads**  
(In basis points)



Sources: Bloomberg L.P.; and Merrill Lynch.

<sup>1</sup>Nonfinancial corporate credit spread.

<sup>2</sup>Spread between yields on three-month U.S. treasury repo and on three-month U.S. treasury bill.

<sup>3</sup>Spread between yields on 90-day investment grade commercial paper and on three-month U.S. treasury bill.

<sup>4</sup>Spread between three-month U.S. dollar LIBOR and yield on three-month treasury bill.

<sup>5</sup>Spread over 10-year government bond.

improved, and spreads on both investment-grade and high-yield debt narrowed considerably. The spread of U.S. high-yield debt to treasuries declined some 140 basis points from the end of the third quarter to year-end, while investment-grade bonds closed the year slightly tighter. The relatively wide spreads on high-yield debt—by historical standards—suggest that credit tiering, though moderated, continues. In Europe, corporate spreads narrowed 60 basis points for BBB-rated issues and 16 basis points for single-A during the fourth quarter of 2002. At the same time, spreads on Japanese BBB-rated bonds narrowed 20 basis points and those for higher credit qualities were little changed, as yields on 10-year Japanese government bonds (JGBs) hit record lows.

Bond spreads continued to narrow during the first few weeks of January as investors anticipated further improvements in economic growth during the new year. Growing fears of the impact of rising oil prices and the possible war in Iraq, however, weighed heavily on credit markets in mid- to late January. On balance, spreads narrowed, and in U.S. markets ended the month 20 to 55 basis points smaller, while spreads in Europe and Japan were little changed on the month.

The combined impact of the global recession, further effects of the bursting of the telecom bubble, and corporate accounting irregularities pushed corporate default rates to record levels in 2002. Defaults in the United States appear to have peaked in early 2002 and then began to trend down, as a year of modest economic growth tempered credit quality problems. Twelve-month default rates on speculative U.S. bonds fell from 11.4 percent in January 2002 to 8.3 percent in October 2002. A lack of pricing power, however, is holding back the earnings growth that will be necessary for significant improvement in default rates. In Europe, where the economic cycle, and thus the credit cycle, lags that in the United States, default rates continue to rise, especially in the small and medium-size enterprise sector. Generally, corporates in the United States

appear to have been more successful in improving their balance sheets (albeit moderately) than in Europe.

The commercial paper (CP) market has largely recovered from the stresses that pushed credit spreads to well beyond their historical range during 1998–2001 (see Figure 2.3, middle panel). Credit quality has improved largely as firms suffering downgrades exited the market, turning instead to bank loans or the corporate bond market. The outstanding amount of lower-rated CP (A2P2) declined to \$65 billion by the end of 2002, from a peak of over \$140 billion in mid-2000. In addition, borrowers responded to concerns that arose in early 2002 about liquidity exposures and the adequacy of bank back-up facilities by reducing their borrowings and securing additional liquidity guarantees from banks. In January 2003, the quality spread of A2P2 paper over A1P1 paper had fallen to 20 basis points or less, roughly in line with historical norms and below the levels that persisted through the previous two years.

#### *Bond issuance picked up while bank lending stayed cautious*

Credit markets were relatively open to new issuance during the fourth quarter. Investment-grade issuance in the United States slowed modestly, though at least some of this decline can be attributed to diminished needs to fund capital spending and inventories. Some lower-rated borrowers were able to tap the market in the fourth quarter, but high-yield issuance remained well below the pace in prior years. High-grade issuance in European markets was relatively robust.

Bank lending continued to be weak through the end of the year. Commercial and industrial loans by U.S. banks continued to decline, fall-

ing \$10 billion during the quarter. Responses to the U.S. Federal Reserve's *Senior Loan Officer Survey* indicate that banks continue to maintain tight standards for borrowers, but also that loan demand remains soft. European banks continue to extend credit, particularly outside Germany. Structural weaknesses, labor market rigidities, poor profitability of core franchises, and a rising level of default risk in the small and medium-size enterprise sector in Germany are damping loan supply. In Japan, continuing difficulties with nonperforming loans and very weak economic conditions continue to hold down lending.

#### *Credit derivatives have facilitated repricing and transfer of corporate risk*

The growing market for credit default swaps (CDS) has facilitated a more consistent pricing of the various forms of corporate risk. Global financial markets continued their disintermediation: the provision of credit moved from banking systems to markets with many sources for corporate funding—distinct markets for equities, corporate bonds, commercial paper, and bank loans. In the past, pricing in these markets operated largely independently of each other, although each responded to the same broad economic forces. More recently, however, the rising use of credit derivatives (particularly credit default swaps) on corporate risks has facilitated a shift away from this “silo” approach to pricing toward a unified method of pricing bank loans, corporate bonds, and equities. The resulting stronger cross-market arbitrage should contribute to more efficient pricing of credit risk, notwithstanding the growing controversy about the potential abuse of insider knowledge and the increasing concentration among market makers in the credit derivatives market.<sup>1</sup>

<sup>1</sup>The corporate bond and loan markets are typically illiquid, making it difficult to establish a short position in corporate credits and inhibiting strategies that would link the different markets for corporate risk through arbitrage relationships. Through credit default swaps one can establish a short position, however, allowing an arbitrage strategy that links the pricing in bond, equity, syndicated loan, and CDS markets. By using credit default swaps, one can arbitrage differences in pricing of corporate risk between these markets.

The use of credit default swaps also facilitates management of credit risk in bank loan portfolios. The CDS market is attractive relative to selling loans in the secondary market because of the market's growing liquidity, and because a lender can use the CDS market to reduce risks while still preserving the relationship with the borrower. Despite the growth in the market, however, it remains small relative to the overall loan market. The majority of banks that use credit default swaps do so for less than 4 percent of their loan portfolio, according to the U.S. Federal Reserve's *Senior Loan Officer Survey* of January 2003. Trading activity has been concentrated in a number of well-known corporate names, particularly in telecom and high-tech sectors; the rest of the market is much less liquid. Consequently, the CDS market is relatively more significant for pricing and hedging the risk of these credits than for the market at large.

### Shift to Safer Fixed-Income Investments

Notwithstanding recent interest in high-quality corporate bonds, the flight from corporate risk that began in early 2000 has led to a sizable reallocation of capital by U.S. and international investors into three alternatives of slightly differing degrees of lower risk. These alternatives are (1) a buildup of "cash" positions by households—"risk capital" waiting on the sidelines in low-risk, low-yielding investments (see the section "Withdrawal from Risk Taking and Buildup of Cash Positions: Implications and Risks" for a broader discussion of the implications of the rise in cash positions for financial markets); (2) investments by financial institutions and other insti-

tutional investors in government and government-sponsored agency securities with some duration risk but no credit risk; and (3) an accumulation of mortgage-backed securities, mostly in the U.S. markets, that entail an additional element of convexity risk.<sup>2</sup>

The reallocation of portfolios into lower-risk positions has occurred despite the fact that nominal short-term interest rates are at 40-year lows in the United States and Japan, and relatively low in Europe as well. Investors have continued to avoid positions with credit and interest rate risk, even as additional easing of monetary policy during the reporting period lowered returns on short-term investments even further. On October 30, the Bank of Japan increased its target for current account balances held at the bank from a range of ¥10–15 trillion to ¥15–20 trillion as well as its outright purchase of long-term government bonds from the current ¥1.0 trillion per month to ¥1.2 trillion per month. On November 6, the U.S. Federal Reserve cut its target for the federal funds rate by 50 basis points, and on December 5, the European Central Bank reduced the minimum rate on its main refinancing operations by 50 basis points to 2.75 percent. On February 6, the Bank of England reduced its repo rate by 25 basis points to 3.75 percent. The official rate cuts and, in Japan's case, quantitative easing, boosted the ex post return on fixed-income investments and reduced the prospective yield on cash, prompting the continued search for higher but safe returns. Lower official rates and a related steepening of the U.S. yield curve have limited the volatility of benchmark long-term interest rates in the fourth quarter and in early 2003, in contrast to the volatility

<sup>2</sup>Duration measures how the market price of an interest-bearing bond changes with interest rates. In turn, duration changes as interest rates change—an effect that is referred to as convexity. Most bonds have positive convexity, indicating the bond's price rises more rapidly as rates fall than the price declines as interest rates increase. The prepayment option on mortgages, however, leads to negative convexity on mortgage-backed securities. As interest rates decline beyond a certain point, the value of mortgage-backed securities stops rising as mortgages are prepaid. Conversely, as interest rates rise, the prepayment rates decline, leading to the lengthening of the duration of mortgage-backed securities, and sharper price losses. Hedging against negative convexity generally involves selling treasury securities as rates rise, and can therefore amplify swings in interest rates.

