

The global economy and international financial markets have been performing strongly in recent years, thanks in large part to low interest rates in mature markets. As a result, corporations and financial institutions in many mature and emerging market (EM) countries have been quite profitable. Their balance sheets have been significantly strengthened, with many accumulating substantial liquid assets. Many EM countries have prudently used the recent period of strong global growth and supportive financing conditions to improve their fiscal accounts, accumulate reserves, and strengthen public debt structures.

Improved fundamentals of many corporate and EM sovereign borrowers have helped them weather well the recent market volatility. During May and June, international financial markets corrected from valuations that had arguably become stretched in some instances, as investors scaled back their exposures to high-yielding assets. Subsequently, markets have recovered much of their earlier losses, making the correction fairly modest. The correction mainly reflected an increase in investors' risk aversion in the face of monetary tightening around the world.

The baseline global economic outlook, as presented in the September 2006 *World Economic Outlook*, is for a continuation of favorable developments, in both growth and inflation. Under this scenario, corporate earnings growth would remain healthy and default rates low, and EM sovereign finances, if coupled with appropriate policies, should continue to improve—thus continuing to support international financial markets.

However, as outlined in the *World Economic Outlook*, there are risks to the global economic outlook that have tilted to the downside. They include an intensification of inflation pressures,

requiring more monetary tightening than currently expected; further increases in oil prices because of ongoing geopolitical uncertainties; and a more rapid cooling-off in the U.S. housing market, leading to a pronounced slowdown of the U.S. economy. The potential for a disorderly unwinding of global imbalances remains a concern.

Under these risk scenarios, international financial markets could undergo more severe corrections, especially because markets appear to be pricing in the baseline growth scenario with little provision for risk. Indeed, term structure and credit risk premiums have been at record lows. Financial volatilities have also remained low from a historical perspective, even though volatility increased somewhat in May–June. In addition, markets are concerned about the possibility of illiquid market conditions for some of the new and complex financial instruments, such as structured credit products. While these instruments have helped to distribute credit risk more broadly, these market features could act to amplify a market downturn. Moreover, some EM countries with large current account deficits that are heavily reliant on international portfolio capital flows would be vulnerable to volatile market conditions.

The recent market turbulence is a timely reminder for authorities to strengthen macroeconomic policies and persevere with needed structural reforms, in order to reduce the downside risks to the baseline growth scenario, and for market participants to heighten risk management efforts. Financial supervisors need to continue to improve market infrastructure so as to limit the scope for amplifying market volatility. With less accommodative external financial conditions, EM countries that still rely heavily on external financing need to continue to reduce vulnerabilities and pursue reforms that will help sustain their current growth performance.

Global Financial Markets Remain Strong; Downside Risks Increase

International Financial Markets Have Performed Strongly

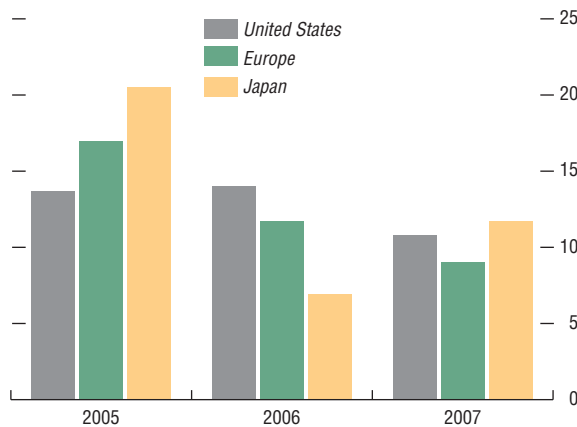
As documented in recent issues of the *Global Financial Stability Report* (GFSR), global financial markets have performed strongly in recent years, exhibiting resilience through several market corrections, with exceptionally low market volatility. Even throughout the recent market correction, global growth remained strong and continued to become more balanced, providing a broad underpinning for financial markets.¹

Corporate fundamentals are also still solid. Most companies are still expecting respectable growth in earnings over the next year or so, even after very strong growth in recent years (Figure 1.1). Moreover, from a historical perspective, equity valuations are not stretched in most equity markets (Figure 1.2); the recent widening of corporate bond and credit default swap (CDS) spreads across mature markets (MMs) was gradual and mild, and spreads remain near historic lows (Figure 1.3).

Major financial institutions in mature and emerging markets are also healthy, having remained profitable and well capitalized.² Also, global default rates remain near record low levels. These facts suggest that the financial sectors in many countries are in a strong position to cope with any cyclical challenges and further market corrections to come.

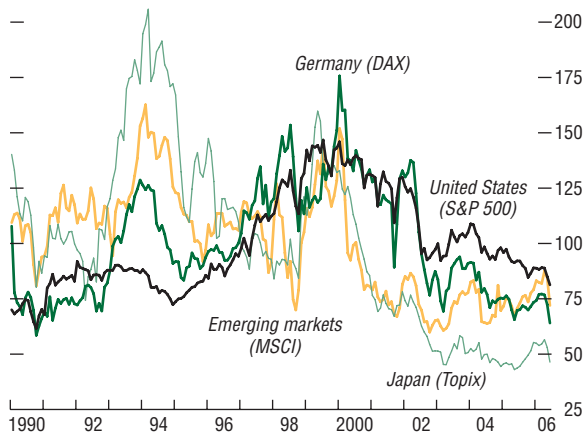
Finally, the housing markets in key countries are showing signs of only gradual slowing. While house price growth in some of the markets that had seen the largest increases over recent years—Australia, the United Kingdom, and the United States—has declined, house price deceleration has been limited and, hence,

Figure 1.1. Corporate Earnings Growth
(Percent change year-on-year)



Sources: Nomura; Standard & Poor's; and Thomson Financial.
Note: Data for 2006 and 2007 are forecasts. Japanese data correspond to fiscal years.

Figure 1.2. Global Equity Markets: Price/Earnings Ratio Indices
(3-month moving average)



Sources: Thomson Financial I/B/E/S; and IMF staff estimates.
Note: Indices represent 12-month forward earnings estimates rebased relative to period average (January 1990–June 2006) = 100.

¹See discussion in Chapter I of the September 2006 *World Economic Outlook* (IMF, 2006c).

²See Annex 1.2 on financial systems in mature and emerging markets.

the negative growth impact of this development has been moderate so far.³

Recent Financial Market Corrections Have Been Fairly Modest

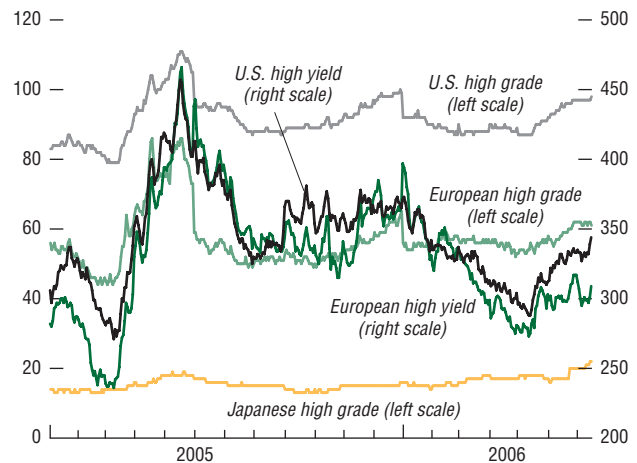
As the global economy expanded, accompanied by rising oil and commodity prices, inflation pressures increased, leading in turn to greater uncertainty about the extent of monetary tightening needed to keep inflation under control in major countries (Figure 1.4). This raised investors' aversion to risk, leading to a correction in prices of risky assets and a rise in underlying volatility beginning in May 2006.

Rising interest rates altered incentives for investors, as they changed the perceptions of the balance of risks and rewards (Figure 1.5). Low rates had encouraged a wide array of risky investment strategies as low funding costs reduced the opportunity cost of capital for leveraged investors. As rates rose in the United States, Europe, and, more recently, Japan,⁴ the appeal of carry trade strategies declined, sparking an unwinding of positions in the more popular high-yield markets, including initially in Iceland and New Zealand, and later in emerging markets. The prospect of further tightening, particularly in the United States, caused many investors to consider downside risks to their global growth projections on the basis that the recoveries in Europe and Japan, and ongoing growth in emerging markets, would be difficult to sustain in the face of a steeper-than-expected slowdown in the United States. Oil price volatility and geopolitical developments further accentuated downside risks. In

³In the September 2006 *World Economic Outlook's* baseline U.S. growth forecast, the assumed slowing house price growth is estimated to imply a drag on domestic demand of approximately one-half percentage point in each of 2006 and 2007, though if existing home price growth were to fall to zero, this could subtract an additional one percentage point from GDP growth relative to the baseline. See also Bank of England (2006, Chapter 1) for additional discussion.

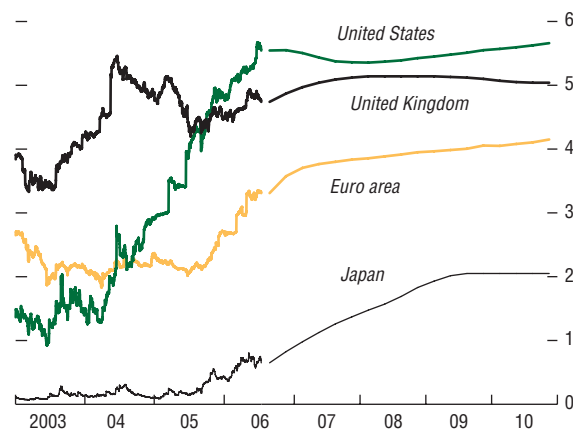
⁴See Box 1.1 (p. 17) on evidence and implications of the yen carry trade.

Figure 1.3. Corporate Bond Spreads
(In basis points)



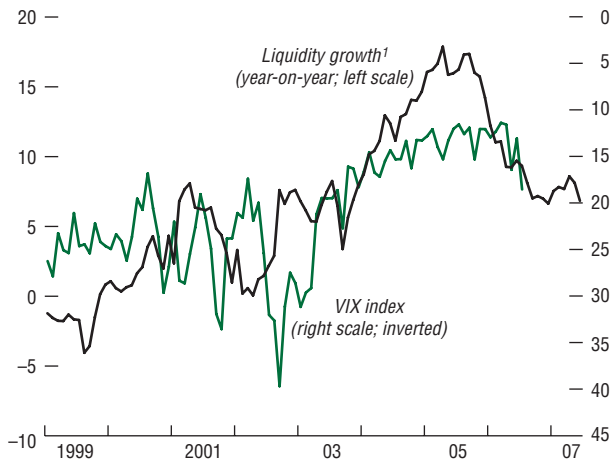
Sources: Bloomberg L.P.; and Merrill Lynch.

Figure 1.4. Term Structure of Interest Rate Expectations
(In percent; 3-month LIBOR futures yields as of July 14, 2006)



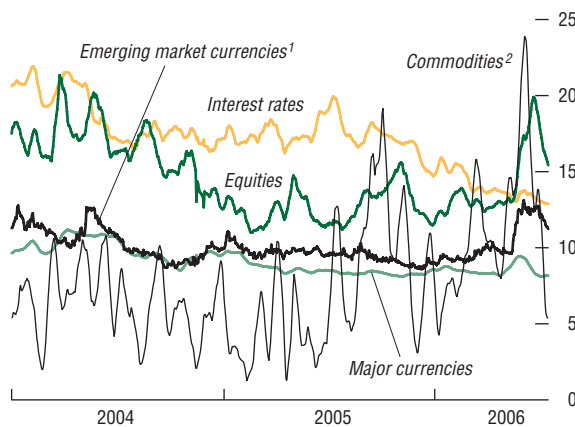
Source: Bloomberg L.P.

Figure 1.5. Liquidity Measure and Market Volatility
(In percent)



Sources: Bloomberg L.P.; and IMF staff estimates.
¹Includes the U.S. monetary base and foreign official holdings at the Federal Reserve Bank of New York, leading 12 months.

