

**FOR  
AGENDA**

SM/02/347

November 8, 2002

To: Members of the Executive Board

From: The Secretary

Subject: **Global Financial Stability Report**

Attached for consideration by the Executive Directors is the *Global Financial Stability Report*, which is tentatively scheduled for discussion on **Friday, November 22, 2002**.

Questions may be referred to Mr. H. Tran, ICM (ext. 37324).

The report will be revised for publication in light of the Executive Board discussion. If Executive Directors have additional comments, they may notify Mr. Tran by close of business on **Tuesday, November 26, 2002**. An edited version of the report will be published on the Fund's external website, in preparation for the press conference, scheduled for Thursday, December 12, 2002 at the Federal Reserve Bank of New York.

Att: (1)

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Department Heads



INTERNATIONAL MONETARY FUND

**Global Financial Stability Report**

Prepared by the International Capital Markets Department  
(In Consultation with other Departments)

Approved by Gerd Häusler

November 7, 2002

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## Preface

This is the fourth issue of the *Global Financial Stability Report*, a quarterly publication launched in March 2002 to provide a regular assessment of global financial markets and to identify potential systemic weaknesses that could lead to crises. By calling attention to potential fault lines in the global financial system, the report seeks to play a role in preventing crises before they erupt, thereby contributing to global financial stability and to the prosperity of the IMF's member countries.

The report was prepared by the International Capital Markets Department, under the direction of the Counsellor and Director, Gerd Häusler. It is managed by an Editorial Committee comprised of Hung Q. Tran (Chairman), Donald J. Mathieson, David J. Ordoobadi, and Garry J. Schinasi, and benefits from comments and suggestions from Axel Bertuch-Samuels and Charles R. Blitzer. Other contributors to this particular quarterly issue are Francesc Balcells, Peter Breuer, Jorge Chan Lau, Martin Edmonds, Toni Gravelle, Anna Ilyina, Janet Kong, Charles Kramer, Gabrielle Lipworth, Chris Morris, Martin Mühleisen, Jürgen Odenius, Li Lian Ong, Kazunari Ohashi, Jorge Roldos, Calvin Schnure, Srikant Seshadri, Manmohan Singh, R. Todd Smith, Mazen Mahmoud Soueid. Oksana Khadarina, Yoon Sook Kim, and Peter Tran provided research assistance. Caroline Bagworth, Jane Harris, Vera Jasenovec, Ramanjeet Singh, Adriana Vohden, and Joan Wise provided expert word processing assistance. Jeff Hayden of the External Relations Department edited the manuscript and coordinated production of the publication.

This particular issue draws, in part, on a series of informal discussions with commercial and investment banks, securities firms, asset management companies, insurance companies, pension funds, stock and futures exchanges, and credit rating agencies in Brazil, Chile, China, Germany, Hong Kong SAR, Hungary, Italy, Japan, Poland, Russia, Singapore, Switzerland, Thailand, the United Kingdom, and the United States. The report reflects mostly information available up to November 4, 2002.

The study has benefited from comments and suggestions from staff in other IMF departments, as well as from Executive Directors following their discussions of the *Global Financial Stability Report* on November 22, 2002. However, the analysis and policy considerations are those of the contributing staff and should not be attributed to the Executive Directors, their national authorities, or the IMF.

## **I. Overview: Key Developments and Sources of Financial Market Risks**

Investor sentiment deteriorated further in the third quarter, continuing the trend reported in previous issues of the *Global Financial Stability Report*. Uncertainty and ultimately concerns mounted over the strength and durability of the global economic recovery, the prospects for corporate profits, and geopolitical conditions. Financial market developments during the period under review can be characterized by heightened investor risk aversion that was reflected in a pronounced tiering by credit quality. Higher risk corporate and sovereign borrowers continued to face difficult financing conditions.

Nevertheless, the global financial system so far has remained resilient. Markets, while unusually volatile, remained orderly and the financial system functioned smoothly. However, the cumulative impact of market declines in recent years has weakened the balance sheets of financial institutions, corporations and households, increasing their vulnerability to further asset price declines. In the wake of the excesses of the bubble years, an adjustment in asset valuations has been necessary and healthy to re-establish a sound basis for the financial sector. At the same time, some retrenchment in the deployment of capital from risk taking activities by financial institutions is also appropriate. However, it is important to guard against an excessive swing in the pendulum away from risk taking. Accordingly, steps to rebuild confidence are needed to restore calmer financial markets and maintain financial stability.

### **Key Developments**

Heightened investor risk aversion, discrimination and aggressive tiering by credit quality—themes developed in Chapters II and III—were manifest in a number of noteworthy financial market developments.

- Concerns that the overhang of corporate leverage and excess capacity would persist in an environment of sluggish growth in demand and earnings led investors to withdraw from mature equity markets. The U.S. and European markets declined to lows not seen since 1997, and the Japanese market fell to 1984 lows (see Table 1.1). However, equity markets rose during October, notwithstanding weak economic indicators for consumer confidence and manufacturing activity, as investors deployed some of their high cash positions, following an initial set of positive corporate earnings announcements.
- Heightened risk aversion pushed U.S. government benchmark bond yields to 40-year lows, and high-yield credit spreads to near record levels, as investor concerns focused on the earnings prospects of highly leveraged firms. Investor discrimination was evident, however, in a sharp tiering by credit quality, with investment grade borrowers benefiting from a decline in borrowing costs. The high yield market continued to experience a high level of defaults, and issuance declined substantially.

**Table 1.1. Financial Market Data**

*(Percentage change; unless otherwise noted)*

|                                                                  | Change to October 17, 2002 from: |                    |                   |                |               |                 |
|------------------------------------------------------------------|----------------------------------|--------------------|-------------------|----------------|---------------|-----------------|
|                                                                  | Peak (March 24, 2000)            | September 11, 2001 | December 31, 2001 | March 29, 2002 | June 30, 2002 | August 12, 2002 |
| <b>Equity Market</b>                                             |                                  |                    |                   |                |               |                 |
| Major stock indexes <sup>1</sup>                                 |                                  |                    |                   |                |               |                 |
| S&P 500                                                          | -42.4                            | -19.5              | -23.4             | -23.3          | -11.1         | -2.7            |
| Nasdaq                                                           | -74.3                            | -24.7              | -34.5             | -30.8          | -12.7         | -2.3            |
| FTSE Eurotop 300                                                 | -44.9                            | -17.3              | -27.6             | -28.6          | -14.8         | -3.2            |
| Topix                                                            | -46.1                            | -16.4              | -14.3             | -16.6          | -13.7         | -7.9            |
| Bank indexes                                                     |                                  |                    |                   |                |               |                 |
| S&P 500 bank index                                               | 6.3                              | -0.7               | -3.1              | -10.3          | -9.2          | -5.5            |
| FTSE Eurotop 300 bank index                                      | -21.2                            | -12.0              | -23.8             | -25.4          | -16.2         | -3.9            |
| Topix bank index                                                 | -53.9                            | -34.6              | -10.1             | -7.7           | -6.9          | -4.9            |
| <b>Bond Market</b>                                               |                                  |                    |                   |                |               |                 |
| U.S. corporate bonds                                             |                                  |                    |                   |                |               |                 |
| Yields (level change; basis points)                              |                                  |                    |                   |                |               |                 |
| AAA                                                              | -124                             | -55                | -22               | -51            | -22           | 4               |
| BAA                                                              | -50                              | 4                  | -9                | -40            | -16           | 28              |
| High-yield bonds                                                 | 229                              | 166                | 152               | 229            | 127           | 68              |
| Spreads (level change; basis points) <sup>2</sup>                |                                  |                    |                   |                |               |                 |
| AAA                                                              | 81                               | 8                  | 69                | 75             | 44            | 12              |
| BAA                                                              | 155                              | 67                 | 82                | 86             | 50            | 36              |
| High-yield bonds                                                 | 434                              | 229                | 243               | 355            | 193           | 76              |
| U.S. corporate bond price indexes <sup>3</sup>                   |                                  |                    |                   |                |               |                 |
| AAA                                                              | ...                              | 2.1                | 2.9               | 4.9            | 1.9           | -0.5            |
| A                                                                | ...                              | 0.7                | 1.7               | 3.7            | 1.0           | -0.5            |
| BBB                                                              | ...                              | -8.4               | -6.7              | -3.9           | -2.9          | -1.0            |
| Government bond yields (level change; basis points) <sup>4</sup> |                                  |                    |                   |                |               |                 |
| United States                                                    | -205                             | -63                | -91               | -126           | -66           | -8              |
| Germany                                                          | -66                              | -21                | -41               | -66            | -35           | 6               |
| Japan                                                            | -80                              | -35                | -30               | -33            | -25           | -19             |
| Government bond price indexes <sup>5</sup>                       |                                  |                    |                   |                |               |                 |
| United States                                                    | 13.0                             | 3.9                | 7.2               | 10.7           | 6.1           | 0.8             |
| Germany                                                          | 6.1                              | 4.9                | 3.6               | 6.3            | 2.2           | -1.6            |
| Japan                                                            | 8.5                              | 4.9                | 3.9               | 4.8            | 3.6           | 2.4             |
| <b>Exchange rates</b>                                            |                                  |                    |                   |                |               |                 |
| Euro/U.S. dollar                                                 | 0.7                              | -6.0               | -8.4              | -10.2          | 2.1           | 0.8             |
| Yen/U.S. dollar                                                  | 16.8                             | 4.6                | -5.1              | -5.9           | 4.5           | 5.0             |
| Trade-weighted nominal U.S.dollar <sup>6</sup>                   | 6.3                              | -2.5               | -6.3              | -6.7           | 2.2           | 1.6             |

Sources: Bloomberg L.P.; and Datastream.

<sup>1</sup>In local currency terms.

<sup>2</sup>Spread over a 10-year U.S. treasury bond.

<sup>3</sup>Merrill Lynch corporate bond indexes.

<sup>4</sup>Ten-year government bonds.

<sup>5</sup>Merrill Lynch government bond indexes, 10+ years.

<sup>6</sup>Changes from October 11, 2002.



- Major equity and credit markets experienced high levels of volatility, suggesting that market risk and investor aversion to risk were both on the rise during the quarter.
- Bank financial losses from lending activities, and reputational losses and legal liabilities from questionable business practices contributed importantly to a retrenchment from risk taking. As outlined further in Chapter II, banks are reconsidering their business models and strategies in the wake of losses in both mature and emerging markets.
- Emerging markets were affected by the retrenchment in bank lending. In addition, liquidity and trading volume in the secondary market for emerging market bonds declined, in part reflecting a reluctance by dealers to expose capital in market making activities.
- Emerging market borrowers also experienced sharp tiering by credit quality. Issuers characterized by a combination of low borrowing requirements, stable debt structures, strong fiscal positions, and good prospects for policy continuity were able to maintain primary market access, and experienced positive returns in the secondary market.
- The cumulative gross issuance of bonds, loans and equities during the first nine months of the year lagged issuance levels of previous years by a significant margin. Investment grade credits accounted for the bulk of new issues, further underscoring the theme of tiering by credit quality. Sub-investment grade credits, especially those in Latin America, faced unreceptive primary market conditions.

Notwithstanding these developments, the risks to international financial market stability remain limited and manageable. A number of recent policy actions, private sector initiatives, and market developments underpin this assessment.

- Monetary easing by the U.S. authorities and low interest rates in the United States and elsewhere have helped to offset the effects of the considerable decline in equity prices on the financial conditions of investors and intermediaries, and have held down borrowing costs for households and investment-grade corporate borrowers. Low interest rates and a steep yield curve have helped support banking sector profitability.
- The low interest rate environment has also spurred a boom in mortgage refinancing that has helped sustain U.S. household demand. At the same time, rising house prices, in part supported by low rates, have moderated the impact of declining equity prices on household balance sheets.
- Steps were speedily taken to reassure investors about the reliability of corporate financial statements and to strengthen corporate governance in the United States. The Sarbanes-Oxley Act was enacted in the United States on July 30. And the August 14 deadline by which all corporate chief executive officers were to confirm the accuracy

of their firm's financial accounts passed without major incident, helping to reduce investor concerns about the reliability of financial statements.

- As discussed in previous issues of the *Global Financial Stability Report* and in Chapter II, financial institutions have continued to repackage and distribute risk across a wide range of investors. The diversification of risk holders has helped to preserve the resiliency of financial systems.
- Financial institutions in the United States have responded to the difficult operating environment by reducing costs, curtailing activities based more on relationship-building than profitability, and improving the management and pricing of credit and other risks.
- Banks in European countries have attempted to address the difficult operating environment through efforts to improve credit risk management, reduce costs, and divest non-core activities.
- European insurance companies have responded to increased claims and losses on investment portfolios by mobilizing new capital and reducing equity holdings. At the same time, supervisory authorities have adjusted rules related to the evaluation of stock holdings.
- Leverage in the emerging markets is low, and contagion, as measured by the cross-correlation of emerging market bond prices, is currently limited.
- The ability of a number of emerging market countries to maintain market access at reasonable cost, notwithstanding a difficult external environment, highlights the importance of strong commitment to the continued implementation of policies aimed at maintaining macroeconomic and financial stability.

## Sources of Risk

The analysis in Chapter II—of recent mature-market developments and key sectoral financial conditions in Europe, Japan, and the United States—and in Chapter III covering emerging market developments suggest that while the resilience so far manifest by markets is likely to continue, there remain significant downside risks. While a global recovery has been underway, concerns about its pace and sustainability have risen significantly. There is a risk that further substantial market declines could undermine growth prospects. It is important to maintain the financial resilience of the U.S. household sector and the European—and in particular German—financial sector. The capacity of Japan's corporate and financial sectors to withstand further sluggish economic growth remains uncertain.

- A further decline in major equity markets constitutes the most immediate risk. Although equity valuation indicators now approach historical averages, further falls cannot be ruled out if risk perceptions were to increase, or corporate revenues fail to

grow. While corporate profitability improved somewhat in the third quarter, this improvement reflected cost reduction rather than revenue growth, which remained negative in an environment of sluggish demand and limited pricing power. Revenue growth will be needed to sustain the stock market recovery that began in October.

- Further stock market declines would erode the balance sheets of U.S. households and key European financial institutions by decreasing their net wealth and thereby erode their financial resilience. Such declines would also undercut the earnings of corporations that are exposed to equity markets through their financing activities and corporate pension plans.
- A prolonged deterioration in the operating environment of major financial institutions could undermine their profitability and credit quality, and spur further retrenchment from risk by financial intermediaries.
  - In banking systems, profits from capital markets businesses could decline further, while balance-sheet credit quality could continue to deteriorate. Many institutions, particularly in Germany, are facing the structural problem of poor profitability in their home markets, making them vulnerable to the present market environment and limiting their strategic options. In Japan, the longstanding problems in the corporate and banking sectors pose a risk to financial resiliency.
  - Insurance companies could experience further losses owing to declining equity prices and rising credit spreads and defaults.
- A further retrenchment from risk taking in the major financial centers could reinforce the current trend of tiering in emerging market financing. Investment grade sovereign and corporate borrowers would maintain relatively ready access to capital markets. Countries with favorable regional or local liquidity support would constitute a second tier of borrowers maintaining market access. Finally, sub-investment grade borrowers not benefiting from regional liquidity would continue to face financing difficulties.
- Within the emerging markets, developments in Brazil are particularly important, given the size of its economy, its importance in emerging market bond indices, and the correspondingly high exposure of emerging market bond investors to Brazilian paper. Ongoing confidence building measures by the new government should help support the Brazilian debt and currency markets.

## Measures to Promote Financial Stability

Recent developments have underscored the importance of restoring investor confidence and reducing excessive risk aversion through appropriate macroeconomic policies and regulatory initiatives. In the emerging markets, recent developments have highlighted the importance of a sustained commitment to strong macroeconomic policies, stability in the regulatory and legal framework, and debt management strategies as a means of facilitating access to capital markets.

- As discussed in the latest *World Economic Outlook*, macroeconomic policies in the advanced economies must remain responsive to the uncertain strength and durability of the economic recovery. Supportive macroeconomic policies in the advanced economies are essential to the continued financial resilience of the corporate, financial, and household sectors, and to prevent excessive risk aversion.
- It is important to build on the steps already taken to reassure investors that recently revealed shortcomings in corporate governance, auditing, financial accounting standards, and investment banking practices are being addressed fully and on a sustained basis. Transparency is the key to strengthening the early application of the self-correcting mechanism of the markets. Regulatory forbearance should be avoided.
- Supervisors of nonbank financial institutions, including in particular insurance companies, should be vigilant for signs of significant capital erosion stemming from losses on equity and corporate bond portfolios.
- The growing reliance by financial institutions on credit risk transfer markets to manage their risk exposures necessitates better disclosure and regulatory scrutiny to ensure that these markets and instruments continue to work as intended should the credit deterioration persist.
- In the emerging markets, recent developments have highlighted the importance of steadfast adherence to policies that are consistent with macroeconomic and financial stability. The ability of some countries to maintain market access notwithstanding heightened risk aversion suggests that a steady commitment to sound policies pays off.
- Recent developments also highlight the importance of avoiding debt structures that amplify external shocks. Excessive reliance on debt indexed to foreign currency movements, very short maturity structures, or a preponderance of floating rate instruments should be avoided or gradually reduced.

- The development of deep local markets in emerging market countries can provide an alternative source of financing and help act as a buffer against changing global financial conditions. The development of local markets can over time facilitate the issuance of longer maturity debt in local currency, a structure that tends to mitigate rather than amplify external shocks.
- Firm commitment to the preservation of property rights, the rule of law, and stability in the legal and regulatory framework is needed to foster investor confidence, avoid financial contagion, and encourage capital inflows. Maintaining an international and diversified investor base also requires transparency, including the disclosure of debt management policies, financing requirements and issuance plans.

### **Development of Local Securities Markets—Emerging Derivatives Markets**

Successive issues of the *Global Financial Stability Report* have underscored the importance of developing local markets as a means of fostering financial stability. Recent developments further highlight the potential role of domestic markets as a buffer against a turbulent external environment. Previous reports have considered local equity and bond markets. Chapter IV continues this analysis with a review of emerging derivatives markets. The next *Global Financial Stability Report* will examine the policy implications of developing local bond, equity and derivatives markets.

Financial derivatives allow investors to unbundle and reallocate various risks—foreign exchange risk, interest rate risk, market risk and default risk—and thus facilitate cross-border capital flows and create more opportunities for portfolio diversification. However, the same instruments also provide opportunities to avoid prudential safeguards, manipulate accounting rules and take on excessive leverage by shifting exposures off balance sheets, highlighting the importance of fostering strong internal risk management practices in the firms employing derivatives and ensuring careful financial supervision and regulation. Accordingly, Chapter IV focuses on how the derivatives can facilitate capital flows to emerging economies, and the role derivatives played in past emerging market crises.

## **II. Key Developments And Sources Of Financial Risk In The Major Financial Centers**

The global financial system has experienced economic recessions and growth slowdowns in various countries, the bursting of the technology, media, and telecom (TMT) bubble and more widespread equity price declines, uncertainty created by corporate accounting irregularities, and significant financial losses in the key sectors of the global economic and financial system. A considerable retrenchment from risk has accompanied these adjustments, partly reflecting heightened perceptions of risk or risk aversion, and partly reflecting the unwinding of some of the excesses of the bubble period.<sup>1</sup> Remarkably, the global financial system has remained resilient and financial stability has so far been maintained. This resilience is attributable to several factors: progress made in strengthening financial infrastructures in the major international financial centers; advances by financial institutions in pricing and managing financial risks; and the increased ability—through information and computer technologies—to repackage and distribute financial risks more broadly.

Although financial sectors have remained resilient, their robustness to shocks and ability to cope with further losses has probably been reduced somewhat. Sharp declines in equity prices, widening credit-market spreads, and record defaults caused losses to both retail investors and financial institutions, and have added to the cumulative losses associated with the bursting of the TMT bubble and the global slowdown. Meanwhile, and related to their exposure to deteriorating markets, financial institutions saw their stock prices come under increasing pressure, falling by 30 percent or more this year for some institutions. Thus, as this report went to press, the main sources of risk to global financial stability seemed to be associated with a further significant and excessive retrenchment from risk taking in financial markets and from lending to less credit-worthy borrowers, including in emerging markets, which could have potential implications for the global economy.

This chapter's analysis aims to shed light on these risks. First, it briefly sketches market developments that reflected and/or fostered retrenchment from risk. Second, the chapter discusses how major financial institutions are changing their business strategies in response to declines in their own stock prices and the deteriorating operating environment, and analyzes how these changes may influence credit conditions and capital flows going forward. Third, the chapter steps back to identify and analyze important sources of risk to global financial stability emanating from the mature markets, bearing in mind that the

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<sup>1</sup> This assessment is consistent with the U.S. Federal Open Market Committee statement on November 6, accompanying its decision to lower the federal funds rate by 50 basis points: "...incoming economic data have tended to confirm that greater uncertainty, in part attributable to heightened geopolitical risks, is currently inhibiting spending, production, and employment."

adjustment that has taken place since 2000 partly reflects the unwinding of past excesses of risk taking. The analysis focuses on the most likely sources of a further and excessive retrenchment from risk taking in each of the major financial centers: the household sector in the United States (and to a lesser extent the financial sector); the financial sector in Europe; and the combination of corporate and financial sector weaknesses in Japan.

Reflecting its substantial direct and indirect holdings of financial assets, the U.S. household sector remains critically important to the global financial system's capacity to assume and intermediate risks, and a widespread rebalancing of household portfolios would have wide ranging effects. So far, U.S. households have continued to underpin economic activity and bear financial risks, domestically and globally, despite significant losses from the deterioration in financial markets, which in the end derive from the fact that households own (directly or indirectly) the lion's share of U.S. corporate and financial sector risks in the form of bond and equity investments. Reflecting their crucial role in the U.S. economy, both from a U.S. and global perspective, a withdrawal from risk taking by U.S. households could significantly affect a wide range of markets.

While European households have increased their exposure to corporate risk, mostly through equity ownership, and while European companies now borrow directly from European and international capital markets, the share of households and companies doing so, and the size of their exposures, are still relatively small. Thus, in Europe, financial institutions have retained a significant share of exposures to the corporate sector, both through credit markets and their substantial cross-shareholdings. As yet, despite well-publicized problems in individual financial institutions most European financial systems have weathered the global downturn and market deterioration reasonably well, and market participants and authorities do not have serious concerns that the problems these financial systems face could lead to systemic risk. Nonetheless, the worsening economic and financial environment has aggravated longstanding structural weaknesses in some European financial systems. This could in the future affect their willingness and ability to continue to own and manage corporate and sovereign risk, particularly exposures to high-risk borrowers within both mature and emerging markets.

Finally, the Japanese financial system continues to struggle with long-standing structural problems relating to the nexus between the corporate and financial sectors. Previous issues of this report have discussed this in detail, so the discussion here is brief.

## **Key Developments**

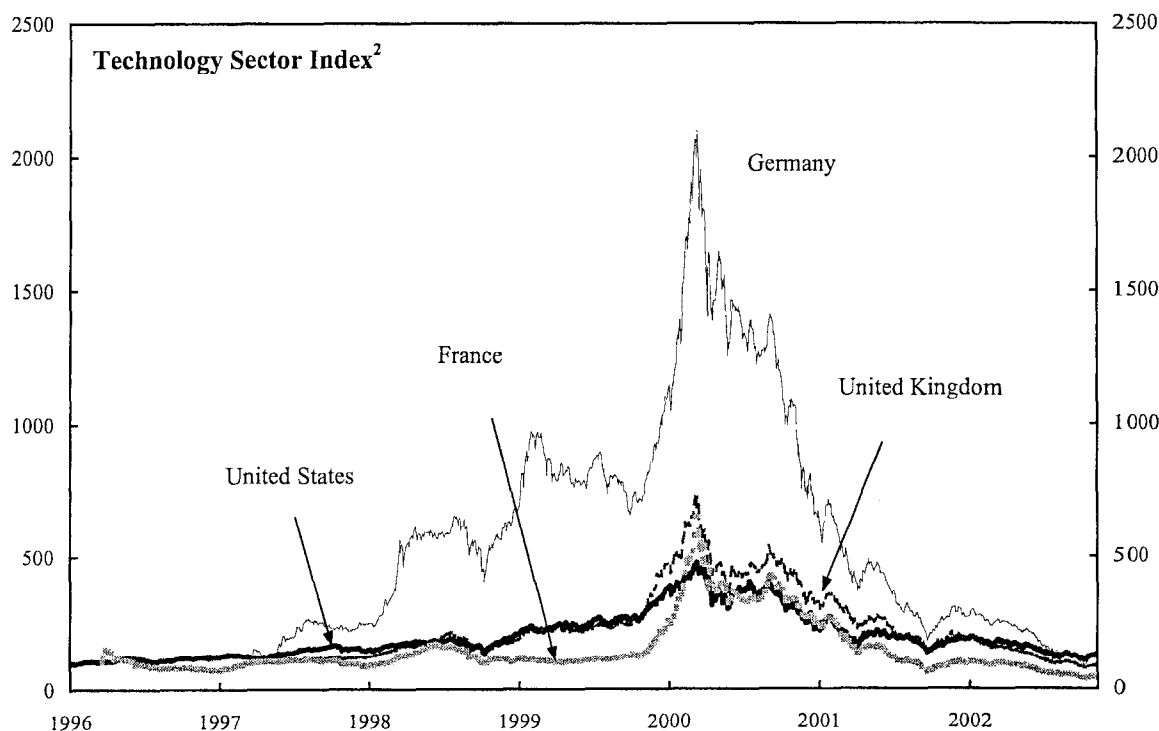
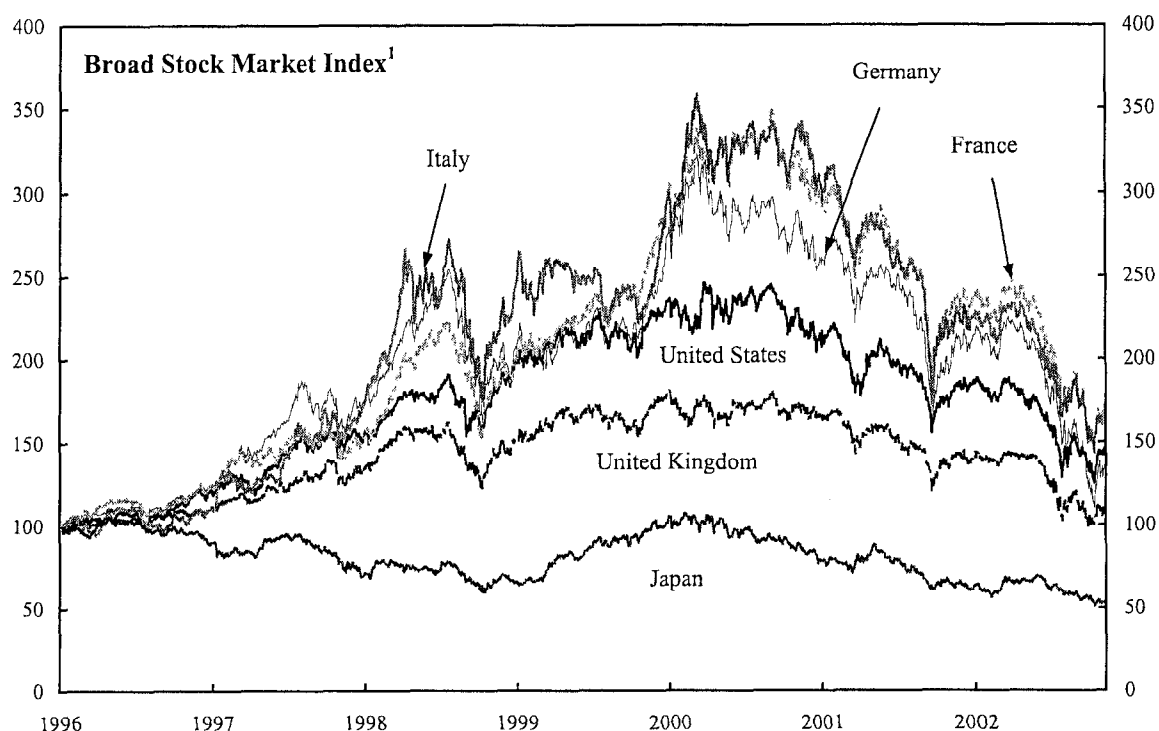
### **The Retrenchment in Risk Taking in Global Markets**

The period under review was characterized by a further retrenchment from risk taking (see Box 3.1), with portfolio adjustments and associated price fluctuations and increases in volatility in the major equity, credit, and foreign exchange markets:

- Equity markets declined for a second consecutive quarter. Major stock indexes fell to the lowest levels since 1997 in the United States and Europe and 1984 in Japan (Figure 2.1). Declines in Japanese stocks seemed to reflect policy announcements (see below). European stock indexes were especially hard hit, and plunged to 50 percent below their 2000 peak levels. In the TMT sector, European stocks declined to well below their 2000 peaks: for example, the Neuer Markt fell to 5 percent of its peak value and is to be closed by end-2003. The global sell-off was driven by concerns about future corporate revenues and earnings, as the expected year-on-year increase in third-quarter S&P 500 earnings was halved to 7.3 percent.
- The decline in prices has put them closer to historical average measures of value. In addition, the decline in nominal interest rates to historically-low levels has worked to support equity valuations, notwithstanding uncertainties about corporate earnings going forward. At the same time, U.S. market price/book and price/earnings ratios have ranged about 10-15 percent above levels attained around the prior recession, which leads some analysts to suggest that markets may still be overvalued.
- The decline in equities markets eroded the assets in defined benefit pension plans. The pension plans of S&P 500 firms are estimated to have shifted from a combined surplus to deficit, estimated at \$200-300 billion. Private pension plans in the United Kingdom and other countries have experienced similar losses. Although the situation remains fluid, and full information is still becoming available, this adds to concerns about corporate earnings as firms may need to top up pension plans.
- Partly offsetting investor unease about earnings, concerns about corporate governance problems and accounting irregularities seemed to abate as revelations of new incidents subsided and the momentum for reform was seen as being sustained. On July 30, the Sarbanes-Oxley Act became law in the United States. The Act strengthens oversight of accounting, notably by establishing a Public Company Accounting Oversight Board. On August 14, the deadline for the executives of selected listed U.S. companies to certify their financial accounts passed uneventfully, as most of the companies complied, relieving some market concerns about corporate financial accounts (Box 2.1 in IMF (2002c) discusses corporate governance and accounting issues in more detail).
- Net flows into global equity and high-yield mutual funds turned negative in July and August, and continued to decline in September although at a more subdued pace. Consistent with a shift to quality, flows into investment-grade bond funds picked up sharply, and in the week of August 7 reached \$3.4 billion, the highest since 1992.
- Amid low short-term yields, some money market mutual funds waived expense charges in order to keep net asset values from falling to below \$1 per share, which would impose losses on investors. This raised concerns that investors might no longer perceive money funds as a highly safe investment.



**Figure 2.1. Stock Prices in Selected Major Industrial Countries**  
(January 1, 1996 = 100)



Source: Bloomberg L.P.

<sup>1</sup>For United States, Standard & Poor's 500 Index; for United Kingdom, FTSE 350 Index; for Germany, Dax 100 Index; for France, SBF 250 Index; and Italy, MIB 30 Index; and for Japan, Topix.