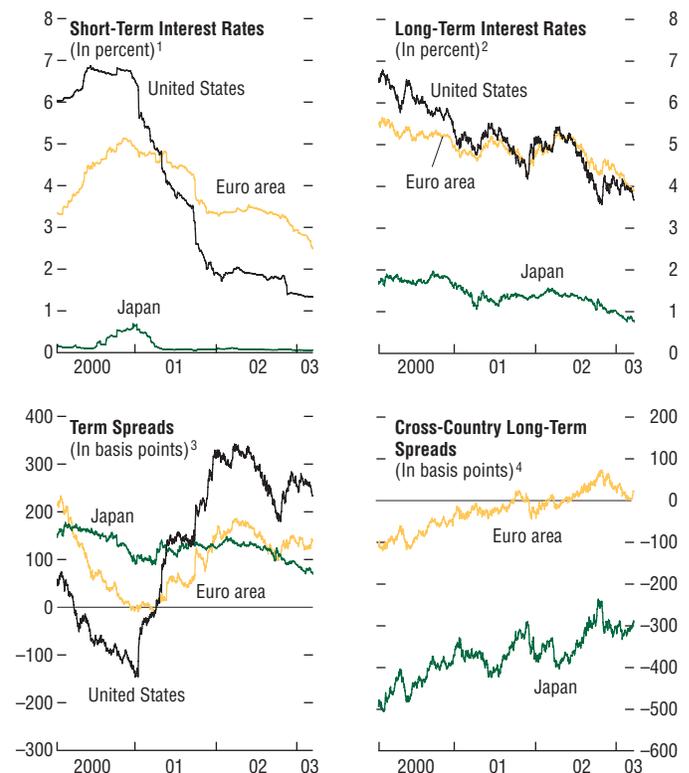
in prices for credit, equity, and credit derivatives (Figure 2.4).

U.S. home mortgage-related securities have increasingly become a close alternative to government debt for U.S. and global investors. U.S. mortgage and mortgage-related debt has risen rapidly since the early 1990s, both in absolute terms and relative to the size of marketable U.S. treasury securities. In 1990, tradable mortgage-related securities outstanding, including in the portfolios of mortgage agencies, were equivalent to less than 50 percent of the outstandings of marketable U.S. treasury securities. At end-September 2002, however, they equaled nearly 100 percent of marketable U.S. treasury securities. International ownership of mortgage-related (mostly agency) securities was 15 percent of total foreign claims on the United States in September 2002. The accumulation of mortgage-related claims since 2000, reflecting strong housing demand and the refinancing boom in the United States, has been facilitated by strong demand by investors seeking to allocate investments into areas with even a slim additional yield relative to cash and benchmark rates. One result is the dwindling of mortgage security premiums over benchmark rates with equivalent duration (Figure 2.5).

**Dollar Declined as U.S. Capital Inflows Slowed**

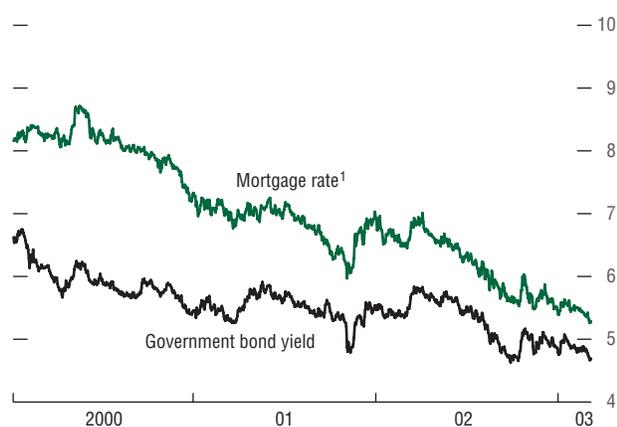
Against the backdrop of geopolitical concerns, persistent uncertainty about the strength of the U.S. recovery, corporate balance sheet risks, and the financial implications of a low interest rate environment, the international value of the dollar weakened significantly during the reporting period. From the end of the third quarter of 2002 through February 28, the dollar declined about 9 percent against the euro, 3 percent against the yen, and 5½ percent on a nominal trade-weighted basis (see Figure 2.6 and Table 1.1). The record U.S. dependence on foreign capital has been underlying the potential for dollar weakness for some time, but the fourth

**Figure 2.4. Short- and Long-Term Interest Rates in Government Securities**



Source: Bloomberg L.P.  
<sup>1</sup>For United States, and Japan, three-month LIBOR; for euro area, three-month EURIBOR.  
<sup>2</sup>Ten-year government bond yields.  
<sup>3</sup>Spread between yield on 10-year government bonds and three-month LIBOR or EURIBOR.  
<sup>4</sup>Spread between yield on 10-year government bonds and yield on 10-year U.S. government bond.

**Figure 2.5. United States: Thirty-Year Mortgage Rate and Government Bond Yield**  
(In percent)



Source: Bloomberg L.P.  
<sup>1</sup>Thirty-year mortgage commitment rate.

quarter saw an acceleration of the slowdown in foreign investment interest in all but the most liquid and safe U.S. investments—such as U.S. treasury and mortgage agencies' securities.

One distinguishing feature since September 2002 has been the heightened sensitivity of investors to war-related uncertainty and risk. According to market participants, this has increasingly been a negative influence on the dollar. This view of war-related pressure on the dollar, if true, marks an important difference with previous similar occasions when the dollar strengthened (Desert Storm in 1990–91, and post–September 11, 2001). One reason may be the significantly wider U.S. current account deficit now prevailing compared to that during the Gulf War. During that earlier period of heightened uncertainty, the U.S. current account deficit narrowed rapidly, from 3.5 percent of GDP in 1987 to near balance in 1991. In sharp contrast, the deficit in the third quarter of 2002 was 4.8 percent of GDP, an all-time record, and prospects for its widening further are likely. As investors were confronted with an unusually broad range of potential economic and business outcomes, a reluctance to make credit or other market decisions is understandable, but potentially highly negative for a nation borrowing at a record pace.

The flight to lower-risk investments was also evident in the changing pattern of recorded capital flows to the United States. Net inflows during the third quarter of 2002 have moved decisively away from claims on U.S. business enterprises (Figure 2.7). Foreign direct investment into the United States fell to \$4.2 billion in the second and third quarters, compared with an average pace of nearly \$33 billion in 2001, and international investment in U.S. corporate and equity securities dropped to a \$39 billion rate in the three months to November, down from a \$85 billion quarterly pace during 2001. The shift toward safer, but lower-yielding investments in the United States was apparent in other forms as well. In

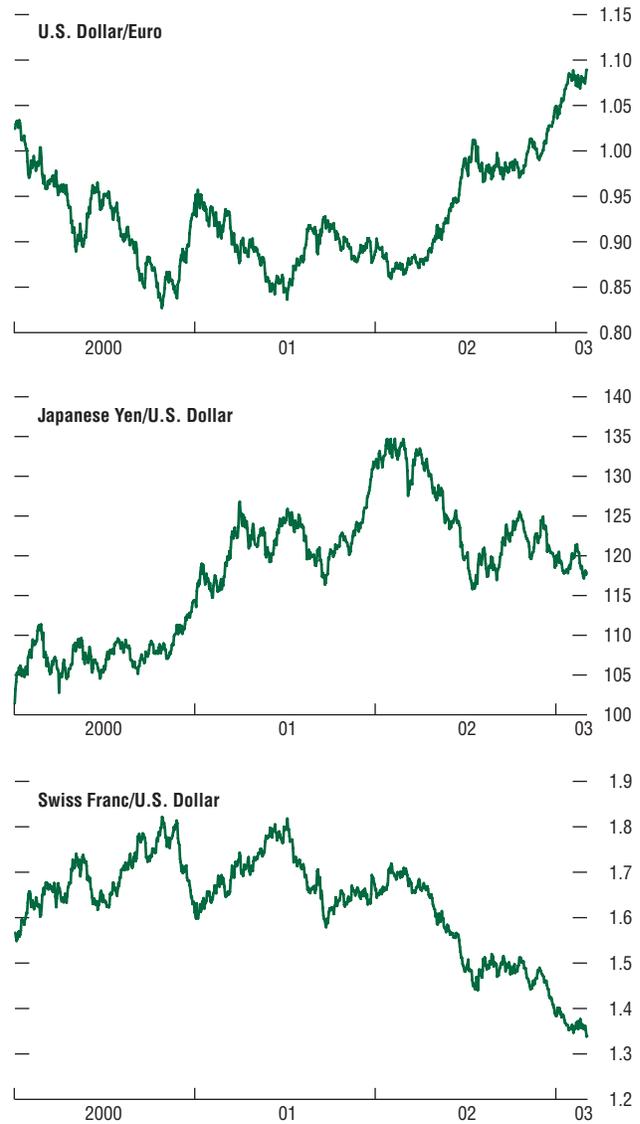
the three months to November 2002, international investment in U.S. government and agency securities was running at a \$119 billion annual pace. In effect, U.S. external financing during much of 2002 reflected the ongoing shift by global investors from corporate risk to less risky government-linked instruments.