Figure 1.6. Implied Volatilities
(In percent)



Sources: Bloomberg L.P.; Commodity Research Bureau (CRB); and IMF staff estimates.
¹Simple average of currencies of Brazil, Hungary, Mexico, Philippines, South Africa, and Thailand.
²10-day moving average of 10-day historical volatilities of CRB index.

line with tighter global liquidity and increased risk perception, underlying volatility, as derived from options prices, increased in some asset classes, especially commodities and equities (Figure 1.6). Renewed attention to the specter of global imbalances raised global currency market concerns.

Equity markets were among the most sensitive to these changing perceptions, prompting a wave of selling of global equities, albeit from multiyear highs (Figure 1.7). In the first half of this decade, investors viewed rising yields as driven by strong noninflationary growth a favorable outcome for equities. Recently, however, equity price declines often coincided with declines in U.S. treasury prices, with the correlation between the two prices turning positive after several years of being negative (Figure 1.8).

Risks to Baseline Global Economic Outlook Could Spill Over to Financial Markets

The baseline scenario outlined in the September 2006 *World Economic Outlook* assumes that inflation pressures will be successfully contained with modest interest rate increases by G-3 central banks, that the composition of demand in the advanced economies will become more balanced, and that emerging market and developing countries will largely avoid capacity bottlenecks. Moreover, recent corrections have reduced risks to financial markets as excessive valuations in some sectors have been reduced. This baseline scenario would support international financial markets.

However, there are risks to the baseline economic outlook, and the balance of risks is now slanted to the downside, according to the *World Economic Outlook*. A key risk is a greater probability that global growth may falter, whether because of tighter monetary policy in response to inflationary risks, geopolitical turmoil, or a greater-than-expected cooling of the U.S. housing market. In addition, a disorderly adjustment of global imbalances still presents a risk. How have these risks been reflected in

financial markets? Some key questions in this regard, most of which were highlighted in the April 2006 GFSR (see IMF, 2006a), are assessed below.

Did the Recent Market Corrections Signal the Beginning of a Protracted Downturn in the Global Economy and Financial Markets?

What did the rise in market volatility signal? The recent turbulence is probably not a harbinger of a protracted downturn, but is more likely a normalization of volatility as this cycle moves into its later stages (Figure 1.9).⁵ Consensus estimates for global growth also appear to reflect this, as they were little affected by the rise in volatility. Moreover, a wide range of leading indicators in mature markets has remained stable, or even improved (Figure 1.10). In fact, as Figure 1.6 showed, the spike in volatility was relatively short lived, and markets returned close to pre-correction levels by early July.

Nonetheless, were market corrections to persist, or even intensify (for example, because of heightened geopolitical tension), business confidence and consumer sentiment could be undermined, leading to a reduction in investment and consumption. In addition, higher interest rates and a faster deceleration of house price growth still have the potential to increase the financial burden of highly indebted households in many countries—leading to a more pronounced slowdown in personal consumption.⁶

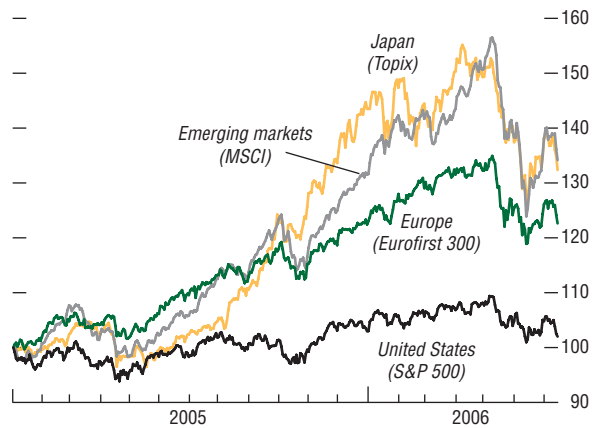
Have Downside Risks from Interest Rates and Risk Premiums Increased?

Sustained high rates of global growth have absorbed spare capacity, raising inflation pressures. Indeed, there has been a moderate rise in headline and core inflation in the United States and Europe, to above the authorities’

⁵See Box 1.2 (p. 28), which explores the relationship between equity market volatility and the business cycle.

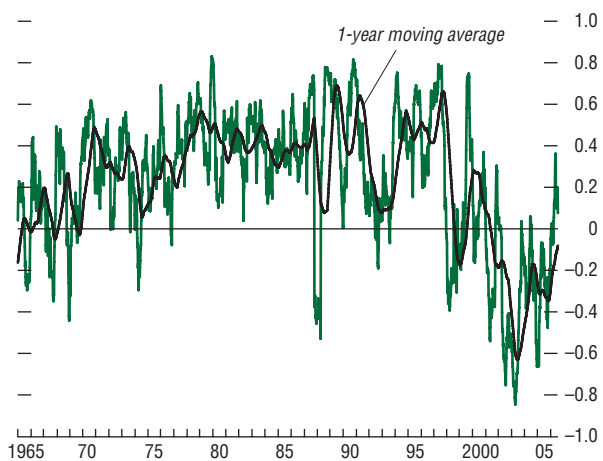
⁶See Chapter I of the September 2006 *World Economic Outlook* (IMF, 2006c) for a discussion on housing sector developments and Chapter II of this GFSR for a discussion on household debt in many emerging market countries.

Figure 1.7. Equity Market Performance
(December 31, 2004 = 100)



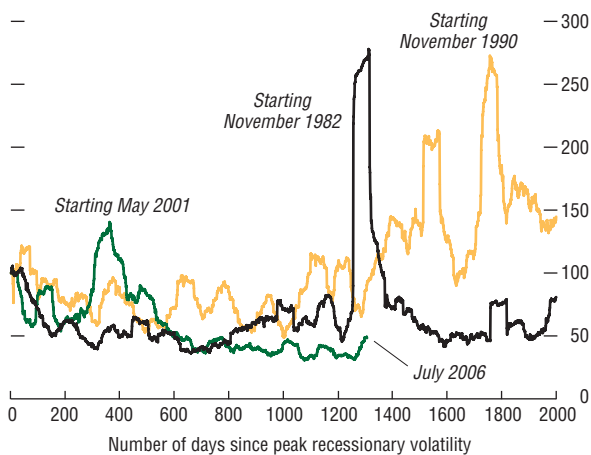
Sources: Bloomberg L.P.; and Morgan Stanley Capital International.

Figure 1.8. Price Correlations Between Treasuries and S&P 500
(26-week rolling correlations)



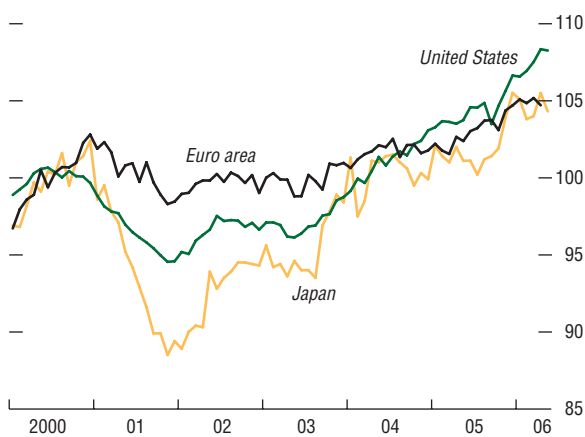
Sources: Bloomberg L.P.; Merrill Lynch; and IMF staff estimates.

Figure 1.9. Volatility and the Business Cycle
(Index = 100 at inception of each business cycle)



Sources: Bloomberg L.P.; and IMF staff estimates.
Note: Volatility series calculated by taking annualized standard deviations of daily price movements of the S&P 500 in 60-day windows, and rebasing to 100 at inception of business cycle.

Figure 1.10. Leading Economic Indicator Indices



Source: OECD.

comfort zones. Shocks to inflation could also come from the supply side. Oil prices remain volatile, reflecting concerns about geopolitical uncertainties, among other things. Market participants have also focused on high and volatile commodity prices because they have, in the past, signaled concerns about inflation—Annex 1.3 examines the influx of financial investment flows into commodity markets that may have contributed to this volatility.⁷ Should inflation pressures intensify, the higher policy interest rates needed to counter them would increase downside risks for global economic activity.

Indeed, over the past few years, financial markets have priced in almost no premium in longer-term interest rates for upside surprises in inflation or inflation volatility (Figure 1.11). Market-derived expectations of inflation rose at the beginning of the year, but have mostly remained within a narrow range over recent years (Figure 1.12). While there has also been some pickup in long-run inflation expectations in the United States,⁸ term premiums for risks of more volatile inflation have not increased (Figure 1.13). However, should these gains erode and risk premiums for unexpected inflation increase, asset markets could come under pressure with potentially negative consequences for the real economy.

Supply shocks and/or an increase in geopolitical tensions could lead to a renewed retrenchment in risk appetite, which would likely increase volatility, force risk premiums higher, and erode business and consumer confidence, thereby testing the resilience of the global financial system. In particular, corporate and sovereign credit spreads still appear largely to be pricing in the benign baseline scenario for growth and inflation and hence could widen more substantially, because these credit spreads have been correlated with volatility in recent years (Figure 1.14).

⁷See also Chapter IV of the September 2006 *World Economic Outlook* (IMF, 2006c).

⁸As signaled by the rise in the inflation rate expected in five years (the five-year, Treasury Inflation-Protected Securities (TIPS) breakeven rate five years forward).

Furthermore, a repricing of credit risk could potentially be amplified by illiquid market conditions for many structured credit products that have become popular in recent years.⁹

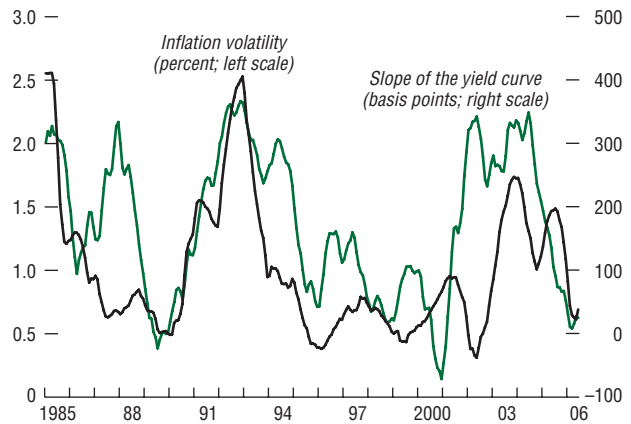
In addition, because risk management has widely used value-at-risk (VAR) approaches that rely on recent volatilities, an increase in volatility could boost VAR measures and trigger a reduction in trading positions, thus amplifying price corrections. In this context, evolving risk management practices by entities such as banks' trading desks and hedge funds should be closely monitored. Indeed, hedge funds appear to have played an important role in the May sell-off and the repricing of risk in many EMs, highlighting the importance for credit institutions of managing counterparty risk vis-à-vis hedge funds. For example, in Asia, hedge funds have been trading large positions in equity markets throughout the region, including Japan, in both individual equities and equity derivatives. Given the high correlation of hedge fund positions to the underlying markets, these hedge funds suffered noticeable losses during the recent correction (Figure 1.15).

Have the Risks of a Disorderly Dollar Adjustment Increased?

Following the release of the G-7 and the International Monetary and Financial Committee (IMFC) communiqués in mid-April, the U.S. dollar, on a trade-weighted basis, resumed the trend depreciation that had been interrupted in 2005 and early 2006, as market participants refocused on current account imbalances. The bulk of the dollar's adjustment has occurred against the major currencies, falling nearly 7 percent against this basket. In contrast, EM currencies have appreciated by less, in part owing to the bout of volatility and risk retrenchment from emerging markets. Looking ahead, one-year option markets have become more skewed toward further dollar depreciation (Figure 1.16).