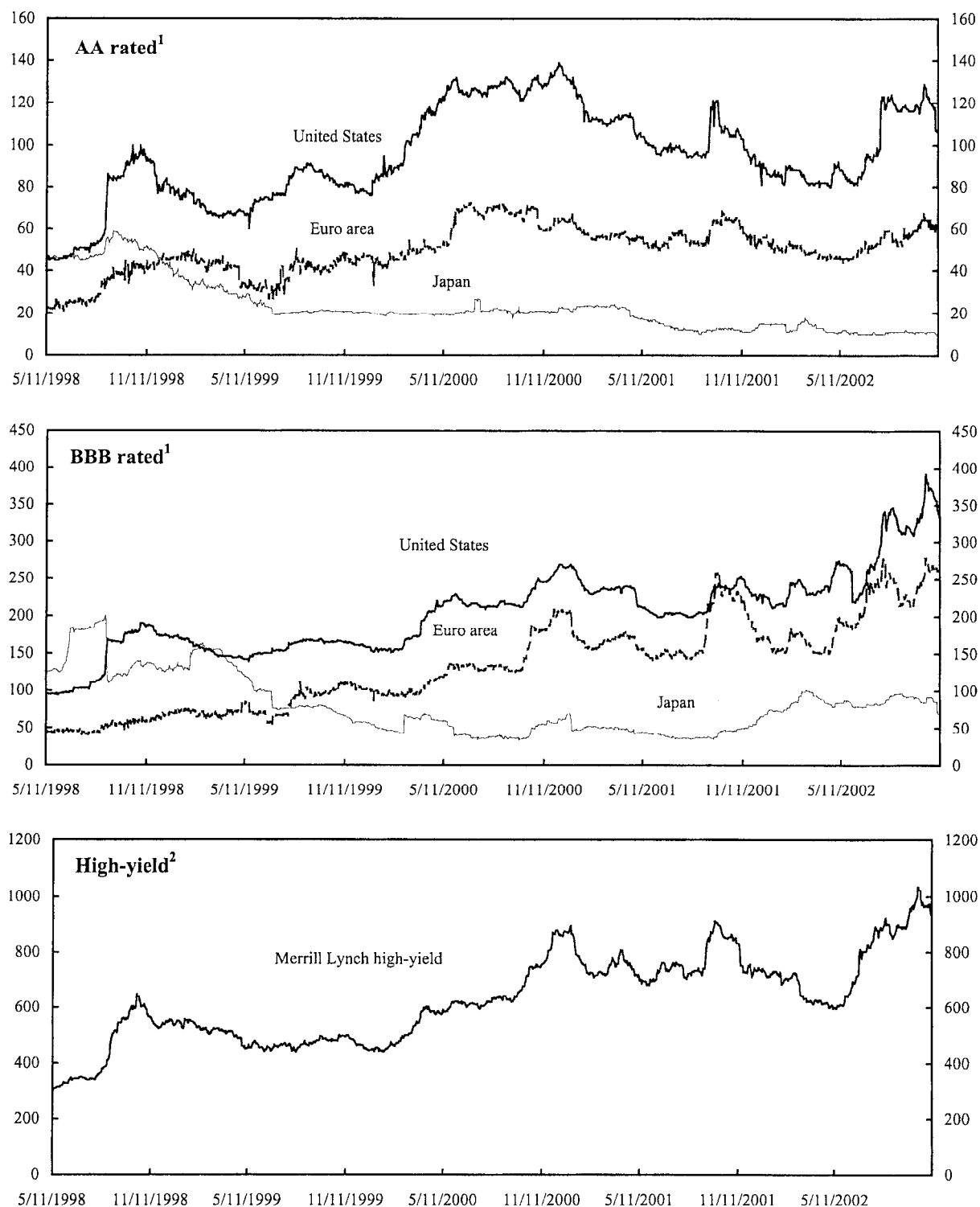
<sup>2</sup>For United States, Nasdaq Composite Index; for United Kingdom, FTSE techMARK 100 Index; for Germany, Nemax All-Share Index; and for France, Nouveau Marché Index. Data for Nemax All-Share and Nouveau Marché start in March 1997 and March 1996, respectively. Therefore these indices are rebased to the level of the Nasdaq on these dates.

- In global credit markets, investment-grade spreads widened and high-yield spreads hit a new record (Figure 2.2), as government bond rates fell sharply, with 10-year U.S. treasury securities rates dropping to a 40-year low. Borrowing rates for investment-grade borrowers in Europe and the United States fell slightly. Meanwhile, borrowing costs for risky borrowers increased and issuance plunged as the value of defaulted corporate debt reached \$140 billion, beating the 2001 record. In Japan, 10-year JGB yields retraced earlier declines after the Bank of Japan announced a plan to buy stocks from banks. At the subsequent September 20 auction, for the first time, the total bid for 10-year JGBs fell short of the offering amount.
- Notwithstanding the high volume of defaults, the ratio of credit downgrades to upgrades declined in the third quarter, partly reflecting reduced corporate leverage (particularly in Europe). Telecom, high-tech, energy, and utility companies accounted for two-thirds of nonfinancial corporate downgrades, while insurance companies accounted for more than two-thirds of third-quarter financial-sector downgrades.
- In the major currency markets, an international shift into the relatively deep and liquid U.S. Treasury and agency securities markets may have worked to support the dollar. During the second quarter (latest available data), net foreign purchases of U.S. long-term securities picked up from \$94 billion to \$135 billion. Reflecting continued demand for high-quality U.S. assets, three-quarters of the pickup comprised net foreign purchases of U.S. treasury and agency securities.
- During the reporting period, volatility increased substantially. Historical and implied (forward-looking) volatility spiked to high levels in fixed-income, credit, and equity markets (Figure 2.3). Currency options and “risk reversal” prices suggest that, during the third quarter, investors saw heightened uncertainty about future G-3 exchange rates and an increased probability of a dollar depreciation (Figure 2.4).

### **Pressures on Banks and Financial Institutions**

The further retrenchment from risk taking, the associated selling pressures in markets, and lingering effects of, and uncertainties about, the credit cycle were reflected in a global sell-off in equity- and debt-market valuations of global and regional financial institutions (commercial and investment banks, and insurance and reinsurance companies) (see Table 1.1). The 10-percent decline in U.S. bank stocks—and more severe declines for some institutions, along with pressures on funding costs—may have reflected litigation and reputational risks that loomed over some of them, relating to bundling of financial services and related conflicts of interest. In addition, uncertainty prevailed about whether their business models could generate sufficient revenues in a slow-growth environment. Meanwhile in Europe, widespread market pessimism about banks and financial institutions was evident in the nearly 30-percent decline in bank stocks (see below for more detail). In Japan, official announcements of measures aimed at stabilizing and revitalizing the financial

**Figure 2.2. United States, Euro Area, and Japan: Nonfinancial Corporate Credit Spreads**  
(In basis points)

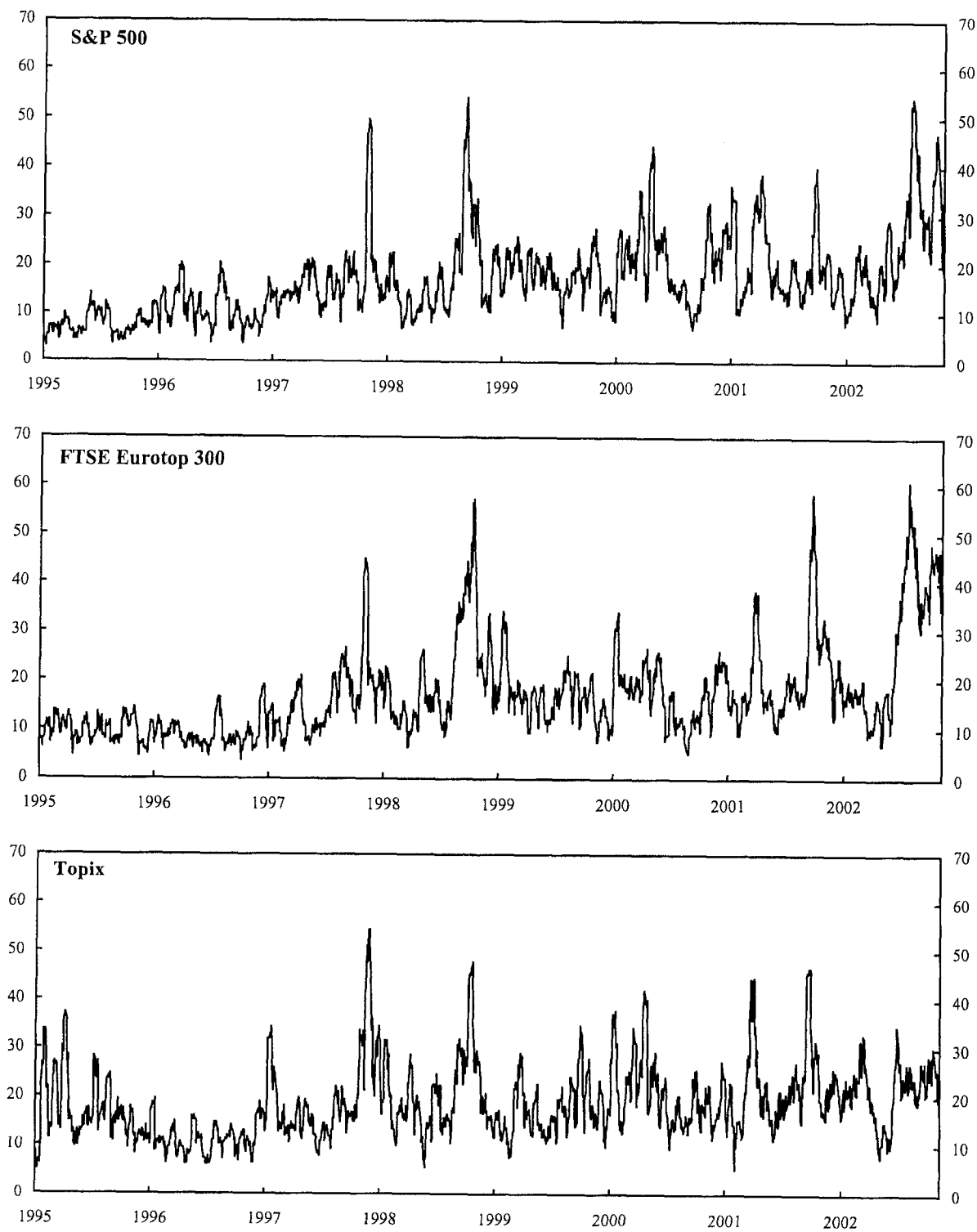


Sources: Merrill Lynch; and Bloomberg L.P.

<sup>1</sup>Merrill Lynch option adjusted spreads, calculated against government bonds of similar maturities.

<sup>2</sup>Spread over 10-year U.S. treasury notes.

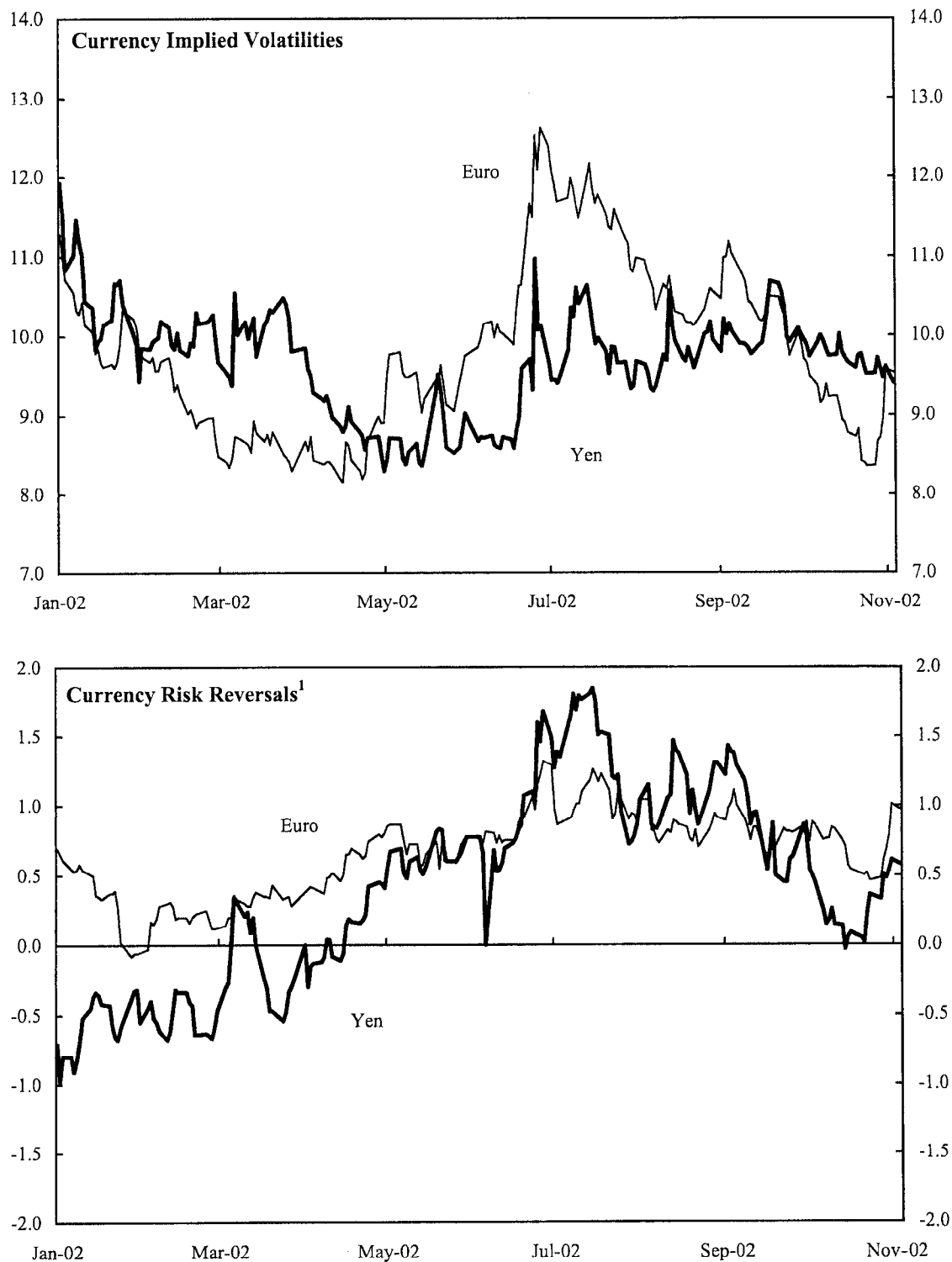
**Figure 2.3. Historical Volatility: Major Stock Market Indexes<sup>1</sup>**  
(In percent)



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

<sup>1</sup> 10-day rolling standard deviation; annualized.

**Figure 2.4. Currency Derivatives**  
(In percent; January 2002)



Source: Reuters.

<sup>1</sup>Positive number implies dollar expected to depreciate. Data for yen are multiplied by minus one.

system seemed to drive bank stock prices, which rose in mid-September after the Bank of Japan announced it would buy shares from banks, then retreated after a new Minister for Financial Services was appointed.

The decline in global stock markets had severe repercussions for financial institutions that either strongly depended on equity-related businesses, especially investment banking, or experienced losses on their asset portfolios, such as insurance and reinsurance companies.<sup>2</sup> Those institutions' stock prices came under considerable selling pressure, particularly after one of the two major U.S. banking conglomerates experienced both a downward revision to its earnings outlook and a downgrade of its credit rating during September-October. Insurance stocks have substantially underperformed broader markets since September 2001. The erosion of net capital, estimated at a cumulative \$170 billion for the global insurance and reinsurance industry over the past three years, led several companies to raise capital in the markets (see below). Meanwhile, the two largest global reinsurance companies lost their AAA ratings.

### **Implications of Financial Institutions' Strategic Responses**

Across the major markets, declining financial-institution stocks have drawn attention to a variety of financial-institution weaknesses that could adversely affect markets, which include: vulnerabilities to credit shocks, as revealed by Argentina's default and fragilities in the telecom sector; regulatory charges surrounding research practices and allocation of IPOs, and associated reputational risks; and cumulative losses or subpar profits on some business lines. Accordingly, financial institutions are rethinking their strategies and considering several structural adjustments, which taken together could change their willingness or capacity to intermediate risks as they have in the recent past—including to riskier borrowers, such as those in emerging markets.

First, financial institutions are re-evaluating strategies, aimed at creating synergies between commercial and investment banking, that failed to deliver as expected on the promise they held during the late 1990s boom. (Falling stocks also led nonfinancial firms to re-evaluate strategies (Business Council, 2002)). In particular, attempts by banks to offer clients low-cost (and low-profitability) loans in order to attract their more profitable investment-banking business met with limited success. More generally, banks appear to be apprehensive about the reputational and legal risks involved in deals that cross business lines, in light of the heightened regulatory and investor scrutiny of commercial and investment-banking practices (such as IPO spinning) and potential conflicts of interest. For example, some institutions are withdrawing from areas such as structured finance.

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<sup>2</sup> IMF (2002b) extensively analyzes the financial markets activities of insurance and reinsurance companies. Precise data on the effects of stock-market declines on the value of asset holdings are elusive, because reporting of hidden reserves is limited.

Second, some of the major financial institutions are moving to a smaller “platform” for financial intermediation, perhaps on a more permanent basis, reducing their cost bases and shedding excess capacity (and particularly headcount). Cost-cutting has been most vigorous in investment banking, where activity is expected to remain muted into 2003, then resume at well below boom (1998-2000) levels (third-quarter M&A was about two-thirds of the third-quarter 2001 value). In New York alone, for example, employment in the securities industry dropped by some 20,000 jobs (about 10 percent) in the past year. Looking ahead, firms are expected to continue to shed labor and reallocate resources across business lines for several more quarters. The depth and extent of the adjustment to come is still unclear, as firms struggle to distinguish the structural and conjunctural factors affecting the demand for financial services.

Third, financial institutions are striving to improve how they manage and price credit and other risks. Partly reflecting the effects of recent credit shocks, banks are moving toward an active “credit portfolio” approach, rather than using their balance sheets as a passive repository of credit risk. This ranges from more aggressive management of wholesale and retail loan exposures, to greater attention to counterparty risk exposures in the interdealer OTC derivatives market (where anecdotal evidence suggests that the major, internationally-active OTC derivatives dealers have been tightening counterparty credit terms, demanding more collateral and charging higher spreads). Over time, the process of improving credit risk management will no doubt make financial sectors more resilient.<sup>3</sup> It may also influence the growth and development of segments of the international capital markets and cross-border capital flows, including flows to emerging markets. In effect, these changes are all part of a broader process of deleveraging.

Over the medium term, heightened attention to credit risk management could have three main consequences for financial markets conditions and flows. First, credit terms for riskier borrowers may become more risk-sensitive to cyclical conditions and therefore more pro-cyclical. That is, during periods of slower economic growth, terms and conditions on credit extension could tighten more than would be expected purely based on the change in the business cycle. As a consequence, during periods of subpar growth some borrowers may have a harder time obtaining financing on past terms—including emerging markets borrowers. Consistent with this notion (and the weaker economic environment), during the first quarter of 2002, U.S. banks’ consolidated cross-border claims on developing economies contracted by 3 percent to about \$250 billion. Meanwhile, European banks reduced their cross-border claims on developing economies by 0.7 percent to about \$832 billion. Second, banks may be less apt to underprice loans, particularly as part of an effort to attract clients’ capital markets business. Some market participants suggest that syndicated loans to

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<sup>3</sup> Greenspan, 2002. Heavier reliance on credit risk transfer vehicles also underscores the importance of careful supervisory and regulatory attention to how these markets are functioning, and the need for improved disclosure and transparency about where the attendant exposures are held (see IMF, 2002a).

investment-grade borrowers are still commonly underpriced in the primary market, as reflected in narrower primary-market spreads compared to secondary-market spreads for the same credit.

Third, improved credit risk management will mean greater reliance on credit derivatives markets. In the first half of 2002, global notional credit derivatives outstandings rose by 44 percent to \$1.6 trillion. In recent months, liquidity in the credit derivatives market has reportedly been maintained, and transactions and settlements have taken place smoothly, despite remaining concerns about unresolved documentation issues, high levels of volatility and sharp blowouts in spreads for specific names (Douglas-Jones, 2002, and IMF, 2002a). Looking ahead, global outstandings are expected to rise to \$4.8 trillion in 2004.

### **The Capacity of Key Sectors to Intermediate and Bear Financial Risks**

In view of developments, and in order to assess the sources of risk that, if realized, could lead to a further, excessive retrenchment from risk taking, this section tries to assess the remaining financial resilience of key financial institutions and investors in the major financial centers in the United States, Europe, and Japan. While household, corporate, and financial sectors have been adversely affected in all three of these financial centers to varying degrees, the most important sectors, in order of importance, are: the household sector in the United States (the financial sector is also discussed for completeness); the financial sectors in Europe; and the nexus of the corporate and financial sectors in Japan.

Overall, the analysis presented below leaves the broad impression that, in the United States in particular, the adverse effects of stock-market declines on households' financial conditions have been at least partly offset by a combination of strongly rising real-estate prices and low and/or declining interest rates.<sup>4</sup> Likewise, while borrowing costs have gone up for riskier borrowers, low and still declining interest rates have mitigated corporate interest burdens globally to some extent. However, there remain two key risks in this environment. First, the present supportive housing-price and interest rate environment (including accommodative monetary stances in some countries) is likely to reverse course in the future once economic recovery is firmly established, at least outside Japan. (Employment and income growth could mitigate the impact of higher interest rates under such a scenario.) Second, if downside risks to the economic outlook materialized, higher unemployment and slow or negative real income growth would adversely affect the financial resilience of highly-indebted households. Moreover, further declines in equity valuations cannot be ruled out, particularly if interest rates rise. In the meantime, the financial conditions of commercial and investment banks, insurance and reinsurance companies, pension funds, and financial/nonfinancial hybrids also have continued to be adversely affected by the global

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<sup>4</sup> These effects have been seen to a lesser extent in Europe, consistent with a much smaller equity wealth effect on private consumption (Case and others, 2001, and IMF, 2002a). In Japan, households have minimal direct exposure to the stock market.



economic slowdown, credit market deterioration, and asset-price adjustments, in some cases severely. This has added to the difficulties of financial institutions that are struggling under longstanding structural problems in particular countries.

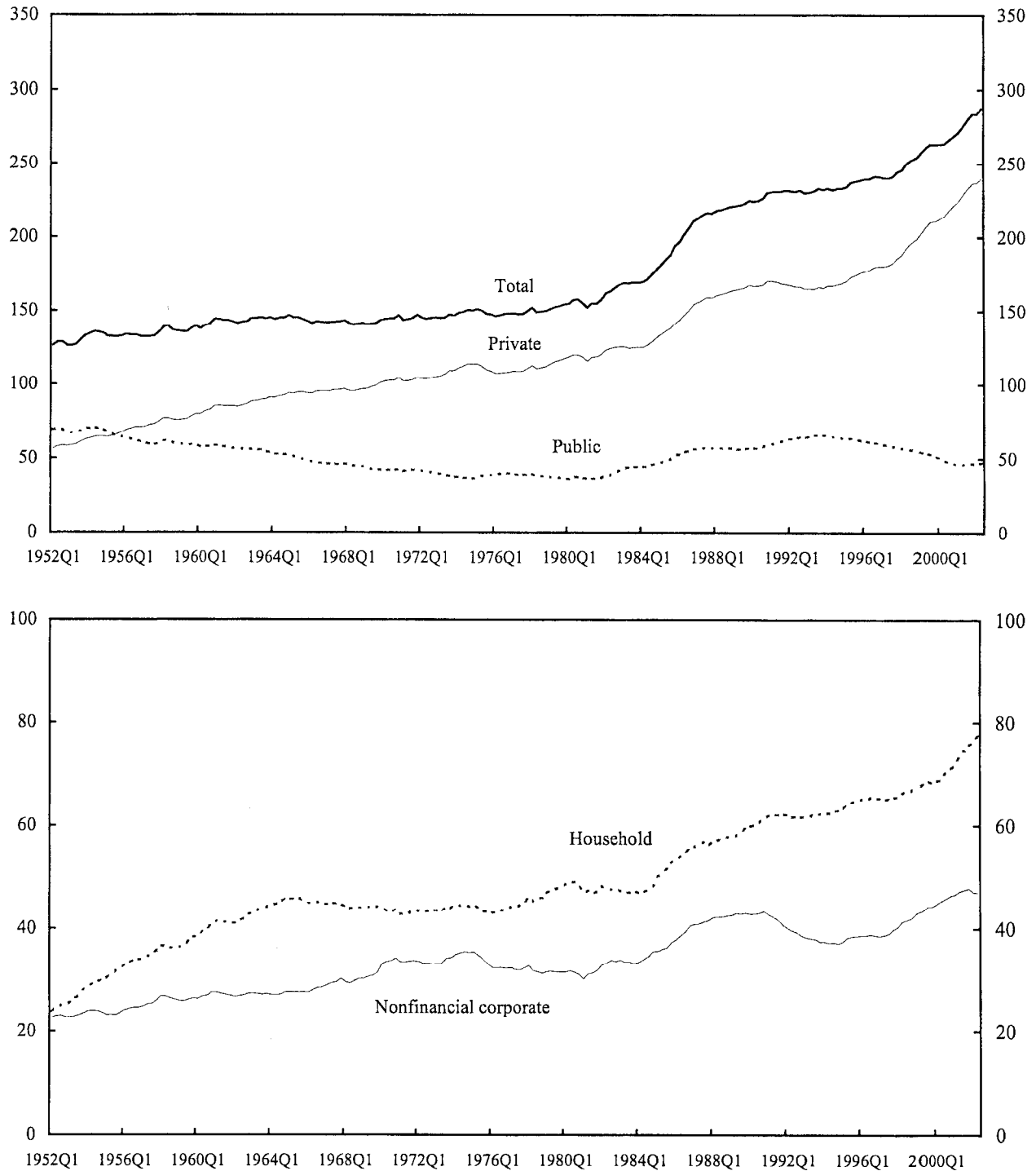
### **US Households and Financial Institutions**

As noted above, a deterioration in U.S. household financial conditions could pose the risk that households retrench further from risk taking, adversely affecting a wide range of markets. This is a serious concern, given that they hold significant amounts of corporate and financial-institution securities. As one possible source of vulnerability, household debt picked up rapidly during the 1990s to a new postwar high of 68 percent of GDP by 1999 (Figure 2.5) (see IMF (2002a), Chapter III). The rise in debt was accompanied by a boom in assets held by U.S. households. During 1997-1999, household equity holdings (including mutual funds) nearly doubled in value to over \$12 trillion. On balance, and despite rapid debt growth, household leverage declined modestly—net worth increased relative to assets—amid the stock-market boom and rising house prices (Table 2.1). Much of the 1990s household debt accumulation represented growth in mortgage debt to finance rising real-estate holdings, and mortgage refinancing in an environment of declining long-term interest rates.

Since the 2000 peak in equity markets, through the subsequent recession, and into 2002, household debt has continued to grow rapidly and reach successive new highs relative to GDP. To a significant extent, this continued strong debt growth has reflected sustained mortgage refinancing activity, which attained new records as rates hit multi-decade lows (similarly, corporations have locked in low-cost funding by refinancing short-term debt). Despite record levels of household liabilities, low interest rates and continued strong income growth have supported households' ability to service their debt. In addition, by allowing households to "lock-in" low mortgage rates, refinancing has reduced their exposure to any near-term interest rate increases (and mitigated the credit risks to institutions that lend to households). During the first half of 2002, about 80-85 percent of refunding has locked in low long-term interest rates (by the same token, the financial institutions on the other side of these transactions—which experienced a rise in prepayment risk as rates fell—may now be more exposed to interest rate risk). Both low rates and refinancing flows have supported the household sector's ability to bear financial risk and reduced any propensity to shed riskier assets (such as equities) to preserve their net wealth. Some have suggested that households used the proceeds of mortgage refinancing to finance stock market investments during the boom years, essentially leveraging their household equity. However, at mid-2002, owners' equity as a percent of household real estate (57 percent) was virtually unchanged compared with end-1996. Taken together, these factors have helped households to maintain consumption at its present pace and thereby support the recovery.

On the asset side of household balance sheets, since end-1999 the value of household equity holdings has fallen by some \$4.4 trillion. Net selling of equities may have contributed marginally to the decline as suggested by cash outflows and rising redemptions from mutual funds (although these figures are small relative to overall household holdings of equities). However, the erosion of household equity portfolios has been partly offset by rising housing

**Figure 2.5. United States: Debt Outstanding by Sector**  
(As a percentage of GDP)



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

**Table 2.1. United States: Sectoral Balance Sheets<sup>1</sup>**

*(In percent)*

|                                     | Pre-boom | Peak | Post-peak<br>average | Latest |
|-------------------------------------|----------|------|----------------------|--------|
|                                     | 1995-97  | 2000 | 2001                 | 2002   |
| <b>Corporate sector</b>             |          |      |                      |        |
| Debt/equity                         | 40.2     | 36.4 | 45.2                 | 54.6   |
| Short-term debt/total debt          | 41.1     | 39.8 | 34.6                 | 32.6   |
| Interest burden                     | 10.9     | 15.2 | 17.8                 | 17.2   |
| <b>Household sector</b>             |          |      |                      |        |
| Net worth/assets                    | 84.8     | 84.9 | 83.6                 | 82.8   |
| Equity/total assets                 | 26.3     | 30.8 | 26.4                 | ...    |
| Equity/financial assets             | 38.7     | 45.0 | 40.1                 | ...    |
| Home mortgage debt/total assets     | 10.0     | 9.9  | 10.9                 | 11.7   |
| Consumer credit/total assets        | 3.4      | 3.2  | 3.5                  | 3.5    |
| Total debt/financial assets         | 22.4     | 22.0 | 24.8                 | 26.8   |
| Debt-service burden <sup>2</sup>    | 13.2     | 13.9 | 14.4                 | 14.1   |
| <b>Banking sector</b>               |          |      |                      |        |
| Credit quality                      |          |      |                      |        |
| Nonperforming loans/total loans     | 1.1      | 1.0  | 1.3                  | 1.5    |
| Net loan losses/average total loans | 0.5      | 0.6  | 0.8                  | 1.1    |
| Loan loss reserve/total loans       | 2.0      | 1.7  | 1.7                  | 1.9    |
| Net charge-offs/total loans         | 0.6      | 0.7  | 1.0                  | 1.1    |
| Capital ratios                      |          |      |                      |        |
| Total risk-based capital            | 12.5     | 12.1 | 12.7                 | 13.0   |
| Tier 1 risk-based capital           | 9.9      | 9.4  | 9.9                  | 10.1   |
| Equity capital/total assets         | 8.2      | 8.5  | 9.1                  | 9.2    |
| Core capital (leverage ratio)       | 7.6      | 7.7  | 7.8                  | 8.0    |
| Profitability measures              |          |      |                      |        |
| ROA                                 | 1.2      | 1.2  | 1.2                  | 1.4    |
| ROE                                 | 14.6     | 14.0 | 13.1                 | 14.9   |
| Net interest margin                 | 4.3      | 4.0  | 3.9                  | 4.1    |
| Efficiency ratio                    | 60.6     | 58.4 | 57.7                 | 55.0   |

Sources: U.S. Board of the Federal Reserve System, Flow of Funds; U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Federal Deposit Insurance Corporation; and U.S. Federal Reserve Bank of St. Louis.

<sup>1</sup>For 2002, data refer to 2002 Q2.

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

prices, and the increasing value of real-estate holdings has added \$2.8 trillion to household wealth over the same period. On balance, and taking into account changes in other assets and liabilities, U.S. households' net worth has fallen by about \$2.3 trillion since end-1999 (and shifted into somewhat less liquid assets—real estate). To put this figure in perspective, it represents a decline of about 5 percent—and household net worth is still over \$40 trillion. In addition, U.S. household net worth stands at about 5.15 times household income, which is still well above the average of 4.75 attained during 1990-95.

The considerable rise in U.S. house prices during recent years, which occurred in an environment of strong housing demand and historically-low and falling interest rates, has raised questions about whether this rise is sustainable or whether it is displaying characteristics of a “bubble”(concerns have also arisen about European house prices). These questions are important, because so far (as noted above) rising house prices have bolstered household wealth, helping to offset the erosion of net worth from falling equity prices. Accordingly, a downturn in house prices—possibly sparked by higher interest rates—could add to downward pressure on net wealth, and might reduce household willingness to take financial market risks.