These flows into U.S. securities may not be sustainable at current low yields. In light of rising budget deficits, foreign investors might become reluctant to buy U.S. treasury securities. In fact, the shift of capital inflows into the United States from equity to fixed-income investments, and most recently to low-risk securities, may also imply a shift in the factors that drive these capital flows. Instead of growth potential and technological innovation—which are key driving forces for equity investments and which still may be favorable for the United States—interest rate differentials, currently tilted toward other currencies, may have become more important with the increased focus on safe fixed-income investments. By the same token, if current geopolitical uncertainties were resolved, investor risk appetite rose, and interest in equity flows revived, the relatively higher economic growth prospects in the United States may again support large capital inflows.

### Have Key Sectors Been Weakened Further or Strengthened?

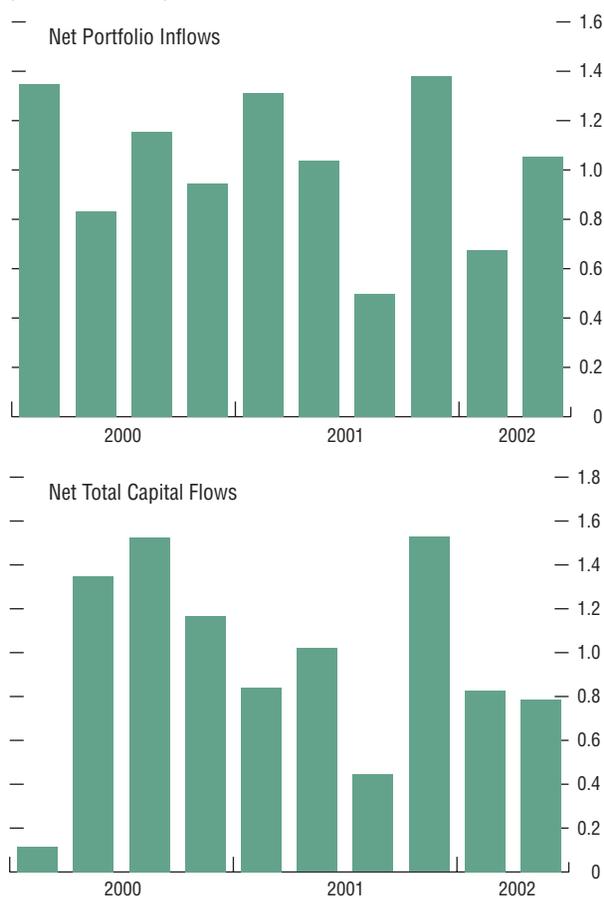
Because of the steep drop in financial asset prices since early 2000, the financial conditions of key sectors of the global financial system were identified in previous issues of the GFSR as the main sources of risk to global financial stability—namely, that of U.S. households, of some European banking systems, and of the Japanese financial system and corporate sector. The December 2002 *Global Financial Stability Report* suggested that, on balance, as long as global equity markets did not deteriorate further (and in particular go below previous lows) and global economic recovery remained on track, the financial con-

**Figure 2.6. Selected Major Exchange Rates**



Source: Bloomberg L.P.

**Figure 2.7. United States: Net Portfolio Inflows and Net Total Capital Flows**  
(In percent of GDP)



Source: IMF, *International Financial Statistics* database.

dition of U.S. households would likely remain resilient and not become a source of further financial market instability.

While financial institutions have been resilient despite severe asset price adjustments and corporate weakness, their remaining ability to absorb additional shocks may have been weakened. The December GFSR also noted that the future resilience of insurance and reinsurance companies and company pension funds depended critically on movements in global equity and corporate bond markets. A key question going forward is how developments since the end of the third quarter of 2002 have impinged on the financial strength of these sectors and whether other subsectors have been particularly affected.

**U.S. Household Balance Sheets Have Stabilized**

U.S. household balance sheets, which have been strong enough to sustain consumer spending, firmed modestly in the fourth quarter. Household net worth rose by about 2 percent, reversing part of the decline posted in the third quarter. For the year as a whole, however, household net worth declined by \$1.75 trillion, the third consecutive annual decline (Table 2.1 and Figure 2.8). On the asset side of the household balance sheet, the value of equity and mutual fund holdings rose 4½ percent during the fourth quarter, and household real estate values appreciated slightly.

On the liability side of the U.S. households' balance sheet, the growth of mortgage debt surged in the fourth quarter to nearly a 14 percent annual rate, as a strong housing market and an ongoing wave of mortgage refinancing boosted borrowing. At the same time, homeowners' equity as a percentage of household real estate was roughly flat, as new construction and the appreciation of property values kept pace with the growth of mortgage debt. Several factors, however, mitigated the impact of these increases in mortgage debt on household financial positions: (1) the debt

**Table 2.1. United States: Household Sector Balance Sheet<sup>1</sup>**  
(In percent)

	1995	1996	1997	1998	1999	2000	2001	2002
Net worth/assets	84.4	84.7	85.3	85.5	86.0	84.9	83.6	81.9
Equity/total assets	23.3	25.8	29.7	31.5	35.0	30.9	26.5	...
Equity/financial assets	35.1	38.1	42.9	45.0	49.2	45.0	40.2	...
Home mortgage debt/total assets	10.3	10.1	9.6	9.5	9.2	9.9	11.0	12.5
Consumer credit/total assets	3.4	3.4	3.2	3.1	2.9	3.2	3.5	3.7
Total debt/financial assets	23.5	22.6	21.2	20.7	19.6	22.0	24.8	29.2
Debt-service burden <sup>2</sup>	12.9	13.3	13.4	13.4	13.7	13.9	14.4	14.0

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

<sup>1</sup>For 2002, data refer to 2002:Q3.

<sup>2</sup>Ratio of debt payments to disposable personal income.

service burden has been held down by refinancing existing mortgages at lower rates; (2) some proceeds of “cash out” refinancings, which liquefy homeowners’ equity, were used to pay down consumer loans bearing higher interest rates; and (3) proceeds of mortgage refinancings also financed residential investment spending and the purchase of consumer durables.

Consumer credit was flat in the fourth quarter. The growth of nonrevolving credit slowed, as automakers began to limit the interest rate incentives offered on new vehicles. Revolving credit outstanding declined, perhaps as households became increasingly cautious about taking on more debt in the current economic environment. The U.S. Federal Reserve’s Survey of Consumer Finances also indicates that leveraging is less pervasive in the United States than generally assumed, and that leveraging as well as exposure to equities tend to be concentrated in the higher-income segments of U.S. households (see Aizcorbe, Kennickell, and Moore, 2003).

### Financial Positions of U.S. Corporations Have Strengthened Somewhat

U.S. corporations have achieved moderate success in bolstering their financial positions, despite the recession and sluggish recovery to date. Cash flow has been steadily rising since mid-2001 and last year surpassed its previous

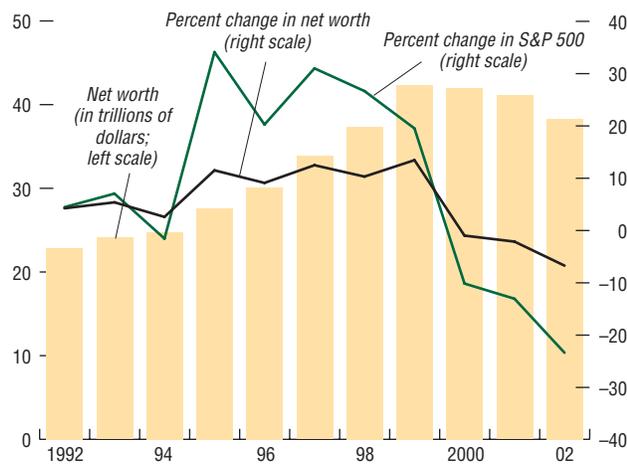
peak. Tight controls on spending, in particular on labor costs, have been a critical factor in this improvement. In addition, cutbacks in capital outlays have reduced funding needs, and the financing gap declined from \$333 billion in 2000 to an average of \$73 billion for the first three quarters of 2002.