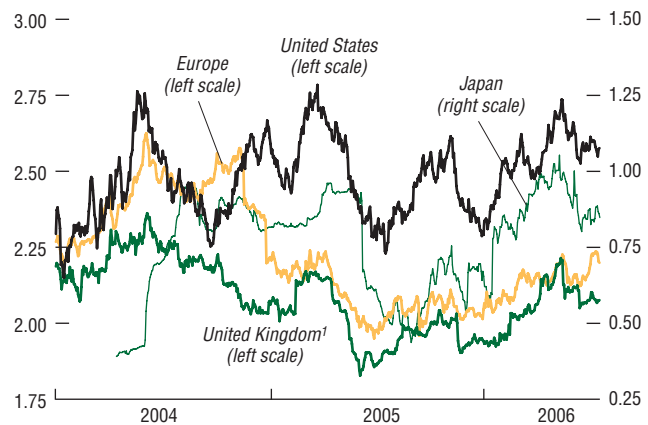
⁹See Chapter II of the April 2006 GFSR (IMF, 2006b) for a detailed discussion on this topic.

Figure 1.11. Inflation Volatility of the United States and the Slope of the Yield Curve
(3-month moving averages)



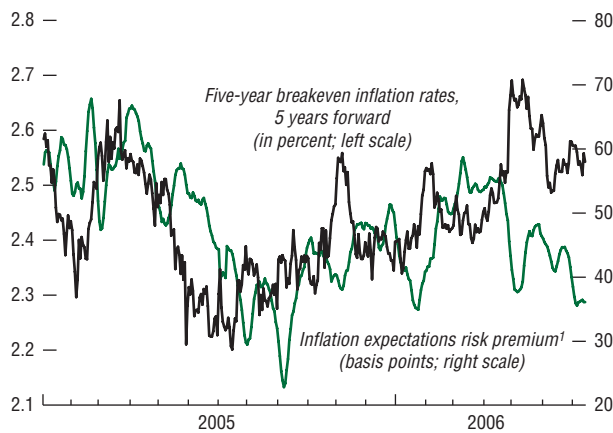
Sources: Bloomberg L.P.; and IMF staff estimates.
Note: Inflation volatility is defined as the annualized 24-month rolling standard deviations of year-on-year core CPI growth, while the slope of the yield curve is the yield spread between 10-year treasury notes and 3-month treasury bills.

Figure 1.12. Breakeven Long-Term Inflation Rates
(In percent; nominal yields less inflation-indexed yields on 10-year benchmarks)



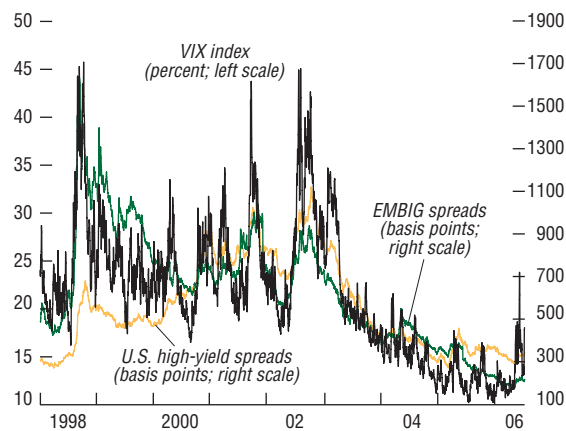
Sources: Bloomberg L.P.; and IMF staff estimates.
¹Adjusted using a Bank of England estimate for the methodological differences between retail price index (RPI) and consumer price index (CPI) inflation.

Figure 1.13. United States: Market-Derived Inflation Expectations



Sources: Bloomberg L.P.; and IMF staff estimates.
 ¹Defined as the 10-day moving average of the spread between 5-year breakeven inflation rates, 5 years forward and 10-year breakeven inflation rates, 10 years forward.

Figure 1.14. Bond Spreads and Implied Equity Volatility



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

In the longer term, market consensus opinion, as of end-June, suggested that dollar adjustment will be limited and orderly, but with a marked differentiation of performance by region (Figure 1.17). The dollar’s real effective exchange rate is expected to remain relatively stable across all major trading partners, but Asian currencies are expected to appreciate over the medium term while non-Asian currencies are expected to weaken.¹⁰ However, a gradual and orderly adjustment would very likely depend on a credible policy framework for resolution of global imbalances over the medium term. Accordingly, the risk of a disorderly dollar adjustment could well increase without policies being put into place to foster the needed adjustments in saving and investment imbalances.

The gradual adjustment of global imbalances—or, conversely, the risk of a disorderly adjustment—will also depend on the pattern of global capital flows and the investment behavior of foreign official and private holders of U.S. assets. Since 1999, EM and developing countries have run a substantial current account surplus and have attracted large and growing foreign capital inflows—most important, foreign direct investment (FDI). As a group, they have become the main counterpart of the U.S. current account deficit and are accumulating assets in an amount that was estimated to exceed \$1 trillion in 2005 (Table 1.1), with oil exporters accounting for nearly half of that amount. This has resulted in a substantial accumulation of foreign assets in the form of reserves held by central banks, other official entities’ holdings, and foreign

¹⁰The calculation used consensus forecasts for exchange rates. Inflation forecasts were a combination of market forecasts, where available, and staff forecasts otherwise. The calculation used the weights from the IMF’s Information Notice System, and was constructed using the currencies of the 16 largest countries by weight. The Asian currencies included in the calculation were the Japanese yen, Chinese renminbi, Korean won, New Taiwan dollar, Singapore dollar, and Malaysian ringgit.

assets held by the private sector of surplus countries.

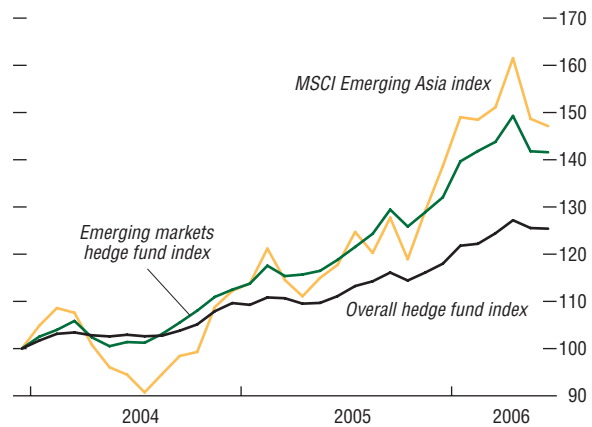
Several factors are therefore critical to global financial stability and the orderly process of intermediating global capital flows, including (1) the ability of the United States and its financial markets to continue to attract foreign investment capital, (2) policies that affect the path of further net accumulation of foreign assets by EMs, and (3) the capacity of financial markets to keep any adjustment in the U.S.dollar from becoming disorderly.

Annex 1.4 provides some evidence that persistently large U.S. current account deficits may partly result from the attractive microeconomic features that make U.S. financial markets unique in attracting a large share of global savings. The comparative advantage of U.S. financial markets is in creating financial investment opportunities that, coupled with deep, liquid, and transparent markets, can attract and sustain high levels of capital inflows. This could continue to support the base case scenario of a gradual adjustment of global imbalances.

Apart from exchange rate policies, emerging market countries can pursue capital, regulatory, and investment policies that aim to limit official foreign asset accumulation and reduce the potential costs and financial risks. Annex 1.5 highlights developments in Asia and finds that the acceleration of private outflows from the region through capital account liberalization, as well as the trend for diversification of official investments, can enhance overall financial stability and support sustainable global capital flows.

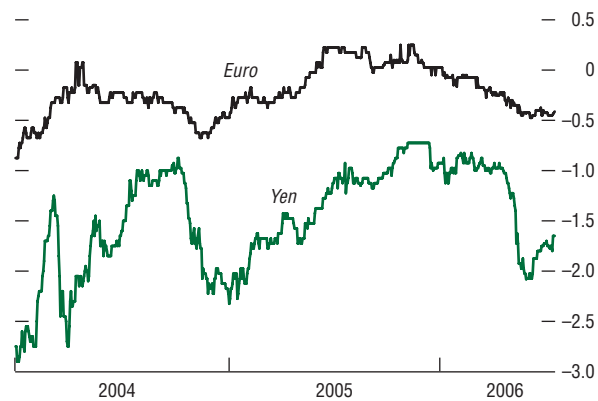
Although the baseline market view is that dollar adjustment will remain orderly, with sizable holdings of U.S. assets held abroad, the potential for a disorderly adjustment may also depend on the risks to, and the behavior of, foreign asset holders. Annex 1.6 analyzes the foreign holdings of U.S. securities, their composition, and their exposure to market volatility. In this respect, foreign holdings of U.S. assets continue to grow, from \$1.2 trillion as recently as 1994 to \$5.4 trillion in June 2004

Figure 1.15. Hedge Fund Performance and Emerging Asian Equities
(December 31, 2003 = 100)



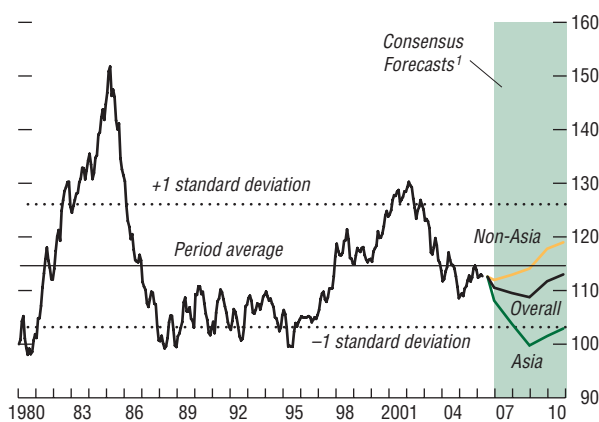
Sources: Bloomberg L.P.; Morgan Stanley Capital International; CSFB/Tremont; and IMF staff estimates.

Figure 1.16. U.S. Dollar Currency Options: Risk Reversals
(In percent; 25-delta 1-year)



Source: Bloomberg L.P.
Note: Negative figures suggest expectations of dollar depreciation.

Figure 1.17. United States: Real Effective Exchange Rate
(January 1980 = 100)



Sources: Consensus Economics; IMF, *Information Notice System* and *World Economic Outlook*; JPMorgan Chase & Co.; and IMF staff estimates.
¹Forecasts as of July 2006.

and, in the most recently available data, to \$6.3 trillion in June 2005.¹¹

Avian Flu Remains a Risk

Risks of an avian flu pandemic remain. If the current strain of avian flu were to mutate, there could be a sharp decline in economic activity. The extent of the decline and the prospects for a rapid recovery would depend on the characteristics of the new virus, as well as on the degree of preparedness in both the public and the private sectors. A pandemic would also pose important risks for the global financial system. As regards financial markets, some reduction in risk appetite is highly likely, leading to a greater demand for liquidity and for low-risk assets. While the “flight to quality” ought to be temporary, asset price declines could put the balance sheets of some financial institutions under stress and they may face challenges in meeting regulatory norms. There could be a period in which net capital flows to emerging markets decline, perhaps substantially for countries with relatively weak fundamentals. Operational risks could arise from the possibility that high absenteeism could disrupt critical functions and services of the financial system, including payments, clearing and settlement, and trading. Such disruptions could also spill over into other jurisdictions.¹²

Preparation in the form of business continuity plans—updated to include the effects of high absenteeism and possible economic and infrastructure disruptions—can go a long way to minimize the potential for such costly disruptions. The IMF is encouraging countries to prepare for a possible pandemic and is facilitating cooperation across countries in preparing contingency plans, particularly in the financial sector. For example, the IMF has been organizing regional seminars that bring

¹¹U.S. Department of the Treasury, Federal Reserve Bank of New York, and Board of Governors of the Federal Reserve System (2006).

¹²For a more in-depth discussion on these issues, see IMF (2006b).

Table 1.1. Emerging Markets and Developing Countries: Current Account Balance and External Financing
(In billions of U.S. dollars)

	1998	2000	2004	2005	2006	2007
Current account balance	-113.4	79.6	211.9	424.7	586.7	638.9
External financing	265.9	231.6	449.2	566.0	584.0	631.0
Of which:						
Foreign direct investment and portfolio equity inflows	179.3	179.5	269.3	359.1	353.4	351.8
Borrowing from private creditors	37.5	44.8	173.3	253.1	229.7	240.8
Asset accumulation	152.5	311.2	661.1	990.7	1,170.7	1,269.9
Reserve assets	-4.3	88.2	432.6	537.1	599.0	696.5
Private sector and nonreserve official sectors	156.8	223.0	228.5	453.6	571.7	573.4

Source: IMF, *World Economic Outlook*, September 2006.