While the risk that U.S. housing markets are experiencing an unsustainable bubble cannot be ruled out, several factors suggest that the strength in U.S. residential real estate markets reflects economic and demographic factors, and therefore fundamental strength in demand for housing, rather than speculative and unsustainable demand (JP Morgan, 2002):

- Since 1996, 7.1 million new households have been formed, broadly in line with the 7.3 million unit increase in the housing stock.
- Changing tastes, higher incomes, and low mortgage rates have led new households to increasingly opt to own rather than rent their dwellings. The home ownership rate reached a record 68 percent in 2001, after ranging around 63-64 percent since 1970.
- Housing prices when properly adjusted for quality increases may not have risen as much as headline figures. Changing tastes and higher income have led households to demand larger, better equipped single-family homes, boosting housing-price indexes, which by and large are not fully adjusted for changes in quality.
- Housing affordability rose during 2001 (measured by the National Association of Realtors' Index) , as lower mortgage rates and higher median family income more than offset the rise in home prices, and remains high by historical standards. The index current level of 138 indicates that the median family had 138 percent of the income to finance a median-priced home.<sup>5</sup>

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<sup>5</sup> At the same time, affordability for first-time buyers has remained low (about 75 percent).

- The median age rose from 33 to 35 years during 1990-2000, supporting an increase in home ownership rates (which tend to rise after age 35).

In sum, the combination of U.S. household balance sheet adjustments and present household financing conditions suggests that, the main financial risks to the future resilience of the sector and its ability to bear financial risk center on the sustainability of housing and equity prices and low interest rates. Considering that equity and real estate holdings comprise a substantial share of household assets, a key risk is that stock and housing prices could grow more slowly or decline if downside risks to the economic outlook are realized, adding to the adverse effects of higher unemployment and slower income growth.

Another risk is that, with debt at record levels, an increase in retail interest rates—either reflecting higher consumer risk premiums, or a sustained sharp rise in oil prices that led markets to expect accommodative monetary policy to become less accommodative—could increase the household debt burden. Refinancing activity at fixed rates has reduced vulnerability to this risk, moving interest rate exposure into the financial sector, so that even a steep increase in long-term interest rates might not significantly affect the interest burden. Moreover, if higher interest rates coincided with economic recovery, stronger income growth would alleviate the financial pressure on households. Nevertheless, increasing interest rates could also dampen equity and real estate prices, potentially eroding household assets. Particularly if the economy is in an environment of softer income growth and heightened employment uncertainty, any of these outcomes could reduce U.S. households' ability and/or willingness to take financial markets risks, or in a worse case scenario could even lead households (and/or the institutions that administer their pensions) to shed riskier assets to safeguard net wealth.

Meanwhile, despite the deterioration in markets, U.S. bank earnings and credit quality have fared reasonably well, reducing the risk of a broader withdrawal from risk taking by the sector (see Table 2.1). U.S. banks avoided the worst effects of credit shocks because of earlier and ongoing adjustments they made, as they disintermediated credit risk to markets and investors, syndicated loan risks to overseas banks, and diversified loan credit risk across firms and sectors. Reflecting these factors, nonperforming assets have remained relatively low by historical standards, and capitalization ratios are high by international norms. Bank earnings were supported by low interest rates, a steep yield curve, a shift of household funds into deposits (providing ample low cost funding, amid retail investor concerns about the performance of stock markets), and still-profitable retail franchises. Accordingly, a reversal of any of the underlying conditions—say, a steep increase in interest rates, or a sharp deterioration in the credit quality of retail portfolios—could adversely affect U.S. bank earnings and asset quality, thereby increasing the chance that they retrench further from risk taking. Moreover, a more general investor retrenchment from risk taking could limit banks' ability to continue to lay off credit risks in the markets.

## European Financial Systems<sup>6</sup>

By contrast with the situation in the United States—where households are bearing the brunt of the deterioration in asset values through their broad direct and indirect ownership of traded financial assets (including through defined contribution pensions)—in Europe, a wide range of financial institutions are being adversely affected by the deterioration in wholesale and retail credit quality caused by the weak economic environment. Many of these institutions, which collectively intermediate and hold the lion's share of financial risk in Europe, have been adversely affected by declining revenues, rigid cost bases, and a sharp rise in provisions. More generally, in some European financial systems a lack of progress in addressing structural inefficiencies has led to a situation in which low profitability (particularly a lack of profitable domestic retail operations) is limiting the scope for some key institutions to earn their way out of problems associated with the deteriorating wholesale business environment. In Germany, for example, persistent pressure on profitability could discourage financial institutions from risk taking in wholesale markets.<sup>7</sup> System-wide problems are seen as unlikely by market participants and authorities, and this process is not expected by European authorities to result in a credit crunch (as consistent with the present positive credit growth in European countries). Nevertheless, a retrenchment in risk taking could have negative repercussions for financial institutions and markets, including those outside Germany. As evidence of this, German banks have about \$2 trillion in consolidated cross-border claims on all countries, according to BIS statistics. In addition, they have \$190 billion in claims on developing economies—more than any other European banking system.

In the recent period, European banks that had international exposures, significant capital-markets activities, or linkages with insurance companies faced pressure on profits from all these business lines—raising questions about their willingness to continue to take the associated risks. Although declining short-term interest rates generally supported profits, major credit events such as WorldCom and Argentina implied substantial losses for internationally-active banks. By contrast, domestic credit quality held up relatively well in most countries in 2001, implying a smaller increase in credit costs for local and regional banks. On balance, 2001 loan loss provisions have risen by about 50 percent relative to total operating income for the 50 major European banks (Table 2.2). In the first half of 2002, loan loss concerns have intensified as hoped-for economic recovery has not materialized and some of last year's credit costs are still being written off. The sharp decline in global equity markets has impinged mainly on larger, more internationally-active financial institutions, reflecting a drop in equity-related businesses and losses on equity holdings. Some banks also

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<sup>6</sup> Owing to the lack of timely, aggregate European financial accounts, this section is mainly based on national data for France, Germany, Italy, and the United Kingdom.

<sup>7</sup> During the year ending March 2002, German private sector credit grew more slowly than would be expected given GDP growth and interest rates (see SM/02/309, Box 2).

**Table 2.2. Europe: Sectoral Balance Sheets**  
(In percent)

|                                             | Pre-boom    | Peak        | Post-peak<br>Average | Latest      |
|---------------------------------------------|-------------|-------------|----------------------|-------------|
|                                             | 1996-97     | 2000        | 2001                 | 2002        |
| <b>Corporate sector<sup>1</sup></b>         |             |             |                      |             |
| Debt/equity                                 | 81.8        | 92.7        | 95.0                 | ...         |
| Short-term debt/total debt <sup>2</sup>     | 46.9        | 48.4        | 49.0                 | ...         |
| Interest burden <sup>3</sup>                | 17.4        | 18.8        | 19.6                 | ...         |
| Debt/operating profits <sup>4</sup>         | 249.9       | 305.0       | 318.2                | ...         |
| <i>Memorandum items:</i>                    |             |             |                      |             |
| Financial assets/equity <sup>4</sup>        | 1.7         | 2.1         | 1.9                  | ...         |
| Liquid assets/short-term debt <sup>2</sup>  | 71.3        | 76.4        | 76.5                 | ...         |
| <b>Household sector<sup>1</sup></b>         |             |             |                      |             |
| Net worth/assets                            | 87.3        | 87.2        | ...                  | ...         |
| Equity/net worth                            | 14.8        | 19.5        | ...                  | ...         |
| Equity/net financial assets <sup>2</sup>    | 38.9        | 45.7        | 40.9                 | ...         |
| Interest burden <sup>3</sup>                | 6.3         | 6.6         | 6.4                  | ...         |
| <i>Memorandum items:</i>                    |             |             |                      |             |
| Nonfinancial assets/net worth               | 60.2        | 57.3        | ...                  | ...         |
| Debt/net financial assets <sup>2</sup>      | 22.8        | 21.3        | 26.0                 | ...         |
| Debt/income                                 | 69.4        | 81.5        | 82.2                 | ...         |
| <b>Banking sector<sup>5</sup></b>           | <b>1997</b> | <b>2000</b> | <b>2001</b>          | <b>2002</b> |
| Credit quality                              |             |             |                      |             |
| Nonperforming loans/total loans             | 5.0         | 5.0         | 4.6                  | ...         |
| Loan loss reserve/nonperforming loans       | 74.3        | 70.9        | 75.7                 | ...         |
| Loan loss reserve/total loans               | 3.7         | 3.5         | 3.5                  | ...         |
| Loan loss provisions/total operating income | 13.2        | 7.6         | 11.5                 | ...         |
| Capital ratios                              |             |             |                      |             |
| Total risk-based capital                    | 10.7        | 10.4        | 10.4                 | ...         |
| Tier 1 risk-based capital                   | 7.2         | 7.2         | 7.1                  | ...         |
| Equity capital/total assets <sup>6</sup>    | 4.1         | 4.4         | 4.5                  | ...         |
| Capital funds/liabilities <sup>6</sup>      | 6.4         | 6.7         | 6.8                  | ...         |
| Profitability measures                      |             |             |                      |             |
| ROA (after tax)                             | 0.3         | 0.7         | 0.5                  | ...         |
| ROE (after tax)                             | 7.6         | 15.8        | 12.2                 | ...         |
| Net interest margin <sup>6</sup>            | 1.4         | 1.4         | 1.3                  | ...         |
| Efficiency ratio                            | 64.6        | 64.3        | 65.0                 | ...         |

Sources: Bankscope; ECB Monthly Bulletin, August 2002; and IMF staff estimates.

<sup>1</sup>GDP-weighted-average for France, Germany, Italy, and the United Kingdom, unless otherwise noted. Corporate equity adjusted for changes in asset valuation.

<sup>2</sup>GDP-weighted-average for France, Italy, and the United Kingdom.

<sup>3</sup>GDP-weighted-average for France, Germany, and the United Kingdom.

<sup>4</sup>GDP-weighted-average for France and the United Kingdom.

<sup>5</sup>50 largest European banks.

<sup>6</sup>Pre-boom data.

had to provide capital support to affiliated insurance companies that experienced severe losses in their equity portfolios (see below). Accordingly, banks' return on equity dropped by about a third in 2001, and interim results for 2002 indicate a further decline.

Despite the adverse effects of deteriorating economic and financial conditions, an improvement in underlying profitability has enabled many European banks to maintain regulatory capital ratios at relatively comfortable levels. This situation reflects significant improvements in credit risk management, earnings diversification, and operating efficiency in recent years in many, although not all, European countries:

- Although they continue to bear the lion's share of credit risk, European banks have increasingly moved such risk off their balance sheets. Securitized credit issues have grown markedly over the past few years—by 20 percent in 2001 alone—and euro-area banks also account for about a third of the rapidly-expanding global credit derivatives market. Similarly, syndicated lending expanded briskly during the late 1990s, albeit mostly to finance corporate reorganization and investment in the TMT sectors. Owing to the active use of these instruments, nonperforming loan ratios declined in 2001 even as provisioning levels increased markedly.
- On the earnings side, European banks have made inroads into fee-based businesses, either by leveraging off their existing retail branch networks (for example, in asset management) or by widening their wholesale businesses. As a result, their revenue structures became more diversified. In the recent period, profits on some of these business lines have come under pressure. Retail brokerage commissions have declined, although the slump may be temporary. It is less clear whether profits on investment banking activities—in particular for medium-sized banks—will over time rebound to a level that generates a reasonable return on capital.
- Many European countries have also seen significant banking-system restructuring (although progress has been uneven across countries). The resulting two-tiered banking structure—a top tier of several larger universal banks with national franchises, and a bottom tier of many smaller regional and local players (Table 2.3)—has meant (in most countries) a more efficient use of banking capital.

This progress has been reflected in strong financial results of banks in some major European countries, which support their ability to intermediate and bear risks. The U.K. banking system has enjoyed solid profits in recent years (notwithstanding a 2001 decline in profits owing to higher provisions), is generally well capitalized and relatively insulated from international shocks. The French, Italian, and Spanish banking systems have also seen substantial improvements in capital levels, asset quality, and profitability; banking reforms in France were particularly successful. In Italy, the consolidation process has progressed, but some banks remain significantly exposed to large industrial borrowers (partly reflecting recent mergers; Italian banks are in the process of unwinding these exposures). Spanish banks have become highly profitable in domestic markets during recent years, and remaining concerns about them focus mostly on emerging market exposures, which account for a



Table 2.3. Europe: Selected Financial Indicators for Twenty Largest Banking Groups, 2001  
(In percent, unless otherwise noted)

|                                                                                                                          | Assets<br>(EUR millions)                 | Net ROE                          | Interest Margin<br>(percentage<br>points) | Cost/Income                      | Impaired<br>Loans/Gross<br>Loans | Reserves/<br>Impaired Loans   | Tier-1 Capital<br>Ratio  |
|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------|-------------------------------------------|----------------------------------|----------------------------------|-------------------------------|--------------------------|
| Belgium<br>Fortis Bank                                                                                                   | 377,919                                  | 12.65                            | 1.24                                      | 74.23                            | ...                              | ...                           | 8.5                      |
| France<br>BNP Paribas<br>Credit Agricole <sup>1</sup><br>Societe Generale                                                | 825,288<br>563,289<br>512,499            | 16.29<br>9.23<br>13.26           | 0.60<br>1.22<br>1.07                      | 63.63<br>67.71<br>73.18          | 5.33<br>4.91<br>4.49             | 86.0<br>66.8<br>91.0          | 7.3<br>10.8<br>8.4       |
| Germany<br>Bayerische Hypo-und<br>Vereinsbank<br>Commerzbank <sup>2</sup><br>Deutsche Bank<br>Dresdner Bank <sup>2</sup> | 715,860<br>500,981<br>917,669<br>506,346 | 3.94<br>1.20<br>0.42<br>1.24     | 0.99<br>0.74<br>0.93<br>0.84              | 68.08<br>85.83<br>87.91<br>95.34 | 2.99<br>3.13<br>4.07<br>3.92     | 97.5<br>80.2<br>51.7<br>75.4  | 6.0<br>6.0<br>8.1<br>5.5 |
| Italy<br>IntesaBei                                                                                                       | 313,220                                  | 5.85                             | 2.16                                      | 71.39                            | 9.64                             | 56.9                          | 6.0                      |
| Netherlands<br>ABN Amro Holding<br>ING Bank<br>Rabobank Group                                                            | 597,363<br>443,356<br>363,619            | 18.90<br>9.14<br>7.77            | 1.77<br>1.40<br>1.43                      | 74.93<br>84.67<br>80.31          | ...<br>...<br>...                | ...<br>...<br>...             | 7.0<br>7.0<br>10.2       |
| Spain<br>Banco Bilbao Vizcaya<br>Argentaria<br>Santander Central Hispano                                                 | 305,470<br>355,903                       | 15.04<br>12.25                   | 3.01<br>2.92                              | 57.07<br>61.87                   | 1.72<br>2.17                     | 221.6<br>135.8                | 8.5<br>7.5               |
| Switzerland<br>Credit Suisse Group<br>UBS Group                                                                          | 681,387<br>835,179                       | 4.41<br>11.15                    | 0.67<br>0.69                              | 89.86<br>80.82                   | 4.82<br>3.53                     | 66.5<br>87.0                  | 9.5<br>11.6              |
| United Kingdom<br>Barclays<br>HSBC plc<br>Lloyds TSB Holding<br>Royal Bank of Scotland Group                             | 573,486<br>327,353<br>312,889<br>590,034 | 16.38<br>11.46<br>23.43<br>10.93 | 1.59<br>1.89<br>2.79<br>2.10              | 57.88<br>66.52<br>49.18<br>63.93 | 2.88<br>2.75<br>0.98<br>2.03     | 52.9<br>81.7<br>125.9<br>92.8 | 7.8<br>6.8<br>8.4<br>7.1 |

Source: FitchRatings.

<sup>1</sup>International Accounting Standards (IAS) figures.

<sup>2</sup>Reserves include only specific provisions.

substantial share of bank capital. These concerns relate mainly to Brazil, but major banks may need to inject fresh capital into Argentinean subsidiaries to preserve market franchises.

Despite these favorable results, further progress can be made in addressing structural problems in European financial systems and bolstering their financial strength and resilience:

- Market efficiencies deriving from intra-European competition have yet to be fully realized. Bank restructuring through M&A has taken place mostly within national borders, and further consolidation among the larger institutions could further reduce the extent of domestic competition. In addition, cross-border merger synergies have been hampered by cultural, legal, and political obstacles (Berger and others, 2001).
- Most European banks lack a strong pan-European operational base, which may have limited their competitiveness in the global wholesale fee business vis-à-vis global U.S. financial institutions and therefore their profitability.<sup>8</sup>
- As a result of these factors, overcapacities in European banking persist as potential returns to scale remain unexploited. A recent estimate suggests that, in corporate and institutional banking alone, about a fifth of aggregate bank capital would have to be withdrawn in order to return profitability to levels that prevailed at the end of the 1990s.<sup>9</sup>
- Although banking consolidation has often involved a reduction in public ownership in larger banks, small local banks with public sector affiliations continue to dominate the retail banking sector in many countries.
- Finally, the cost bases of many European banks have remained high, owing to steep labor costs, underinvestment in technology, and the difficulty of downsizing through labor shedding.

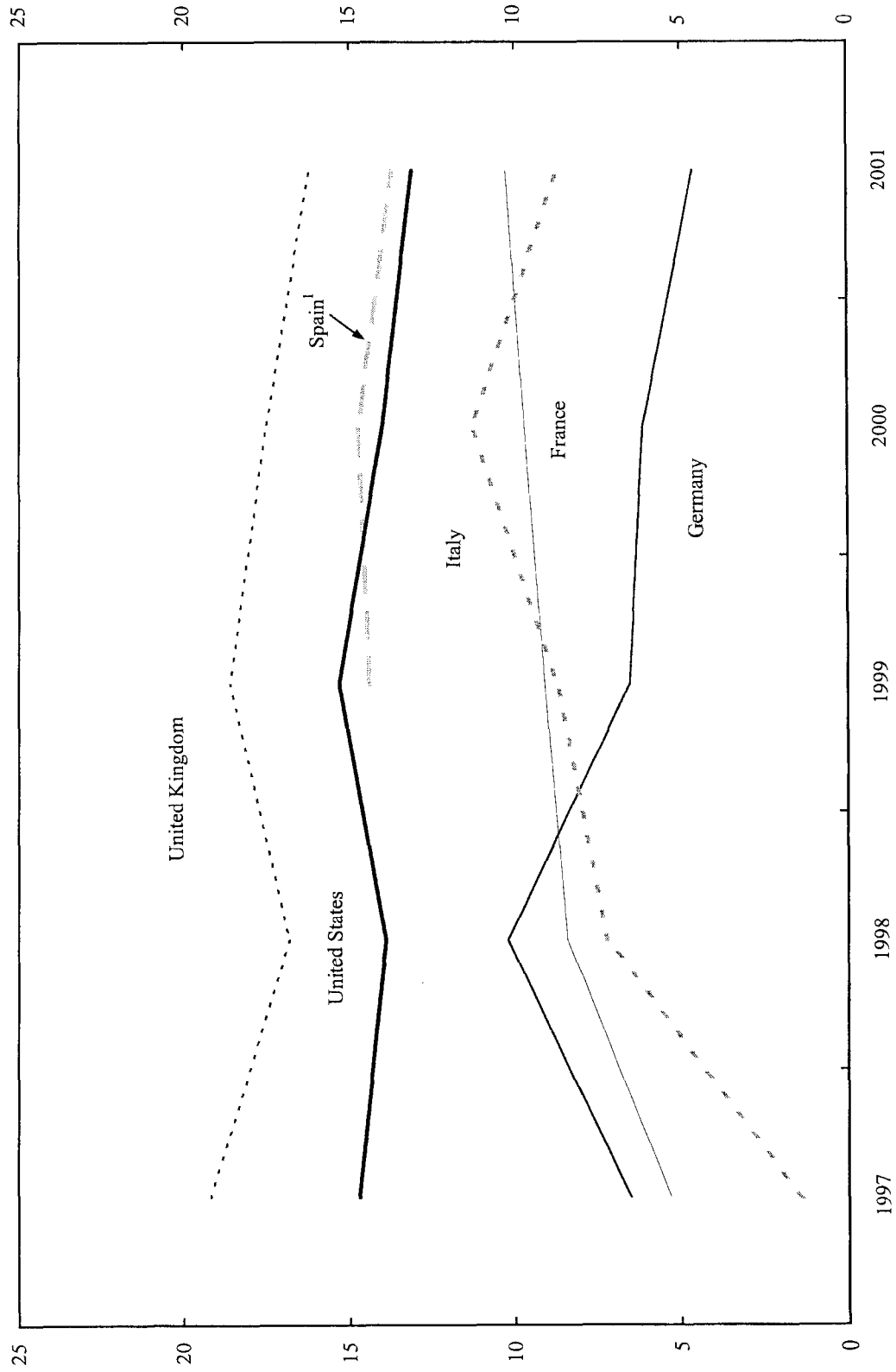
Partly as result of these factors, both profitability and rates of return on equity have remained below U.K. and U.S. levels in many continental European countries (Figure 2.6). Meanwhile, the public savings banks, which are generally the most profitable banks in Germany, have seen their profitability drop in recent years on falling interest margins and higher loan losses. Even at the height of profitability in the mid-1990s, their return on assets has remained well below that achieved by comparable U.S. savings banks.

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<sup>8</sup> For example, U.S. investment banks quadrupled their market share in the lead management of euro-area corporate bond issues to 40 percent over 1995-2001 (ECB, 2002). Efforts of European banks to attain a leading position in global investment banking have met with limited success, and some have recently abandoned or scaled back their presence in this area.

<sup>9</sup> Oliver Wyman & Company (2002).

**Figure 2.6. U.S. and European Banking Systems: Return on Equity**  
(In percent)



Sources: Data prepared by national authorities; and Bankscope.

<sup>1</sup>Fifty largest banks.

Among the major European countries, the earnings power and asset quality of the German financial sector has perhaps been most under pressure, mainly reflecting that domestic banking-system restructuring has yet to begin in earnest. In addition, the asset sides of balance sheets have also been adversely affected by declining credit quality during the downturn, the continuing property slump (also affecting collateral values), and equity losses. As a result of all these factors, profit margins have deteriorated steadily (remaining well below those in other European countries), and a number of institutions have failed or received public capital injections. Over the medium term, the phase-out of public guarantees for the Landesbanks and public savings banks beginning in 2005 could relieve some of the pressure on the private banks, by forcing a large part of the German banking system to compete for market funds on competitive terms. As a consequence, some of the Landesbanks could in turn withdraw from riskier activities, including overseas lending. More generally, although the systemic stability of the German financial system is not in question, further shocks such as prolonged asset price declines or a worsening of the credit cycle could reinforce an excessive retrenchment from risk taking and affect borrowers in a variety of domestic and international markets, including emerging markets.

The economic downturn and market deterioration have also put pressure on European insurers, which are major investors and risk takers in European capital markets.<sup>10</sup> To reduce pressure on solvency margins, many insurers have cut back their purchases of equities or reduced equity holdings outright, which may have reinforced the downward trend in global equity markets. They have also sought to raise up to €10 billion in new capital. In addition, supervisory authorities have adjusted rules related to the valuation of stock holdings.<sup>11</sup> Finally, close linkages between some banks and insurance companies in *bancassurance* groups have in some cases raised questions about cross exposures and possible arbitraging of accounting and regulatory regimes.

Looking ahead, the European banking and insurance sectors as a whole appear strong enough to withstand the current cyclical downturn and continue to bear and intermediate risks to a reasonable extent. Nevertheless, a further slump in equity prices as well as higher credit costs (including from emerging market exposure) could yet lead to more widespread losses, and possibly further significant restructuring. The financial strength of the German banking system has become of particular concern, partly because ambitious steps toward the

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<sup>10</sup> European insurers hold about 20 percent of their assets in equities (see IMF, 2002b).

<sup>11</sup> In July, the U.K. FSA changed its “resilience tests” on equity portfolios to allow insurers to base the tests on the three-month average of past equity prices, rather than the current price (see IMF, 2002c). The FSA also stepped up its surveillance of the sector. In Germany, in late 2001 the government changed the accounting basis for stockholdings from mark-to-market to an impairment rule, requiring valuation changes only for “permanent” declines in asset values. Many insurers used this rule to meet solvency requirements in 2001, therefore significant writedowns could occur if stock markets do not recover by end-2002.

restructuring of the fragmented and weakly profitable banking sector have yet to be taken. Meanwhile, although its systemic stability is not in question, the German financial system could become increasingly vulnerable to market shocks that could trigger a further and excessive retrenchment from risk taking and affect market conditions and credit availability in the real economy, domestically and internationally. Similarly, the systemic stability of European insurance sectors is generally not in doubt, but severe losses on asset holdings have weakened insurers, especially in Germany and the United Kingdom. If failures or distress sales become unavoidable, portfolio unwinding could put downward pressure on markets.

### **The Japanese Financial System**

In Japan, the financial system's risk-bearing capacity continues to be impaired by ongoing asset-price deflation and severe economic weakness, which have exacerbated the banks' longstanding problems related to the bubble period and led to the emergence of fresh nonperforming loans (NPLs) (IMF (2002a), Chapter III, and IMF (2002b), Chapter II). In FY2001, amid stricter asset assessments major banks' NPLs increased by 40 percent to ¥28 trillion. In addition, massive loan-loss provisioning and write-offs reduced major banks' shareholder equity by 27 percent, a loss that exceeds the FY1998 public capital injection. Meanwhile, low profitability, weak capitalization and a considerable and growing overhang of nonperforming loans—now equivalent to some 10 percent of GDP (Table 2.4)—continue to exert a drag on the sector's financial condition. These problems, particularly low profitability and the continued accumulation of nonperforming loans, reflect persistent financial weaknesses in the corporate sector that have yet to be squarely resolved.<sup>12</sup> The quality of bank capital remains weak as well: deferred tax assets account for half of shareholder equity.

The banks' ongoing difficulties have also fostered a further withdrawal from risk taking in domestic and international markets. Amid shrinking capital, weak credit demand, and stock-market losses, major banks' assets contracted by 9 percent over FY2001, and are now 22 percent below their 1989 peak. Japanese banks have cut back their overseas exposures by 16 percent, unwinding a rapid increase in preceding years. Lending to emerging markets has steadily shrunk to less than half the amount outstanding at the time of the Asian crises, although Japanese banks still have substantial consolidated overseas exposure amounting to some \$1 trillion.

The government has responded to financial-system weaknesses with a series of measures (as noted above, these events seem to have importantly influenced Japanese stock prices during the recent period). In mid-September, the Bank of Japan announced that it would purchase stocks from major banks to reduce their vulnerability to declining stock prices; at end-September, the Minister for Financial Services was replaced by the Minister

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<sup>12</sup> Although a framework for dealing with these problems is in place, incentives for banks to apply it remain weak. See IMF (2001), Annex I.

**Table 2.4. Japan: Sectoral Balance Sheets**

(In percent)

|                                        | Pre-boom       | Peak        | Post-peak<br>Average | Latest      |
|----------------------------------------|----------------|-------------|----------------------|-------------|
| <b>Corporate sector</b>                | <b>1980-85</b> | <b>1989</b> | <b>1992-2001</b>     | <b>2001</b> |
| Debt/shareholder's equity (book value) | 232.7          | 224.7       | 198.3                | 156.0       |
| Short-term debt/total debt             | 48.7           | 45.9        | 39.8                 | 36.8        |
| Interest burden                        | 67.3           | 49.8        | 48.6                 | 32.3        |
| Debt/operating profits                 | 787.8          | 959.9       | 1496.2               | 1480.0      |
| <i>Memorandum items:</i>               |                |             |                      |             |
| Debt/net worth                         | 57.6           | 29.5        | 89.6                 | 120.1       |
| Net worth/assets                       | 46.8           | 65.3        | 39.8                 | 31.6        |
| <b>Household sector</b>                | <b>1980-85</b> | <b>1989</b> | <b>1992-2000</b>     | <b>2000</b> |
| Net worth/assets                       | 86.6           | 88.6        | 85.7                 | 85.6        |
| Equity                                 | 4.0            | 9.2         | 4.1                  | 4.2         |
| Real estate                            | 47.2           | 52.9        | 41.7                 | 36.5        |
| Interest burden                        | 5.4            | 5.7         | 5.3                  | 4.5         |
| <i>Memorandum items:</i>               |                |             |                      |             |
| Debt/equity                            | 263.7          | 103.1       | 301.8                | 296.3       |
| Debt/real estate                       | 22.0           | 17.9        | 29.1                 | 34.0        |
| Debt/interest payment                  | 63.9           | 92.1        | 96.4                 | 99.0        |
| Debt/net worth                         | 12.0           | 10.7        | 14.0                 | 14.5        |
| Equity/net worth                       | 4.6            | 10.4        | 4.8                  | 4.9         |
| Real estate/net worth                  | 54.5           | 59.7        | 48.6                 | 42.6        |
| <b>Banking sector</b>                  | <b>1983-85</b> | <b>1989</b> | <b>1992-2001</b>     | <b>2001</b> |
| Credit quality                         |                |             |                      |             |
| Nonperforming loans/assets             | ...            | ...         | 3.28                 | 5.57        |
| Capital ratio                          |                |             |                      |             |
| Stockholders equity/assets             | 2.66           | 3.04        | 3.87                 | 3.85        |
| Profitability measures                 |                |             |                      |             |
| ROE                                    | 6.54           | 7.66        | -5.36                | -16.91      |

Sources: Ministry of Finance, *Financial Statements of Corporations by Industries*; Cabinet Office, Economic and Social Research Institute, *Annual Report on National Accounts*; Bank of Japan, *Financial Statements of Japanese Banks*; and Financial Service Agency, *The Status of Nonperforming Loans*.

for Economic and Fiscal Policy (who is seen in the markets as likely to more aggressively pursue bank restructuring); and in October, the government postponed the withdrawal of blanket guarantees on demand deposits for two years.

In addition, the Bank of Japan issued a report that highlighted the continued emergence of nonperforming loans. The report emphasized the close linkage of the NPL problem with structural problems in the financial and corporate sectors, including low profitability. It advocated a comprehensive approach to resolving the NPL problem, including stricter loan evaluations, prompt disposal of bad loans, and measures to bolster corporate and bank earnings power. The report also called for steps to encourage banks to reduce shareholdings, and proposed injections of public capital if banks became undercapitalized as a result of more aggressive provisioning.

At end-October, the government released a Financial Reconstruction Program aimed at addressing banking sector weaknesses and resolving Japan's non-performing loan problem by end-FY2004. Elements under consideration include provisioning based on more strict and forward-looking loan assessments; acceleration of NPL sales; and the creation of an industrial reconstruction corporation.<sup>13</sup> The Program also proposed that undercapitalized financial institutions would receive prompt capital injections, with their NPL books separately managed under a new account. In addition, the Resolution and Collection Corporation (RCC) would be expected to play a more active role in catalyzing NPL sales. However, the program lacked concrete details and timetables for implementation of some measures, particularly limits on the amount of deferred tax assets that can be included in Tier 1 capital.

In the meantime, the financial sector remains in precarious condition, with considerable exposure to market risk. Falling stock prices and rising interest rates could generate losses on banks' equity, bond and swap positions. Rising interest rates (albeit unlikely in the near term) would also increase the corporate debt burden and heighten the credit risk faced by banks. Falling stock prices and rising interest rates would also create further losses for the already-weakened life insurers that hold about half of their assets in domestic stocks and bonds. Moreover, life-insurance-company failures could significantly impair bank capital through cross-gearing. Any of these outcomes could spur a further retrenchment by banks from lending in domestic and overseas markets, with possible spillovers to other markets (IMF, 2002b). It could also increase the risk that banks and insurance companies would unwind their equity and JGB portfolios in a disorderly fashion, raising the risk of sharp price movements and turbulence in Japanese financial markets.

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<sup>13</sup> The corporation would purchase loans to corporations that are experiencing financial trouble, but have reasonable prospects for rehabilitation.

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### **III. Emerging Market Developments and Finance**

Emerging market investor sentiment deteriorated sharply during the third quarter, and the external financing environment for emerging markets was singularly unsupportive. At the same time, investor apprehension over policy continuity in Brazil and other Latin American countries became accentuated with the approach of elections. Both mature and emerging markets experienced a sharp tiering by credit quality, with highly leveraged firms and countries with large borrowing requirements at the focal point of investor concern. Signs of broad-based contagion in emerging debt markets were limited, notwithstanding an increase in volatility. In the primary markets, unsecured access was effectively closed to non-investment grade issuers in Latin America, while Asian and Eastern European issuers experienced relatively open access. However, cumulative gross issuance of bonds, loans and equities in the nine months through September has fallen well below previous years. So long as the external environment remains turbulent and uncertainty over policy continuity in key emerging markets persist, risks for emerging markets will remain elevated. Mitigating these risks are the limited leverage in emerging credit markets and the likely continuation of investor discrimination.