Firms have acted to shore up their balance sheets as well. Exposures to liquidity risk have been trimmed, with the ratio of liquid assets to short-term liabilities rising from 65 percent at the beginning of the recession to over 100 percent late last year (Figure 2.9). The main contributor to this improvement in working capital has been the refinancing of short-term debt that began in 2001 and continued through last year. Nonfinancial corporations paid down \$136 billion of commercial paper and \$129 billion in bank loans during this period, while at the same time net bond issuance rose to over \$400 billion. Corporate holdings of cash and liquid securities have continued to rise as well. This improvement in corporate financial positions indicates firms will be better positioned to step up real activity once the current uncertainties about economic growth and geopolitical risks are reduced.

### Company Pension Plans Weakened

Private companies’ defined benefit pension funds in some countries are estimated to have

**Figure 2.8. United States: Household Net Worth Position**



Sources: Board of Governors of the Federal Reserve System; and Bloomberg L.P.

**Figure 2.9. United States: Non-Financial Corporate Sector—Ratio of Broad Liquid Assets to Short-Term Debt<sup>1</sup>**



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

<sup>1</sup>Short-term debt comprises commercial paper and bank loans. Broad liquid assets comprise narrow liquid assets plus commercial paper, U.S. government securities, and municipal securities. Narrow liquid assets comprise currency, deposits, and money market mutual fund shares.

sizable funding gaps as a result of the bursting of the equity price bubble, the distress experienced in corporate sectors in the mature markets, and higher present values of their pension liabilities as a result of lower interest rates. The transparency of these private pension obligations and their funding is limited, so it is difficult to assess their financial conditions with any precision.

In the United States, the funding ratio declined from 131 percent at the end of 1999 to about 80 percent at end-2002 (see Towers Perrin, 2003), and market participants are estimating that S&P 500 companies had unfunded pension liabilities of between \$250 billion and \$300 billion at the end of 2002.<sup>3</sup> The underfunding of U.S. defined benefit plans has gone no further than in 1992–94, at a comparable cyclical point when these plans were a larger share of total pension funds. One study suggests that average U.S. pension investments are allocated roughly 60 percent toward equity investments and 40 percent toward fixed income investments, with a maximum of 10 percent of the portfolio in the companies’ own shares (see Towers Perrin, 2003). Because these relatively large equity investments are mostly funded with long-term liabilities, companies’ defined-benefit pension funds constitute highly leveraged equity exposures, adding to the effective leverage position of the U.S. corporate sector.

In the United States, pension funding gaps, measured as the difference between the discounted value of accumulating future pension obligations and the expected value of (smoothed) investment assets, are concentrated in older industries that have had large

<sup>3</sup>The Pension Benefit Guarantee Corporation (PBGC), a federal corporation created to insure the pension benefits of workers with private defined benefit pension plans, estimates that its main insurance program went from a \$7.7 billion surplus in 2001 to a \$3.6 billion deficit in 2002. See the Statement of Steven Kandarian, Executive Director, Pension Benefit Guarantee Corporation, before the Committee on Finance, United States Senate, March 11, 2003.

workforces in the past when defined-benefit plans were the norm. U.S. companies are allowed to replenish funding shortfalls gradually.<sup>4</sup> A similar concentration among affected companies is reported by commentators in the United Kingdom.<sup>5</sup> To address part of this funding gap, several large U.S. companies have made contributions to their underfunded pension plans during the reporting period. Unless these funding gaps are reversed by appreciations in equity and corporate bond markets, companies will have to set aside additional funds to make up this gap through time. This will be a drain on these companies' profitability, their equity and bond prices, and therefore their funding costs (even though the timing of this impact is hard to predict).

In the United Kingdom, estimates of the funding gap range between £85 and £100 billion. Anecdotal evidence also suggests that the Netherlands has a sizable private pension funding gap, but no hard figures are available. In most other countries, pensions rely more heavily on government pay-as-you-go schemes either explicitly or implicitly and differences in accounting systems complicate comparisons of the financial conditions of corporate pension systems. For example, in some countries corporations are not required to pre-fund their pension liabilities but can fund them on a pay-as-you-go basis. Reacting to heightened concern about the issue, one rating agency has proposed a standard assessment of net pension liabilities across countries (see Standard and Poor's, 2003).

Japanese corporate pension funds suffer serious funding gaps due largely to the protracted difficult investing environments, including depressed equity prices. According to a survey conducted in October 2001 by the

**Table 2.2. Internationally Active Financial Institutions: Equity Prices**

	Percent Change to February 28, 2003 from		
	2000 Mar. 29	2002	
		Sep. 30 <sup>1</sup>	Nov. 4 <sup>2</sup>
Citigroup	-21.5	12.4	-11.3
J.P. Morgan Chase	-62.4	19.4	3.0
Bank of America	33.2	8.5	-1.5
Deutsche Bank	-47.2	-18.1	-20.2
Credit Suisse	-69.2	-12.6	-17.2
UBS	4.4	1.7	-14.8
Morgan Stanley Dean Witter	-57.5	8.8	-11.3
Merrill Lynch	-36.1	3.4	-13.0
Goldman Sachs	-39.2	5.2	-8.6
ING Bank	-55.9	-10.4	-26.0
ABN AMRO	-36.6	33.1	-7.5
Barclays Bank	-12.2	-1.2	-21.0
HSBC Bank	-9.0	6.2	-6.4
Royal Bank of Scotland	84.0	21.1	-6.4

Source: Bloomberg L.P.

<sup>1</sup>End of third quarter 2002.

<sup>2</sup>Closing date for December 2002 GFSR.

Pension Fund Association, one of the largest associations of the corporate pension funds in Japan, 44 percent of the participating corporate pension funds reported that they were underfunded. In response, the government introduced the Defined Benefit Corporate Pension Law to strengthen corporate funding requirements.<sup>6</sup> The Japanese government has also re-established the linkage between pension benefits and inflation. This will lead to a 0.9 percent cut in benefits to recipients.

### Banking Systems: A Mixed Performance

During the reporting period, the large internationally active financial institutions reported mixed results (Table 2.2). Institutions with well-diversified sets of businesses,

<sup>4</sup>Pension laws in the United States allow firms to delay and smooth contributions to underfunded plans. Specifically, firms are only required to contribute additional assets (not necessarily cash), if the pension plan's funding status falls below 90 percent on average for three consecutive years or 80 percent in any one year. Firms then have three to five years to correct the funding shortfall.

<sup>5</sup>See "Pension Funds Seek An Equity Trap Exit" (2003).

<sup>6</sup>In 2002, the government also introduced a 401k-type performance-linked pension scheme in addition to the existing defined-benefit scheme.

**Table 2.3. Global Financial Institutions: Ratings and Capital Ratios**

	Ratings <sup>1</sup>			Capital Ratio		
	Last	Long-Term	Outlook	Last	Tier 1	Total
Citigroup	10/11/01	Aa1 ↑	Stable	2002: 4Q	8.5	11.2
J.P. Morgan Chase	10/9/02	A1 ↓	Stable	2002: 3Q	8.69	12.43
Bank of America	9/24/98	Aa2 ↑	Stable	2002: 3Q	8.13	12.38
Deutsche Bank	9/19/02	Aa3	Neg. ↓	2002: 3Q	8.9	12.0
Credit Suisse First Boston <sup>2</sup>	7/5/02	Aa3	Neg. ↓	2002: 3Q	9.00	15.4
UBS	5/31/01	Aa2 ↓	Stable	2002: 3Q	11.6	14.2
Morgan Stanley Dean Witter	11/24/98	Aa3 ↑	Stable	November 2002	n.a.	n.a.
Merrill Lynch	4/26/02	Aa3	Neg. ↓	2002: 3Q	n.a.	n.a.
Goldman Sachs	8/9/02	Aa3 ↑	Stable	2002: 4Q	n.a.	n.a.
ING Bank	5/24/00	Aa2	Stable ↑	2002: 3Q	6.9	10.30
ABN AMRO	9/12/02	Aa3 ↓	Stable	2002: 2Q	7.0	10.87
Barclays Bank	9/19/01	Aa1 ↑	Stable	2002: 2Q	7.9	12.9
HSBC Bank	8/26/97	Aa2	Stable	2002: 2Q	9.7	13.5
Royal Bank of Scotland	9/18/01	Aa1 ↑	Stable	2002: 2Q	7.4	11.8

Sources: Moody's; and company quarterly reports.

<sup>1</sup>Moody's ratings as of February 28, 2002.

<sup>2</sup>Capital ratios are for Credit Suisse Group.

including successful retail franchises, performed reasonably well, considering the still-weak global economy and the gloomy securities underwriting and merger and acquisition (M&A) environments. Other global institutions, primarily those that are active in the wholesale banking business and have retail franchises of suboptimal scale, reported losses. The institutions hardest hit were predominantly those with simultaneous losses in their investment banking, insurance, and retail businesses, many of them in Europe, predominantly in Germany and Switzerland.