Note: Data for 2006 and 2007 are forecast.

together central banks and supervisory authorities, health experts, and business continuity planners from private financial institutions to share their knowledge on key issues related to avian flu pandemic preparedness. To date, almost 140 representatives from 109 countries have participated in these seminars. In addition, the IMF has worked with the Bank for International Settlements' Financial Stability Forum and Joint Forum to broadly disseminate information on "good international practices" on the design and testing of business continuity plans.

Market Corrections Highlight Pressure Points in Emerging Markets

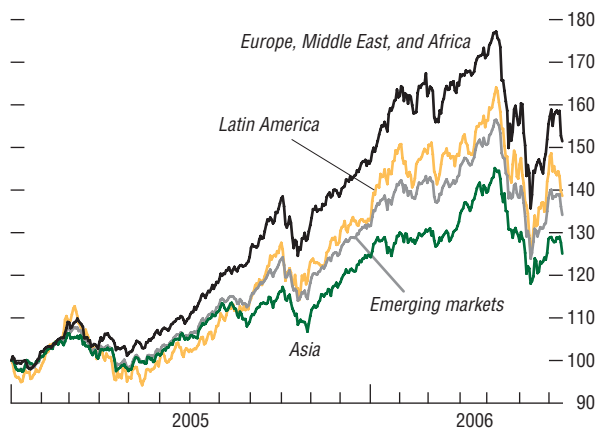
The recent corrections should be seen in the context of the very benign conditions for EMs that have prevailed in recent years. As shown in Annex 1.1, private capital flows to EMs, including foreign direct investment, remained strong in the first half of 2006, despite the market turbulence of the second quarter. Moreover, the baseline scenario for continued strong global growth suggests capital flows to EM countries should continue to be supported in the period ahead. At the same time, the composition of capital flows has shifted somewhat. Owing to credit booms and related increases in current account deficits in a number of countries, especially in eastern Europe, debt flows to private sector borrowers have increased while debt flows to public sector borrowers have fallen.

As a result, public-sector-related vulnerability indicators have generally improved in most EM countries, even as private-sector-related vulnerabilities have, in some cases, increased.

Turning to the May–June correction, it initially featured a broad-based sell-off that began in equity markets, reflecting the general retraction from risk rather than a reassessment of EM fundamentals (Figure 1.18). Equity markets that had seen the largest run-up in prices since 2005, generally the biggest and most liquid markets, experienced some of the deepest declines, including in Argentina, Colombia, Hungary, India, Peru, Poland, Russia, and Turkey (Figure 1.19).

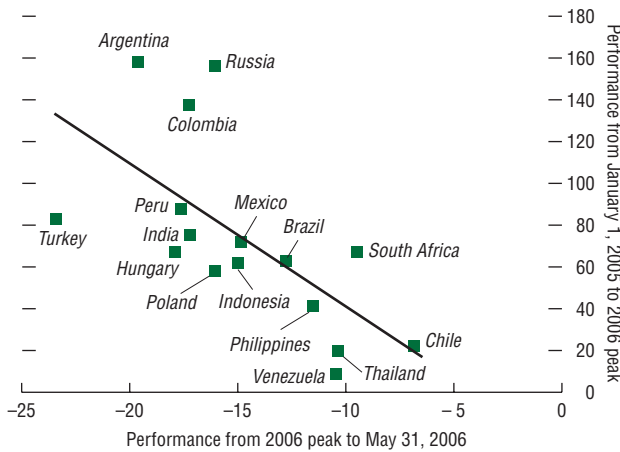
The broad nature of the correction was reflected in the increase in correlations between price movements in different EM asset classes during May (Figure 1.20). The correction in equities went hand in hand with a correction in foreign exchange markets as more speculative investors, particularly hedge funds, rapidly unwound leveraged carry trades in the higher-yielding emerging market currencies (e.g., Brazil, Indonesia, and Turkey). Most of these currencies had also seen significant nominal and real appreciation during 2005 and early 2006. Local debt prices also became more correlated with foreign exchange rates, reflecting an unwinding of some of the large positions foreign investors had built up in local market debt over the previous two years (Figure 1.21), and the use of currency positions to hedge investments in local debt.

Figure 1.18. Emerging Market Equity Performance
(December 31, 2004 = 100; local currency performance)



Sources: Bloomberg L.P.; and Morgan Stanley Capital International.

Figure 1.19. Relative Emerging Market Equity Performance
(In percent)



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

In a second phase of the correction, in June, investors began to discriminate among emerging markets, suggesting where pressure points might lie in a more sustained retrenchment from risk. Countries perceived as more vulnerable to an external shock and/or with weaker policy frameworks experienced continued pressures in this second phase. In currency markets, for instance, June brought further depreciation in Hungary’s forint, South Africa’s rand, and Turkey’s lira, but recovery in Brazil’s real. Similarly, CDS spreads widened in June for Hungary, South Africa, and Turkey, but remained relatively stable for Brazil and Indonesia (Figure 1.22). More specifically, countries where markets continued to weaken and that would likely be most vulnerable to a continued retrenchment from risk displayed one or both of the following characteristics:

- *Large balance of payments financing needs (as signaled by current account deficits) combined with an excessive reliance on portfolio inflows.* Hungary, South Africa, and especially Turkey experienced further pressures on exchange rates (Figure 1.23). Each of these countries had domestic-consumption-led growth financed by sizable external portfolio flows, particularly into equity markets. With current account deficits concentrated in emerging Europe, currencies in the emerging Europe index depreciated more than currencies from other EM regions (Figure 1.24). In addition, the vulnerability to large current account deficits was magnified in countries with a high dependence on commodity exports and exposure to global growth. In such countries, equity markets reacted to the fall in commodity prices.
- *Questions of policy credibility.* In Turkey, concerns about the monetary policy framework had already been raised by the slow pace of disinflation and more recent inflation surprises.¹³ Markets only stabilized after two

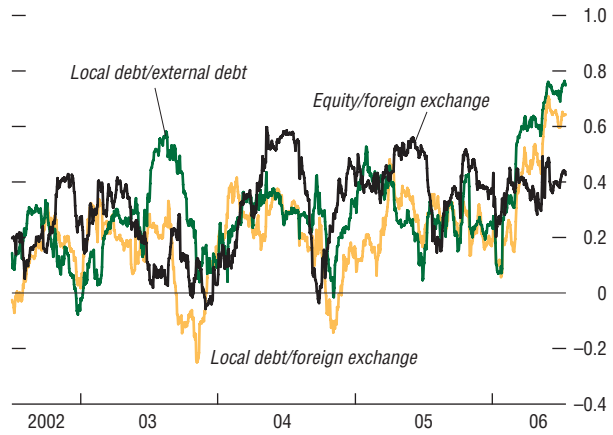
¹³Developments in Turkey were also influenced by the tense domestic political situation and uncertainties on the path to EU accession.

emergency meetings of the central bank's monetary policy committee brought more decisive action, including by raising policy rates by a total of 400 basis points, widening the spread between the central bank's lending and borrowing rates, and introducing deposit auctions to mop up excess lira liquidity. In Hungary, the credibility of the recently announced fiscal consolidation package was questioned in view of past slippages. In other EMs, however, macroeconomic policy frameworks were seen as better established. For example, Brazil and Indonesia were able to continue monetary policy easing in the context of stabilizing conditions.

In contrast with previous EM corrections, a salient feature of this correction was the relatively muted reaction of the external sovereign bond market. This is consonant with the improvement in sovereign vulnerability indicators, and suggests that risks to EMs from sovereign debt default continue to be perceived as low. External debt spreads moved by about half as much during the recent correction as they had in the previous large correction in 2004, which was also motivated by a reassessment of expectations for the path of global interest rates. The model of EM spreads presented in the April 2006 GFSR suggests that the rise in spreads can be largely explained by the changed external environment, proxied by U.S. monetary policy variables and risk aversion measures (Figure 1.25). As well, market participants point to technical supply and demand factors, including continued demand for external debt and scarcity of supply following sizable debt buybacks and substantial prefinancing by many EM sovereigns (see Annex 1.1).

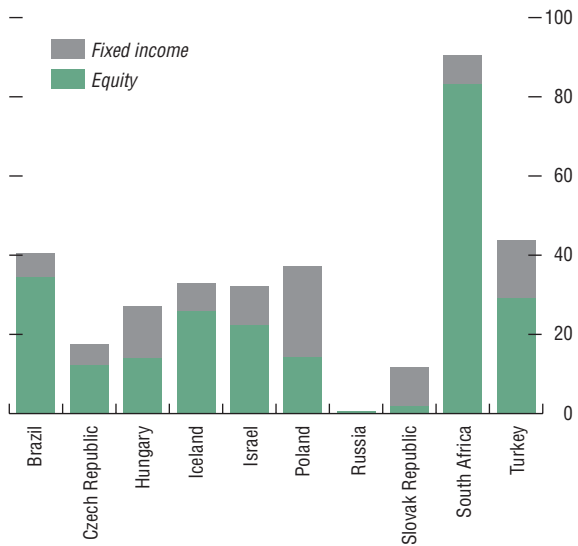
In bringing some underlying vulnerabilities to the fore, the correction highlighted policy challenges for several emerging markets. In Turkey, in particular, and South Africa, to a lesser extent, exchange rate depreciation has increased expectations for inflation, requiring prompt action by the authorities to raise interest rates substantially and resulting in a slower expected growth path. In addition, as discussed

Figure 1.20. Emerging Market Asset Class Correlations
(60-day rolling window)



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

Figure 1.21. Crowded Trades in Local Markets
(In number of days)

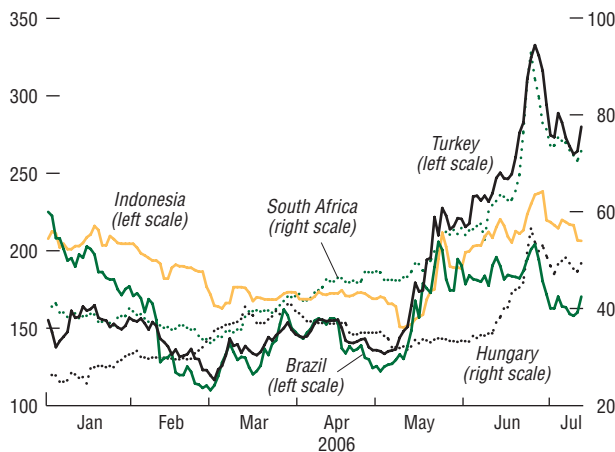


Sources: Deutsche Bank; Securities and Exchange Commission of Brazil; and IMF staff estimates.

Note: The chart shows the stock of foreign equity and local bond positions divided by the average daily spot foreign exchange turnover as of end-April, to give an indicator of how many days it might take for foreign investors to fully unwind their local positions.

Figure 1.22. Emerging Market Credit Default Swap Spreads

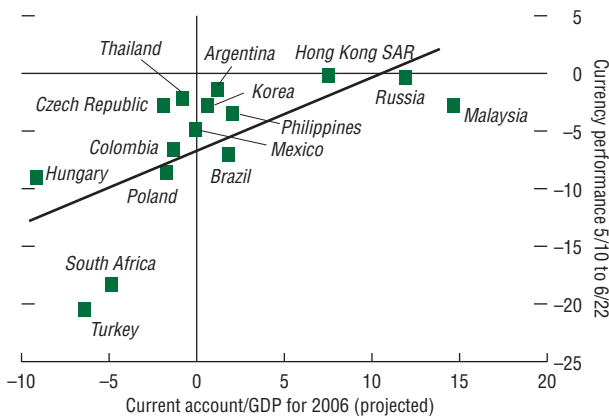
(In basis points for 5-year instruments)



Source: Bloomberg L.P.

Figure 1.23. Current Account and Currency Performance Versus the U.S. Dollar

(In percent)



Sources: Bloomberg L.P.; IMF, *World Economic Outlook* database; and IMF staff estimates.

below and in detail in Chapter II, further exchange rate depreciations could present problems for financial systems in certain countries with currency mismatches in the context of large private sector debt inflows.