As highlighted in the previous chapter, the external financing environment for emerging markets was singularly unsupportive.

- In the mature credit markets, heightened risk aversion (Box 3.1) pushed government bond yields to historic lows and yield spread ratios on corporate bonds to near record levels. These yield spreads were symptomatic of sharp tiering by credit quality, and reflect heightened investor concerns over the earnings prospects of highly leveraged firms. Wide corporate yield spreads also made it difficult for emerging markets to attract cross-over investors from mature credit markets.
- Continued mature equity market weakness and volatility were detrimental to emerging market financing, including foreign direct investment, which has in the past been correlated with equity market performance.
- As outlined in Chapter II, bank financial losses from lending in mature markets and reputational losses and potential legal liabilities from questionable business practices inhibited lending. In addition, the unexpected nature of the losses incurred as a result of the deposit freeze and asymmetric pessification of bank deposits in Argentina led banks to reassess the risks of operations in emerging markets and retrench further.
- Liquidity and trading volume in the secondary market for emerging market bonds declined. Financial consolidation has reduced the number of emerging market debt dealers. And those remaining appear less willing than in the past to accommodate sellers by taking securities on their balance sheets. Limited liquidity contributed to price gapping and prevented large dedicated investors from reducing their exposures.

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**Box 3.1. Risk Retrenchment and Risk Indicators**

There are a number of widely-used measures developed by market practitioners to capture episodes of financial market strain. All of these measures suggest that financial market strain has begun to ease recently, from high levels earlier in 2002. These indices have also been interpreted as indicators of risk appetite, implying that changes in risk from changes in risk aversion have been successfully disentangled.

**Changes in Risk Perceptions Versus Increased Risk Aversion**

The recent retrenchment from risk could reflect investor perceptions that a further deterioration in the financial environment is more likely—that is, higher perceived risk—or a reduced willingness by investors to bear a given level of risk (heightened investor risk aversion), or some combination of the two. Given that the two alternatives have different policy implications, it is important to be able to distinguish them. In particular, a variety of policies—ranging from stimulative macroeconomic policies, to improved disclosure and transparency—can reduce actual and perceived risk; it is not clear what types of policies (if any) can affect investor tastes.

Unfortunately, disentangling risk and risk aversion is difficult in practice: both increased risk and increased risk aversion cause risk premiums to rise. A generalized present-value framework with a risky and a risk-free asset demonstrates this. Under this framework, the price of a risk-free asset that has a real rate of return  $r$  is:

$$P_{safe} = 1/r.$$

When the risky asset pays a dividend,  $d$ , that has an expected future value of \$1 and variance (or risk)  $\sigma^2$ , and is held by investors with risk aversion  $\gamma > 0$ , its price is:

$$P = 1/r - 2\gamma\sigma^2/r.$$

The risk premium,  $2\gamma\sigma^2/r$ , reflects both risk and risk aversion, so an increase in risk ( $\sigma^2$ ) has the same effect on risky asset prices as an increase in risk aversion ( $\gamma$ ): both cause the price of the risky asset to decline and the risk premium to increase. This illustrates the difficulty of distinguishing the two effects, including in the current environment. Nevertheless, the substantial increase in market volatility (as noted in the text) suggests that increased risk perceptions are at least partly at work.

**Risk Indicators**

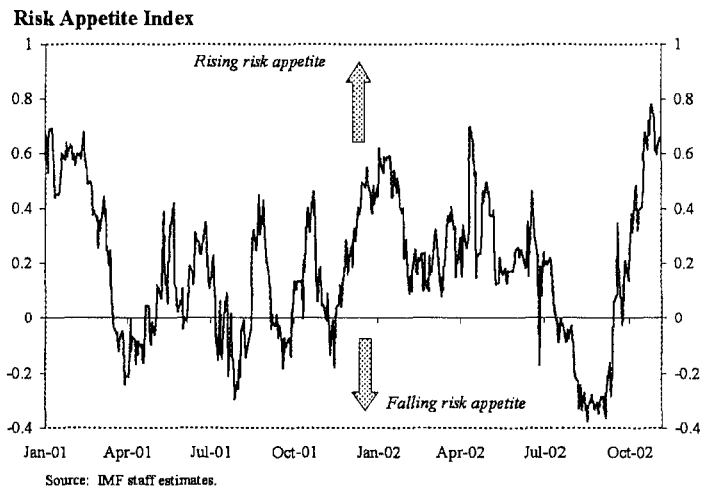
Besides the difficulties in distinguishing between risk and risk aversion, there are further issues with risk indicators. First, in the past, these indexes have sometimes taken on negative values, which imply that investors are “risk-loving.” The notion of “risk loving” investors is difficult to square with basic microeconomics and simple observation. For example, if investors “loved risk,” credit spreads would be negative. Second, the increase in implied (forward-looking) volatility in a variety of markets during the latest period of financial strain suggests that increased risk perceptions rather than risk aversion may be at work.

A further difficulty with the interpretation arises when comparing these indices on an absolute rather than relative basis. By design, these indices rely on a selected number of financial market variables and thus provide limited insights into overall market developments. The conclusion that a period of financial market strain experienced, for instance in September 2002, is more or less severe than earlier periods of strain, such as the 1998 LTCM crisis, is limited in its meaningfulness to the extent that the measure of strain is based on specific market variables subsumed in the various indices. Nevertheless, the indicators often subsumed—including credits spread movements, liquidity risk measurements, as well as financial market volatility—do provide an indication of financial market conditions.

## The Risk Appetite Index

The Risk Appetite Index (RAI) index was developed by Kumar and Persaud in 2001 and builds on earlier analysis by Persaud, with focus on the foreign exchange markets (see first Figure). The RAI is premised on the observation that investors may share a common but changing appetite for risk. This formulation is motivated by the frequently observed clustering of crises and sunspot equilibria in financial markets.

The RAI exclusively relies on currency markets, where short-term movements are often viewed as divorced from fundamentals. The authors suggest that when risk appetite changes and investors become more risk-seeking, high yielding currencies are set to outperform. Similarly, when risk aversion rises, high yielding currencies are set to under-perform. In contrast, yields on currencies should be driven by unanticipated events, or shifts in risk in a world of constant risk aversion.



Within this framework, the “yield” or excess return of a currency is measured as the difference between the spot exchange rate and the one-(or three-)month forward rate one month (or three months) ago. Risk is calculated as the average volatility of past excess returns, implying that investor positioning reflects past return volatilities rather than expected volatilities embedded in option prices.

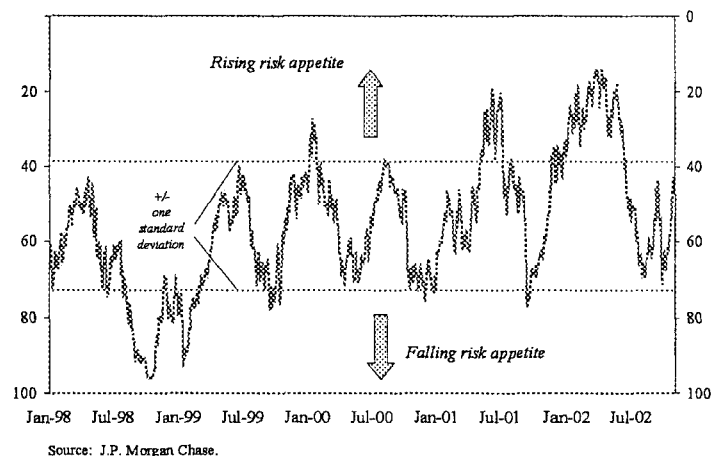
For a set of liquid currencies, the authors calculate the correlation between the excess returns of these currencies and past volatilities of excess returns in terms of their rank. For instance, the currency with the highest excess return is assigned rank one. If the excess return of this particular currency also exhibits, say, the second highest volatility, the currency is assigned rank two in terms of risk.

The RAI measures the correlation between the rank of excess returns and rank of risk at any point in time. An index value of positive one establishes that currency movements are fully correlated with their past volatilities; expressed differently, for all currencies the rank of their excess returns—rather than their percentage point return—matches the rank of their risk. Positive index measures thus are considered as an indication of rising risk appetite, while negative index measures—suggesting that excess returns move in the opposite direction of risk—are considered an indication of falling risk appetite.

## Liquidity, Credit, and Volatility Index

The Liquidity, Credit, and Volatility Index (LCVI) released by J.P. Morgan Chase in October 2002 broadens the earlier Liquidity, Credit, and Premia Index (LCPI), by incorporating a measure of equity market volatility (see second Figure). Both indices rely on a broad range of asset classes, besides the foreign exchange markets, to derive a measure of investors’ willingness to bear risk. The LCVI encompasses seven indicators, and attempts to capture three distinct types of risks, namely credit risk, liquidity risk, and volatility.

### Liquidity, Credit and Volatility Index



Liquidity risk is measured by two indicators:

- Since U.S. Treasuries entail identical credit risk, differences in yield between on-the-run and off-the-run U.S. Treasury bonds at various maturities are widely used to capture liquidity risk premia.
- In addition, U.S. dollar swap spreads, are used as a proxy for liquidity risk, as these spreads tend to widen during episodes of financial market strain.

Credit risk is measured by two indicators:

- U.S. corporate high yield spread over U.S. Treasuries for B2 rated corporates.
- The spread of the Emerging Bond Market Index over U.S. Treasuries.

Financial market volatility measures include:

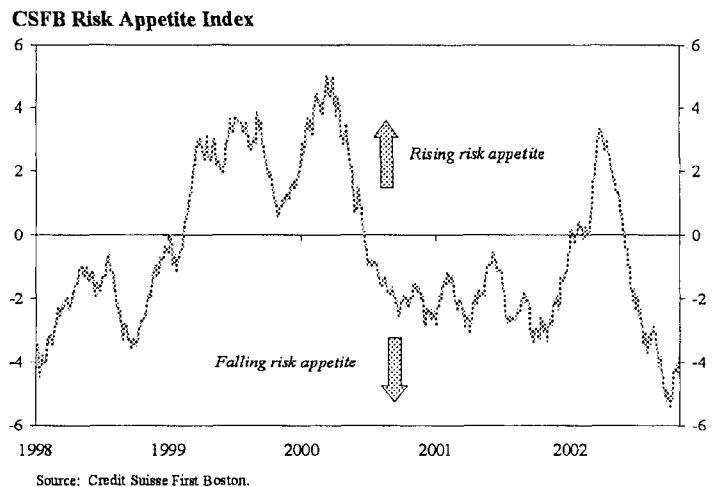
- The implied volatilities of six major currencies, as derived from option prices. Implied volatilities are used, rather than historical volatilities, as the former are considered a more timely measure of risks priced into the market.
- An index similar to the RAI.
- The volatility index (VIX), developed by the Chicago Board of Options Exchange, which provides a measure volatility of the U.S. equity market, and is derived from the level of implied volatility in index options.

The above indicators are normalized and averaged, using identical weights. The LCVI is less volatile than its component indices, thus suppressing some of the noise emanating from individual indicators while capturing periods of strain that affect a broad range of asset classes.

### The CSFB Risk Appetite Index

Similar to the LCVI, the CSFB Risk Appetite Index (CSFB RAI) draws on a broad range of financial market variables, beyond the foreign exchange market (see third Figure). The CSFB RAI, in its current composition, was released by Credit Suisse First Boston in 2001, while building on an econometric model developed in 1998. The index is derived from econometric estimates, ultimately centered on the Sharpe ratio.

This ratio measures excess return per unit of risk and is derived by an asset's return in excess of the risk-free rate divided by the asset's standard deviation. Expressed differently, an asset's excess return needs to rise in order to compensate investors for rising return volatility. For a broad range of mature and emerging market assets, including equities, government and corporate bonds, the CSFB RAI regresses assets' excess return on a rolling measure of their standard deviation of their return. The derived coefficient from this regression is carried forward through time, thus giving rise to the index, with negative values indicating periods of financial market strain and positive values indicating periods of ease.



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## Emerging Market Financing Overview

Against this backdrop, the cumulative gross issuance of bonds, loans and equities in the first nine months of the year is lagging issuance levels of the previous five years by a significant margin and is highly concentrated in investment grade credits. In the third quarter, gross funding of emerging markets on international capital markets declined to US\$28.8 billion from US\$31.8 billion in the previous quarter (Table 3.1, Figure 3.1). Bond issuance plummeted, with quarterly issuance down 40 percent from the second quarter to levels witnessed in the aftermath of the Asian crisis. The drop in bond issuance was partially offset by syndicated loan commitments. Equity placements remained modest, with Asian issuers accounting for the bulk of new offerings.

Table 3.1. Emerging Market Financing Overview

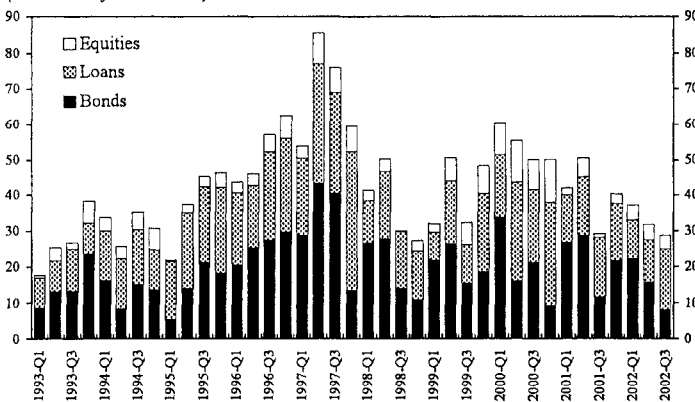
|                                          | 2000  |       |          |          |          |          | 2001     |          |          |          | 2002     |          |          |       |      |       |        |
|------------------------------------------|-------|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-------|------|-------|--------|
|                                          | 2000  | 2001  | 1st qtr. | 2nd qtr. | 3rd qtr. | 4th qtr. | 1st qtr. | 2nd qtr. | 3rd qtr. | 4th qtr. | 1st qtr. | 2nd qtr. | 3rd qtr. | Jul   | Aug  | Sep   | YTD 1/ |
| <i>(In billions of U.S. dollars)</i>     |       |       |          |          |          |          |          |          |          |          |          |          |          |       |      |       |        |
| <b>ISSUANCE</b>                          | 216.4 | 162.1 | 60.4     | 55.4     | 50.3     | 50.3     | 42.2     | 50.5     | 29.2     | 40.2     | 37.1     | 31.8     | 28.8     | 14.9  | 3.9  | 10.0  | 98.5   |
| Bonds                                    | 80.5  | 89.0  | 33.8     | 16.1     | 21.1     | 9.4      | 26.8     | 28.8     | 11.7     | 21.7     | 22.2     | 15.7     | 8.1      | 2.5   | 1.0  | 4.5   | 46.9   |
| Equities                                 | 41.8  | 11.2  | 8.9      | 11.6     | 8.8      | 12.4     | 2.3      | 5.3      | 1.0      | 2.6      | 4.1      | 4.3      | 3.8      | 3.7   | 0.0  | 0.1   | 12.2   |
| Loans                                    | 94.2  | 61.9  | 17.6     | 27.7     | 20.4     | 28.5     | 13.1     | 16.4     | 16.4     | 15.9     | 10.8     | 11.9     | 16.8     | 8.7   | 2.8  | 5.3   | 39.5   |
| <b>ISSUANCE BY REGION</b>                | 216.4 | 162.1 | 60.4     | 55.4     | 50.3     | 50.3     | 42.2     | 50.5     | 29.2     | 40.2     | 37.1     | 31.8     | 28.8     | 14.9  | 3.9  | 10.0  | 98.5   |
| Asia                                     | 85.9  | 67.5  | 19.5     | 26.1     | 18.3     | 22.0     | 19.6     | 22.8     | 7.5      | 17.6     | 13.3     | 11.5     | 13.1     | 7.0   | 1.3  | 4.8   | 38.5   |
| Western Hemisphere                       | 69.1  | 53.9  | 23.7     | 13.9     | 18.8     | 12.7     | 15.2     | 15.4     | 11.4     | 11.9     | 11.9     | 8.0      | 5.2      | 1.6   | 0.2  | 3.4   | 25.1   |
| Europe, Middle East, Africa              | 61.4  | 40.8  | 17.1     | 15.4     | 13.2     | 15.6     | 7.4      | 12.4     | 10.4     | 10.7     | 11.8     | 12.4     | 10.5     | 6.3   | 2.4  | 1.8   | 34.9   |
| <b>SECONDARY MARKETS</b>                 |       |       |          |          |          |          |          |          |          |          |          |          |          |       |      |       |        |
| Bonds:                                   |       |       |          |          |          |          |          |          |          |          |          |          |          |       |      |       |        |
| EMBI+ (spread in bps) 2/                 | 756   | 731   | 674      | 712      | 677      | 756      | 784      | 766      | 1,005    | 731      | 598      | 799      | 903      | 991   | 886  | 1,041 | 844    |
| Merrill Lynch High Yield (spread in bps) | 871   | 734   | 584      | 615      | 664      | 871      | 757      | 736      | 915      | 734      | 623      | 809      | 890      | 874   | 863  | 966   | 930    |
| Salomon Broad Inv Grade (spread in bps)  | 89    | 78    | 81       | 87       | 83       | 95       | 89       | 80       | 77       | 78       | 69       | 73       | 75       | 84    | 76   | 81    | 81     |
| US 10 yr. Treasury Yield (yield in %)    | 5.12  | 5.07  | 6.03     | 6.03     | 5.80     | 5.12     | 4.93     | 4.93     | 4.60     | 5.07     | 5.42     | 4.86     | 3.98     | 4.51  | 4.14 | 3.63  | 4.07   |
| Equity:                                  |       |       |          |          |          |          |          |          |          |          |          |          |          |       |      |       |        |
| DOW                                      | -6.2  | -7.1  | -5.0     | -4.3     | 1.9      | 1.3      | -8.4     | 6.3      | -17.5    | 15.7     | 3.8      | -11.2    | -9.3     | -5.5  | -0.8 | -12.4 | -14.5  |
| NASDAQ                                   | -39.3 | -21.1 | 12.4     | -13.3    | -7.4     | -32.7    | -25.5    | 17.4     | -30.5    | 29.9     | -5.4     | -20.7    | -12.5    | -9.2  | -1.0 | -10.9 | -28.4  |
| MSCI Emerging Market Free                | -31.8 | -4.9  | 2.0      | -10.8    | -13.4    | -13.5    | -6.2     | 3.1      | -23.4    | 28.4     | 10.7     | -9.0     | -6.9     | -7.9  | 1.4  | -11.0 | -9.4   |
| Asia                                     | -42.5 | 4.2   | 4.0      | -14.0    | -22.3    | -17.3    | -0.1     | -1.6     | -22.1    | 36.1     | 14.9     | -6.3     | -6.2     | -4.3  | -1.2 | -12.2 | -4.9   |
| Latin America                            | -18.4 | -4.3  | 3.2      | -8.1     | -6.0     | -8.5     | -3.5     | 7.1      | -24.7    | 23.0     | 7.1      | -22.0    | -8.7     | -15.6 | 9.1  | -18.3 | -27.7  |
| Europe/Middle East                       | -23.4 | -17.7 | 3.0      | -9.7     | -3.9     | -14.3    | -22.0    | 4.5      | -26.1    | 36.8     | 0.2      | -11.0    | -1.5     | -4.1  | 2.3  | -4.6  | -8.7   |

Sources: Bloomberg L.P.; Capital Data Ltd.; Merrill Lynch; Salomon Smith Barney; and IMF staff estimates.

1/ Issuance data are as of October 8, 2002 close-of-business London and Secondary markets data are as of November 4, 2002 cob New York.

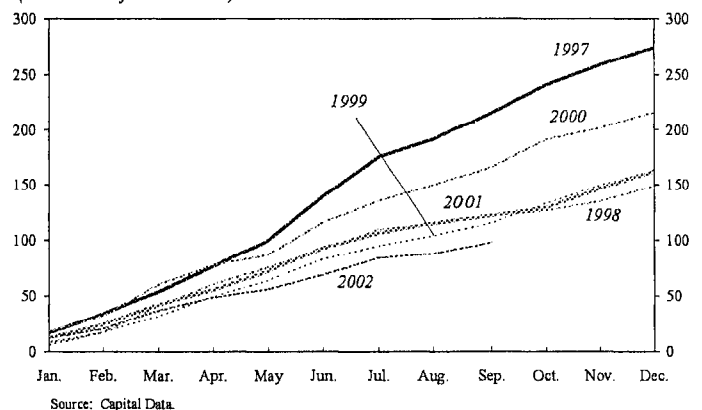
2/ On April 14, 2000 the EMBI+ was adjusted for the London Club agreement for Russia. This resulted in a one-off (131 basis points) decline in average measured spreads.

Figure 3.1. Emerging Markets Financing  
(In billions of U.S. dollars)



Source: Capital Data.

Figure 3.2. Cumulative Gross Annual Issuance of Bonds, Loans, and Equity  
(In billions of U.S. dollars)



Source: Capital Data.

In the primary markets, cumulative issuance of bonds during the first three quarters is down over 30 percent compared to the same periods in both 2000 and 2001 (Figure 3.2). Issuance in the third quarter totaled a mere US\$8.1 billion, the lowest quarterly level since the first quarter of 1995, a 60 percent decline from the average during the same period over the previous five years. Latin American issuance fell most sharply, with mainstream non-investment grade issuers facing difficult market access. The decline followed relatively healthy activity in the primary markets in the first half of 2002, dominated by Eastern European and Asian investment grade borrowers, while the Argentine default continued to impede the receptiveness of euro- and yen-based investors to all but investment grade issuance.

Equity issuance remained muted in the third quarter, with placements totaling US\$3.7 billion, in line with levels through 2001 and the first half of 2002. The abrupt decline in placements from 2000 echoes developments in the mature markets, and contrasts markedly with the jumbo issues by Asian corporates in the technology, media, and telecommunications (TMT) sector witnessed during 2000.

Syndicated lending to the emerging markets rose modestly in the third quarter of this year, with quarterly issuance—primarily to investment grade corporates—totaling US\$16.8 billion compared with quarterly issuance of around US\$11 billion in both the first and second quarters. Nevertheless, the syndicated loan market has witnessed a considerable decline in volumes in 2002 to levels last seen in 1994/95 and in the aftermath of the 1998 Asian crisis. This downturn in primary market syndications reflects a lack of demand by corporates for credit amid the slowdown in global economic growth and heightened uncertainty about recovery prospects. On the supply side, banks have further tightened lending conditions, having sustained sizeable losses on their exposures following several high profile bankruptcies in the United States and Europe in late 2001 and 2002. Losses on banks' Argentine exposures and uncertainty over Brazil's outlook have also weighed on risk appetite, spurring a retrenchment by banks, especially in the Southern Cone. This sharp fall in activity follows the tremendous surge in syndicated lending in late 1999 and 2000, marked by the advent of jumbo loans for the emerging markets, in large part driven by financing for mergers and acquisitions in the TMT sector and by widespread improvement in credit quality.

### **Emerging Bond Markets**

Performance and yield spread developments in the emerging bond market during the third quarter continued to reflect investor discrimination across regions and the credit spectrum, with favor bestowed on borrowers with relatively low external financing requirements, strong fiscal positions, and good prospects for policy continuity. Nevertheless, the emerging bond market was not spared the retrenchment from risk taking and pessimism that characterized global financial markets in the third quarter, as there was a general tendency for spreads to widen.

## Performance and Spread Developments

Notwithstanding the unsupportive external environment, and aggressive tiering by credit quality, the EMBI+ closed the third quarter with a relatively modest decline of 1.1 percent. While in part reflecting the yield tightening of U.S. Treasuries, this performance compares favorably to a 9.3 percent decline for the Dow Jones Industrial Average, and a 3.1 percent decline for the Merrill Lynch high yield index (Table 3.2). As in the second quarter, overall returns masked significant differences between Latin American emerging market bonds (which declined 4.5 percent in value), and non-Latin American bonds (which rose 3.6 percent), and between investment grade bonds (whose unweighted returns rose an average of 5.7 percent) and sub-investment grade bonds (which lost 1.5 percent), highlighting the trend of tiering by region and credit quality.

Table 3.2. EMBI+ Performance, 2002 <sup>1/</sup>

|              | Returns (%) |                  | Spread Changes (bps) |                  | Spread Levels (bps) |           |           |          |
|--------------|-------------|------------------|----------------------|------------------|---------------------|-----------|-----------|----------|
|              | 3Q          | YTD <sup>2</sup> | 3Q                   | YTD <sup>2</sup> | 31-Dec-01           | 28-Jun-02 | 30-Sep-02 | 4-Nov-02 |
| EMBI+        | -1.1        | 7.7              | 242                  | 113              | 731                 | 799       | 1041      | 844      |
| Latin        | -4.5        | -0.5             | 336                  | 299              | 833                 | 1063      | 1399      | 1132     |
| Non-Latin    | 3.6         | 20.8             | 133                  | -81              | 567                 | 468       | 601       | 486      |
| Argentina    | 15.2        | -5.1             | -521                 | 1725             | 4372                | 7074      | 6553      | 6097     |
| Brazil       | -15.7       | -15.0            | 847                  | 860              | 863                 | 1548      | 2395      | 1723     |
| Bulgaria     | 0.9         | 6.9              | 12                   | -112             | 433                 | 378       | 390       | 321      |
| Colombia     | -12.1       | 1.5              | 471                  | 286              | 514                 | 613       | 1084      | 800      |
| Ecuador      | -23.1       | -7.7             | 713                  | 551              | 1233                | 1262      | 1975      | 1784     |
| Egypt        | 3.7         | n.a.             | 115                  | n.a.             | n.a.                | 446       | 561       | 422      |
| Malaysia     | 9.3         | n.a.             | 8                    | n.a.             | n.a.                | 162       | 170       | 175      |
| Mexico       | 3.1         | 10.5             | 113                  | 50               | 308                 | 323       | 436       | 358      |
| Morocco      | 0.2         | 2.8              | 47                   | 8                | 518                 | 498       | 545       | 526      |
| Nigeria      | -10.0       | -0.6             | 2285                 | 1163             | 1426                | 1647      | 3932      | 2589     |
| Panama       | 2.5         | 7.3              | 88                   | 48               | 409                 | 466       | 554       | 457      |
| Peru         | -5.9        | 1.3              | 252                  | 205              | 521                 | 628       | 880       | 726      |
| Philippines  | 2.7         | 13.5             | 102                  | 18               | 466                 | 429       | 531       | 484      |
| Poland       | 4.2         | 11.2             | 101                  | 18               | 195                 | 202       | 303       | 213      |
| Russia       | 3.3         | 31.3             | 105                  | -190             | 669                 | 510       | 615       | 479      |
| South Africa | 6.0         | n.a.             | 70                   | n.a.             | n.a.                | 234       | 304       | 276      |
| Turkey       | 4.3         | 10.0             | 129                  | 118              | 707                 | 895       | 1024      | 825      |
| Ukraine      | 5.4         | 18.9             | 13                   | -243             | 940                 | 651       | 664       | 697      |
| Venezuela    | 5.7         | 18.4             | 51                   | -88              | 1130                | 1111      | 1162      | 1042     |

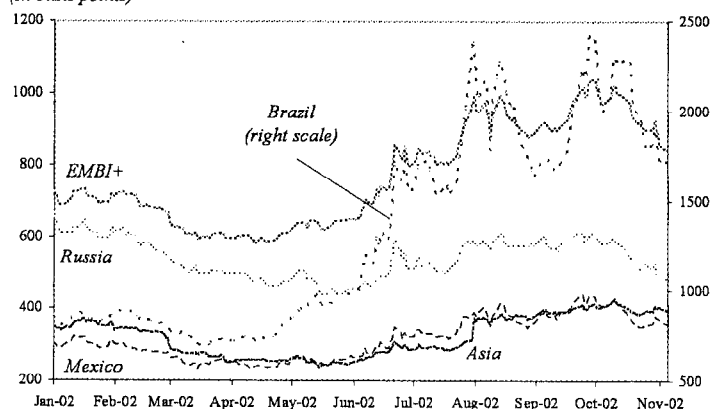
Source: J.P. Morgan Chase.

1/ Constituents as of September 30, 2002.

2/ Though November 4, 2002.

Yield spreads on the EMBI+ widened by 242 basis points during the quarter (Figure 3.3). Spread widening on Latin American bonds was particularly pronounced, reaching a cumulative 566 basis points in the first nine months of the year, largely reflecting developments in the Brazilian EMBI+ sub-index. Non-Latin American spreads also widened in the third quarter (by 133 basis points), but the cumulative widening for the year remained modest (34 basis points).

Figure 3.3. Sovereign Spreads  
(In basis points)

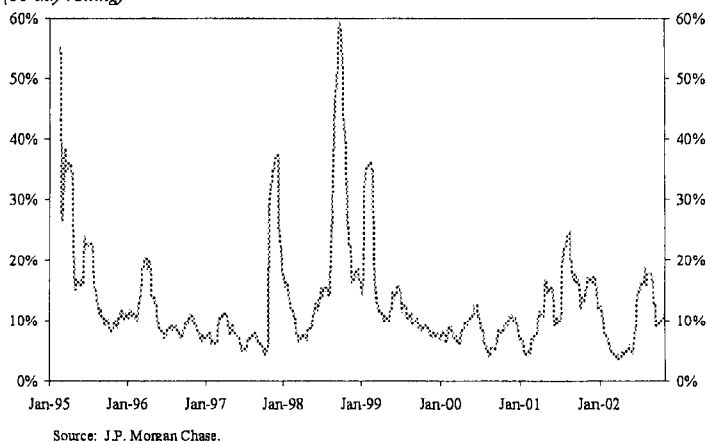


Source: J.P. Morgan Chase.



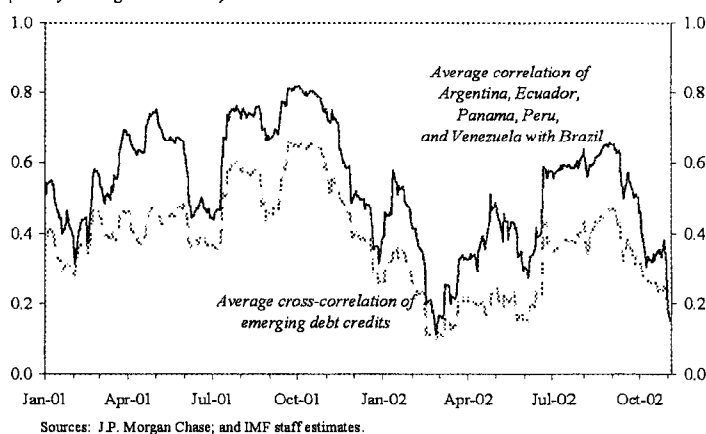
Volatility remained well below previous crisis episodes, owing to a reduction in leverage in the market, and continued investor discrimination, as the emerging market bond investor base gradually shifted toward dedicated institutional investors with a longer term investment horizon, while cross-over and leveraged investors reduced their exposure to the market (Figure 3.4).

**Figure 3.4. EMBI+ Volatility**  
(30-day rolling)



Signs of broad-based contagion were limited. The rolling 30-day average cross-correlation of individual country returns in the EMBI+ fell slightly by the end of the quarter, with correlations remaining well below historical peaks, reflecting continued investor discrimination (Figure 3.5). With respect to individual cross-country correlations, pair-wise correlations with Brazil rose in the case of Colombia, while cross-correlations with Ecuador were particularly high in market declines. Cross-correlations of Brazil with Mexico and Russia, respectively, declined sharply by the end of the quarter, reflecting Mexico's investment grade status and the rising influence of the U.S. market on developments in Mexico, while Russia continued to find favor among emerging market bond investors.