In general, earnings weakness was most apparent in investment banking and insurance activities, especially equity underwriting and M&A. As a result, several of these institutions are on review by credit agencies (Table 2.3), and equity prices for several have been particularly hard hit (Figure 2.10). Special one time write-offs owing to regulatory pressures to separate investment research and realizations of litigation risk variously affected the earnings performance of many of these institutions, a holdover from the corporate governance and accounting problems encountered in the post-bubble period.

On the whole, even for global institutions that have been hard hit, Tier 1 capital has been adequate if not strong, and in some cases banks have raised additional capital (see Table 2.2). Overall, while individual banks have difficult adjustments to make, and may even become takeover targets, systemic problems are unlikely to arise as long as the global recovery is sustained, the market environment improves, and earnest efforts at cost restructuring in these institutions take place.

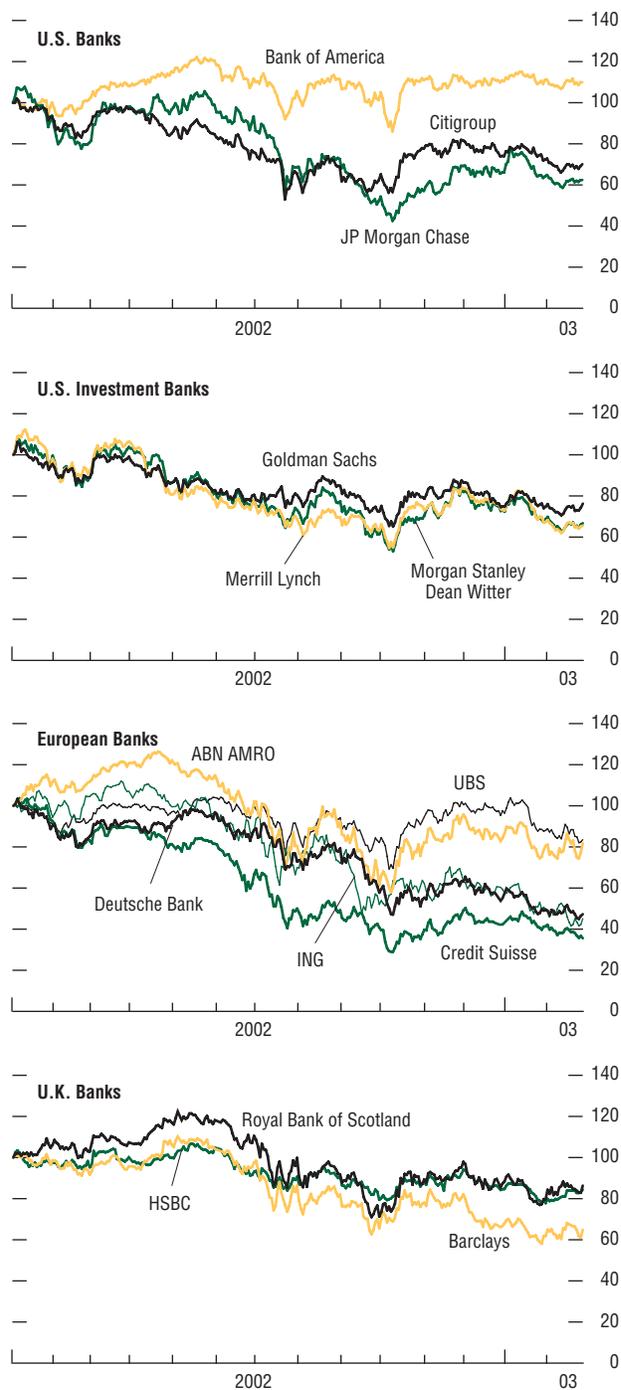
By and large, U.S. banks of all sizes have remained well capitalized and liquid. Banks that are primarily focused on domestic retail business have been insulated largely but not completely from losses during this credit cycle. Their underlying earnings have remained solid in part owing to wide credit card margins, strong mortgage underwriting, and a steep yield curve for balance sheet positioning (Figure 2.11).

The performance of individual European banking systems has been mixed. European banks are generally well capitalized and have reasonably good earnings performance in their home markets, even though the benchmark yield curve in the euro area is less advantageously steep than in the United

States. But the large German banks continued their sub-par performance, which could further impede credit creation and economic growth. In the wake of a record number of domestic insolvencies, several German banks reported unusually high fourth-quarter losses that in some cases brought operations into loss for the entire year. Reflecting that strain, German bank equity performance has been particularly weak, down 70 to 75 percent since January 2001. Credit losses are an additional burden in the face of persistent structural core-earnings weakness in the German banking system arising from the fragmentation of the sector, the need to compete with public institutions with low return on equity, substantial overcapacity, and a greater degree of market risks (because of equity holdings) introduced by bank and insurance company mergers. However, many banks have endeavored to ensure that risk is adequately priced, to concentrate on core business, and to cut costs.

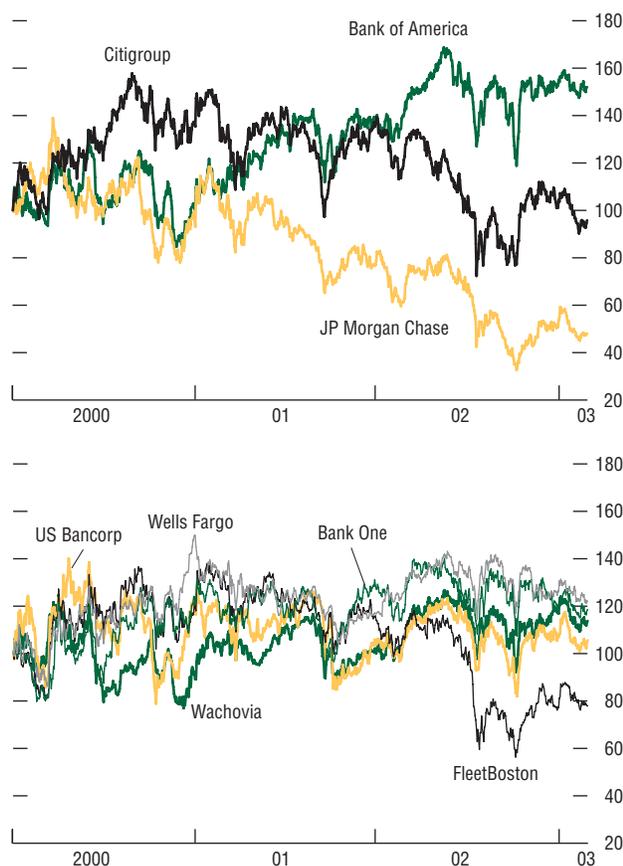
Japanese banks have been and remain a persistent source of uncertainty under the ongoing process of assessment and resolution of the bad loan problem in the present deflationary environment. A new round of special inspections by the Financial Services Agency to be reflected in March year-end accounting will accelerate the vigorous assessment of non-performing loans (NPLs) and might potentially lead to an increase in loan-loss reserves. In response, the four major banks in Japan have tried to raise capital via offerings of preferred and common shares (estimated to be around ¥1.9 trillion). While some of the shares have reportedly been earmarked to foreign investors and one bank has announced a public offering, some banks have placed shares with their clients and other affiliated organizations. Capital increases through double-gearing, especially with related life insurance companies, could intensify systemic concerns. Reports of these potentially controversial steps and the fear of dilution have contributed to a further decline in bank stocks. In November 2002, with a view to alleviate fur-

**Figure 2.10. Internationally Active Financial Institutions: Relative Stock Prices**  
(January 2002 = 100)



Source: Bloomberg L.P.

**Figure 2.11. U.S. Banks: Relative Stock Prices**  
(January 2000 = 100)



Source: Bloomberg L.P.

ther losses on banks' equity holdings, the Bank of Japan started purchasing stocks held by Japanese banks. By the end of January, the Bank of Japan had spent about 20 percent of the ¥2 trillion set aside for the stock purchases in the next two years, which is equivalent to about 1 percent of the equity holdings of Japanese banks. On balance, however, aggressive liquidity support and a possible capital injection in the worst case would most likely mitigate any systemic consequences in the near term.

### Insurance Sectors: Still Under Pressure

On balance, the financial condition of the insurance company sector has worsened, in some countries significantly. Insurance companies have been hard hit by the decline in equity and corporate bond markets since early 2000 (Figure 2.12). In the early 1990s, many insurance companies locked into annuity products promising to pay fixed interest rates at the same time they were earning even higher returns on their asset portfolios with a high share of equities and corporate bonds in them.<sup>7</sup> Since the bursting of the bubble, earnings on their asset portfolios have dropped below these fixed rates and in some cases turned negative. In the past three years, some insurance companies have also been substantial net sellers (protection providers) of credit default swaps, total return swaps, and equity put options.<sup>8</sup> According to market participants, most of these instruments have terms to maturity of about five years. Given the decline in equity and lower-quality bond markets, insurance companies participating in these markets might have to recognize further substantial losses in the near term (in many jurisdictions, most of these positions do not have to be marked to market).