Looking Forward: Managing External Challenges

The correction raises the question: How resilient are emerging markets to future financial volatility? One lesson is that policy efforts across EMs have brought greater overall resilience against external shocks. Over time, country policy efforts have resulted in a migration of many EM sovereigns toward the safer end of the risk spectrum as measured by a variety of risk indicators. In turn, this appears likely to be an important contributory factor to the more muted reaction of external sovereign bond spreads to external shocks in recent corrections.

Against the background of improved sovereign creditworthiness, which types of borrowers remain most vulnerable? The recent corrections were especially concentrated in portfolio equity flows, but these remain quantitatively relatively small. In fact, concerns are increasingly focused on the extent of private sector debt inflows, mostly in the form of bank flows, and in particular to private borrowers in central and south-eastern Europe.¹⁴ Historically, net debt flows to the private sector have been much more volatile than other types of flows, and subject to sudden stops. There have been three periods when private debt flows surged rapidly: the late 1970s to early 1980s; the mid-1990s; and, more recently, since about 2003 (Figure 1.26). The first two episodes corresponded to region-specific boom-bust credit cycles, culminating in the Latin American debt crisis of 1982 and the Asian financial crisis of 1997. In both cases, net debt flows to the private sector turned negative in the crisis and remained so for several years, imposing severe contractions on the affected

¹⁴See Box 1.1 in the September 2006 *World Economic Outlook* for further discussion.

economies. The more recent surge reflects, to a large degree, lending by banks in advanced economies to central and southeastern Europe and Central Asia,¹⁵ and, to a lesser extent, a revival of private debt flows to East Asia, notably China. In emerging Europe and Central Asia as a whole (including Russia and Turkey), private sector debt has replaced foreign direct investment as the primary source of external financing.

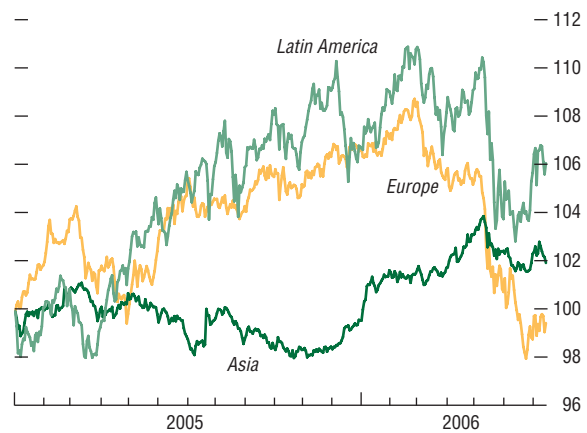
Historical experience suggests a clear possibility that recent heavy debt flows to emerging Europe and East Asia could prove unsustainable—even though there are some grounds to believe that this surge may be less risky than previous episodes. For example, in China and Russia, the two countries that have received the largest private debt inflows in recent years, risks are mitigated by large net foreign assets of the public sector, reflecting high reserve cushions and relatively low external debt levels.¹⁶ In some countries in central and southeastern Europe, where private sector exposure is not balanced by a strong public sector position, the fact that bank lending flows are largely intermediated through generally well-supervised and largely foreign-owned banks should, in principle, help mitigate the adverse consequences of poor investment projects. Another factor is that, in some countries, progress toward joining the European Union and the prospect of the Economic and Monetary Union membership may have boosted investor confidence sufficiently to render a reversal in capital flows less likely.

These factors notwithstanding, the risks associated with the recent surge in private debt flows should not be discounted: current account

¹⁵In 2005, \$46 billion of all net private debt flows to emerging Europe and Central Asia were medium- and long-term bank loans, \$32 billion were short-term debt flows, and \$19 billion were bond financing.

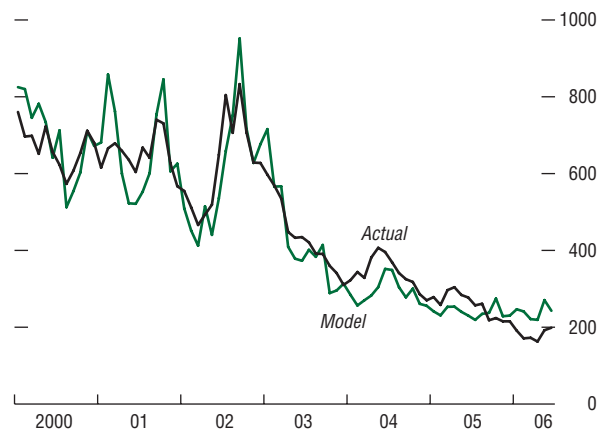
¹⁶In both China and Russia, the net foreign asset position of the economy as a whole is positive (see Lane and Milesi-Ferretti, 2006). This distinguishes them from most other recipient countries of large private debt inflows in recent years.

Figure 1.24. Emerging Market Currency Performance Versus the U.S. Dollar
(December 31, 2004 = 100)



Source: JPMorgan Chase & Co.

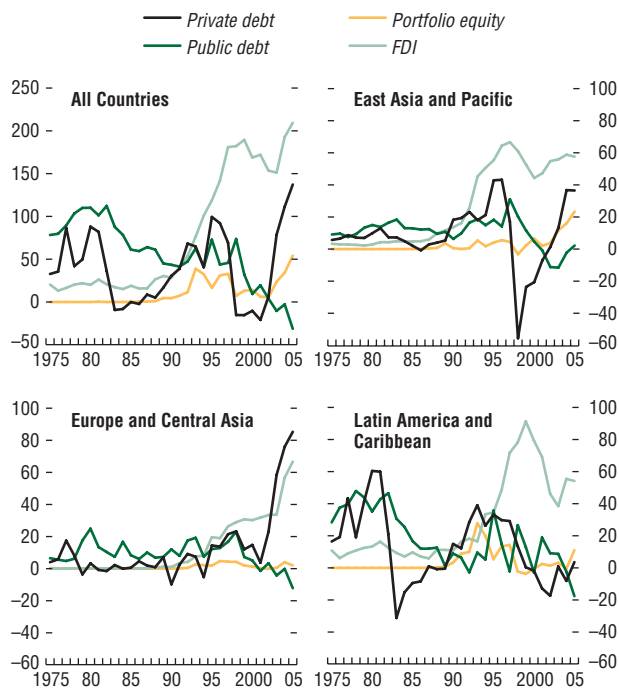
Figure 1.25. Adjusted EMBIG Spreads¹
(In basis points)



Sources: Bloomberg L.P.; JPMorgan Chase & Co.; The PRS Group; and IMF staff estimates.

¹Argentina was excluded because of breaks in the data series. Indonesia and several smaller countries were also excluded because of short data series. The analysis thus includes 32 countries.

Figure 1.26. Net Financing Flows to Middle- and Low-Income Countries
(In billions of real U.S. dollars; base year = 2000)



Sources: World Bank, *Global Development Finance* database; and IMF staff estimates.

deficits are large in the Baltics, Bulgaria, Hungary, Kazakhstan, Romania, the Slovak Republic, and Turkey; fiscal deficits are high in some other countries such as Hungary; and the ratio of private sector credit to GDP has risen particularly strongly in the Baltics, Bulgaria, and Slovenia. With some currencies pegged to the euro, adjustments to any slowdown in inflows may be made more difficult. While the benign baseline global growth scenario would likely mean that any such slowdown in private debt inflows would be moderate, the historical experience noted above suggests that it could be quite dramatic. The risk of a sudden stop would be heightened by the emergence of some of the downside risks to the baseline scenario, especially sharper-than-expected increases in interest rates that could inflate debt-servicing ratios and lead to debt rollover difficulties. In such a case, EM countries with large current account deficits would likely face a sharper adjustment path than currently envisaged.

Challenges for Policymakers

Policymakers in both mature and emerging markets face renewed challenges in ensuring balanced global growth and financial stability against the backdrop of heightened uncertainty and greater downside risks to the global economic outlook.

- Country authorities need to work cooperatively so that policies can mutually reinforce an orderly adjustment of global imbalances and avoid disruptive market conditions. Concretely, countries should show more ambitious commitments to increased exchange rate flexibility in emerging Asia, fiscal consolidation in the United States, greater progress on structural reforms in Europe and Japan, and a steady buildup in absorption by oil-exporting countries, particularly in the Middle East (while being careful to avoid overheating).
- In emerging markets, the acceleration of private capital outflows through appropriately phased capital account liberalization, as well as

Box 1.1. The Yen Carry Trade

A major subject of conjecture among global investors has been the idea that a “yen carry trade” supported some global asset prices during the period of declining risk premiums in 2005 and early 2006.¹ Proponents of the idea noted that not only were short-term interest rates in Japan near zero, but also that the Bank of Japan, under its quantitative easing policy, had provided the banking system with ample reserves. While the extra reserves themselves simply sat on bank balance sheets with no apparent effect on yen lending, there is evidence of interest rate carry trades between Japan and external markets, some of which may have been closed out after the announcement of the end of the quantitative easing policy in March 2006.

The evidence that Japanese *domestic* investors conducted a form of the carry trade by seeking higher returns overseas is quite strong. Domestic institutions, such as life insurers, effectively engaged in the carry trade by purchasing foreign bonds to support yen-denominated liabilities, often on an unhedged basis. Net purchases of foreign bonds by life insurers totaled 848 billion yen (\$7.4 billion) in 2005. Individual investors—particularly wealthier retired households—shifted a share of wealth away from bank deposits or other low-yielding yen investments, toward foreign bonds or investment trusts explicitly tied to foreign bonds (see the first figure). At its peak in late 2005, the money flowing into foreign bond funds exceeded 5 trillion yen over the trailing 12-month period, equivalent to about 1 percent of GDP.

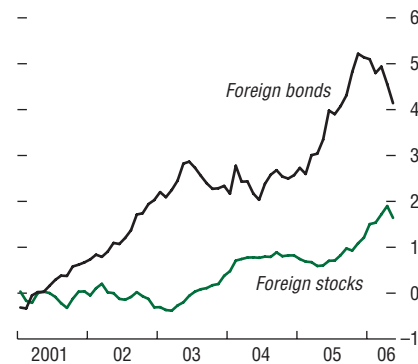
There are also some indications that *foreign* investors borrowed yen to fund positions in higher-yielding currencies, but this evidence is more mixed and the magnitude of this form of the carry trade is less certain. Data from the Bank for International Settlements show that Japanese banks increased their net outward

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

¹A carry trade is generally defined as a trade in which the investor borrows at a low interest rate and invests at a higher one, normally with some type of currency or basis risk.

Increase in Japanese Holdings of Foreign Assets Through Investment Trusts

(In trillions of yen; trailing 12 months)



Source: Japan Investment Trusts Association.

yen-denominated lending from \$19 billion in 2004 to \$87 billion in 2005. Japanese financial institutions probably also provided yen funding through derivatives transactions with offshore counterparties, and Japanese banks have “increased investing in alternative financial products, such as structured bonds, securitized products, hedge funds,” according to the Bank of Japan.² Balance of payments data seem to imply that such flows were significant from late 2005 into 2006, as indicated by the outward shift in net banking and derivatives investment flows (see the second figure). Positioning on yen futures contracts also points to the existence of an offshore yen carry trade. Data from the Chicago Mercantile Exchange show noncommercial traders (predominantly financial players) moving from net long to net short yen positions in early 2005, and staying net short until the end of April 2006 (see the third figure).³

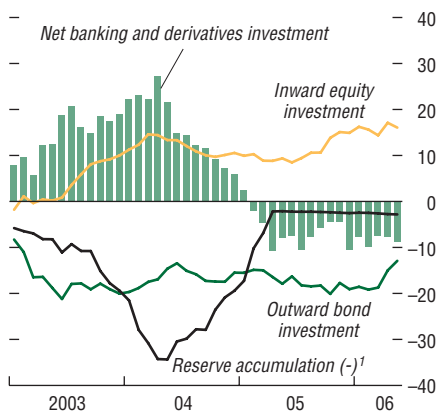
²Bank of Japan (2006, p. 29).