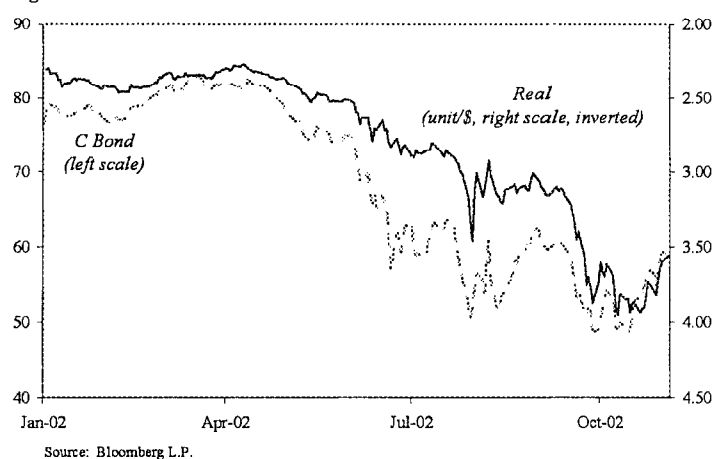
**Figure 3.5. Average Correlation of Emerging Debt Markets**  
(30-day rolling correlations)



## Regional Developments

Within Latin America, Brazil continued to be the focal point of investor concern. The spread on the Brazilian EMBI+ sub-index rose 847 basis points during the quarter, to bring the cumulative increase during the year to 1,532 basis points. Performance in the Brazilian external debt market was largely driven by the dynamics in the local market. Correlations between Brazil's external benchmark C-bond and the *real* rose sharply (Figure 3.6).

**Figure 3.6. Brazil**



At the same time, investors focused on the impact of the weakness of the *real*—which had declined by about 40 percent in the first nine months of 2002—on local debt dynamics, since Brazil’s domestic government debt remained largely indexed to the dollar (40 percent) and short-term interest rates (41 percent). In the course of the year, the average maturity of local government bonded debt declined, and the share of debt maturing within one year rose to 40 percent. The heavily indexed structure of domestic government debt tended to amplify the impact of external shocks, as declines in the value of the *real* were reflected in rising debt service costs. The role of a country’s debt structure in transmitting external shocks is considered in Box 3.2.

The volatility of the *real* rose sharply during the quarter (Figure 3.7). With access to new external borrowing quite limited, Brazilian corporates were active buyers of dollars to meet foreign obligations falling due. At the same time, currency movements became particularly pronounced around the maturity of domestic dollar-indexed debt. The high local demand for dollars in the spot market was also manifested in the sharp increase and further inversion of the onshore dollar (coupon) curve (Figure 3.8).

Figure 3.7. Real/U.S. Dollar 10-Day Rolling Volatility

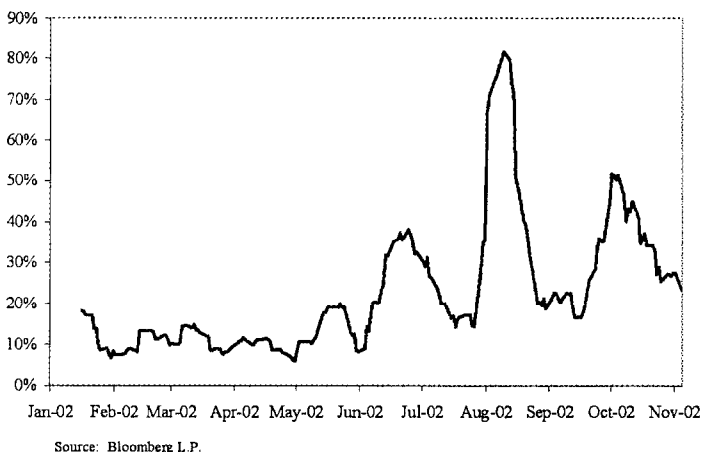
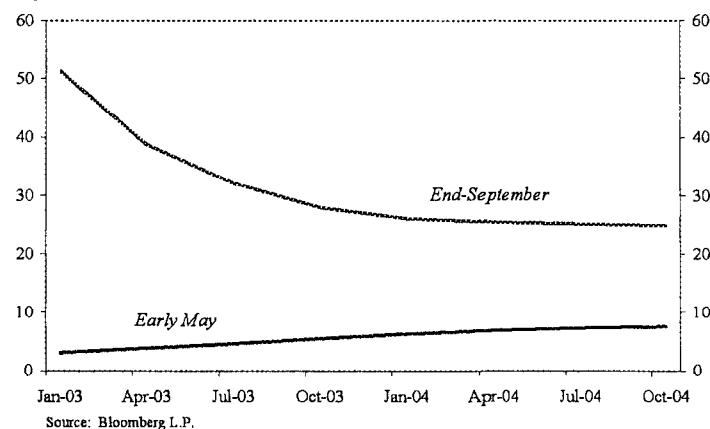


Figure 3.8. On-Shore Dollar Curve (In percent)



Sub-investment grade borrowers in the region—notably Colombia and Ecuador—experienced a marked widening of spreads in the third quarter, although not to the same extent as Brazil. Argentina was a notable exception, as its EMBI+ sub-index recorded the strongest returns of all EMBI+ components on growing expectations of renewed multilateral support.<sup>1</sup> Venezuela’s spreads widened only modestly, in part reflecting the beneficial impact of higher oil prices, notwithstanding continued refinancing difficulties experienced by the government. Mexico managed to post a positive return for the quarter, reflecting its

<sup>1</sup> Box 3.3, considers the functioning of the market for distressed debt and highlights that investors in distressed emerging market debt have in some cases generated returns many times the comparable returns achieved in the market for distressed corporate debt in mature markets.

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**Box 3.2. Local Debt Structure and Vulnerability to Volatile Debt Dynamics**

A number of governments—in both emerging and mature markets—have used indexed debt structures in an attempt, among other objectives, to facilitate issuance in local markets, reduce the cost of deficit financing, and expand the scope of instruments available to investors.<sup>2</sup> In some instances, the introduction of an instrument with a relatively assured real return and long duration was intended in part to provide a good match for the liability stream of large institutional investors such as insurance companies and pension funds. A perceived ancillary benefit of indexed structures is their ability to signal commitment to policies.<sup>3</sup> For example, when indexed linked gilts were introduced in the United Kingdom in 1981, they were dubbed “sleeping policemen” that would help enforce a commitment to price stability, as a failure to contain inflation would result in a direct cost to the budget.

Many indexed bond structures shift risk—typically of currency depreciation or rising market interest rates—from lender to issuer. Whether this risk transfer ultimately reduces debt service costs to the issuer depends on the future path of the indexed variables, and whether that path is reflected in the pricing differential between indexed and conventional bonds. As considered in greater detail below, indexation can in some cases have the unintended consequence of changing the structure of a country’s liabilities in a way that increases its vulnerability to external shocks.<sup>4</sup>

Indexed bonds should, in principle, be no less costly to service than their conventional counterparts. However, indexed bonds may reduce funding costs when conventional bond yields do not fully reflect policies aimed at improving or stabilizing the indexed variables. If, for example, the expectations imbedded in conventional bond yields reflect a history of instability in the indexed variables, policies that achieve an unanticipated break from the past would, in addition to any macroeconomic benefit, result in lower debt service costs for indexed versus conventional bonds. When the markets are perceived to be unjustifiably skeptical of commitments to announced policies, issuers may find indexed structures particularly attractive. Issuers may find indexed bonds expedient when uncertainty over the future direction of the indexed variables is particularly acute, and indexed bonds are the only practical means of raising funds.

While indexed bonds may contribute to lower funding costs if policies succeed against market expectations in stabilizing indexed values, the capital structure resulting from some forms of indexation can increase the issuer’s vulnerability to external shocks.

In those cases, the structure of liabilities adopted as a means of reducing funding costs amplifies external shocks, as debt servicing costs rise precisely when the capacity to meet those rising costs is falling. There are a number of potentially unstable debt structures that tend to reinforce, rather than mitigate, the impact of external shocks.<sup>5</sup>

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<sup>2</sup> Governments that have issued indexed securities at various times include Argentina, Australia, Brazil, Canada, the Czech Republic, Finland, France, Hungary, Iceland, Israel, Mexico, New Zealand, Sweden, Turkey, the United Kingdom, and the United States.

<sup>3</sup> See Box 4.1 of the September 2002 Global Financial Stability Report for background information on indexed bonds.

<sup>4</sup> The importance of capital structure as a channel of volatility in emerging markets is considered in Michael Pettis, *The Volatility Machine: Emerging Market Economies and the Threat of Financial Collapse* (Oxford, 2001).

<sup>5</sup> Pettis (2001) considers a number of additional examples.

- A debt structure indexed to foreign exchange is inversely correlated with the issuer's capacity to meet debt service payments. In the event of a deterioration in global investor sentiment that results in a shock to the external capital account, the depreciation of the local currency needed to adjust will increase debt service costs. The process can become self-reinforcing, as an initial shock results in a higher debt service burden, which reinforces investor concern and retrenchment. Depending on the magnitude of the external shock, it is conceivable that the depreciation required to achieve the needed adjustment in the balance of payments could be large enough to make the debt dynamics unsustainable. In that event, a debt structure adopted to reduce debt servicing costs would have the unintended consequence of seriously amplifying the impact of global financial market volatility.
- Similarly, a debt structure comprising largely short-term maturities (whether denominated in local or foreign currency) can also reinforce the impact of external shocks through the frequent rolling over of maturing bonds. In a climate of heightened risk aversion, the rising risk premium demanded by investors will be incurred as each maturing issue is rolled over, thereby increasing the debt service costs to the budget at the same time that financing conditions are likely to be undercutting the capacity to service debt.
- As in the case of a debt structure that relies on short-term instruments, floating rate instruments can also amplify the impact of shocks, as they too tend to become more costly to service in times of financial pressure and diminished payment capacity.

Designing a debt structure whose servicing costs increase with the capacity of the issuer to meet them (and vice versa) is an especially desirable goal for emerging markets, given their vulnerability to changes in global investor sentiment and liquidity conditions. Liabilities structured to increase the correlation between debt service costs and the capacity to meet them reduce the volatility of the residual difference between income and debt service costs, lessen the vulnerability of the issuer to adverse shocks, increase the range of policy response to economic developments, help bolster investor confidence in the issuer, and reduce funding costs by lowering the riskiness of the debt structure.

There are a few bond structures whose servicing cost are positively correlated with payment capacity.

- Among the indexed structures typically employed, indexation to inflation does not result in a liability structure whose servicing cost is inversely related to capacity to pay. In the case of an unanticipated increase in inflation, the nominal payments under an inflation-indexed bond will increase, and will exceed the coupon payments on a conventional bond with a similar maturity. But the real payment stream under the inflation-indexed bond will remain roughly constant, and the ability of the issuer to meet the higher nominal payments will likely increase as revenues rise with the rate of inflation. In this way, inflation-indexed bonds do not pose an additional real cost on the issuer in the event of an unanticipated increase in inflation. However, inflation-indexed bonds reduce the effectiveness of the inflation tax as a means of resolving an unsustainable debt position. In the event of unanticipated inflation, the real cost of servicing a conventional bond will fall, while the real cost of an inflation-indexed bond will not.
- As explored in the September 2002 Global Financial Stability Report, the development of deep local bond markets can help shield borrowers from the impact of temporary market volatility by facilitating the issuance of medium- to long-term bonds denominated in local currency. In times of stress, the fixed coupon and extended maturity of such instruments can dampen the impact of external shocks. The inability to issue longer term conventional bonds in local currency, or the high ex ante real yields demanded on such securities, have been the main factors underlying the recourse to indexed and potentially unstable debt structures.
- In the case of commodity exporters, linking bond coupon payments with commodity price movements would make debt service costs positively correlated with payment capacity.

- Structured notes—which combine derivative securities with fixed income instruments—can be designed to link the payoff structure on the note with the payment capacity of the issuer.<sup>5</sup>
- GDP-indexed bonds have been proposed as a means of limiting the variability of a country's debt-to-GDP ratio.<sup>6</sup> By linking the bond payments to a broad measure of payment capacity, GDP-indexed bonds would also limit the need to pursue procyclical fiscal policies—e.g., boosting the primary surplus in the midst of an economic downturn to make debt payments—and thus increase the range of policy response to economic cycles.

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<sup>5</sup> The March 2002 Global Financial Stability Report provides background information on structured notes and collateralized bonds.

<sup>6</sup> The benefits and feasibility of GDP-indexed bonds are considered in Eduardo Borensztein and Paolo Mauro, "Reviving the Case for GDP-Indexed Bonds", IMF Policy Discussion Paper, September 2002 (PDP/02/10).

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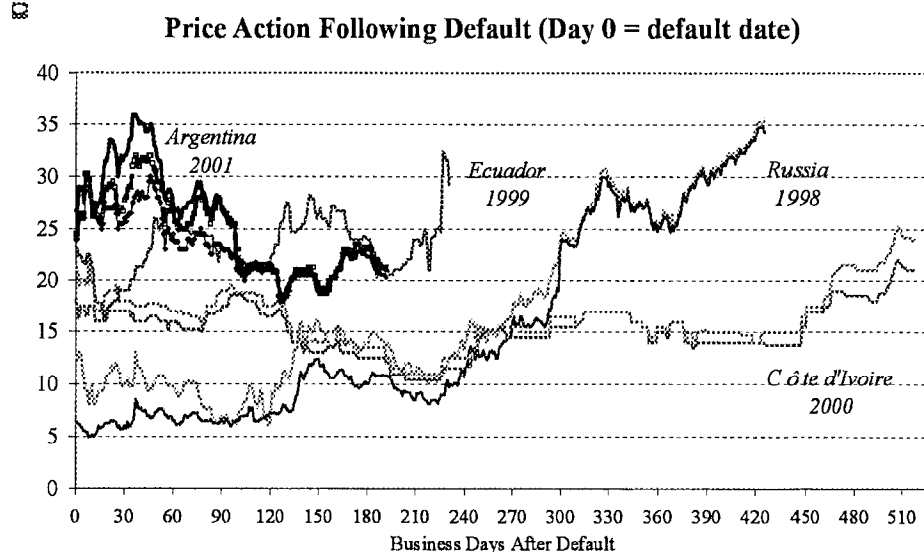
### Box 3.3. Recovery Rates from Defaulted Debt

The recent sharp increase in the number of bond defaults and restructurings in both mature and emerging markets has led to increased investor interest in the potential returns that can be obtained from acquiring and trading these instruments. As in other markets, the realized returns on these investments will play an important role in determining future investor interest in this asset class.

The return on defaulted debt can be high, especially in emerging markets. A recent study finds that annualized returns from investing in defaulted corporate debt subject to U.S. bankruptcy procedures have averaged 22 percent in the last 20 years against annualized returns of 57 percent from sovereign bilateral restructurings in EM debt and up to 300 percent from international litigation involving EM debt.<sup>1</sup>

The investor base in distressed EM debt consists mainly of: (i) those that acquired the debt prior to default and usually recover via bilateral negotiations with the sovereign; and (ii) distressed debt investors, including vulture funds, which specialize in *illiquid* distressed sovereign debt and recover their investments through litigation; such investors provide a “floor” to the defaulted debt prices.

Sovereign bond restructurings, such as those involving Côte d’Ivoire, Ecuador, and Russia provided holders of defaulted debt considerable post-default returns, in a relatively short period (see Figure). Assuming a conservative two-year average window for bilateral debt-workouts, investing in defaulted EM debt has on average generated annualized returns of 57 percent.



Sources: Bloomberg L.P.; Merrill Lynch; and IMF staff estimates.  
Note: Two most liquid issues for each country are shown.

Investors in the illiquid debt market often buy paper with the intent of suing for full recovery. Litigation is a protracted process with many lawsuits taking 3–10 years to settle. Assuming average recovery over six years, suggests that annualized average returns can be as high as 50 percent to 333 percent. A recent IMF Board paper suggests that in cases where information is reliably available, the judgment (*gross* award inclusive of principal, accrued interest and legal costs) was nearly three times the original value of claims. In other words, accrued interest plus costs, if awarded, was twice the principal amount. Some of these claims were bought at roughly 10 percent of face value, implying very high gross recovery rates.<sup>2</sup>

<sup>1</sup> Forthcoming IMF Working Paper (Singh, 2002): Recovery Rates from Defaulted Debt —Empirical Evidence from Recent Sovereign Debt Restructurings, International Litigation and Chapter 11 Filings

<sup>2</sup> Highly Indebted Poor Countries Initiative— Status of Implementation, Annex III. (SM/02/264)

investment grade status, and ability to attract cross-over investors from the U.S. corporate bond market.

In the case of non-Latin American sovereigns, both emerging Europe, the Middle East and Africa (EMEA) and Asia benefited from rotation away from Latin America, steady demand from local investors, and improving credit quality, as reflected by credit rating upgrades for Korea, Malaysia, Qatar, and Russia during the quarter.<sup>6</sup> Spread compression in Asia was facilitated by abundant regional demand. The strong performance of investment grade credits, such as Malaysia (9.3 percent), Poland (4.2 percent), and South Africa (6.0 percent), spurred investors to venture down the credit spectrum, with single B sovereign credits such as Turkey (4.3 percent), and Ukraine (5.4 percent), posting positive returns during the quarter.

### **Investor Positioning**

Dedicated<sup>7</sup> investors responded to concerns over Brazil by increasing their cash holdings, underweighting Latin American countries relative to the benchmark<sup>8</sup> weight, and overweighting positions in emerging Europe, especially Russia. In the case of Brazil, dedicated investors face a bifurcated outcome, with very large bond price movements possible in either direction, depending on the direction of policies. As the performance of dedicated investment managers is measured relative to a benchmark index, they responded by avoiding large divergences from the benchmark, and, given the large weight of Brazil in emerging market bond benchmark indices, the gross exposure of dedicated investors to Brazil remained high. Dedicated investors apparently maintained broadly neutral benchmark exposure to Brazil ahead of the October presidential elections, given the chance of a sharp increase in bond prices in the event of positive developments.

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<sup>6</sup> As a result of credit upgrades to investment quality, Korea and Qatar were removed from the EMBI+.

<sup>7</sup> Dedicated emerging market bond investors are typically given a mandate to match or better the performance of an index that includes sovereign issues of about 40 emerging market countries. While the terms of each mandate differ, most managers are expected to limit the divergence of portfolio returns from those of the benchmark index. These portfolios are often termed “real money” accounts as they do not permit leverage or short selling. The focus on relative returns and inability to take levered positions limits the range of investment opportunities available to managers. The approach to asset management differs markedly from that of hedge funds and proprietary trading desks that typically have a total return objective subject to a value-at-risk limit.

<sup>8</sup> While the EMBI+ index is still estimated to be the preferred reference benchmark for dedicated investors than any other index, there has been a shift this year toward broader indices with a lower weight assigned to Latin American issuers, such as the EMBI Global Diversified, and the EMBI Global.

Cross-over<sup>9</sup> investors, on the other hand, appear to have largely withdrawn from Latin America with the exception of Mexico, while increasing exposure in EMEA.

Leveraged money in the market remained low, especially compared with the Asian or Russian crises, with the withdrawal of a number of active highly leveraged “macro” hedge funds. However, the market witnessed an increasing tendency towards short positions, particularly in Brazil.

The positioning of investors appears to be mildly supportive. The lack of leverage is likely to limit contagion in the event of intensifying difficulties in Brazil, although the large share of Brazil in dedicated investor portfolios could result in a dramatic overhaul of the emerging bond market (see the section on the key risks to emerging market finance below). The relatively large cash levels underscore the scope for net inflows, suggesting that a favorable outcome could trigger new investment.

### **Primary Bond Market Developments**

Access for emerging market issuers remained difficult during the quarter, and market access was skewed strongly toward investment grade issuers and smaller infrequent (“exotic”) issuers that were attractive because of local demand, and their perceived ability to add diversification to external investor portfolios. Total issuance declined sharply to US\$8.1 billion in the third quarter from US\$15.7 billion in the second quarter, and was some US\$3.6 billion lower than the same quarter last year. Investment grade issuers accounted for about three-quarters of total bond issuance—compared with 50 percent in the second quarter—and corporate bond issues (including publicly owned corporations) accounted for about half of total issues. Given the prominence of investment grade issuers during the quarter, new bond issues had, on average, longer maturities and tighter spreads than those issued during the second quarter of 2002. On the sovereign side, issuance in the third quarter totaled US\$3.5 billion, one of the lowest levels on record. Many individual issues were small in size, and were mostly dominated by non-Latin credits (Bulgaria, Philippines), “exotic” sovereigns (Belize, Central Bank of Iran, and the Development Bank of Kazakhstan), and investment grade Latin American issuers (El Salvador and Mexico). A few Latin American sub-investment grade corporate issuers accessed international bond markets using credit enhancements (Embraer, Unibanco), although two Brazilian issuers (Bradesco and Vontarim) issued very short-term unsecured commercial paper at high yields.

The share of dollar-denominated issuance during the quarter reached a record high of 82 percent, bolstered by liability management transactions. For example, Bulgaria reopened its dollar-denominated global 2015 bond for liability management purposes, issuing an additional US\$759 million in exchange for Brady bonds. Sovereign dollar-issuance was boosted by the US\$1.75 billion, 20-year issue from Mexico, which included a US\$1.3 billion

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<sup>9</sup> Cross-over investors allocate assets across a range of different fixed income investments and include emerging market bonds in their portfolios when doing so appears likely to be advantageous.



swap component for outstanding Brady bonds. Demand was strong from cross-over investors, highlighting Mexico's strong appeal within this category of investors. Regionally based tiering was also evident in unsecured issues without a liability management element. For instance, demand for the US\$300 million dollar-denominated issue from the Philippines was very significant from local and regional investors, with an estimated 90 percent sold in Asia.

The euro and the yen sectors remain largely shut to non-regional and non-investment grade credits. Most euro-denominated deals in the quarter were concentrated on a few selected exotic issuers, with the European retail investor, which has in the past formed an important element of the investor base for euro-denominated bonds, still reluctant to invest following the losses incurred in the wake of the default in Argentina.

Bonds issued with collective action clauses are estimated to amount to about 24 percent of the outstanding stock of bonds issued since 1994 (Box 3.4).

The near-term prospects for access by sub-investment grade borrowers in Latin America are likely to remain poor. While alternative structures—multilateral guarantees, insurance wrapping, and securitization—to enhance access have been used, the effectiveness of some of these structures has diminished sharply. In particular, the ratings assigned to bonds issued with certain multilateral guarantees were downgraded (Colombia '11), following the World Bank's decision to grant Argentina a five-year extension for its US\$250 million payment due on October 15 this year. Market participants had apparently expected that, if the World Bank's rolling guarantee were called, the guarantee would be repaid to the Bank in time for it to roll to subsequent bond payments. The five-year repayment terms offered to Argentina by the Bank led to a reassessment of this expectation, and the subsequent downgrading of issues with a similar guarantee structure.

## Emerging Equity Markets

### Overview

Emerging equity markets fell during the third quarter, following declines in mature markets (Table 3.3). Nevertheless, the relative performance of emerging market equities in the first nine months of the year remained better than that of their mature market counterparts. In addition to a generalized retrenchment from risky assets, emerging market equities were hurt by fears over slow global growth (which

Table 3.3. Equity Markets Performance, 2002  
(In percent, dollar indices)

|                      | Q1   | Q2    | Q3    | YTD <sup>1</sup> |
|----------------------|------|-------|-------|------------------|
| Emerging Market Free | 10.7 | -9.0  | -16.8 | -10.0            |
| EMF Asia             | 14.9 | -6.3  | -17.0 | -11.6            |
| EMF Latin America    | 7.1  | -22.0 | -24.7 | -13.4            |
| EMF EMEA             | 5.1  | -1.8  | -10.5 | -3.70            |
| Dow                  | 3.8  | -11.2 | -17.9 | -7.3             |
| S&P 500              | -0.1 | -13.7 | -17.6 | -8.2             |
| Nasdaq               | -5.4 | -20.7 | -19.9 | -4.6             |
| ACWI Free            | 0.5  | -9.5  | -18.6 | -10.6            |
| ACWI Free x-US       | 1.1  | -3.5  | -19.7 | -13.7            |

Sources: Bloomberg L.P., and Morgan Stanley Capital International.  
1/ Through November 4, 2002.

### Box 3.4. Collective Action Clauses

Collective action clauses (CACs) are typically included in bonds governed by English or Japanese law, while they are generally absent from those governed by German or New York law.<sup>10</sup> New York law does not prohibit the use of CACs in sovereign issues, and there has been at least one quasi-sovereign issue under New York law with majority restructuring provisions; nevertheless, most bonds governed by New York law do not include CACs largely because of market practice and perceived first-mover costs.<sup>11</sup>

Emerging Markets Sovereign Bond Issuance by Jurisdiction<sup>1</sup>

|                                 | 2001 |      |     |     | 2002 |     |     |
|---------------------------------|------|------|-----|-----|------|-----|-----|
|                                 | Q1   | Q2   | Q3  | Q4  | Q1   | Q2  | Q3  |
| <b>With CACs<sup>2</sup></b>    |      |      |     |     |      |     |     |
| Number of issuance              | 13   | 8    | 2   | 10  | 6    | 5   | 1   |
| Volume of issuance              | 5.3  | 3.3  | 1.8 | 2.2 | 2.6  | 1.9 | 0.3 |
| <b>Without CACs<sup>3</sup></b> |      |      |     |     |      |     |     |
| Number of issuance              | 15   | 19   | 6   | 19  | 17   | 10  | 5   |
| Volume of issuance              | 6.6  | 10.0 | 3.8 | 6.3 | 11.6 | 5.6 | 3.3 |

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> English and Japan law.

<sup>3</sup> German and New York laws.

EMSB Outstanding Issuance by Governing Law and Issuer  
(Number of bonds outstanding)

|                           | New York   | English    | German    | Japan     |
|---------------------------|------------|------------|-----------|-----------|
| <b>Emerging Markets</b>   | <b>253</b> | <b>146</b> | <b>84</b> | <b>52</b> |
| <b>Asia</b>               | 30         | 17         | 1         | 14        |
| <b>Europe</b>             | 31         | 69         | 32        | 18        |
| <b>Latin America</b>      | 160        | 49         | 50        | 17        |
| <b>Middle East/Africa</b> | 32         | 11         | 1         | 3         |

Source: Capital Data

Since 1994, emerging market sovereign bonds have been increasingly issued under New York law, both in terms of number and volume of issues, while issues governed by English law declined to around 20 percent from a level as high as 40 percent in 1998. In 2002, about 80 percent of bonds were issued under New York law. As of September 2002, sovereign bonds issued with CACs amounted only to about 30 percent of the outstanding volume of issuance.<sup>12</sup>

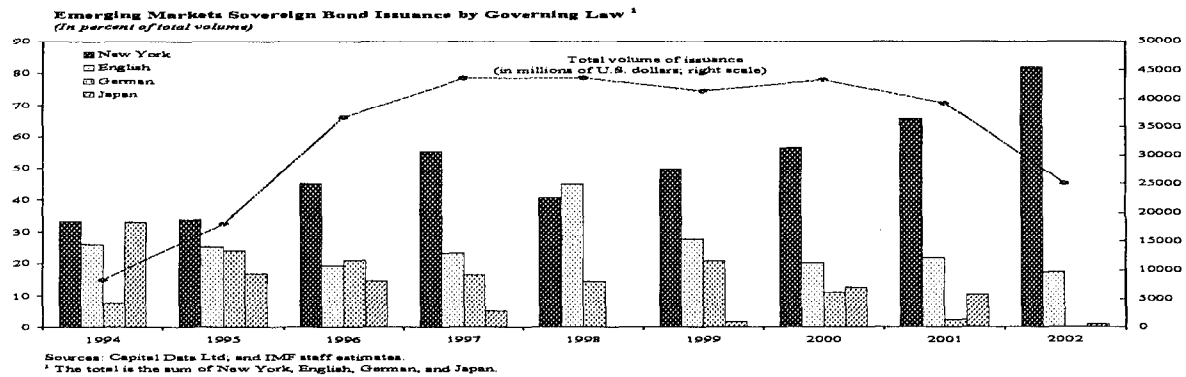
However, little evidence suggests that investors actually eschew bonds issued with CACs or that bonds issued under English law systematically carry a premium to those issued under New York law.<sup>4</sup> Rather, the jurisdiction of issuance is typically determined by a variety of factors, including changes in the issuer and investor base, the desired currency denomination of the issue, and debt management considerations.

Changes in the investor base and issuers pool have tended to favor New York as an issuing jurisdiction. Institutional investors have gained more importance, especially U.S. institutional and cross-over investors. At the same time, the retail investor base in Europe and Japan has declined. These changes led to a greater focus on the U.S. market and more issuance out of New York. The pool of issuers has changed as well, with Latin issuers becoming more prominent and Emerging European issuers declining in importance, most noticeably Russia. Typically, issuers targeting a global investor base increasingly tend to issue out of New York. The decline in new bonds governed by English law is partially explained also by the fact that Russia, which so far has issued only Eurobonds out of London, has not been in the market except for one exchange in 2000.

<sup>10</sup> CACs can be broadly classified into two categories: (i) majority restructuring provisions, which enable a qualified majority of bondholders of a particular issue to bind all bondholders of the same issue to the financial terms of restructuring, and (ii) majority enforcement provisions, which enable a qualified majority of bondholders to limit the ability of others to recover their claims through litigation. For purposes of this analysis, we identify the presence of CACs with the majority restructuring provision.

<sup>11</sup> The Electricity Generating Authority of Thailand in 1998 issued US\$300 million fixed rate bond with the sovereign and the World Bank guarantee governed by New York law but included a majority restructuring provision.

<sup>12</sup> Stock outstanding as of September 2002. Non-dollar denominated bonds are converted into dollars at the current exchange rate. Bradys are not included.



The increasing use of New York law reflects a preference for U.S. dollar denominated bonds by issuers.

The increasing use of New York law could also be associated with the emergence and gaining importance of 144A bonds. Prior to the adoption of rule 144A, many issuers preferred eurobonds as a means of avoiding the cost of registering bonds with the U.S. Securities and Exchange Commission (SEC). After the SEC adopted the rule 144A which exempts the issuers from SEC registration requirement for resales of the bonds to qualified institutional investors, issues governed by the New York law that increased as a proportion of new issues.

**EMSB Outstanding Issuance by Governing Law and Currency**

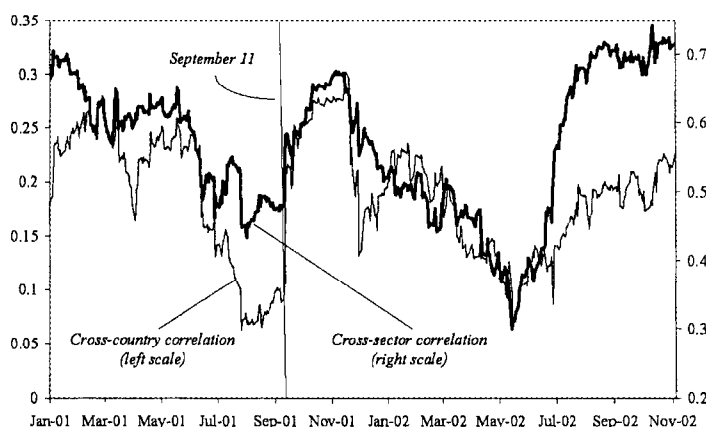
|                                      | New York | English | German | Japan | Total |
|--------------------------------------|----------|---------|--------|-------|-------|
| <i>(In percent)</i>                  |          |         |        |       |       |
| U.S. dollar                          | 91       | 36      | 0      | 0     |       |
| Euro                                 | 7        | 53      | 49     | 0     |       |
| Deutsche Mark                        | 0        | 0       | 51     | 0     |       |
| Japanese yen                         | 0        | 3       | 0      | 100   |       |
| other                                | 1        | 8       | 1      | 0     |       |
| <i>(In billions of U.S. dollars)</i> |          |         |        |       |       |
| Total                                | 134      | 60      | 30     | 17    | 240   |
| <i>(In number of issuance)</i>       |          |         |        |       |       |
| Total                                | 253      | 146     | 84     | 52    | 535   |

Source: Capital Data; and IMF staff estimates.

undermined the performance of large exporters), a surge in oil prices (which affected mainly Asian markets heavily dependent on oil imports), and investor concerns about regional developments (which continued to bedevil Latin American equities).

The variation of equity market performance by country was much wider than the relative performance of various sectors, suggesting that investors were discriminating more by country than by sector in their asset allocation decisions (Table 3.4). As a consequence, the cross-correlation of sector returns increased sharply, while the cross-correlation of returns by country remained much lower (Figure 3.9).