<sup>7</sup>See the June, September, and December 2002 issues of the *Global Financial Stability Report* (IMF, 2002b, 2002c, and 2002d).

<sup>8</sup>See Chapter III in the March 2002 issue of the *Global Financial Stability Report* (IMF, 2002a).

Insurance companies in Germany, the Netherlands, the United Kingdom, and Switzerland have been particularly hard hit. Sales of equities by insurers have contributed to declines in equity markets in 2003, as insurers have reduced their equity holdings to preserve their capital strength. In turn, these declines led to further sales of equities by insurers. On January 31, 2003, the U.K. Financial Services Authority (FSA) announced that companies, whether or not they are pressing against their “Regulatory Minimum Margin” (RMM) requirements, could apply to have particular parts of the rules in the RMM calculation waived or modified, so long as they continued to meet the European Community minima. Granting of the waiver or modification would depend in part on the company’s strength when measured on the new more “realistic calculation” of solvency.<sup>9</sup> Companies that are approaching their RMM would otherwise have to consider corrective action, such as raising capital, reallocating assets (in this case equities), reducing bonuses or dividends, or reducing or ceasing to write new business. In making the announcement, the FSA noted that the existing RMM might force sales when this might not be in the best long-term interests of customers, and might force losses upon insurers because their sales push markets down and might therefore create a downward spiral, as described earlier. The announcement led to a rebound in U.K. equity markets.

Investors have generally responded by marking down shares of insurance companies dramatically. German insurers were marked down 30 to 35 percent during the reporting period. German deregulation since 1994 had enabled a surge in equity and other risky investments, albeit from a low level, and solvency regulations are strictly enforced. British life insurers, which likewise have high equity holdings and a highly transparent regulatory regime, were

**Figure 2.12. Large Insurance Companies: Relative Stock Prices**  
(January 2002 = 100)



Source: Bloomberg L.P.

<sup>9</sup>The new “realistic calculation” is to be published by companies at the end of 2003 and implemented during 2004.

down 30 percent in some cases during the reporting period. U.S. firms did relatively well over the period, reflecting stricter regulatory limits on equity portfolios and asset risks. Ratings agencies have responded by downgrading more than one-fourth of global non-life insurers and more than one-seventh of global life insurers in October–December 2002 (see Moody’s Investors Service, 2003).

In light of weaknesses, some large European insurers continued efforts to recapitalize. On October 2, Credit Suisse put 2 billion Swiss francs into its Winterthur insurance unit. On December 4, Allianz floated a €1.5 billion subordinated bond, and on December 20, Zurich Financial passed on to its insurance arm 1.7 billion Swiss francs out of a 3.7 billion Swiss franc equity rights issue from earlier in the year. Other measures, including asset sales, were reported across the range of insurers seeking to rebuild capital lost in unusually high claims and equity market losses.

Japan’s life insurance companies have been under intense financial pressure, mainly due to the negative spread between guaranteed yields to policyholders and low returns on investments, including declining stock prices. The ruling parties and the government have debated remedial measures that include allowing the life insurers to reduce their guaranteed yields to policyholders. The ongoing discussion may have increased concerns among investors and policyholders about the financial health of these institutions.

Further deterioration in the financial health of the global insurance industry could have negative implications for the stability of the global financial system. The risks may be limited because insurance companies—unlike banks—do not encounter acute liquidity risks and only face slow-moving liquidity shocks. The

recent experience shows, however, that insurers faced with declining stock markets may be prompted to sell equities on a large scale—thus deepening the price declines. Financial distress in parts of the insurance industry could reduce the ability of buyers of risk protection to hedge their exposures, as some insurance companies are increasingly active in over-the-counter markets for credit derivatives.

### **Withdrawal from Risk Taking and Buildup of Cash Positions: Implications and Risks**

The withdrawal from risk taking since the peak of the equity markets in early 2000 has been associated with a significant buildup of cash positions in investors’ portfolios.<sup>10</sup> This accumulation of high-quality, short-dated liquid instruments by both retail and institutional investors has been greater than in previous periods of market uncertainty for two reasons: first, the recent pull-back from risk taking has been particularly dramatic; in addition, income growth has been well-maintained despite the recession, permitting net financial investment by households to continue at a relatively high level relative to the late 1990s.

The implications for financial market stability of this buildup in cash positions may turn out to be mostly favorable, as this represents “risk capital” waiting for greater returns. If and when geopolitical concerns are resolved and as the economic recovery gradually picks up momentum, investors’ withdrawal from risk taking will lessen and eventually may reverse completely. As this occurs, portfolio flows out of cash and back into riskier investments may well support a recovery in prices of financial assets, including equities and corporate bonds. An improvement in market conditions would also support an increase in overall

<sup>10</sup>A “cash position” is a portfolio allocation with the primary goal being conservation of principal. These positions are typically very liquid, short term, have minimal credit risk, and are interest bearing. Bank deposits and money market mutual fund shares are the primary cash instruments held by households. Institutional investors can choose from a broader range of wholesale cash instruments, including treasury bills, short-term debt of government mortgage agencies and municipalities, commercial paper, repurchase agreements (repos), and large time deposits.

issuance, including improved access to capital markets by lower-rated corporate borrowers and by emerging market issuers.

The high levels of cash in investors' portfolios, while mostly beneficial, also pose new risks. Large, quick portfolio shifts away from cash positions could spark sharp movements in asset prices. Depending on the suddenness and magnitude of such a shift, should it occur, and the degree of leveraging, positions in the financial sector could unwind quickly. This would reinforce the sell-off and contribute to volatility in interest rates.

### Retail and Institutional Portfolios Show Strong Shift Toward Cash

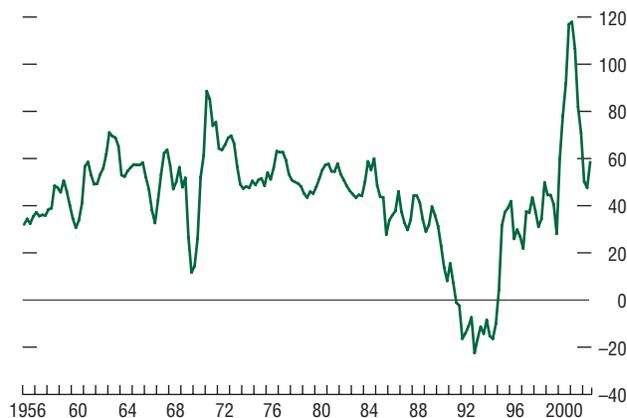
Investor willingness to bear financial risk began to fall sharply after the peak of the U.S. stock market in early 2000. U.S. households rebalanced their portfolios away from equities and mutual funds and back into cash to a degree without precedent in the past 50 years. The magnitude of these portfolio shifts is striking:

- Net sales of equities surged to more than \$500 billion in 2000, and purchases of mutual fund shares fell to roughly half their peak pace during the 1990s.
- Net inflows to money market mutual funds soared from an average of less than \$100 billion a year in the mid- to late 1990s to a \$250 billion pace in early 2001.
- Inflows to time and savings deposits more than doubled, from an average of \$125 billion annually in the late 1990s to \$270 billion since 2000.
- The deposit share of overall portfolio flows spiked to over 100 percent in 2001.<sup>11</sup> The share of savings going into deposits declined somewhat in 2002 but still remains at the high end of its historical range (Figure 2.13).

<sup>11</sup>The deposit share includes all demand, time, and savings deposits at banks and thrifts, as well as money market mutual fund shares, relative to the net acquisition of financial assets of all types.

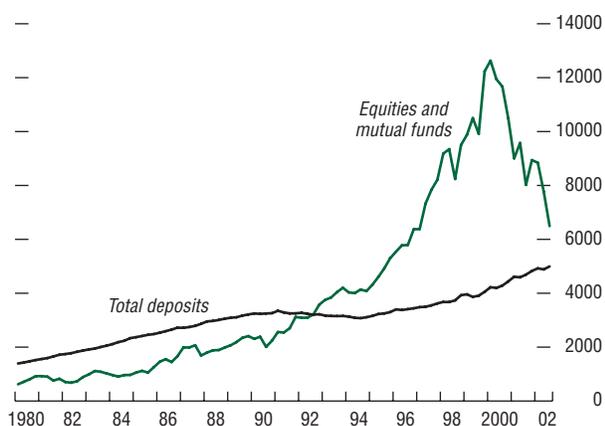
**Figure 2.13. United States: Household Portfolio Allocation, Total Deposits<sup>1</sup>**

(In percent of net acquisitions of financial assets)



Source: Board of Governors of the Federal Reserve System, *Flow of Funds*.  
<sup>1</sup>Total deposits including money market mutual funds.