³While such futures positions technically involve no yen borrowing, the currency exposure implied by a short yen futures position is similar to the exposure an investor would have borrowing in yen and investing in dollar securities over a fixed term.

Box 1.1 (concluded)

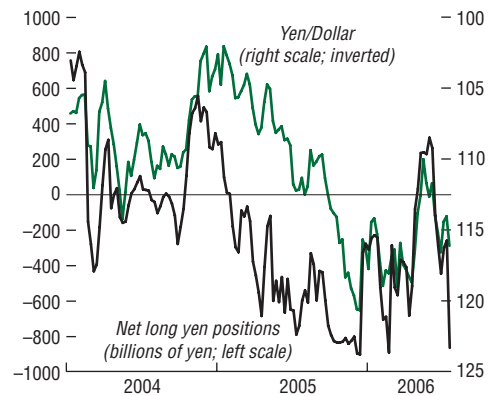
Major Components of Japanese Financial Account

(In trillions of yen; trailing 12 months)



Source: Bank of Japan.
¹Includes interest earnings.

Yen Positions of Noncommercial Traders at the Chicago Mercantile Exchange



Sources: Bloomberg L.P.; and Commodities Futures Trading Commission.

One piece of evidence that does *not* appear to support the idea that the yen carry trade contributed significantly to global liquidity is that the yen did not strengthen against the dollar when emerging markets sold off in May and June, as would have been expected if those positions had been funded with yen borrowing. However, the yen had appreciated prior to the sell-off, in the wake of the Bank of Japan's decision on March 9 of this year to end quantitative easing. In addition, while fixed-income investors may have treated Japan as a source of funding before the market correction, equity investors from Europe and North America in particular tended to regard Japanese equities as relatively risky. Accordingly, there were substantial outflows from the market in May and June, partially counteracting any upward

pressure on the currency from the closing of yen-funded positions. Market participants also note that the yen carry trade was largely into mature fixed-income markets, including corporate credit markets, which were generally unaffected by the risk retrenchment.

On balance, the evidence suggests that cross-border investments based on yen funding have taken several forms. However, by most indications, the scale of the trade and subsequent unwinding has been moderate, particularly by the standards of October 1998, when the yen ended a three-year decline by appreciating more than 16 percent against the dollar in one week. To the extent that the trade has unwound, or is being unwound, the process appears to be occurring in an orderly fashion, without inordinate risk to financial stability.

the trend for diversification of official investments, can enhance overall financial stability and support sustainable global capital flows.

- As the linchpin for global stability, central bankers will need to ensure clear communi-

cation of their policy intentions, given the potential for spillovers through financial markets. Central banks need to continue to communicate effectively to financial markets their assessment of inflation risks and the

implications for monetary policy. Some EM authorities may need to continue to respond proactively in the face of higher inflation risks.

- Supervisors and important financial institutions need to intensify their efforts to monitor and manage risk, especially counterparty risk vis-à-vis important entities such as hedge funds. Efforts to improve operational and infrastructure gaps, having made some progress, need to proceed quickly to help ensure orderly market conditions, even while asset price corrections may occur.
- Recent financial market turbulence has raised concerns about how far the underlying vulnerabilities of EM economies have been reduced. EM countries with macroeconomic imbalances that rely heavily on external financing face a narrower margin for policy slippage. Prudent macroeconomic policies will be necessary to retain the ability of fiscal and monetary policy to react to external sector developments. In addition, prudential policies, especially strengthened oversight of risk management systems at financial institutions, will help safeguard financial systems from external shocks.
- Active debt management policies that have reduced vulnerabilities of debt structures have paid handsome dividends in stabilizing external debt markets. Such policies should continue as part of an overall plan to develop and strengthen local capital markets and deepen the institutional investor base. In particular, the recent correction in local market instruments highlights the need to ensure that sovereign debt management policies are consistent with the capacity of local markets to absorb foreign investor inflows, and the need to strengthen the local investor base and market liquidity.

Annex 1.1. Emerging Market Financing Flows

Private capital flows to emerging markets remained strong in the first half of 2006,

despite market turbulence in the second quarter (Table 1.2). Primary issuance in *external* markets (bonds, loans, and equity) remained high in the first half, although short of record-high levels seen in the second half of 2005. Primary issuance in external markets was supported by strong issuance of loans and equity. However, bond issuance declined amid market turbulence in the second quarter, particularly for sovereign issuers, although many had already largely prefinanced their external financing needs for the year. Foreign investor flows into *local* secondary bond and equity markets remained firm in the first half, helped by a diversified investor base, as steady institutional investor flows helped offset a pullback by more mercurial investors in the second quarter. This annex reviews recent developments in primary issuance in external markets, foreign investor flows into local markets, and the growth of “South-South” FDI.

Primary Issuance in External Markets

Primary issuance in external markets remained high in the first half of 2006. Gross issuance of bonds, loans, and equities was \$196.5 billion in the first half of 2006, up 6.5 percent over the same period a year earlier (Figure 1.27), but down 13.3 percent from the record high seen in the second half of 2005.¹⁷ Compared with the year before, new issuance of equities in the first half of 2006 grew the most in relative terms (83.3 percent), starting from a lower base and reflecting foreign investors’ rising comfort with this asset class (Figure 1.28). At the same time, gross loan issuance climbed 25.9 percent in the first half of 2006, reflecting increased activity by commercial banks in EMs in search of higher returns amid strong competition in mature markets. By contrast, gross bond issuance fell 25.6 percent in the first half

¹⁷Net issuance data show similar broad patterns, as the path of bond and loan amortization is relatively stable over time, usually around the \$50–\$60 billion range per semester.

Table 1.2. Emerging Market External Financing

	2000	2001	2002	2003	2004	2005	2005				2006					Year-to-date ¹	
							Q1	Q2	Q3	Q4	Q1	Q2	April	May	June		July
<i>(In billions of U.S. dollars)</i>																	
Gross issuance by asset	216.4	162.1	135.6	199.7	286.2	411.2	94.1	90.4	109.3	117.3	98.6	103.7	39.7	45.3	18.7	27.1	229.4
Bonds	80.5	89.0	61.6	99.8	134.9	187.0	61.4	39.3	42.7	43.7	48.7	26.2	13.8	9.6	2.8	0.0	74.9
Equities	41.8	11.2	16.4	27.7	45.1	78.1	10.5	17.4	22.9	27.3	22.4	29.3	7.5	16.4	5.4	11.0	62.8
Loans	94.2	61.9	57.6	72.2	106.2	146.0	22.3	33.8	43.7	46.3	27.4	48.2	18.4	19.3	10.5	16.1	91.7
Gross issuance by region	216.4	162.1	135.6	199.7	286.2	411.2	94.1	39.7	109.3	117.3	98.6	103.7	39.7	45.3	18.7	27.1	229.4
Asia	85.9	67.5	53.9	88.8	123.0	150.0	26.6	33.5	40.8	49.2	37.5	41.3	11.7	22.0	7.6	7.8	86.5
Latin America	69.1	53.9	33.4	43.3	54.3	87.9	34.3	14.0	23.2	16.4	15.7	11.3	5.6	2.3	3.5	0.1	27.1
Europe, Middle East, Africa	61.4	40.8	48.3	67.7	108.9	173.3	33.3	43.0	45.3	51.7	45.4	51.0	22.4	21.0	7.6	19.2	115.7
Amortization by asset	113.9	147.0	128.4	119.5	128.1	107.8	21.6	9.1	32.6	27.5	22.2	28.4	9.1	6.7	12.5	11.7	62.3
Bonds	51.8	59.0	58.9	57.1	69.6	65.2	13.3	14.5	21.6	15.8	13.4	17.7	6.7	4.9	6.1	6.1	37.1
Equities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Loans	62.1	88.0	69.5	62.4	58.5	42.6	8.3	11.6	11.0	11.7	8.8	10.7	2.4	1.9	6.4	5.6	25.1
Amortization by region	113.9	147.0	128.4	119.5	128.1	107.8	21.6	9.1	32.6	27.5	22.2	28.4	9.1	6.7	12.5	11.7	62.3
Asia	56.6	66.0	55.6	45.5	49.8	38.6	8.0	5.9	11.4	13.4	10.7	11.2	3.3	3.8	4.1	4.5	26.4
Latin America	32.3	45.6	40.8	40.4	46.7	37.1	7.7	10.4	11.1	7.9	7.9	7.3	2.4	1.5	3.5	2.7	18.0
Europe, Middle East, Africa	24.9	35.3	32.0	33.6	31.6	32.1	5.9	9.8	10.1	6.3	3.6	9.8	3.4	1.4	5.0	4.5	17.9
Net issuance by asset	102.5	15.2	7.3	80.2	158.1	303.4	72.5	81.3	76.7	89.8	76.4	75.3	30.6	38.5	6.2	15.4	167.1
Bonds	28.7	30.1	2.7	42.7	65.2	121.8	48.1	24.8	21.1	27.9	35.3	8.5	7.1	4.7	-3.3	-6.1	37.8
Equities	41.8	11.2	16.4	27.7	45.1	78.1	10.5	17.4	22.9	27.3	22.4	29.3	7.5	16.4	5.4	11.0	62.8
Loans	32.1	-26.1	-11.8	9.8	47.7	103.5	14.0	22.2	32.7	34.6	18.6	37.5	16.0	17.4	4.1	10.5	66.6
Net issuance by region	102.5	15.2	7.3	80.2	158.1	303.4	72.5	30.6	76.7	89.8	76.4	75.3	30.6	38.5	6.2	15.4	167.1
Asia	29.2	1.5	-1.7	43.3	73.2	111.4	18.6	8.4	29.4	35.8	26.8	30.1	8.4	18.2	3.6	3.3	60.1
Latin America	36.8	8.3	-7.4	2.9	7.6	50.8	26.5	3.2	12.1	8.5	7.7	4.0	3.2	0.8	0.0	-2.6	9.2
Europe, Middle East, Africa	36.5	5.5	16.3	34.0	77.2	141.2	27.4	19.0	35.2	45.5	41.9	41.2	19.0	19.5	2.6	14.7	97.8
Secondary Markets																	
Bonds																	
EMBI Global																	
(spread in basis points)	735	728	725	403	347	237	382	356	333	382	191	218	179	210	218	197	197
Merrill Lynch high-yield																	
(spread in basis points)	890	795	871	418	310	371	319	329	283	319	313	335	304	312	335	345	345
Merrill Lynch high-grade																	
(spread in basis points)	200	162	184	93	83	92	88	85	81	88	90	97	89	92	97	98	98
U.S. 10-year treasury yield																	
(in percent)	5.12	5.05	3.82	4.25	4.22	4.39	4.60	4.13	4.38	4.60	4.85	5.14	5.05	5.12	5.14	4.80	4.98
<i>(In percent)</i>																	
Equity																	
Dow	-6.2	-7.1	-16.8	25.0	3.1	-0.6	-2.8	-2.7	2.6	-2.6	3.7	0.4	2.3	-1.7	-0.2	0.3	4.4
Nasdaq	-39.3	-21.1	-31.5	50.5	8.6	1.4	-8.4	-5.2	-0.5	-2.9	6.1	-7.2	-0.7	-6.2	-0.3	-3.7	-5.2
MSCI Emerging Markets																	
index	-31.8	-4.9	-8.0	51.2	22.4	30.3	0.6	0.0	8.6	-7.4	11.5	-5.1	6.8	-10.8	-0.5	1.1	7.0
Asia	-42.5	4.2	-6.2	46.1	12.2	23.5	2.8	1.4	6.5	-4.8	9.0	-2.6	6.9	-8.0	-1.0	-0.6	5.5
Latin America	-18.4	-4.3	-24.8	66.7	34.8	44.9	-0.6	-1.9	13.0	-10.3	14.9	-4.1	7.3	-14.2	4.1	2.8	13.2
Europe, Middle East, Africa	-22.3	-20.9	4.7	51.9	35.8	34.9	-3.0	-1.4	9.7	-10.3	14.1	-10.5	6.3	-13.7	-2.5	3.3	5.4

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

¹Issuance data are as of July 31, 2006, close-of-business London. Secondary markets data are as of July 31, 2006, close-of-business New York.

of 2006 because of a decline in sovereign bond issuance in the second quarter (Figure 1.29).