Figure 3.9. Average Correlations of the Returns on Emerging Equity Markets Indices



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

Table 3.4. Sector and Country Performance  
(In percent, dollar indices)

| By Sector                     |                                        |                   | By Country               |                                        |                   |
|-------------------------------|----------------------------------------|-------------------|--------------------------|----------------------------------------|-------------------|
|                               | Weight<br>(in Emerging<br>Market Free) | Q3<br>Performance |                          | Weight<br>(in Emerging<br>Market Free) | Q3<br>Performance |
| Information Technology        | 18.9                                   | -19.4             | Korea                    | 22.6                                   | -16.2             |
| Financials                    | 17.8                                   | -18.5             | Taiwan Province of China | 14.4                                   | -24.8             |
| Materials                     | 16.5                                   | -12.8             | South Africa             | 13.9                                   | -13.8             |
| Telecommunication Services    | 12.1                                   | -15.8             | Mexico                   | 7.8                                    | -15.3             |
| Energy                        | 9.5                                    | -12.1             | Brazil                   | 7.2                                    | -39.4             |
| Consumer Discretionary        | 7.6                                    | -18.6             | China                    | 6.6                                    | -14.5             |
| Consumer Staples              | 6.3                                    | -13.5             | Malaysia                 | 5.4                                    | -11.7             |
| Industrials                   | 5.5                                    | -16.1             | Russia                   | 4.5                                    | -7.7              |
| Utilities                     | 3.6                                    | -18.7             | India                    | 4.1                                    | -7.2              |
| Health Care                   | 2.2                                    | -3.3              | Israel                   | 3.1                                    | -4.8              |
| Total of Index                | 100.0                                  |                   | Total of Index           | 89.6                                   |                   |
| Standard Deviation of Returns |                                        | 4.9               |                          |                                        | 10.1              |

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

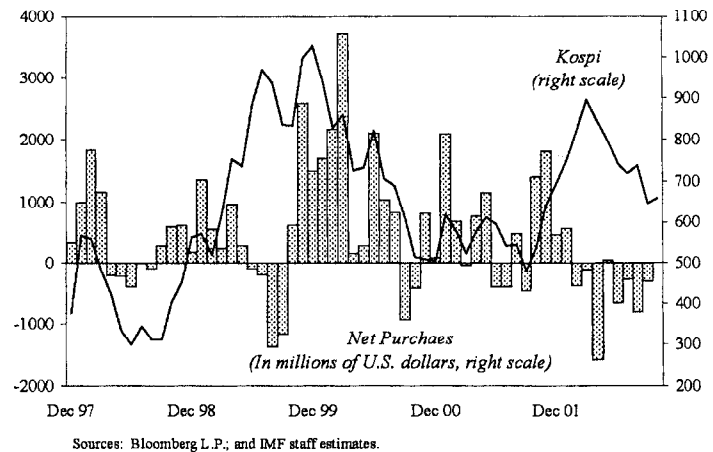
## Net Foreign Flows and Market Positioning

Data from US-based emerging market and global equity funds suggest continued retrenchment from risk, as reflected in net outflows and an increase in cash positions. While funds with a global emerging market mandate executed sales of US\$500 million in the third quarter, funds with a regional mandate in Latin America and Asia also experienced significant outflows. Global equity mutual funds, which comprise both emerging and mature markets, have experienced three consecutive quarters of accelerating outflows, which reached US\$2.3 billion in the third quarter.

Net foreign outflows from Asian equity markets accelerated in the third quarter from the second quarter. This was partly attributed to technical factors, with global institutional investors (including insurance companies, mutual funds, and pension funds) selling some of their profitable Asia positions to offset losses in U.S. equity investments and meet redemptions by retail investors.

In some emerging equity markets, foreign institutional investors own a high proportion of the outstanding shares, and represent an even higher proportion of trading volume, exposing these markets to changes in foreign investor sentiment. In Korea, where foreign ownership represents an estimated 35 percent of stock market capitalization—the highest in Asia—equity prices have tended to track foreign investor flows (Figure 3.10).

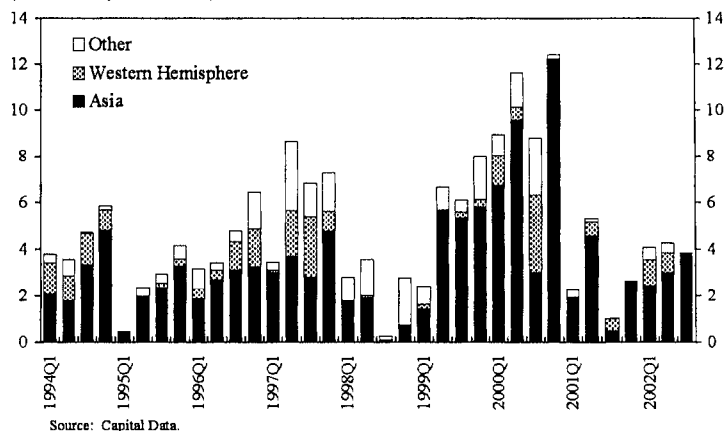
**Figure 3.10. Net Foreign Equity Purchases and the Kospi**



### Primary Market Issuance

Emerging market equity issuance continued to be hampered by global market conditions as well as by a slowdown of large scale privatizations relative to earlier boom years. Issuance in the third quarter of 2002 totaled US\$3.7 billion, representing a decline from issuance in the first and second quarters of 2002 (Figure 3.11). With the exception of a US\$32.5 million South African issue in the mining sector, all other initial public offerings (IPOs) were made by Asian companies, notably, Hong Kong SAR listed Chinese companies.

**Figure 3.11. Equity Placements**  
(In billions of U.S. dollars)



The IPO by the Bank of China totaled US\$2.4 billion, or 80 percent of total China and Hong Kong SAR issuance, and 65 percent of total emerging markets issuance.<sup>13</sup> Local accounts were the main purchasers of new Asian equity, primarily attracted to high dividend yields in relation to money-market or fixed income returns.

<sup>13</sup> IPOs in the order of RMB21.7 billion (\$2.6 billion) were placed on the Shanghai A market in the third quarter, which is not open to foreign investors.

The participation of foreign institutional investors in the primary market has declined, in line with their withdrawal from secondary markets. As a result, the pipeline of issuance for the fourth quarter and for 2003 appears ambitious, totaling up to US\$28 billion, with companies in Hong Kong SAR and Taiwan Province of China accounting for the bulk of the planned IPOs. Nevertheless, major IPOs in defensive sectors, such as infrastructure and utilities, are expected to be well received.

## Valuations and Earnings Outlook

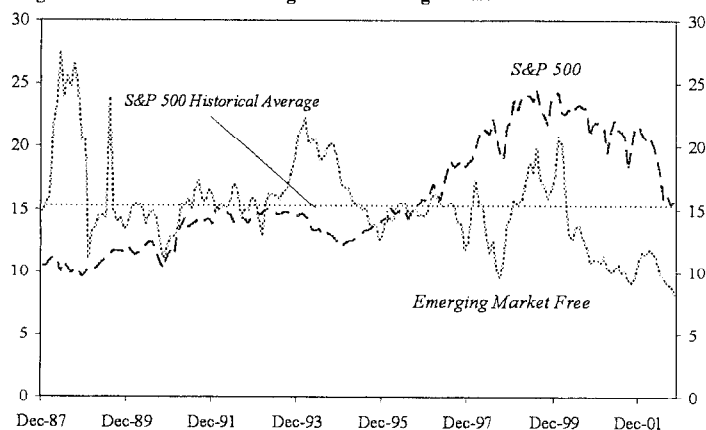
On some valuation measures, emerging markets appear favorably valued against their mature market counterparts. On a price-to-earnings (P/E) basis, the 12-month forward P/E ratio for the S&P 500 is 16.3, compared with a near record low of 8.9 for the Emerging Markets Free index (Figure 3.12). Similarly, on a price-to-book basis (P/B), emerging market equities, and in particular those in Asia, are also significantly cheaper than their U.S. counterparts.

Consensus forecasts of corporate earnings growth are also supportive of emerging equity markets. While the optimism earlier this year has moderated, corporate earnings are still expected to grow at rates higher than those of the S&P 500 (Figure 3.13).

## Syndicated Lending

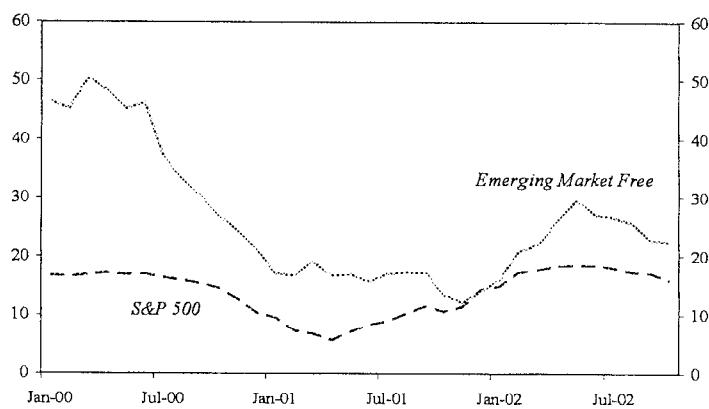
Downgraded expectations about a global economic recovery and ongoing concerns about credit quality continued to weigh on the loan market in the third quarter of 2002, with the major international banks further reducing exposures in the mature markets. Emerging markets, however, benefited at the margin, as the total volume of lending to emerging markets rose to \$16.8 billion in the third quarter (Figure 3.14) from \$11.2 billion in the second, but remained nonetheless subdued by historical

Figure 3.12. Forward Looking Price-Earnings Ratio



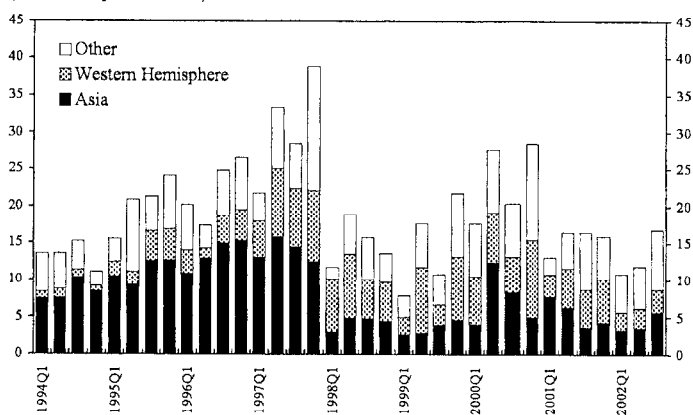
Source: I/B/E/S International.

Figure 3.13. 12-Month Forward Earnings Growth, Emerging Markets Free and S&P 500



Source: I/B/E/S International.

Figure 3.14. Syndicated Loan Commitments  
(In billions of U.S. dollars)



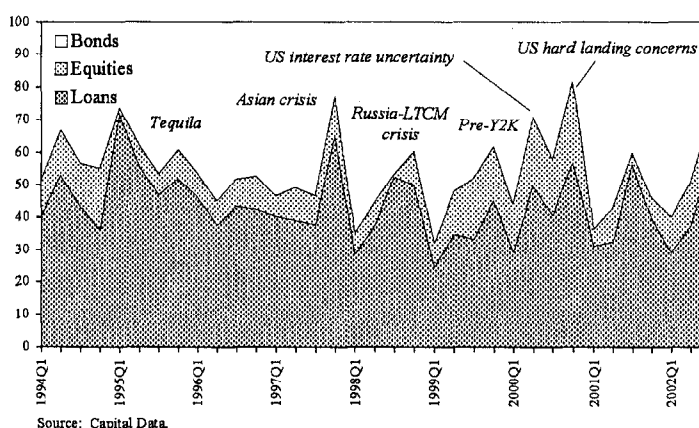
Source: Capital Data

standards. Refinancings continued to dominate deal flow, with new money raised in the loan market constrained by scarcity of demand for corporate funding, particularly in Asia. Looking forward, syndicated lending is expected to remain around current levels in the fourth quarter, but a rebound in activity is considered unlikely in the absence of a decisive turnaround in the global outlook.

A number of salient points about third quarter loan market developments warrant highlighting:

- Despite its relatively subdued level, syndicated bank lending represented the largest component of fundraising by emerging markets in the third quarter, as issuance in the bond market fell precipitously to levels not seen since 1995. The share of syndicated bank loans in total financing of emerging markets on international capital markets has in the past tended to peak around each of the emerging market crises (Figure 3.15).

Figure 3.15. Shares of Total Issuance  
(In percent)

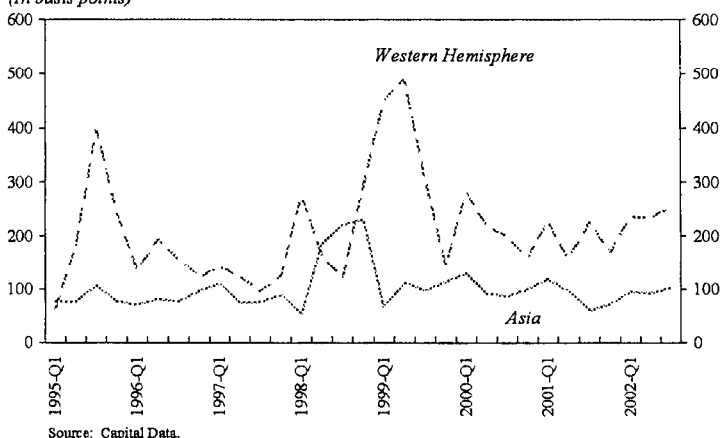


- Creditors are seeking to shift exposure to higher-quality borrowers. Such a trend was clearly apparent in Latin America, where Argentine borrowers were shut out of the loan market and Brazilian borrowers faced very difficult conditions. In addition, banks continued to rotate their exposures from Latin America into Emerging Europe, and the Middle East. However, with local banks in Central and Eastern Europe flush with liquidity and aggressively concluding loans at wafer-thin margins in local currency, international lenders moved further afield to pick up yield, including to Kazakhstan, Romania, and Uzbekistan. In the Persian Gulf, oil and gas ventures received considerable funding.
- Despite well-documented difficulties in the mature markets, competition for investment grade TMT mandates in emerging markets remained intense, with spreads in Central and Eastern Europe below their Western European counterparts (for example, France Telecom's (FT) Polish affiliate TPSA reportedly could raise financing at terms more favorable than those for FT). In the third quarter of 2002, TMT related lending remained buoyant in the emerging markets, boosted by the US\$2.3 billion facility extended to Poland's Tele-Invest. Malaysian and Romanian telecom companies were also active in the loan markets.

- In recent years, secondary market trading volumes have picked up notably in Europe and Asia, but remain relatively small in comparison to the United States. Such a trend is expected to gather momentum amid structural changes in the loan market, including the size and composition of mandated arranger groups and the introduction of a mark-to-market framework for liquid loans in the context of Basle 2.

There was a dearth of corporate borrowing from the traditionally buoyant Asian markets of Hong Kong SAR, Korea and Taiwan Province of China, and on risk-adjusted terms, margin compression continued, reflecting ample bank liquidity. As noted, the same trend was prevalent in Central and Eastern Europe. In Latin America, the average loan weighted spread also increased, despite lenders' move up the credit spectrum (Figure 3.16).

**Figure 3.16. Loan Weighted Interest Margin, 1995-2002**  
(In basis points)

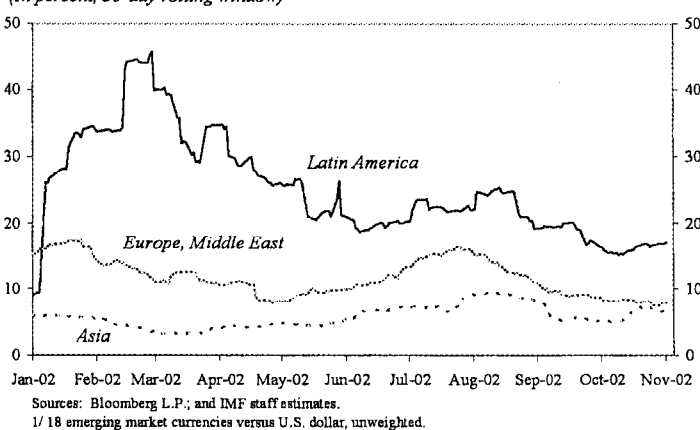


### Emerging Foreign Exchange

Developments in foreign exchange markets remained divergent across regions, in large part reflecting global growth developments, equity market volatility, intensifying tiering of emerging markets, investor discrimination, as well as country specific circumstances.

Currencies in Latin America remained volatile, with most currencies continuing to fall against the dollar during the quarter (Figure 3.17), in part spurred by a retrenchment of capital from sub-investment grade credits and slowing U.S. growth. As noted in the emerging market bond section, the Brazilian *real* moved in tandem with bond prices, losing almost a quarter of its value against the dollar during the quarter.

**Figure 3.17. Emerging Market Currencies, Historical Volatilities<sup>1</sup>**  
(In percent, 30-day rolling window)

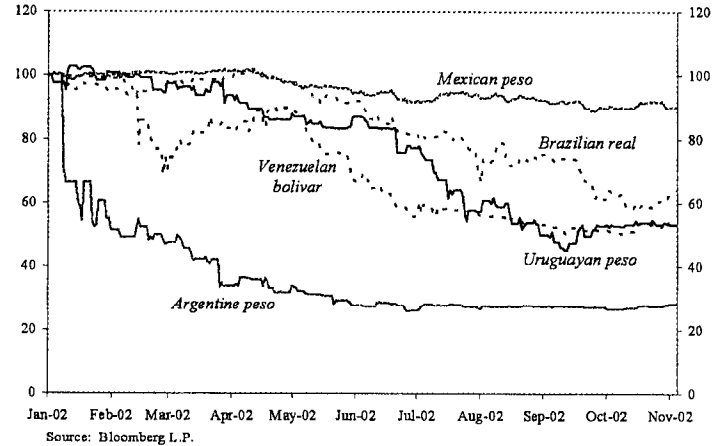


The Argentine peso strengthened by about 2 percent against the dollar during the quarter but was still some 73 percent weaker than at the start of the year (Figure 3.18). The authorities tightened reserve requirements, limits on the net foreign exchange positions banks can hold, and requirements on exporters to sell their foreign currency receipts. Central bank intervention also contributed to the currency's stability.



In Uruguay, the newly-floating currency fell sharply as economic trouble in Argentina caused further deposit outflows. Runs on deposits in late July forced the authorities to close the banks for four days in early August. The augmentation of the IMF Stand-By credit to the country following the bank closure initially did little to support the currency as capital flight continued. However, deposits started to reflow in September as confidence in the financial system improved, and the currency strengthened over 15 percent toward the end of that month. Nevertheless, the currency still ended the quarter down some 30 percent against the U.S. dollar, the sharpest decline in the region.

**Figure 3.18. Latin American Currencies against the U.S. Dollar**  
(Jan. 1, 2002=100)

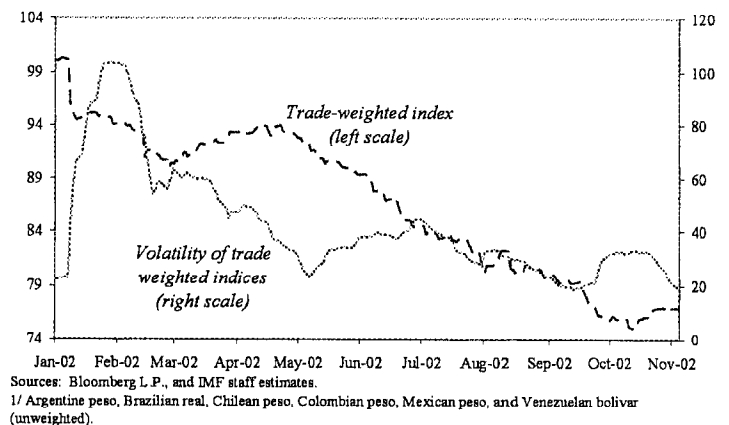


The Mexican peso continued to weaken moderately during the quarter, reaching a 44-month low in late September, before the central bank moved to tighten policy on September 23 by increasing the *corto*. The peso reacted positively to the move, but still ended the quarter 2.6 percent lower versus the dollar.

On a trade-weighted basis, Latin American currencies, on balance, weakened further during the third quarter. Even though the volatility of their bilateral exchange rates with the U.S. dollar remained high, their trade-weighted indices were generally less volatile than earlier in the year (Figure 3.19).

At quarter end, investors were positioned in anticipation of further weakness among Latin American currencies as most of the factors that have weighed on the region were expected to continue.

**Figure 3.19. Latin American Currencies Trade-weighted Indices and Volatility<sup>1</sup>**  
(In percent, 30-day rolling window)



Eastern European currencies ended the quarter little changed, as they continued, for the most part, to track the euro. After a year-long rally that had seen its value rise up to 15 percent, the Czech koruna weakened modestly in the third quarter. In September, the government agreed to extend the arrangement by which privatization revenues are kept outside the foreign exchange market. The koruna ended the quarter 3 percent lower versus the euro. In Hungary, the central bank raised the deposit rate by another 50 basis points in early July and the forint stabilized to end the quarter little changed against the euro. In

Poland, the zloty declined less than 2 percent against the euro as the central bank cut interest rates twice during the quarter, lowering the key rate by a cumulative 100 basis points to 7.5 percent.

The Turkish lira also won some much-needed stability during the third quarter. Having continued to weaken in July, good news on inflation allowed the central bank to trim its key interest rate by 200 basis points to 46 percent, and the lira rallied to end the quarter 4.2 percent weaker against the euro.

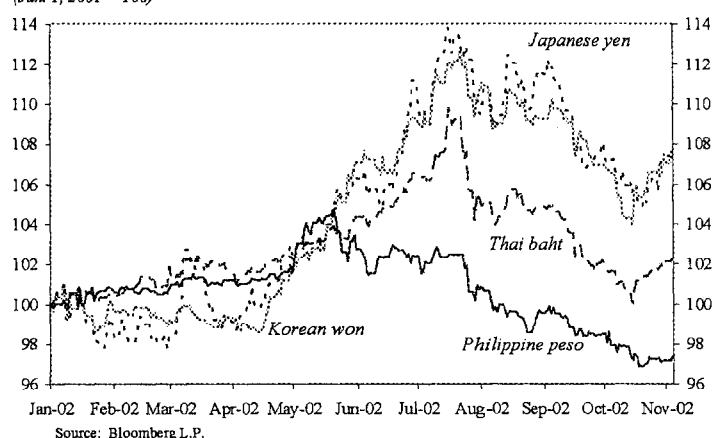
In South Africa, the rand initially gave up some of the gains it had made in the second quarter on fears that it might be hit by contagion from Latin America. However, it later gained as these worries were dispelled. The 100 basis points interest rate hike in September gave the currency another boost, leaving it down only 2.3 percent against the dollar and a little less against the euro.

Investor positioning at the end of the quarter was considered to favor the Central European convergence plays, with the zloty, in particular, seen supported by improving fundamentals and as having priced in a considerable risk premium. The attractive overnight carry on Turkish lira positions continued to attract investors, as many consider that the currency has already discounted many negative factors.

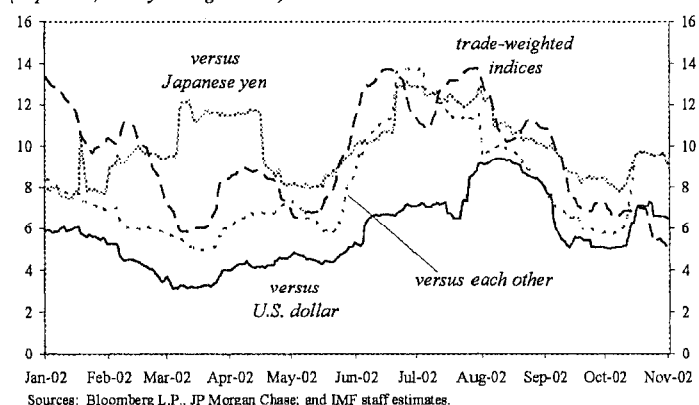
Asian currencies were the least volatile of the three major regions even as the region's floating currencies outpaced the yen's weakness versus the dollar (Figure 3.20). Analysts noted that, unlike other Asian asset classes, currencies had moved swiftly to price in the prospect of a double-dip recession in the mature markets, with negative knock-on effects for Asian exports and equity markets. Some market participants noted an asymmetry between the authorities' willingness to intervene in the market to dampen the appreciation of their local units, and their reticence to intervene as their currencies depreciated.

As noted in the discussion of emerging equity markets, foreigners were increasingly net sellers of Asian equities in the third quarter, in many cases as they took profits to cover losses on other parts of their portfolios. Volatility versus the yen fell, but was still above that for the dollar. The volatility of Asian currencies' trade-weighted indices fell during the quarter, as the cross-volatility of currencies in the region dropped by half during the quarter (Figure 3.21).

**Figure 3.20. Asian Currencies against the U.S. Dollar**  
(Jan. 1, 2001 = 100)



**Figure 3.21. Volatility of Asian Currencies, Bilaterally and Trade-weighted<sup>1</sup>**  
(In percent, 30-day rolling window)



Investors at the end of the quarter were said to be positioned in the expectation that Asian currencies will strengthen versus the U.S. dollar in coming months, particularly if the yen were to strengthen. However, they are being quite selective in their exposures—most of which are said to be expressed through options rather than in the spot market—with the Korean *won* and New Taiwan dollar preferred over the Philippine peso or Indonesian rupiah.

### **Key Risks to Emerging Market Finance**

Emerging markets faced a difficult external environment during the third quarter, as the uncertain prospects for economic growth and earnings, concerns over excessive leverage and capacity, and the risk of war combined to sour investor and creditor sentiment. Investor disquiet was manifest in the mature markets in continued equity market weakness and volatility, a decline in government bond yields toward historic lows, and a marked widening in credit spreads. Banks appeared less willing to take on risk, as they sought to preserve capital in the wake of lower earnings, mounting loan losses, and legal liabilities. In addition, investor doubts over policy continuity in Brazil and other emerging markets intensified with the approach of elections, compounding the effects of a harsh external environment.

Contagion in the emerging bond market remained subdued, reflecting limited leverage and continued discrimination by portfolio investors. Nevertheless, the attendant tiering by credit quality exacerbated the reduction of flows to emerging markets, in particular to sub-investment grade issuers in Latin America. This retrenchment is manifest in both lending and brokerage activities. The retrenchment of capital to brokerage activities in emerging markets, and Latin America in particular, has reportedly limited trading in emerging market bonds. In addition, as considered in the previous GFSR, contagion through common creditor channels appears to have emerged, reflecting banks' desire to protect their capital. Rollover problems encountered by Brazil's corporate and financial sector are symptomatic of an increasing trend toward cutting exposures across the region, and appear to have spread to other markets.

Looking forward, a prolonged period of sluggish global growth, continued corporate earnings disappointments, prolonged mature equity market weakness and volatility, further aggressive tiering by credit quality, continued retrenchment by banks, and the potential for a spike in oil prices represent the key external risks to emerging markets.

Within emerging markets, developments in Brazil are critical, given the size of its economy, its importance in emerging credit markets, and the correspondingly high exposure of emerging market bond investors to Brazilian paper. A further sharp deterioration in Brazil would have repercussions for the region and could alter the structure of the emerging credit market. The combination of an unsupportive external environment, the potential for policy missteps, and an indexed debt structure that amplifies the impact of exchange rate and short-term interest rate movements heighten the risk of worsening sentiment toward Brazil.

A deterioration in Brazil would have repercussions for sub-investment grade borrowers in the region but might otherwise be contained, given the lack of leverage and the likelihood of continued investor discrimination. While profit-taking may lead to an initial sell-off, sovereigns with strong fundamentals are likely to maintain investor support. Mexico

appears to have increasingly decoupled from the region's emerging bond market, and is trading more closely with U.S. corporate credits. Chile appears also likely to be largely immune to contagion given its investment grade status. Asia would enjoy continued support from strong regional liquidity, although sub-investment grade sovereigns with high public debt levels could suffer from increased market focus on debt sustainability. In contrast, emerging Europe would likely continue to benefit from expectations of convergence with the European Union.

Given the size of Brazil in the emerging bond market, and the recent experience of default by Argentina, another large bond issuer, a further sharp deterioration in Brazil could also have implications for how investors approach emerging market debt. Investments in emerging market debt could become subsumed within global fixed income portfolios as a tactical or opportunistic allocation, rather than a separate asset class that forms a strategic allocation in institutional investor portfolios. If flows to the asset class were to become more tactical, the resources devoted by the sell-side to support the marketing of emerging market debt could be curtailed.

Less brokerage support, less liquidity, and less dedicated investment could lead to a restructuring of the primary and secondary emerging bond market into three tiers: The first tier of investment grade credits—including Chile, Mexico, Korea, and Poland—would continue to find relatively open access and a stable secondary market investor base. The second tier of countries would rely on a favorable local or regional liquidity dynamic and include issuers in Asia, EMEA, and smaller “exotic” issuers. The third tier would comprise sub-investment grade Latin American issuers, which would likely experience difficult access conditions without guarantees or securitization and a structural increase in secondary market volatility without the support provided by a dedicated investor base.

A structural diversification away from sub-investment grade issuers in Latin America already appears to be underway, underscoring the risk of a long-lasting reorientation of capital flows. Given Brazil's high weight (17 percent) in the widely used EMBI+, some fund managers have begun to move toward broader-based indices, such as the EMBI Global and the EMBI Global Diversified, with a view to diversifying their exposure away from Latin America. In addition, some fund managers are shifting away from benchmarking toward total return mandates.

A retrenchment of bank lending from emerging markets poses another risk, as banks intensify their efforts to protect their capital, against the backdrop of difficult earnings prospects, losses on lending in mature markets, reputational losses from questionable business practices, potentially large legal liabilities, and falling share prices.

A reduction in FDI flows, which has in the past been a mainstay of emerging market finance, is another potential risk. Investors, and especially banks, are reassessing the risks of unanticipated regulatory changes in the wake of the recent experience in Argentina. In addition, prolonged weak mature equity markets, and the trend by corporations to seek profitability through downsizing could diminish FDI flows. The concentration of foreign direct investments in a relatively small number of countries could intensify further.

#### **IV. Selected Topics: The Role of Financial Derivatives in Emerging Markets**

The two previous Global Financial Stability Reports contained chapters on local equity and fixed-income markets in emerging market economies, with particular focus on the role of local markets as a substitute for international markets for raising funds. This chapter presents original estimates of the scale of the derivatives trading activity in the major emerging markets and compares developments in these markets with global trends. In addition to providing a brief overview of the local derivatives markets, this chapter focuses on two issues: (1) how the use of derivatives facilitated capital flows to emerging economies and (2) what was the role of derivatives in past emerging market crises.

Financial derivatives allow investors to unbundle and redistribute various risks—foreign exchange, interest rate, market, and default risks—and thus, facilitate cross-border capital flows and create more opportunities for portfolio diversification. However, the same instruments allow market participants to avoid prudential safeguards, manipulate accounting rules, and take on excessive leverage by shifting exposures off balance sheets. The latter can occur due to the weaknesses in the companies' internal risk management practices and also due to the inadequate financial regulation. In a world of constantly evolving derivatives markets, the establishment of prudential regulations that create incentives for market participants to use derivatives appropriately is one of the major challenges for regulators in both mature and emerging markets.

##### **Overview of Derivatives Markets in Emerging Economies**

Despite rapid growth over the past several years, emerging market derivatives account for only 1 percent of the total outstanding notionals in global derivatives markets. Local derivatives markets in emerging economies differ greatly in their sizes, both in absolute terms and relative to cash markets. Compared to mature markets, the ratio of outstanding notionals in bond and equity derivatives to market capitalization of the underlying asset markets is fairly small in most emerging economies (see Table 4.1). The most common problems that constrain the development of local derivatives markets are (1) relatively underdeveloped markets for underlying instruments; (2) weak/inadequate legal and market infrastructure, and (3) restrictions on the use of derivatives by local and foreign entities.