**Figure 2.14. United States: Household Balance Sheets, Selected Items**  
(In billions of U.S. dollars)



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

- The preference for safe havens can be seen in prices of other assets as well. The price of gold, the classical financial refuge for centuries, has risen 15 percent since last November.

There were indications last fall that households had begun to shift investments out of cash as equity markets rallied from their October lows. For example, equity mutual funds recorded a \$7 billion inflow in November, the first positive flow in six months. Total deposits and money market mutual funds continued to grow at their recent trend of above 6 percent through the fourth quarter, however, and equity mutual fund flows turned negative again in December. Taken together with the recent sell-off in equities, this suggests that there has not yet been a meaningful return to the markets.

Despite this shift in portfolio allocations, new financial investment slowed only modestly since the market peak in 2000. A number of factors have contributed to stable investment flows. The most important is that gross household income has continued to grow, as the brunt of the recession has been borne by the business sector. Tax cuts have supported after-tax income growth, and households have directed some of these tax cuts into savings. As a result, total net household portfolio flows into financial assets continued their recent pace of around \$500 billion annually through the third quarter of 2002.

These portfolio reallocations have had a noticeable impact on household financial positions. Together with the price declines in equity markets, the portfolio adjustments have resulted in household balance sheet positions that are significantly less exposed to equity market movements than just a few years ago. In particular, household holdings of deposits and money funds are nearly equal to those of corporate equities and mutual funds for the first time since 1994 (Figure 2.14).

European investors also turned markedly more conservative in 2001. The net acquisition of equities and other shares by house-

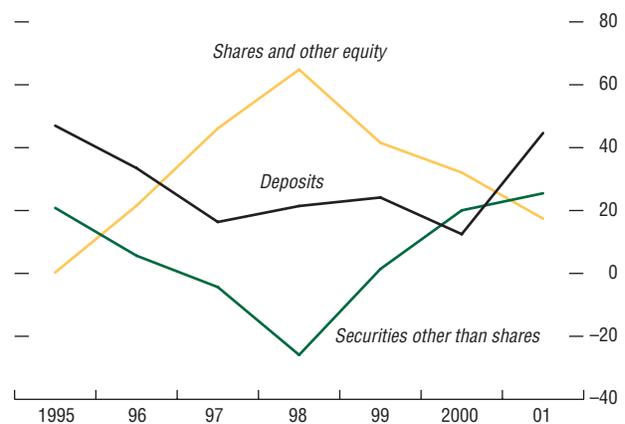
holds fell to its lowest share of total portfolio flows in five years, as investors redirected financial investment toward deposits and, to a lesser extent, fixed income securities (Figure 2.15). European institutional investors, especially insurance companies and pension funds, also redirected portfolios from equities to fixed-income securities, government paper, and cash. The degree of withdrawal from risk taking appears to be somewhat less pronounced than in the United States, although the lack of timely data on European portfolio flows limits the ability to compare more recent trends.

The United Kingdom has shown less of a retrenchment in risk appetites, initially perhaps because the real economy continued to expand even as the U.S. economy contracted and as the continental European economy slowed. In recent months, however, U.K. investors have also turned more cautious. Investments in mutual funds declined in 2002, for example, and portfolio allocations into cash in individual savings accounts rose from 43 percent in 1999 to over 60 percent in 2002.

Financial flows by Japanese households tell a similar story. Bank deposits have traditionally occupied a more central role in Japanese household finance, with deposits averaging between 60 percent and 70 percent of total financial flows in the 1960s and 1970s. Their share declined during the buildup of the Japanese asset price bubble. Japanese households turned toward the safety of bank deposits, however, as prices of financial assets fell in the early 1990s. The deposit share of total portfolio flows rose to above 100 percent in late 1997, reflecting the very cautious stance of investors (Figure 2.16).

More recently, credit concerns about the nonbank segment of the Japanese financial sector (in particular, life insurance and pension funds as well as uninsured bank investments) have prompted an even greater flight into bank deposits. In addition, deflation has made the opportunity cost of holding bank deposits negative at the same time as equity

**Figure 2.15. Europe: Household Portfolio Allocation**  
(In percent of total net acquisition of financial assets)



Source: ECB Monthly Bulletin.

**Figure 2.16. Japan: Personal Sector Portfolio Allocation, Total Deposits**  
*(In percent of total financial flows)*



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

prices continue to fall. In response, the deposit share has soared to more than 200 percent of total net financial flows.

Institutional investors in U.S. markets have likewise shifted their portfolios away from riskier positions and into cash over the past three years. These changes are more difficult to measure than those of retail investors, however. Whereas retail cash instruments can be clearly identified in national *Flow of Funds Accounts*, wholesale investors have a much broader selection of cash instruments. Many of these are not distinguishable in *Flow of Funds* figures, which do not distinguish claims by maturity—for example, treasury bills versus longer-term treasury notes or bonds. To quantify the portfolio shift toward cash by institutional investors, we have constructed a measure for the U.S. markets of the primary wholesale cash instruments: treasury bills, short-term debt of government mortgage agencies and municipal securities, commercial paper, repurchase agreements (repos), and large time deposits. The following analysis reports on the recent behavior of this wholesale cash measure.

Wholesale cash in U.S. markets began rising relative to total financial claims following the peak of the equity markets in 2000. Although the declines in equity prices would have suggested a need for less cash in institutional portfolios, the growth of U.S. wholesale cash positions actually accelerated in 2000, rising 15 percent or more over the prior year. Since then, cash positions have continued to build, rising to their highest share relative to total claims since 1995 (Figure 2.17).

Moreover, this measure likely understates the portfolio shift into safe assets because it focuses on those with very short maturities. Other portfolio changes, say, from equities and corporate bonds to two- or five-year treasury notes, have almost certainly augmented the pool of “risk capital” that has been placed in safer assets. Market surveys of institutional investors support this notion. The portion of respondents indicating that cash positions are

“high” has risen considerably over the past two years, while the portion with portfolios considered “overweight” with corporate bonds has declined.

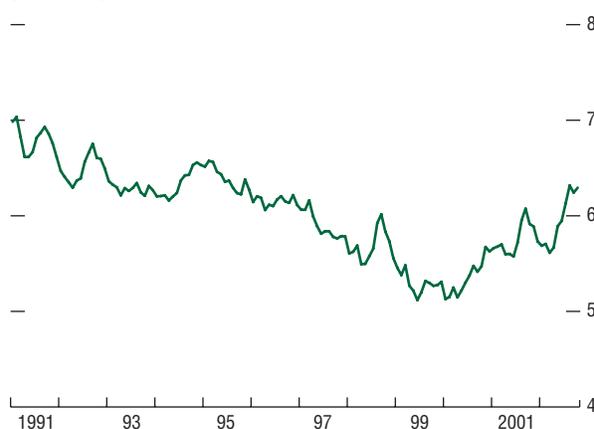
Some key sectors of institutional investors appear to be driving this accumulation of wholesale cash instruments:

- *Insurance companies* bought nearly \$30 billion of commercial paper in the first three quarters of 2002 (compared to less than \$1 billion per year over the prior decade) and accelerated their acquisition of treasury and agency securities, as well as corporate bonds. At the same time, they cut back their purchases of equities to roughly half the average annual rate between 1996 and 1999.
- *Pension funds* stepped up their purchases of commercial paper, repurchase agreements, and government securities in 2002, while they sold equities and slowed the purchase of corporate bonds.
- *Foreign investors* in the U.S. markets accumulated commercial paper and repurchase agreements at greater than a \$100 billion pace through the first three quarters of 2002, compared to negligible amounts in the 1990s. Foreign purchases of treasury and agency securities nearly doubled. Purchases of equities, in contrast, fell to a \$57 billion annual rate during this period, less than half the pace of the previous year, and purchases of corporate bonds slowed as well.
- Liquidity positions at U.S. nonfinancial corporations have improved as well. Cash holdings held by businesses are related to funding decisions rather than portfolio decisions, however, and are more likely to influence future capital spending than prices of financial assets.

### Recent Portfolio Adjustments Dwarf Those in Previous Periods

It is not unusual, of course, for investors to shift portfolio flows toward cash and other low-risk investments during periods of economic uncertainty and back to riskier assets

**Figure 2.17. United States: Wholesale Cash Instruments Relative to Total Financial Claims**  
(In percent)



Sources: Board of Governors of the Federal Reserve System, *Flow of Funds*; U.S. Treasury; Fannie Mae; Freddie Mac; and IMF staff estimates.

during periods of economic calm. The recent changes in portfolio allocations by U.S. households, however, are far greater than in previous fluctuations. Earlier movements over much of the postwar period tended to be modest, with the deposit share generally remaining between 40 percent and 60 percent of total portfolio flows between 1952 and 1990. Net purchases of equities and mutual funds, typically among the riskiest assets in household portfolios, were relatively minor during this period.