Why did *sovereign* bond issuance fall in the second quarter of 2006? A significant part of

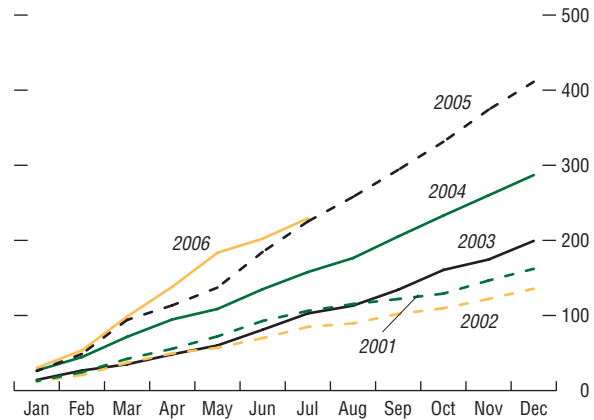
the surge in issuance of bonds by sovereigns in 2005 had represented active prefinancing of future sovereign external obligations, as sovereign issuers had taken advantage of unusually

favorable global conditions to issue aggressively. Many sovereign issuers therefore had built a comfortable prefinancing cushion that allowed them to forgo new issuance when market conditions turned less propitious during the second quarter. Indeed, including issuance during the first half of 2006, total financing already undertaken to meet 2006 needs was estimated at \$39.0 billion at midyear, or about three-quarters of total sovereign planned issuance of \$52.8 billion. On a regional basis, Latin America had fully completed its issuance needs (although there was considerable variation within the region), and a number of sovereigns had begun to prefinance 2007, while emerging Asia had met 62 percent of its 2006 financing needs, and emerging Europe about 56 percent. Turkey posted the largest absolute remaining sovereign external financing need at midyear, estimated at about \$2.4 billion.

By contrast, external bond issuance by the *private* sector remained relatively firm in the first half of the year, even amid the second quarter's market turbulence. More broadly, private corporate issuance of bonds in external markets started around 2003 and accelerated significantly to peak in 2005, reflecting an increased risk appetite by investors and a continued leveraging of balance sheets by emerging market corporates after the financial crises of the late 1990s and early 2000s. For its part, nonsovereign public sector issuance remains relatively small over time.

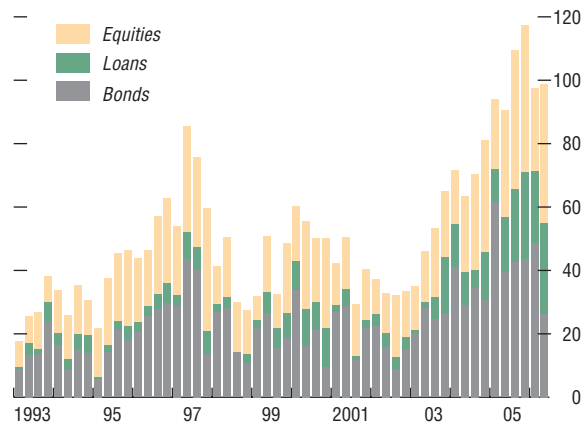
As for patterns across regions, loans are particularly important for EMEA (Europe, Middle East, and Africa) countries (Figure 1.30), as loans have risen especially for the Middle East and European EMs, including for Russian corporates. In general, cross-border lending to EM corporates has increased as commercial banks have sought to take advantage of expanding business opportunities beyond operations in traditional mature markets. For its part, equity issuance is clearly concentrated in emerging countries in Asia, particularly in China (Figure 1.31). European equity issuance follows in a distant second place, dominated

Figure 1.27. Cumulative Gross Annual Issuance of Bonds, Loans, and Equity
(In billions of U.S. dollars)



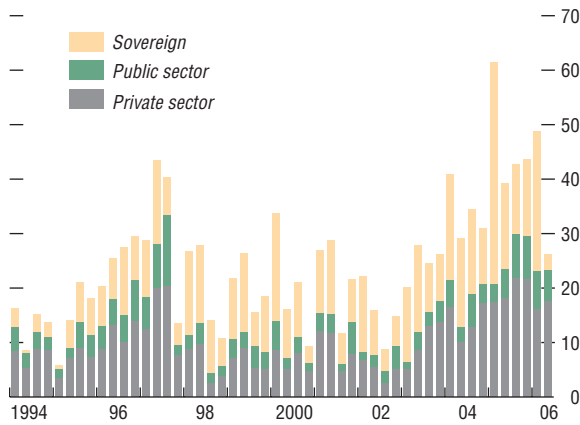
Source: Dealogic.

Figure 1.28. Gross Quarterly Issuance of Bonds, Loans, and Equity
(In billions of U.S. dollars)



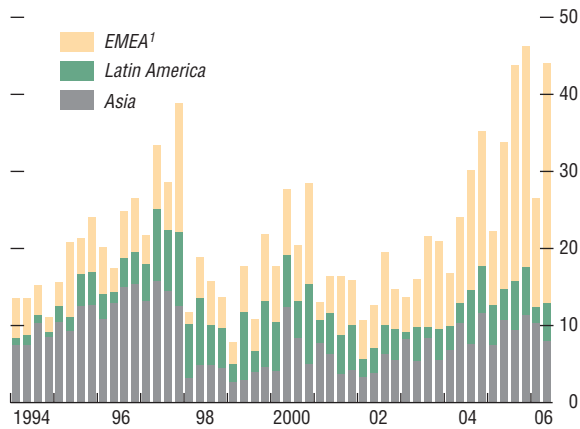
Source: Dealogic.

Figure 1.29. Bond Issuance, by Issuer Type
(In billions of U.S. dollars)



Source: Dealogic.

Figure 1.30. Syndicated Loan Commitments, by Region
(In billions of U.S. dollars)



Source: Dealogic.
¹EMEA = Europe, Middle East, and Africa.

by Russian initial public offerings (IPOs). In Latin America, IPOs have been relatively more active in countries such as Mexico and Brazil, where medium-size companies, in some cases growing out of a family-owned business model, found strong demand for new public offerings, particularly among foreign investors. Indeed, about two-thirds of shares issued in recent IPOs in Brazil have been purchased by foreign investors. In turn, external bond issuance is particularly important for sovereigns in Latin America (Figure 1.32). As for corporate external bond issuance in particular, however, Asia and EMEA tend to dominate, with Korean and Chinese firms (largely trading companies and banks) dominating in the former and Russian banks and oil companies in the latter.

Foreign Investor Flows into Local Markets

Foreign investment flows into EM equities have grown significantly in recent years, increasingly driving the value of local stock indices. With a paucity of marketable debt, Asia has traditionally dominated as a destination for EM equity investors. But flows into Latin America and EMEA had also accelerated rapidly through 2005 and early 2006. By the start of 2006 there was an acceleration of equity investment flows into stock markets in emerging Asia, driven by global growth plays, the turn in the tech cycle, and expectations of some recovery of local demand in the region (Figures 1.33 and 1.34). Since the middle of 2004, equity valuations have moved in tandem with foreign investor inflows, suggesting that foreign investors are an increasingly important segment of the market. Major equity markets in other regions have also started to move in tandem with foreign investor flows, suggesting this may be a more general phenomenon for emerging markets. Equity markets in Brazil, Mexico, and Turkey all hit historical highs before the market turbulence that started in May 2006, with the data indicating that changes in valuation have become increasingly driven by foreign investor inflows (see Figures 1.35–1.37).

It appears that there has been a significant increase in structural allocations to local debt markets in recent years. Although only incomplete data exist on foreign investor flows into local bond markets, they seem to confirm encouraging evidence from investor surveys. Data on holdings of local government bonds by nonresidents show significant increases in Brazil, Colombia, Mexico, Poland, and Turkey, particularly starting in 2004 and continuing through early 2006.

Steady flows from institutional investors counteracted the pullback by more volatile investors from local EMs during the market turbulence in the second quarter of 2006. The move into higher-yielding local markets in recent years was spearheaded by speculative investors, pushed by a global search for yield and diversification, both in equity and in bond markets. However, dedicated EM investors had increasingly set up more stable local market funds and invested in local cash bond markets. Fixed-income investor surveys suggest that investors had raised their benchmark exposure to EM local debt. Investment in local market instruments has been facilitated by improving fundamentals in EMs, the inclusion of local currency government bonds from EMs in standard benchmark indices (the Lehman Aggregate, for example), and the development of new index products designed specifically to benchmark funds invested in local market government bonds (such as the JPMorgan GBI-EM Index).

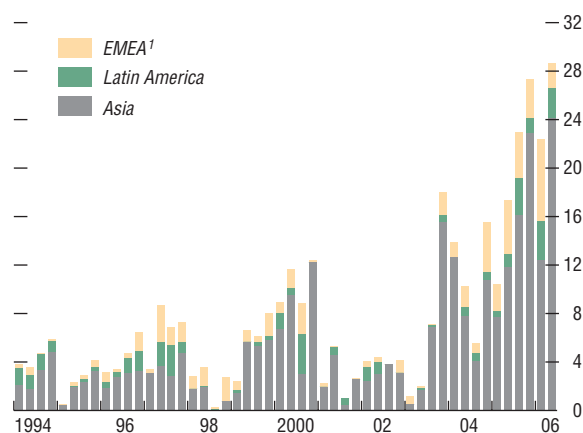
“South-South” Foreign Direct Investment

This section discusses FDI on the part of firms based in EM countries into other emerging market countries, a growing trend often referred to as “South-South” FDI.¹⁸

South-South FDI is becoming a significant factor in the overall flows to developing coun-

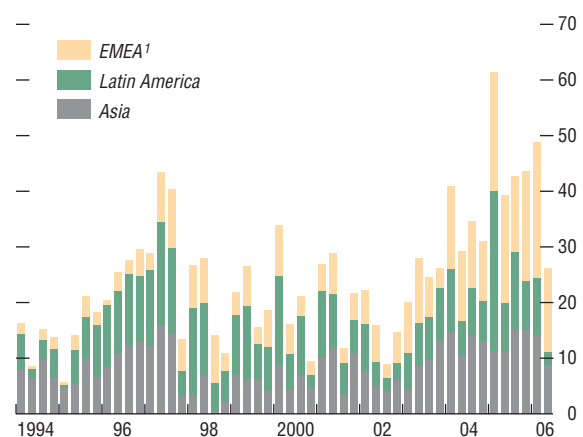
¹⁸This section was prepared by Dilek Aykut (World Bank), Joseph Battat (International Finance Corporation), and Paul Ross (IMF). It is based on World Bank (2006).

Figure 1.31. Equity Placements, by Region
(In billions of U.S. dollars)



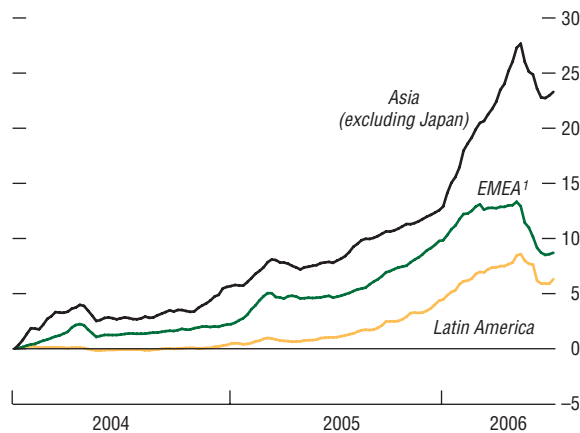
Source: Dealogic.
¹EMEA = Europe, Middle East, and Africa.