##### **Currency Derivatives**

Most of the currency derivatives trading around the world takes place through the over-the-counter (OTC) markets, with foreign exchange swaps accounting for more than two-thirds of the turnover. In emerging markets, the most liquid OTC currency derivatives markets are in Singapore, Hong Kong SAR, and South Africa, where average daily turnover significantly exceeds the spot market turnover. By contrast, a significant share of the foreign exchange derivatives trading in Brazil takes place at the organized exchange—Bolsa de Mercadorias & Futuros of São Paulo (BM&F) (see Box 4.1). According to the BIS, the

**Table 4.1. Notional Amounts Outstanding of the OTC and Exchange-Traded Derivatives (end-June-2001)**  
(In billions of U.S. dollars)

|                          | Equity   |                             |                 | Fixed-Income                             |        |                             | Foreign Exchange |      |                             |
|--------------------------|----------|-----------------------------|-----------------|------------------------------------------|--------|-----------------------------|------------------|------|-----------------------------|
|                          | Spot     | Exchange-Traded Derivatives | OTC Derivatives | Total Derivatives in percent of the spot | Spot   | Exchange-Traded Derivatives | OTC Derivatives  | Spot | Exchange-Traded Derivatives |
| <b>Latin America</b>     |          |                             |                 |                                          |        |                             |                  |      |                             |
| Brazil                   | 194.07   | 1.00                        | 0.81            | 0.9                                      | 284.80 | 151.15                      | 12.52            | ...  | 12.61                       |
| Mexico                   | 154.91   | 0.01                        | ...             | 0.0                                      | 82.30  | 4.58                        | ...              | ...  | 0.10                        |
| Chile                    | 44.31    | ...                         | 0.00            | 0.0                                      | 34.00  | ...                         | 0.10             | ...  | ...                         |
| <b>Asia</b>              |          |                             |                 |                                          |        |                             |                  |      |                             |
| Singapore                | 197.62   | 6.80                        | 0.38            | 3.6                                      | 48.30  | 459.96                      | 32.00            | ...  | ...                         |
| Hong Kong SAR            | 570.56   | 3.91                        | 0.14            | 0.7                                      | 44.90  | 25.61                       | 4.15             | ...  | 0.03                        |
| Korea                    | 217.73   | 12.68                       | 0.00            | 5.8                                      | 279.00 | 1.96                        | 19.26            | ...  | 1.33                        |
| Taiwan Province of China | 231.05   | 0.42                        | ...             | 0.2                                      | ...    | ...                         | ...              | ...  | ...                         |
| Malaysia                 | 104.08   | 0.03                        | 0.00            | 0.0                                      | 77.10  | 2.86                        | 0.94             | ...  | ...                         |
| <b>EMEA</b>              |          |                             |                 |                                          |        |                             |                  |      |                             |
| South Africa             | 194.93   | 15.62                       | 8.73            | 12.5                                     | 56.10  | 0.16                        | 144.79           | ...  | ...                         |
| Hungary                  | 9.34     | 0.05                        | 0.00            | 0.6                                      | 17.20  | 0.06                        | 0.09             | ...  | 0.17                        |
| Poland                   | 25.56    | 0.04                        | 0.00            | 0.2                                      | 37.60  | ...                         | 0.85             | ...  | 0.01                        |
| <b>Total</b>             | 1,944.16 | 40.56                       | 10.07           | 2.6                                      | 961.30 | 646.33                      | 214.69           | ...  | 14.24                       |
| <b>Memo item:</b>        |          |                             |                 |                                          |        |                             |                  |      |                             |
| <b>Global Markets</b>    | 29,843   | 1,905                       | 2,039           | 13.2                                     | 29,710 | 17,493                      | 75,813           | ...  | 66                          |
|                          |          |                             |                 |                                          |        |                             |                  |      | 20,435                      |

Sources: BIS, IFC, MSCI, FOW TRADEdata, Exchanges, Bloomberg, and staff estimates.  
"..." means either "not traded" or "the data is not available."

**Notes:**

1. The notional amounts outstanding of the OTC traded derivatives are based on the data collected as part of the BIS 2001 Triennial Survey. All positions were reported on a worldwide consolidated basis (i.e., are based on global books of the head offices and all branches and subsidiaries of a given institutions), and only to the monetary authority of a country, where the parent institution had its head office.
2. The notional amounts outstanding of the exchange-traded derivatives are estimated using the data from the FOW TRADEdata, Bloomberg and various local exchanges. Notional amount is calculated as the number of contracts ("open interest" from FOW TRADEdata) multiplied by the face value of the contract in the U.S. dollar terms. In the case of index derivatives, the face value is the product of the contract's multiplier and the value of the underlying index. In the case of equity derivatives, individual stock futures and options are not included. The break-down of exchange-traded derivatives by asset class (equity, fixed-income, currency) is based on the FOW TRADEdata classification, which, in some cases, differs from the BIS classification of the OTC derivatives. For example, the exchange-traded fixed income derivatives include a broader range of instruments than the single-currency interest rate swaps. In particular, in the case of Brazil, all cross currency swaps are included in the fixed-income derivatives category.
3. For bond markets, the spot market capitalization is the total value of all outstanding domestic bonds based on the data provided by the BIS. The overall market capitalization of the global bond markets is the total value of all outstanding domestic bonds in all countries followed by the BIS. The overall market capitalization of the global equity markets is an estimated total market capitalization of all countries included in the MSCI All Country World Free Index. The equity market capitalization estimates for individual markets are based on the IFC data.

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**Box 4.1. The Bolsa de Mercadorias & Futuros of São Paulo**

The Bolsa de Mercadorias & Futuros (BM&F) of São Paulo, Brazil, which started operations in January 1986, ranks among the largest exchange-traded derivatives markets in the world in terms of the number of contracts transacted annually. In 2001, almost 98 million contracts were traded with a total open interest of 74 million contracts. These figures would likely be surpassed in 2002: by end-August 2002 the cumulative number of contracts traded was up to 74 million with a total open interest of 58 million contracts. According to International Financial Services, London, the BM&F ranked ninth in terms of the number of contracts traded by end-2001, being surpassed among emerging markets only by the Korean Stock Exchange.

Trading at the BM&F takes place through the auction market system, which comprises both the exchange floor and the electronic trading system. Most contracts are traded in the auction market system, which accounted for 94 percent of all contracts traded and 97 percent of financial volume in 2001, while the over-the-counter (OTC) system accounted for the remaining transactions. The performance of all contracts traded through the auction system is guaranteed by the BM&F Derivatives Clearinghouse, which uses a safeguard structure based on intraday risk limits, market concentration limits, and collateral requirements imposed on clearing members, brokerage houses, and customers. The safeguard structure is complemented with three clearinghouse funds that provide additional levels of protection against counterparty risk. Currently, the BM&F is exploring the possibility of using international insurance policies as an additional line of defense. Other transactions in the OTC market system must be registered either with the BM&F or the Central of Custody and Financial Settlement (CETIP) if at least one of the counterparties is a financial institution. The settlement of OTC contracts registered with the BM&F can be guaranteed by the exchange upon request of the contractual parties provided the contract is written according to the BM&F specifications, which ensures a certain level of standardization. In practice, most of the OTC contracts are guaranteed by the BM&F.

The BM&F offers end-users of the exchange a substantial number of contracts allowing them to hedge risks or acquire market exposure. Futures contracts are available on a number of commodities, including gold, on the São Paulo Exchange Stock Index (Ibovespa), on foreign currencies including the U.S. dollar and the Euro, and on interest rates including short and long interbank deposit rates, and the local U.S. dollar interest rate (Cupom Cambial). Option contracts are available on gold, interbank deposit rates, the Ibovespa, and the U.S. dollar. However, liquidity in the BM&F is heavily concentrated in a few contracts including the one-day interbank deposit futures contracts or DI Futures, U.S. Dollar Futures, especially for those with maturities of one year or less, Ibovespa Index Futures, and Cupom Cambial Futures. Some of these contracts are described next.

*DI Futures.* This contract allows end users to hedge or take positions on local interest rate risk. The contract size is R\$1,000,000, and the underlying asset is the capitalized daily interbank deposit rate, as measured by the Certificate of Deposit rate, verified on the period between the trading day and the business day preceding the expiration date of the contract, which is the first business day of the contract month. All contracts are settled on a cash basis. Contracts months include the first four months subsequent to the month during which a trade is made, and months that initiate a quarter (January, April, July, and October). DI Futures with maturities less than two years enjoy good liquidity, with an average daily turnover in the range of US\$5-10 billion.

*Foreign exchange derivatives.* The two- and three-month U.S. Dollar Futures, with contract sizes of US\$50,000, are the most traded and liquid contracts, with an average daily trading volume of around US\$3 billion. Contracts months include every month of the year and should be settled on a cash basis the next business day following the last business day of the previous month. Hedging and speculation in the foreign exchange market can also be accomplished via U.S. Dollar European and American Options in the auction and OTC market systems, respectively. The average daily trading volume in this market is only around US\$250 million, a fraction of the volume traded in the futures market. In terms of open interest, though, U.S. Dollar Options accounted for 30 percent of total exchange-traded foreign currency instruments by end-July 2002.

*Ibovespa Index Futures.* Local investors can engage in index arbitrage and hedge positions on the main Brazilian stock market index, Ibovespa, through Ibovespa Index Futures. The contract size in Brazilian *reais* is equal to three times the level of the index. These contracts mature every two months and are settled on a cash basis on the next business day following the Wednesday closest to the 15<sup>th</sup> calendar day, which is the last trading day. Trading in the Ibovespa index futures comprises 86 percent of total trading in stock index instruments, as measured by number of traded contracts.

*Cupom Cambial Futures.* The Cupom Cambial for a given maturity is the spread between the local interest rate, as measured by the interest rate on interbank deposits, and the exchange rate variation during the life of the contract. From this definition, it is clear that the Cupom Cambial is equivalent to the onshore U.S. dollar interest rate and hence, its level is affected by corporate demand for foreign currency hedging. The Cupom Cambial Futures allow local market participants, mostly nonfinancial companies, banks, and mutual funds, to position themselves in the local U.S. dollar interest rate market. Contract size is US\$50,000 and contract months and expiration dates are established by the BM&F. Contracts are settled in cash.

The BM&F follows state-of-the-art risk management procedures to deal with market risk, liquidity risk, and counterparty risk. These procedures have helped the BM&F to withstand several episodes of market turbulence including the January 1999 crisis, the Argentina crisis by the end of 2001, and the current volatility associated to the presidential elections in October 2002. Despite this impressive track record, the BM&F remains highly exposed to sovereign risk as close to 90 percent of the exchange's collateral is comprised by Federal Government Bonds.

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global currency derivatives market activity has been on a declining trend since 1998, with the average daily turnover in the global OTC currency derivatives markets falling to \$853 billion in April 2001 from \$959 billion in April 1998, in parallel with the contraction of the global spot market activity. The latter is generally attributed to the introduction of the euro, expansion of E-broking and banking sector consolidation. By contrast, the turnover in the emerging foreign exchange spot markets increased, with the share of emerging market currencies (including the Hong Kong SAR and Singapore dollars) in global foreign exchange turnover rising from 5.5 percent in April 1998 to 8.6 percent in April 2001. Turnover of currency derivatives in emerging markets rose in cue with the increased spot market activity (see Table 4.2).

In emerging Asia, Singapore has the largest foreign exchange derivatives market. A notable pick up in cross-currency swaps activity occurred after 1998, when the government allowed foreign entities to issue Singapore dollar bonds and to swap the proceeds into foreign currency for use outside the country. In Korea, the development of the onshore currency derivatives market was constrained by a legal requirement that any forward transaction had to be certified as a hedge against future current account flows (the so-called “real demand principle”), which also spurred the development of a liquid offshore “nondeliverable” forward (NDF) market in the Korean won. In 1999, this restriction was lifted and a lot of activity moved onshore, leading to the convergence of the offshore and onshore prices.

Generally, the NDF contracts are the principal instruments in the offshore derivatives markets for emerging market currencies and are often preferred by foreign investors who have restricted access to the onshore market and want to avoid potential costs of delivering local currencies or to reduce their counterparty credit risk exposure. In most cases, NDF markets trade at a premium to local markets because offshore financial institutions have limited access to local funding. In Taiwan Province of China, for example, the average implied one-year NDF yields were around 150 bps higher than onshore rates during 2001–02. In some cases, however, offshore markets perform functions that are not performed by onshore markets. For example, while both onshore and offshore forward markets in Korea are most liquid in maturities of up to 1 year, the NDFs and swaps can be structured in tenors of up to 10 years in the offshore market.

In Latin America, the most active foreign exchange derivatives markets are in Brazil and Mexico (see Table 4.2). The recent expansion of currency derivatives in Brazil was stimulated by the flotation of the *real* in early 1999 and regulatory authorization for OTC derivatives on foreign exchange, interest rates, and price indexes. The change in the exchange rate regime coincided with sharply higher volatility in both the *real*-dollar rate and Brazilian interest rates, contributing to the creation of a “hedge culture.” At present, trading in currency derivatives is much higher than that in the cash market: daily currency derivatives turnover is more than \$5 billion compared with a little over \$1 billion in the spot market. Most of the derivatives contracts are “nondeliverable” because historically, the BM&F did not want local derivatives markets to be limited either by less than free convertibility of the *real* or by the size of the cash market, with the latter also being susceptible to short squeezes. In contrast with many other derivatives markets, a significant

**Table 4.2. Average Daily Turnover in the OTC Derivatives Markets**

(In billions of U.S. dollars)

|                          | <b>Total</b> |              | <b>Foreign Exchange</b> |              | <b>Interest Rate</b> |            |
|--------------------------|--------------|--------------|-------------------------|--------------|----------------------|------------|
|                          | April 1998   | April 2001   | April 1998              | April 2001   | April 1998           | April 2001 |
| Brazil                   | ...          | 2.1          | ...                     | 1.9          | ...                  | 0.3        |
| Chile                    | 0.5          | 0.6          | 0.5                     | 0.6          | 0                    | 0          |
| China                    | ...          | 0            | ...                     | 0            | ...                  | 0          |
| Czech Republic           | 3            | 1.4          | 3                       | 1.2          | 0                    | 0.2        |
| Hong Kong SAR            | 51.4         | 52.0         | 48.9                    | 49.4         | 2.4                  | 2.6        |
| Hungary                  | 0.5          | 0.2          | 0.5                     | 0.2          | 0                    | 0          |
| India                    | 1.3          | 2            | 1.3                     | 1.8          | 0                    | 0.1        |
| Indonesia                | 1            | 0.5          | 1                       | 0.5          | 0                    | 0          |
| Korea                    | 1.1          | 4            | 1                       | 3.9          | 0                    | 0.1        |
| Malaysia                 | 0.8          | 0.9          | 0.8                     | 0.9          | 0                    | 0          |
| Mexico                   | 2.6          | 4.6          | 2.4                     | 4.2          | 0.2                  | 0.4        |
| Philippines              | 0.4          | 0.6          | 0.4                     | 0.6          | 0                    | 0          |
| Poland                   | 0.5          | 3.8          | 0.5                     | 3.3          | ...                  | 0.5        |
| Russia                   | 0.9          | 0.2          | 0.9                     | 0.2          | 0                    | 0          |
| Singapore                | 90.7         | 72.5         | 85.4                    | 69.3         | 5.3                  | 3.2        |
| South Africa             | 6            | 8.4          | 5.2                     | 7.9          | 0.8                  | 0.6        |
| Taiwan Province of China | 1.6          | 1.8          | 1.5                     | 1.7          | 0.1                  | 0.1        |
| Thailand                 | 2.2          | 1.3          | 2.2                     | 1.3          | 0                    | 0          |
| Turkey                   | ...          | 0.7          | ...                     | 0.7          | ...                  | 0          |
| <b>Total</b>             | <b>164.5</b> | <b>157.6</b> | <b>155.5</b>            | <b>149.6</b> | <b>8.8</b>           | <b>8.1</b> |

Source: Bank for International Settlements, *Triennial Central Bank Survey 2001*.

"..." means either "not traded" or "the data is not available."

**Note:**

Turnover is defined as the absolute gross value of all new deals entered into during the month of April. No distinction is made between sales and purchases. The basis for reporting is the location of the office where any given deal was struck, so transactions concluded abroad were not reported by the country of location of the head office.

part of the currency derivatives trading in Brazil takes place at the BM&F. Besides certain features of the country's legal framework that had hampered the development of the OTC market, the BM&F itself was actively trying to absorb part of the OTC business (see Box 4.1). In contrast to the rapid growth of derivatives markets in Brazil, the development of exchanges in Mexico has been slower, primarily because the exchanges in Chicago (which are in the same time zone) have launched numerous derivative products based on Mexican underlying assets.

In emerging Europe, Middle East, and Africa (EMEA) region, the most liquid OTC forward foreign exchange market is in South Africa, where daily turnover significantly exceeds turnover in the spot market (see Table 4.2). By contrast, the liquidity of the Central European derivatives markets remains limited. Hungary has seen a strong pickup in currency derivatives trading since the flotation of the forint and removal of capital controls; but, compared to Poland, liquidity is still low (see Tables 4.1 and 4.2). The relatively limited development of onshore derivatives in the CEE countries is due to some extent to restrictions on derivatives trading, including regulatory constraints on the use of hedging instruments by local corporates and pension funds. Many of the derivatives linked to the Central European currencies are reportedly traded offshore, mainly out of London.

### **Fixed-Income Derivatives**

In contrast to recent trends in currency derivatives markets, global fixed-income derivatives activity surged over the past few years, with daily average turnover in the global OTC interest-rate derivatives market rising from \$265 billion in April 1998 to \$489 billion in April 2001, according to the BIS. Interest rate swaps (IRS) constitute the largest (around 70 percent of total turnover) and the fastest growing segment of the market. The rapid expansion of the IRS activity was triggered by the liquidity crunch in the cash and exchange-traded derivatives markets during the Russia/LTCM crisis and the reduction in the U.S. government bond market liquidity due to the planned debt repayments, which forced market participants to look for alternative hedging and benchmark instruments and encouraged the shift into the OTC swaps market.<sup>1</sup> As in the case of currency derivatives, the OTC segment of the global fixed-income derivatives market is significantly larger (when measured in terms of the outstanding notionals) than the exchange-traded derivatives segment, although the average daily turnover in the latter is higher, possibly due to the shorter maturity of the exchange-traded instruments.

In emerging markets, the most deep and liquid fixed-income derivatives markets are in Singapore, Brazil, and South Africa (see Tables 4.1, 4.2, and 4.3). In terms of the outstanding notional of the exchange-traded fixed income derivatives, the Singapore Exchange (SGX) is far ahead of all other emerging markets, with most traded contracts including Euroyen LIBOR, Euroyen TIBOR, and Eurodollar futures and options.

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<sup>1</sup> See *IMF Occasional Paper No. 203* (2001).

**Table 4.3. Exchange-Traded Options and Futures Contract Trading Volume (Year 2001)**

|                          | Stock      | Equity Index | Government Debt | Interest Rate | Foreign Exchange |
|--------------------------|------------|--------------|-----------------|---------------|------------------|
| <b>Latin America</b>     |            |              |                 |               |                  |
| Brazil                   | 69,065,436 | 6,713,344    | 3,012           | 88,626,322    | 24,869,397       |
| Mexico                   | ...        | 34,478       | 958,908         | 16,813,830    | 205,068          |
| <b>Asia</b>              |            |              |                 |               |                  |
| Singapore                | 6,575      | 9,349,788    | 624,435         | 21,008,786    | ...              |
| Hong Kong SAR            | 4,010,411  | 5,889,934    | 1,175           | 643,806       | 4,226            |
| Korea                    | ...        | 855,257,564  | 9,323,430       | 1,410         | 1,681,677        |
| Taiwan Province of China | ...        | 4,351,390    | ...             | ...           | ...              |
| Malaysia                 | ...        | 288,092      | ...             | 54,914        | ...              |
| <b>EMEA</b>              |            |              |                 |               |                  |
| South Africa             | 6,517,235  | 28,798,060   | 14,072          | ...           | ...              |
| Hungary                  | 879,049    | 1,245,481    | 1,800           | 7,585         | 2,750,373        |
| Poland                   | 60,557     | ...          | ...             | ...           | 14,325           |

Sources: International Federation of Stock Exchanges (FIBV) and FOW TRADEdata.

"..." means either "not traded" or "the data is not available."

Over the past two years, falling interest rates and increased local bond issuance in emerging Asia spurred the expansion of the IRS market, which significantly outpaced the growth in cross-currency swaps.<sup>2</sup> The onshore derivatives markets in Singapore and Korea, which were deregulated more extensively than other regional markets, experienced the fastest growth. As equity prices remained volatile and interest rates continued to decline throughout Asia, many investors shifted from stocks to bonds, turning to the bond futures and IRS markets either in search of yield or to hedge their bond exposures. For example, in Korea, the increase in the fixed-income derivatives trading volume clearly mirrored the performance of the underlying cash market (see Figure 4.1).

Abundant local liquidity and an increasingly sophisticated institutional investor base also contributed to the rapid pickup of the fixed-income derivatives activity in Asia. One of the key drivers behind the growth of the IRS market in Korea was the entry of the investment trust companies that were allowed to hedge up to 5 percent of total assets using local derivatives. In Singapore, insurance companies, which form the core of the local institutional investor base, increased their participation in the longer-dated bond futures market as well. Similarly, in Taiwan Province of China, pension and insurance companies have become more active users of debt-related derivatives, following their shift toward fixed-income investments and away from equity and real estate.

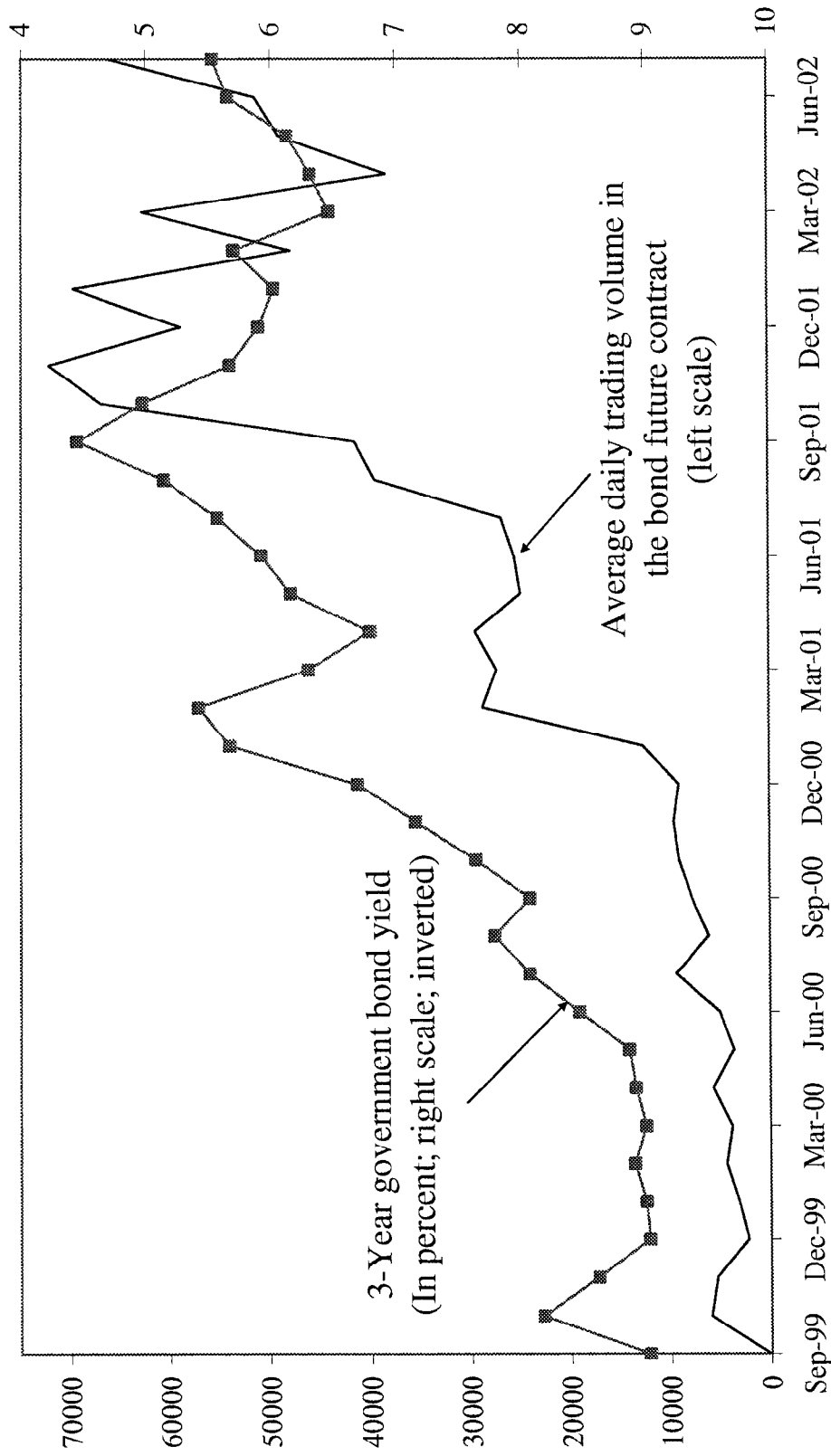
The recent efforts by several Asian governments to extend the government bond yield curve played an important role in lengthening maturities of the interest rate swap contracts. However, the improvement in liquidity of longer-tenor bond futures has been uneven. For example, the daily volume on the 3-year government bond future contract traded on the Korean Futures Exchange (Kofex) grew from 27,000 contracts in July 2001 to 66,000 contracts in July 2002. By contrast, the liquidity of the future contract on the 5-year Singapore government bond launched in July 2001 declined markedly, with the average daily volume falling from 878 contracts in July 2001 to 351 contracts in July 2002 partly due to weak activity in the underlying cash market.

In some emerging economies, most notably in Brazil and Hong Kong SAR, the IRS market is more liquid than the underlying cash market and as a result, performs functions that are typically provided by cash markets, such as price discovery and provision of benchmarks. For example, in Brazil, the local swap curve is the benchmark yield curve for maturities beyond 1-year. In Hong Kong SAR, because the small size of Exchange Fund bonds limits the liquidity of the secondary market, the swap market is more liquid and, therefore, drives the pricing of local bonds.

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<sup>2</sup> See Chapter IV, "Emerging Local Bond Markets," *Global Financial Stability Report*, September 2002.

**Figure 4.1. Korea: 3-Year Government Bond and Bond Futures**



Sources: Bloomberg L.P.; and FOW TRADEdata.

## **Equity-linked Derivatives**

Compared to global currency and fixed-income derivatives, the equity-based derivative products represent a much smaller part of the global market, with the bulk of activity concentrated at the organized exchanges. This reflects in part the diminishing role of local equity markets as a source of funding for local entities. As of June 2001, the outstanding notional of equity-based options and futures was only 3 percent of the global outstanding notional of all types of derivatives (see Table 4.1). While the increased volatility in global equity markets over the past years led more participants to use equity derivatives, the volume of exchange-traded equity futures and options in most mature markets nonetheless rose fairly modestly.

In contrast, the Korean Stock Exchange experienced an exceptionally strong growth in equity options and futures trading on the back of increased participation by individual investors (see Figure 4.2), with the average daily volume of Kospi200 options and futures reaching 3.5 million contracts in June 2002 compared to only about 400,000 contracts in June 2000. As a result, the Korean equity-index derivatives market has become the second most active in the world after that of the United States. The Hong Kong Exchanges and Clearing (HKE) has also been very active in introducing new equity-linked derivative products, such as equity-linked notes (ELNs) and small-sized equity index option contracts, aimed at attracting retail investors. The Taiwan Futures Exchange (Taifex) launched similar instruments to increase retail investor participation. The average daily volume of index futures and options traded at Taifex rose from 2,000 contracts in July 2000 to almost 6,000 in July 2002, with around 90 percent of futures market reportedly being represented by retail investors.<sup>3</sup>

In Latin America, the trading volume of stock options at the Brazilian Bovespa is the highest in the region. In EMEA, South Africa has a fairly well developed equity index futures and options market, with the outstanding notional exceeding that of the Korean market in June 2001 (see Table 4.1). By contrast with index options and futures, the activity in the derivatives based on individual emerging market stocks is much lower.

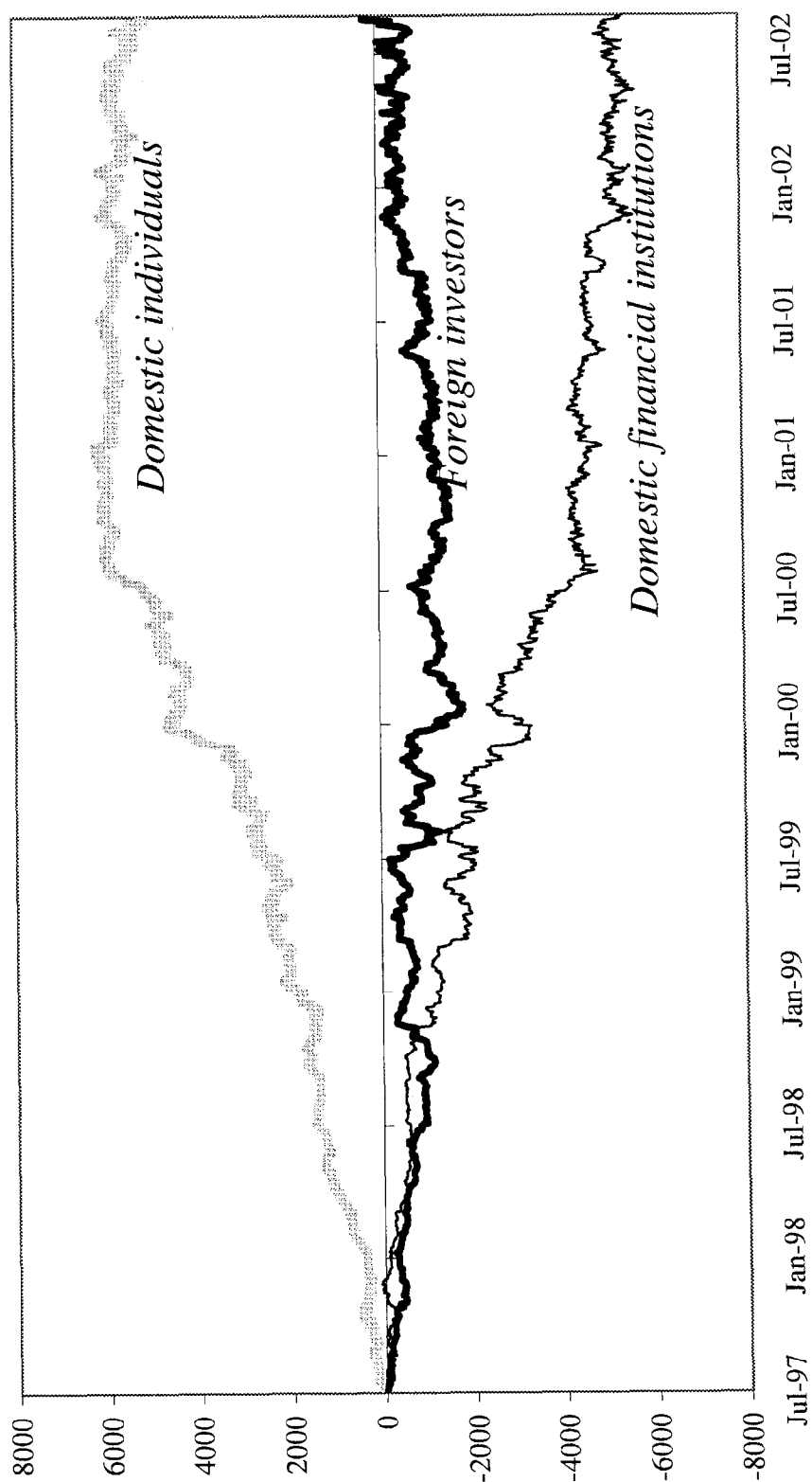
## **Credit derivatives**

Although the global credit derivatives market is still a very small part of the global derivatives markets, it remains one of its fastest growing segments despite several major credit events that shook the market over the past few years (Russia, Argentina, Enron). The data collected as part of the BIS Triennial Survey showed that positions in the global credit derivatives market rose to \$693 billion at end-June 2001 from \$118 billion at end-June 1998.