In the early 1990s, U.S. investors redirected their portfolio flows away from deposits and into riskier assets. The net acquisition of corporate equities and mutual fund shares surged, exceeding one-third of total portfolio flows.<sup>12</sup> Households began to moderate their net purchases of equities and mutual funds toward the end of the decade. As investors scaled back the additions to their equity positions, portfolio flows into deposits rose back into their historical range.<sup>13</sup>

The pattern of household portfolio flows in Europe reveals a similar increase in the latter half of the 1990s in willingness to take on risk, followed by a sharp retrenchment. Net purchases of shares and other equity rose from essentially zero in 1995 to over 60 percent of total portfolio flows in 1998. Investments in safer assets declined over this period. Deposits fell from nearly half of total portfolio flows in 1995 to as low as 12 percent in 2000. Fixed-income securities turned from net purchases corresponding to 20 percent of total portfolio flows in 1995, to significant net selling in 1998.<sup>14</sup>

The measure of wholesale cash constructed above does not exist for previous business

cycles, but the behavior over the past decade is instructive. Wholesale cash outstandings grew at a double-digit pace during the latter half of the 1990s. There was rapid growth in the demand for wholesale cash instruments, as total portfolio growth was very rapid during this period, driven primarily by rising equity valuations and strong inflows. Portfolio managers therefore needed to build their cash holdings accordingly to maintain a stable portfolio balance. Mutual funds, for example, typically keep a portion of their assets in cash to meet sudden redemptions. Even with the rapid growth of wholesale cash instruments, the value of these claims relative to total financial market claims fell steadily through much of the 1990s, from 7 percent in 1991 to 5 percent in 1999.

Concerns about financial market stability during the Long-Term Capital Management (LTCM) crisis prompted a sharp rise in cash allocations late in the summer of 1998. Fears that the crisis could cause more widespread problems in equity and bond markets—and the possible damage the disruption in financial markets could cause to the macroeconomy—led institutional investors to build cash holdings. After the passing of the crisis, the share of portfolios allocated to cash resumed its downward trend in 1999 before turning up sharply over the past three years.

### Cash-Rich Financial Intermediaries Are Engaged in Carry Trades

Commercial banks and brokers and dealers have accommodated the preference for cash by retail and institutional investors by issuing the short-term cash instruments that investors

<sup>12</sup>Indirect holdings of equities through pension and retirement accounts are not included. These flows represent a significant portion of household portfolio flows, but have tended to be more stable over time than the direct purchases of equities and mutual funds.

<sup>13</sup>Even though the net purchases, or flows into these assets, decreased to roughly zero by the late 1990s, the value of equity holdings continued to rise rapidly because of price increases.

<sup>14</sup>The component of portfolio flows that is not shown is insurance technical reserves. These flows as a share of total portfolio flows remained relatively stable between 45 percent and 55 percent.

desire. They have done so by building “carry trade” positions that profit from the spread between short-term and long-term interest rates, which has been especially large because of the steep yield curve. In particular, banks and dealers have purchased government securities and mortgage-backed securities. Banks have funded these positions by issuing deposits, which have been growing rapidly because of households’ preference for low-risk investments, even despite the low rates of interest being paid on these deposits. A similar buildup of carry trade positions boosted earnings and helped the recovery of U.S. commercial banks in the early 1990s, when the yield curve was also quite steep. Brokers and dealers have typically funded their securities portfolios by entering into repurchase agreements (repos). The repo transaction in turn creates a low-risk secured claim for the institutional investor that is the dealer’s counterparty.

Carry trade positions are reportedly widespread in the U.S. market, and to a lesser extent, in Europe, according to comments from market participants in New York and London, although comprehensive data on positions are not available. Carry trades have been less common in the London market, as the Sterling yield curve has been flatter and therefore not conducive to such a play.

### Implications for Financial Stability

These carry trades expose commercial banks and dealers to interest rate risk. Furthermore, the prepayment option of mortgages creates negative convexity in mortgage-backed securities, which magnifies the interest rate risk in carry positions. Anecdotes suggest that carry positions are largely unhedged, as the measures that would hedge these positions would reduce or eliminate the gains from the carry trade. Although positions at the mortgage agencies do tend to be hedged, the market risks have not disappeared; rather they have been transferred to the counterparties to the derivatives transactions that hedge

the risk. In addition, the agencies have traded to some extent market risks for counterparty risks. The rapid growth of mortgage debt over the past decade has resulted in a market for mortgage-backed securities that is far greater, both in absolute terms as well as relative to the treasury securities market, than a decade ago.

A key risk to the markets, therefore, is that an unexpected rise in interest rates could spark a rapid unwinding of carry trade positions in mortgage-backed securities and treasuries, resulting in market volatility equal to or exceeding what occurred in 1994 (see IMF, 1994). Many market participants expressed concern that the risks posed by these positions are significant. In this view, an unanticipated increase in interest rates could provoke a dumping of positions with potentially destabilizing effects.

A simple scenario demonstrates how such an outcome could be possible. Consider two risks that now concern financial markets: geopolitical tensions regarding the threat of conflict in Iraq, and the uncertain nature of the global recovery. Should either or both of these two threats be resolved favorably, the pool of risk capital that is waiting on the sidelines could flow back into the equity and credit markets, perhaps quickly. As investors sell off safe investments, the yield curve would shift upward. A rise in the yield curve would cause losses in carry trade positions.

Depending on how quickly cash flows from safe investments back into the markets and how fast carry positions are liquidated, such a development could result in considerable volatility in interest rates. This would have potential knock-on effects on commercial banks, insurance companies, and pension funds that have extensive holdings of treasury and mortgage agency securities.

The prominent role of mortgage finance in the carry trade and the rapid growth of mortgage credit in the United States since 2000 highlights another potential risk to financial markets. The government-sponsored mort-

gage agencies, Fannie Mae and Freddie Mac, have assumed a large portion of the interest rate and convexity risks in the mortgage markets through their holdings of mortgages and mortgage-backed securities. The agencies maintain that the risks are modest and well managed. There is some credibility to this claim, as they hedge their positions and monitor these risks quite closely. Furthermore, they regularly stress test their portfolios against large changes in the level or slope of the yield curve.<sup>15</sup>

The agencies have managed these exposures to date without any major troubles. The large size of the agencies' holdings (over \$1 trillion), however, suggests that an outcome not anticipated by their pricing models could have severe consequences, both for the agencies and for financial market stability. The Federal Home Loan Bank (FHLB) system raises similar concerns. While positions through the FHLB are not as large as those held by Fannie Mae and Freddie Mac, neither are the member banks viewed as possessing the same degree of sophistication in hedging interest rate and yield curve risks, in particular the risks associated with prepayments of mortgage debt. These exposures, as well as the very rapid growth of mortgage debt and its critical role in supporting the boom in U.S. housing markets, suggest these risks should continue to be monitored closely.

There are reasons to be somewhat sanguine about these risks and potential outcomes, however. In contrast to 1994—when the yield curve rose sharply, sparking an unwind of carry positions in mortgage-backed securities that contributed to heightened volatility in interest rates—market participants are well

aware of the risks involved in these positions, including the risks arising from the convexity risk in mortgage-backed securities.

Furthermore, while the positions may be largely unhedged at present, tools for hedging—interest rate swaps and swaptions—are widely available and can be quickly implemented. If these derivatives markets remain liquid when the interest rate environment finally changes, the adjustment to changes in the shape of the yield curve may be smoother than in the past, although the counterparties to those hedges would, of course, have to bear the risk.

Another element that may limit these risks is that markets have not been behaving as if there were a high degree of leverage. Rather, there is reportedly lower leverage, including a less prominent role of highly leveraged hedge funds and less credit extended to them by banks. This has been in part due to a decline in the activity of macro hedge funds since the crisis sparked by LTCM, as well as a further unwillingness to take large positions of this sort since the September 11 attacks.

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<sup>15</sup>The Office of Federal Housing Enterprise Oversight (OFHEO), regulator for Fannie Mae and Freddie Mac, recently analyzed the threats of systemic risk posed by the agencies (United States, OFHEO, 2003). The report concludes that the agencies are critical to the intermediation of real estate finance, and large enough to impose a widespread impact on real economic activity if one were to fail. The report does not, however, evaluate the chances of such an outcome occurring. The report presents other risk scenarios where the agencies have no systemic implications, or even have a beneficial effect by providing liquidity in the mortgage-backed securities market during times of economic stress.

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