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<sup>3</sup> The contract volumes are based on the information provided by the FOW TRADEdata.

**Figure 4.2. KOSPI 200 Index Futures: Cumulative Net Purchases**  
(In millions of U.S. dollars)



Source: Bloomberg L.P.



The emerging credit derivatives market mainly consists of credit protection instruments on external sovereign bonds that are traded offshore. The estimates of the size of this market range from \$40 billion for the outstanding notional as of mid-2001, according to *Risk* survey, to \$200–300 billion suggested by Deutsche Bank.<sup>4</sup> The most commonly used credit derivatives in emerging markets are credit default swaps (CDSs), credit-linked notes (CLNs), and collateralized debt obligations (CDOs).<sup>5</sup> The sovereign CDSs are the most liquid instruments in the emerging credit derivatives market, accounting for around 85 percent of the total outstanding notional. The most actively traded contracts reference the external sovereign bonds issued by Brazil, Russia, Mexico, Turkey, and Venezuela. A relatively few top tier corporate credits (in Latin America, these include mainly Mexican names, such as Telmex and Cemex) are also traded in the CDS market, but these instruments are considerably less liquid and account for less than 5 percent of the emerging CDS market/ex-Asia.

Market participants use credit default swaps as a tool for hedging against (or gaining exposure to) changes in credit spreads and default risk. Compared to cash instruments, the CDSs have several advantages: (1) credit default swaps allow positions in maturities for which the cash instruments are illiquid or unavailable; (2) there is no collateral or upfront cash payment, subject to the counterparty's decision; and (3) the CDSs provide investors with an opportunity to take a short position vis-à-vis a particular credit for a longer term than in the repo market, in which positions typically have to be rolled over every one-to-three months.<sup>6</sup> Thus, emerging market credit default swaps are often used to take exposure to sovereigns for maturities shorter than those corresponding to outstanding bonds and to express views on sovereign default risk and on cross-country relative values (see Box 4.2).

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<sup>4</sup> Both estimates exclude emerging Asia. Deutsche Bank is believed to be the largest broker-dealer in the emerging market credit derivatives with an estimated market share of 50 percent (see Ranciere (2001)).

<sup>5</sup> A **credit default swap** is a financial contract under which the protection buyer pays a periodic fee (expressed in basis points per notional) in return for a payment by the protection seller contingent on the occurrence of a credit event. A **credit linked note** is a security with principal and/or coupon payments linked to the occurrence of a credit event with respect to reference entity (i.e., it is a structured note with an embedded default swap). In a synthetic **collateralized debt obligation** (CDO), the issuer of notes (protection buyer) is typically either a special purpose vehicle or a bank and the payments are usually linked to a portfolio (which may be actively managed) of default swaps referencing a variety of credit risks. The proceeds from issuance of CDOs are reinvested in a collateral consisting of highly rated government securities, which is used to pay interest and principal on the notes.

<sup>6</sup> Of course, an obvious disadvantage is that like in any insurance contract, no payout occurs if protection expires before the credit event.

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#### Box 4.2 Credit Default Swaps Spreads in Emerging Markets

The credit default swap curve, a plot of credit default swap spreads for different maturities, conveys useful information about market views on a sovereign ability to honor its external debt, as well as the recovery value bond investors can obtain in case of debt default. The credit default swap curve is normally upward sloping because credit deterioration is more likely in the medium and long term than in the short term. If the sovereign is able to meet its debt repayments in the short term, changes in market perception about debt sustainability would likely result into parallel or steepening movements of the credit default swap curve. In contrast, problems associated to short-term financing needs would lead to a flattening of the credit default swap curve, as short-term spreads widen to compensate protection sellers for the increase in short-term risk. During market stress periods, the credit default swap curve can become inverted, as in the case of Argentina during the second half of 2001, and more recently, of Brazil since June 2002.

Further information on default probabilities for a sovereign for different time horizons can be extracted using standard credit default swap valuation models. The figure below shows the evolution of one-year and two-year default probabilities for Argentina during the period January 1990–December 2001.<sup>1</sup> The approval of an IMF package for Argentina by end-2000 contributed to soothe investors' sentiment and reversed a sharp spike in default probabilities experienced in November 2000. However, increased concerns about the ability of Argentina to meet its debt payments amid continued deterioration of the country's fiscal position, together with an uncertain political climate, caused default probabilities to creep upwards during 2001. By the end of the second half of 2001, default probabilities reached levels not observed ever before. As it became clear that no further external aid was forthcoming and that the government would refrain from implementing significant fiscal measures, default probabilities increased significantly at the end of the third quarter of 2001. By mid-December 2001, trading on Argentina default swaps stopped completely as no participant was willing to take a long position on Argentina credit risk, a position validated by Argentina's default in January 2002.

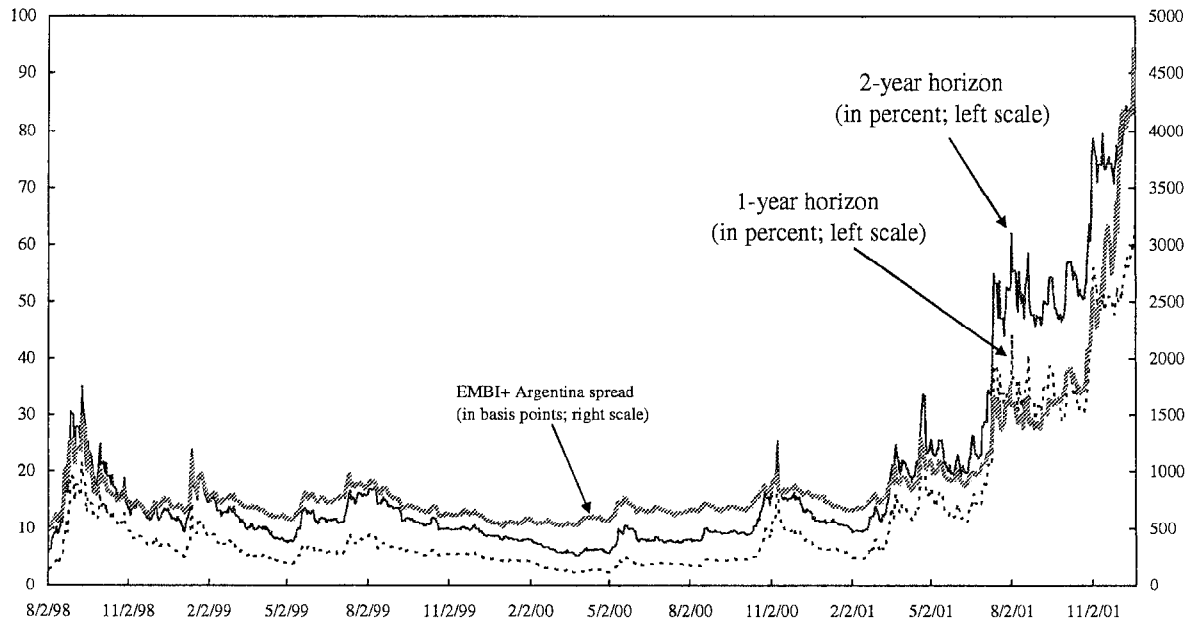
Credit default swaps are not the only financial instruments that contain useful information about sovereign risk, as sovereign bond spreads are also useful indicators of sovereign debt solvency. Indeed, the chart below shows the high correlation between the default probabilities implied by credit default swaps and the EMBI+ spread for Argentina.<sup>2</sup> However, liquidity in the cash market is more likely to dry out during periods of stress than in the credit default swap markets. In fact, there is anecdotal evidence that following the serious disruptions in the cash market clearing mechanisms in the aftermath of the events of September 11, 2001, price discovery migrated from the cash market to the credit derivatives market.

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<sup>1</sup> Default probabilities were estimated using the credit derivatives pricing model described in Darrell Duffie, "Credit Swap Valuation," *Financial Analyst Journal* (January/February 2000), pp. 73–87 and assuming a 25 percent recovery rate in case of default.

<sup>2</sup> A detailed analysis of different sovereign risk measures for emerging markets including implied default probabilities from credit default swaps and sovereign bond yields is provided in Chan-Lau and Sy, "A Comparative Study of Sovereign Risk Measures," forthcoming.

### Sovereign Credit Default Probability and EMBI+ Spread for Argentina



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

Compared to other regions, the CDS activity in emerging Asia has been limited by a relatively small size of external sovereign bond market. However, the CDSs are rapidly gaining popularity, as they often provide higher market liquidity, higher returns and longer yield curves than the U.S. dollar-denominated sovereign bonds. In some cases, the CDS market is more liquid than the underlying bond market. According to market sources, the average daily trading volume in the Asian CDS market rose to \$200 million in 2002 from \$100–150 million in 2001. In Korea, the onshore investors with excess cash reserves have reportedly been very active in the CDS market this year, buying credit protection in anticipation of widening spreads on Korean bonds on the back of increased new issuance.

Some emerging markets, most notably Brazil and South Africa, have recently experienced a pickup in local credit derivatives activity. In Brazil, the government has made the first steps toward developing the onshore credit derivatives markets by allowing local banks to trade credit risk. In South Africa, credit derivatives trading grew rapidly in 2001 on the back of a strong local demand for a higher-yielding paper amid a general shortage of government bonds and with bond yields hovering at all-time lows. However, in both countries, the local bond markets are fairly small and illiquid, which may limit the CDS growth.<sup>7</sup> As a result, local banks tend to structure CLNs, which reference corporate bonds and promissory notes that are unlisted but traded over-the-counter. Nevertheless, many market analysts are optimistic and foresee the local credit derivatives market providing price discovery for the cash market and thus, encouraging securitization in the medium term.

### **Local Derivatives Markets and Capital Flows to Emerging Economies**

There is a broad consensus that the rapid expansion of derivatives products during the past 10–15 years was one of the key factors that facilitated the growth of global cross-border capital flows.<sup>8</sup> Various traditional cross-border investment vehicles, such as loans, bonds, equities, and FDI can potentially expose both lenders and borrowers to foreign exchange risk, interest rate, market, credit, and refinancing (liquidity) risks. By allowing to unbundle and redistribute these risks away from investors unwilling to bear them to those who are in a better position to manage these risks, derivatives make cross-border investments more attractive, thereby increasing net flows and creating more opportunities for portfolio diversification. There are many ways in which the use of derivatives by local and foreign market participants can facilitate cross-border capital flows. Here are a few examples.

Currency derivatives can be used to change the currency of denomination of asset holdings and therefore, to hedge investments against unexpected changes in exchange rates

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<sup>7</sup> The type of reference obligations most commonly included in a CDS contract is “bonds,” and less often “bonds and loans” or “specified obligations.” In addition, the CDS counterparties use the underlying bond market to hedge their swap positions.

<sup>8</sup> See, for example, Garber (1998), Dodd (2001).

by both foreign and local investors. Foreign investors typically use currency derivatives to hedge their long local currency exposure in emerging markets, while local entities often use the same instruments to manage foreign exchange risk associated with external financing, typically in G3 currencies. Thus, the level of external fundraising by local entities is directly related to the availability of the currency hedging instruments.

Another example is the basic single-currency interest-rate swap, which can allow the borrower with a floating interest rate loan/bond to hedge the interest rate risk by swapping floating rate payments for fixed-rate payments. Because interest rate swaps give borrowers an opportunity to exploit their comparative advantages for borrowing at fixed versus floating rates in different markets, they may encourage corporates or banks to seek external financing at more favorable terms instead of borrowing locally. Thus, the use of single-currency swaps can generate gross cross-border flows. In some emerging markets, most notably in Brazil, where local corporate treasurers' benchmark is a floating local currency interest rate, whereas funds raised internationally are typically at fixed U.S. dollar rate, interest-rate swaps have become central to the ability of local entities to manage the risks associated with foreign borrowing.

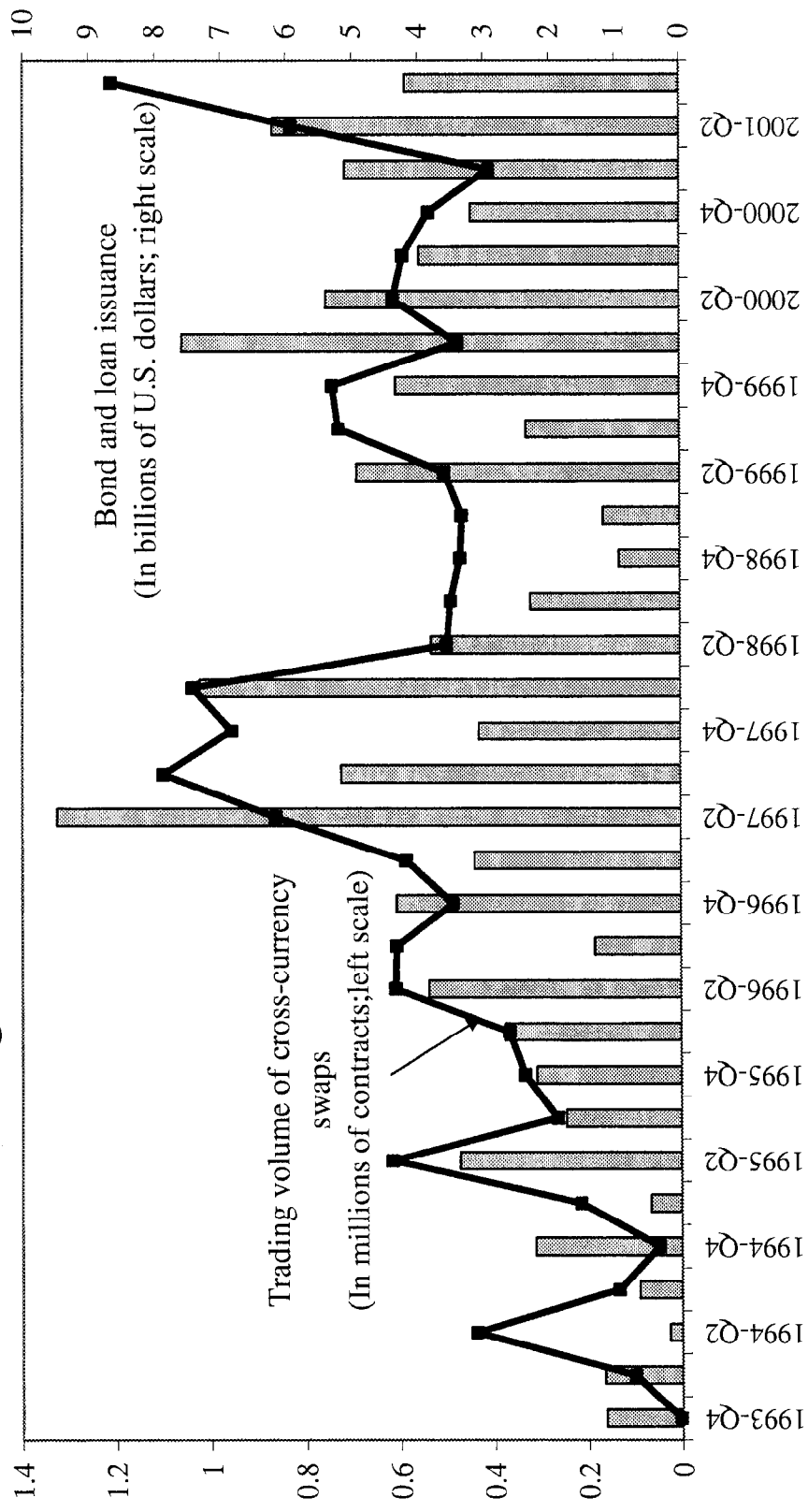
Finally, credit derivatives is another class of instruments that can potentially increase net flows into emerging markets. An attractive feature of credit derivatives is that they allow investors/lenders to manage the default/bankruptcy risks without having to buy or sell the underlying securities. For example, a foreign bank can reduce its credit exposure to a particular client without physically removing assets from its balance sheet and thus, effectively separate relationship management from risk management. Some market analysts argue that if international banks could use onshore credit derivatives in emerging markets, they would be more willing to maintain or increase their exposure to local corporate clients.

### **Local Participation**

Local entities with foreign exchange exposures are among the most active participants in the local derivatives markets. The relative importance of derivatives for local entities' fundraising in international markets varies across emerging economies, depending on their net external borrowing needs as well as on the relative maturity of the local derivatives markets. In Emerging Europe and Asia, the link between fundraising in international markets and derivatives activity is not as strong as in Latin America. Following the Asian crisis, many countries in emerging Asia shifted toward relying more on local currency financing. In addition, many of these countries are running significant current account surpluses, and thus do not have positive net external financing requirements. In emerging Europe, local entities have gained access to the international capital markets only a few years ago and are still facing regulatory restrictions on the use of derivatives.

By contrast, in Brazil, the link between fundraising in international markets and derivatives activity has been particularly strong (see Figure 4.3). Virtually all local

**Figure 4.3. Brazil: International Bond and Loan Issuance and Derivatives Trading Volume**



Sources: Bloomberg L.P.; and FOW TRADEdata.

companies that have access to international financial markets raise U.S. dollar-denominated funds and then turn to the local derivatives market to swap the external financing obligations into *reais* with an interest rate indexed to the overnight (CDI) rate. Historically, the cost of U.S. dollar hedges in Brazil was fairly high due to the shortage of hedge provision, as most domestic institutional investors did not have foreign currency positions (in sharp contrast to the Chilean pension funds) and many exporters with U.S. dollar receivables nonetheless typically had overall net short U.S. dollar positions. As a result, Brazilian corporates tended to invest part of their cash reserves in U.S. dollar-denominated securities in order to provide at least partial protection against an adverse exchange rate move. In 1999, the Brazilian Central Bank (BCB) stepped in as the main provider of the currency hedge to the market through the issuance of U.S. dollar linked securities. Furthermore, in March 2002, the BCB decided to split the exchange rate linked instruments into *real*-denominated bonds and foreign-exchange swaps in order to lower its debt rollover costs and also to reduce the cost of currency hedging for local entities.<sup>9</sup>

Local market participants can also play a key role in the development of local credit derivatives market, which can facilitate a more accurate pricing of corporate credit risk and help attract capital flows going forward. Many analysts believe that since local players are more familiar with local credit risk and less concerned about market liquidity than foreign investors, they are natural sellers of credit protection on emerging market corporate risk. On the other hand, local financial institutions that have exposure to local corporate credit risk (in the form of bonds, loans, receivables) are in a good position to structure products that match local investors' preferences for credit risk exposure. Currently, the market for corporate credit risk protection remains very illiquid in most emerging economies, mainly due to the lack of a well developed local corporate bond market. However, local institutional investors, particularly pension funds and insurance companies in Latin America, have become more active users of credit derivatives over the past year. In emerging Asia, banks and insurance companies were also reported to have been actively buying CDSs and CLNs to boost yields in a low interest rate environment.

### **Foreign Participation**

Foreign investors in emerging markets generally include banks, corporates, "real money" accounts (both dedicated and cross-over investment funds), and speculative money accounts (hedge funds and proprietary trading desks of investment and commercial banks). Compared to local entities, foreign investors' participation in the local derivatives exchanges

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<sup>9</sup> This move was intended to result in a more efficient pricing of both instruments and a reduction of the transaction costs for end users of these instruments, with mutual funds being the main users of the *real*-denominated bonds, and with local corporates being the main users of currency hedges. Before March 2002, Brazilian corporates had to pay a premium to the financial intermediaries for transferring the U.S. dollar hedge component of the U.S. dollar-linked bond to them through currency swap arrangements.

is fairly limited. Mexico, Hungary, Poland, and the Czech Republic have recently seen a considerable demand by international investors for long-term interest rate and local currency exposures that has been driven in part by the so-called “convergence trades,” with exposures established both in cash and derivatives markets.<sup>10</sup> As far as the OTC markets are concerned, the extent of foreign investor participation (both as final users of the derivative products as well as intermediaries) varies. In some countries, such as Singapore, Hong Kong SAR, and South Africa, foreign dealers account for the bulk of the turnover in the OTC markets, while in other countries, most of the trading goes through domestic dealers.

Both anecdotal evidence and industry surveys suggest that “real money” funds hedge relatively little of their risk exposures in emerging markets, either because of internal restrictions on leveraged positions or because these risk exposures are desirable. A survey of derivatives usage by U.S. institutional investors conducted by the NYU Stern School of Business in 1998 (*Risk*, 1999) showed that only 46 percent of respondents were permitted to use derivatives by their investment mandate, and only 27 percent of respondents had open derivatives positions at the time of the survey. Because many emerging market countries maintain various restrictions on foreign participation in local derivatives markets, one would expect that the percentage of the dedicated emerging market funds using local derivatives to hedge various risk exposures is even lower. Separately, our analysis of foreign institutional investors’ purchases of stocks in Brazil, Korea, Taiwan Province of China, and South Africa and the trading volumes in these countries’ currency and equity derivatives markets suggests that there is no statistically significant relationship between foreign purchases of cash instruments and the level of activity in local derivatives markets.<sup>11</sup> It should be noted, however, that in some emerging markets, local equities are a “natural hedge” against the foreign exchange risk (for example, in South Africa, the share prices of companies with significant dollar receivables are often referred to as “rand hedges”). Also, in some emerging markets, foreign investors prefer to hedge their local bond market exposure via the repo market rather than by using currency derivatives.

In contrast with the “real money” accounts, speculative investors can use derivatives freely either for hedging risks associated with their cash market positions or for gaining leveraged returns or for exploiting relative value opportunities between the cash and derivatives markets. However, according to the Credit Suisse First Boston/Tremont, the leading provider of the hedge fund indices, emerging market hedge funds often employ a

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<sup>10</sup> The term “convergence trade” refers to a bet that local inflation rate (and thus long-term interest rates) in an emerging market will converge to a particular developed market rate (in the United States or in the EU) within a certain period of time or as economic integration progresses.

<sup>11</sup> This exercise uses monthly time series of foreign purchases of local shares (from Bloomberg) and trading volumes in local equity and foreign exchange derivatives markets (from the FOW TRADEdata).



long-only strategy because “many emerging markets do not allow short selling, nor offer viable futures or other derivative products with which to hedge.”<sup>12</sup>

Both leveraged investors and dedicated emerging market debt funds are active participants in the credit-derivatives markets for emerging market U.S. dollar-denominated bonds. The main protection sellers in credit derivatives markets are the major internationally active banks. Hedge funds have been the most active users of emerging market credit derivatives over the past year, mainly focusing on trading the basis between default swaps and bonds amid increased volatility in emerging debt markets.<sup>13</sup> The “convertible arbitrage” funds have also been among the active buyers of credit protection, using the CDSs to strip the credit component from the equity option of convertible bonds. The main features of credit derivatives that make them particularly attractive for hedge funds are: (1) they provide an efficient way to short a credit with a relatively low risk of a short squeeze, and (2) they are better instruments for structuring any relative value trading strategies than cash bonds because they allow better alignment between maturities of different credit exposures. However, for “real money” accounts, CLNs represent a more viable investment alternative than CDSs, since these funds are typically allowed to invest only in cash instruments.<sup>14</sup> Since the ability of foreign investors to manage the emerging market corporate default risk remains limited (due to the relatively underdeveloped state of the corporate credit default market), many emerging market borrowers are forced to issue bonds with various credit enhancements, particularly when the perceived credit risk rises.<sup>15</sup>

### **The Role of Derivatives in Emerging Market Crises**

While derivatives can play a positive role by reallocating risks and facilitating growth of capital flows to emerging markets, they can also allow market participants to take on excessive leverage, avoid prudential regulations, and manipulate accounting rules when financial supervision and internal risk management systems are inadequate. In this case, the use (or rather mis-use) of derivatives can lead to a buildup of hidden financial system

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<sup>12</sup> See the notes on the index methodology on <http://www.tremont.com>.

<sup>13</sup> “Basis” is the difference between bond spread (over LIBOR) and the CDS premium for the same credit/same maturity.

<sup>14</sup> An important feature of CLNs is that they can be issued in Euroclearable form and listed on international exchanges. In contrast to CDSs, which do not pay the protection buyer until a credit event occurs, the credit-linked notes allow the protection buyer to receive cash payment at the time of the issuance of the notes, and thus eliminate the counterparty credit risk inherent in the CDSs.

<sup>15</sup> See Chapter V, “Alternative Financial Instruments and Access to Capital Markets,” *Global Financial Stability Report*, March 2002.

fragilities that are generally unobservable to regulators. Therefore, a negative exogenous shock to the financial system can potentially lead to an unpredictable and rapid unwinding of derivatives positions, which can in turn accelerate capital outflows and deepen the crisis.

This section will discuss the role of derivatives in several emerging market crises focusing mainly on two issues: (1) the types of financial derivatives used by market participants before the onset of a crisis and how the use of these instruments affected the stability of the domestic financial system, and (2) the impact of the unwinding of derivatives positions on the crisis dynamics. While the Mexican and Asian crises highlighted the role of structured notes and swaps in magnifying balance sheet mismatches and the associated volatility in foreign exchange markets, the Russian and Argentine crises demonstrated the importance of counterparty risk and spillovers through credit markets. It should be noted that the analysis of the role of derivatives in emerging market crisis is seriously hampered by data availability, since the OTC derivatives transactions are not reported systematically. Thus, in many cases, anecdotal evidence and reported (ex post) losses on derivatives positions by major investment banks of the developed countries are the main sources of information.

### **The Mexican Crisis, 1994**

In the early 1990s, the recently privatized Mexican banks engaged in an aggressive building up of their on- and off-balance sheet positions, which led to an increase of their credit and market risk exposures well beyond prudential limits. In particular, they used various derivatives in order to achieve leveraged returns. One of the popular instruments that allowed local banks to leverage their holdings of the exchange rate linked treasury bills (the Tesobonos) was a tesobono swap (Garber (1998)). In a tesobono swap, a Mexican bank received the tesobono yield and paid U.S. dollar LIBOR plus X basis points to an offshore counterparty, which in turn hedged its swap position by purchasing tesobonos in the spot market. The only transactions that were recorded in the balance of payments were: (1) an outflow of bank deposits related to the payment of collateral by the Mexican bank, and (2) a U.S. dollar inflow related to the purchase of tesobonos by the foreign investor. Thus, traditional balance of payments accounting provided a misguided representation of capital flows and associated risks, i.e., although it appeared that the foreign investor had a long position in government bonds, it was in fact the local bank that bore the tesobono risk, while the foreign investor was effectively providing a short-term dollar loan. Tesobono swaps were not the only instruments that allowed local banks to establish leveraged positions financed by short-term U.S. dollar loans from their offshore counterparties; other instruments included various structured notes and equity swaps.<sup>16</sup>

At the onset of the crisis, the tesobono yields jumped from 8 percent to 24 percent and the U.S. dollar value of the collateral fell, triggering margin calls on Mexican banks. Quoting market sources, Garber (1998) suggested that the total of margin calls on tesobono

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<sup>16</sup> Equity swaps are a subset of the total return swaps that are discussed below.

and total return swaps was about \$4 billion (compared to \$6.1 billion in foreign exchange reserves of the Banco de Mexico as of end 1994). The continued pressure on the exchange rate forced the authorities to float the peso on December 21, 1994.

### **The Asian Crises, 1997–98**

As in the Mexican crisis, unhedged currency and interest rate exposures were key determinants of the severity and scope of the Asian crises (see International Capital Markets Report (1998)). Banks and nonfinancial corporations in Asia left their exposures unhedged because (1) domestic interest rates were higher than foreign interest rates, (2) the pegged exchange rates were generally perceived as stable, and (3) domestic hedging products were underdeveloped, while offshore hedges were expensive. Because of these factors, foreign banks were eager to lend to East Asian banks that tried to capture carry profits on the interest rate differentials. However, local prudential regulations, such as restrictions on the net open foreign exchange exposures and risk-to-capital ratios, limited the amount of profitable arbitrage trade. Therefore, Asian financial institutions turned to derivatives “to avoid prudential regulations by taking their carry positions off balance sheet” (Dodd (2001), p. 10).

According to market sources, the majority of losses reported by both U.S. and European banks on their Asian lending were listed as due to swaps contracts, with the latter presumably including both total return swaps and currency swaps (Kreger (1998)). In a total return swap, one counterparty pays the other the cash flows (both capital appreciation and interest payments computed on a mark-to-market basis ) generated by some underlying asset (equity, bond, or loan) in exchange for dollar LIBOR plus X basis points. Thus, the flows between Asian financial institutions and foreign counterparties were similar to those in the tesobono swap described above. As in the case of tesobono swaps, offshore counterparties were buying the underlying assets to hedge their swaps positions, while local banks were left with short U.S. dollar positions. When the exchange rate peg collapsed and domestic interest rates rose, both counterparties had incentives to either unwind the swaps or hedge their foreign exchange exposures, which exacerbated the sell-off in Asian assets and currencies.<sup>17</sup>

### **Russia’s Default and Devaluation, 1998**

Although the poor state of Russia’s fiscal accounts was well-known by mid-1998, the announcement of a 90-day moratorium on external debt payments on August 17, 1998 caught most market participants by surprise. At the time of the default, the estimates of the

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<sup>17</sup> Other structured instruments were also used in the run-up to the Asian crisis. For example, one of the well-known instruments was called a PERL—principal exchange rate linked note. A PERL was a dollar-denominated instrument that generated cash flows linked to a long position in an emerging market currency. If the exchange rate remained stable, the return on the PERL was significantly higher than the return on the similarly rated dollar paper, but in the event of major depreciation, the return could become negative (Dodd, 2001).

outstanding notionals of the U.S. dollar-ruble NDF contracts ranged from \$10 billion to \$100 billion and the total foreign exposure to the domestic bond market (GKO/OFZs) was around \$20 billion. According to market sources, the U.S. dollar-ruble foreign exchange forwards with Russian firms as counterparties were the largest source of credit losses by major swap dealers during 1997–98, exceeding the losses made on their Asian lending. The events in Russia highlighted the presence of convertibility risk even when local currency positions in emerging markets were hedged, and raised the issue of the NDF valuation when an official rate was not available. In addition, Russia's default caused shock-waves through the credit-derivatives markets, with the cost of protection increasing in all sectors, including the investment grade segment. Ambiguous and often misleading definitions of reference obligations, credit events and settlement mechanics made it very difficult for protection buyers to enforce the contracts. According to dealers, many CDS contracts were initially triggered under "failure to pay" clauses, but the attempts to enforce the contracts under such clauses were often frustrated by other credit events that appeared more significant and therefore, had to carry more weight under contractual law. In order to address the legal issues highlighted during the Russian crisis, the International Swaps and Derivatives Association (ISDA) issued new credit derivative documentation guidelines in 1999.<sup>18</sup>

### **Argentina's Default and Devaluation, 2001**

In contrast with the Russian crisis, the Argentine default and devaluation in December 2001 were widely anticipated and occurred at a time when the credit derivatives market was relatively more mature. The protracted recession and gradual deterioration of the sovereign's credit quality gave market participants sufficient time to exit the bond and credit protection markets and also allowed the main sellers of credit protection on Argentine sovereign bonds (broker-dealers) to hedge their books in the repo market. According to market sources, liquidity in Argentine CDS market dried up in August-September 2001, following a bout of volatility in July. The announcement of the moratorium on all debt payments on December 23, 2001 was unanimously accepted as "repudiation/moratorium" credit event consistent with the ISDA definitions. There were, reportedly, some disputes as to which bonds could be considered as "deliverable," but they have been resolved fairly quickly. According to market sources, 95 percent of all CDSs were settled by mid-February 2002 and there were no reported failures to deliver, with the total sum of contingent payments from the protection sellers to the protection buyers estimated at \$7 billion (Ranciere (2002)).

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<sup>18</sup> The most recent (1999) ISDA guidelines include the following types of credit events: "failure to pay," "obligation acceleration," "obligation default," "repudiation/moratorium," and "restructuring."

## **Concluding Remarks**

Local derivatives markets in emerging economies have grown rapidly over the past few years, especially in countries that have removed capital controls and have developed their underlying securities markets. The existence of derivative products has supported capital inflows, but it has also exacerbated crises dynamics in several recent episodes. The policy implications of the trends described in this chapter will be discussed in the next Global Financial Stability Report, in a broader context of the development of local securities markets, and the role of these markets in providing an alternative source of funding, a vehicle for managing risks and for attracting foreign investors.

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