Figure 1.32. Bond Issuance, by Region
(In billions of U.S. dollars)



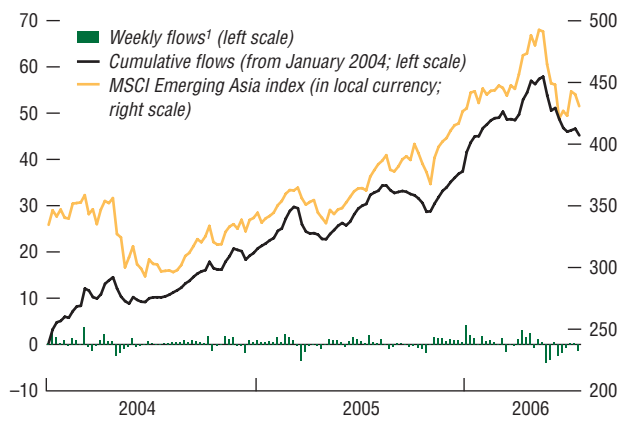
Source: Dealogic.
¹EMEA = Europe, Middle East, and Africa.

Figure 1.33. Cumulative Net Flows into Emerging Market Equity Funds
(In billions of U.S. dollars)



Sources: Emerging Portfolio Fund Research, Inc.; and IMF staff estimates.
¹EMEA = Europe, Middle East, and Africa.

Figure 1.34. Flows into Emerging Asian Equity Markets
(In billions of U.S. dollars)



Sources: Bloomberg L.P.; Morgan Stanley Capital International; and IMF staff estimates.
¹Includes flows into Indonesia, Korea, Philippines, Taiwan Province of China, and Thailand.

tries (Figure 1.38). These FDI flows are estimated to have increased from \$14 billion in 1995 to \$47 billion in 2003, significantly faster than FDI from MM countries. In 2003, 37 percent of FDI received by EMs was estimated to have come from other EMs, compared with 16 percent in 1995. Available data on FDI flows, including recent mergers and acquisitions, suggest that this trend continued in 2004–05, driven mainly by increasing openness to capital and trade, and globalization of economic activities.

EM firms' reasons for FDI are similar to those of MM investors. Discussions with a private sector contact network indicate that these strategic motivations are, first, market seeking and, second, securing natural resources.¹⁹ Efficiency-seeking FDI by EM firms exists but appears limited. EM firms tend initially to invest in their own regions before investing farther afield, because of trade and cultural ties. Regional trade and investment agreements, which began to proliferate in the mid-1990s, also encouraged such investments. While EM firms' initial bias may be regional, they have made significant extra-regional investments (e.g., Chinese firms' investments in Ecuador and Peru, and Malaysian firms' investments in sub-Saharan Africa).

Available data indicate that the bulk of emerging market outward FDI is directed toward the services and primary sectors. There is substantial investment in services—particularly in infrastructure (telecommunications, transport, energy, and water) and banking—paralleling the global trend and facilitated by liberalization in many EM countries. As services often require proximity between the producer and consumer, EM firms' regional orientation may provide some advantage and allow them to leverage their experience in managing the regulatory process. The primary sector attracts increasingly large amounts of emerging mar-

¹⁹The network comprises senior executives from 40 private sector companies and financial institutions of EM and MM countries and is designed to gather investor perspectives on FDI in EM countries.

ket FDI (particularly oil and gas) to secure resources and inputs for their high-growth economies. Some EM companies have invested in export-oriented activities abroad following erosion in their competitiveness, or to take advantage of host countries' preferential treatment of inward FDI.

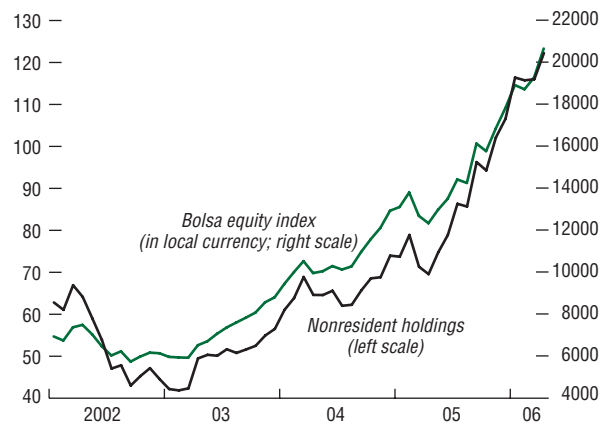
EM firms enjoy advantages and face challenges when investing in other EMs. Companies with a significant regional presence often benefit from well-established distribution networks, from the ability to develop and market products and services appropriate for EMs, and from cultural affinities. EM firms' experiences in their home markets allow them to use locally available inputs more efficiently. Geographical proximity and cultural similarities can make coordination of foreign operations more effective. However, EM firms face various challenges in their home countries.²⁰ Many EMs do not have policies and institutional infrastructure to support outward FDI, and EM firms often have less favorable access to financing than MM firms.

Growth in emerging market outward FDI is an important phenomenon. The economic impact of emerging market FDI is not limited to the host countries. The investing economies also benefit through increased diversification of markets, competitiveness, and exports. Emerging market FDI flows have augmented and sustained financing to the recipient markets in recent years. While mature market multinational firms have improved the transparency of their foreign operations and subscribed to environmental and labor standards, such initiatives are still at an early stage of implementation by EM firms; compliance with corporate governance initiatives by EM firms is increasing, but regional and sectoral variations remain. State-owned enterprises in EMs, especially in extractive industries and infrastructure,

²⁰Examples of these challenges include capital controls in some EMs, inadequate infrastructure to promote outward investment, and the higher costs and difficulties in raising financing.

Figure 1.35. Mexico: Nonresident Holdings of Local Equities

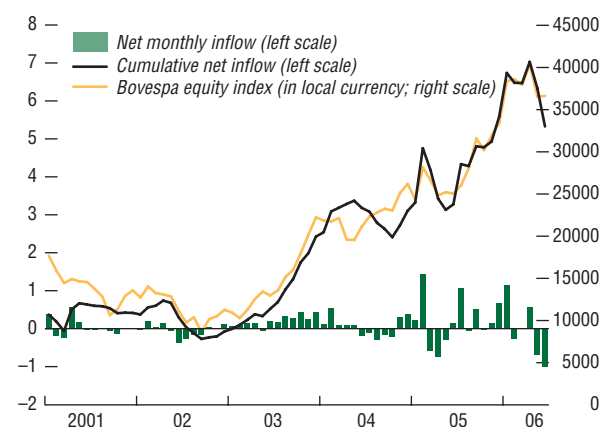
(In billions of U.S. dollars)



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

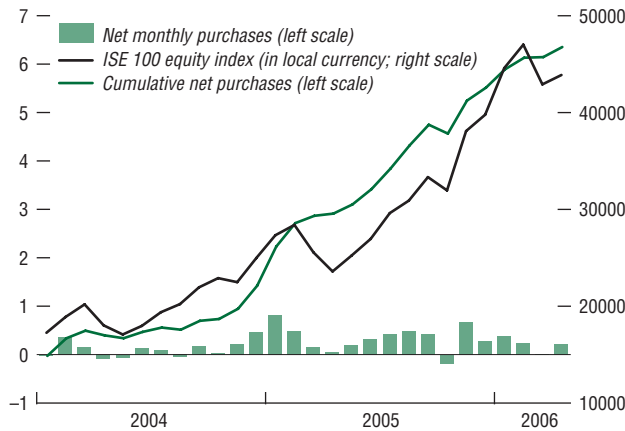
Figure 1.36. Brazil: Foreign Investment in the Stock Market

(In billions of U.S. dollars)



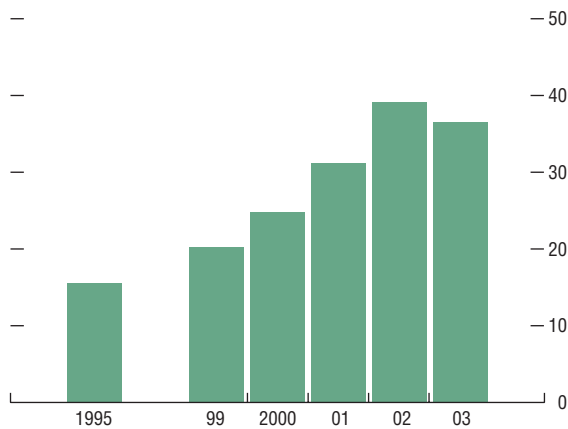
Sources: Bloomberg L.P.; and IMF staff estimates.

Figure 1.37. Turkey: Foreign Investment in the Stock Market
(In billions of U.S. dollars)



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

Figure 1.38. Share of FDI Flows from Emerging Markets to Other Emerging Market Countries
(In percent of total FDI flows to emerging markets)



Source: World Bank, *Global Development Finance*, 2006.
Note: FDI = foreign direct investment. Data for 2003 are estimated.

are an important source of emerging market FDI outflows, and their investment decisions can be subject to economic and strategic considerations.

Note: The main author of this annex is Marcelo Carvalho.

Annex 1.2. Financial Systems in Mature and Emerging Markets

Credit Risk Indicators for the Mature Market Financial System

This issue of the GFSR continues the use of credit risk indicators (CRIs) to review the evolution of market perceptions of systemic default risk in mature financial systems.²¹ As measured by the CRIs, default risk in the financial and insurance sectors remains relatively low, and credit derivatives markets do not indicate any particular financial stability concerns. However, banking sector CRIs have recently moved up with rising interest rates and the perception (based on numerous qualitative factors) that the credit cycle may have peaked, as well as a weaker and more volatile stock market. The nonlife-insurer CRI also reflects some increased risk perception, which we attribute primarily to the beginning of the Atlantic and Gulf of Mexico hurricane season (Figure 1.39).

Banking Sector Developments in Emerging Markets

Financial institutions in most regions have been enjoying favorable business conditions, with strong earnings often supported by rapid growth in credit, especially to households. In Latin America, improving economic perfor-

²¹The CRI index measures the probability of multiple defaults within three groups of financial institutions, implied from the market prices of credit default swaps (see Chapter II of the September 2005 GFSR for more details): large complex financial institutions (LCFIs), commercial banks, and insurance companies. The definition of LCFIs is the same as that suggested by Hawkesby, Marsh, and Stevens (2005).

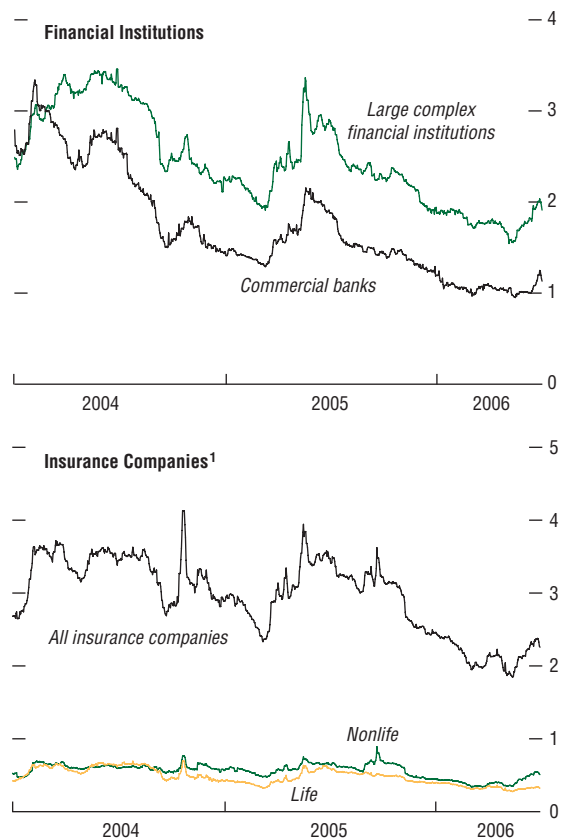
mance and the wider availability of new financial products continue to boost banks' earnings and balance sheets. In emerging Europe, financial institutions remain profitable, with indications of good asset quality, but rapid credit growth continues to be of concern. Financial systems in Asia are also generally improving with stepped-up supervision, although banks in some countries still suffer from an overhang of bad loans. In the Middle East and Central Asia, high prices of hydrocarbons have generally contributed to strengthened financial positions of banks, even though some institutions may be exposed to the effects of recent corrections in regional stock markets. Financial systems in Africa continue to strengthen despite slow progress in addressing long-standing fragilities.

Going forward, institutions in all EMs must now face rising world interest rates and tighter conditions on the availability of financing from abroad, which may affect profits and slow credit growth. This is the main risk facing EM financial institutions, which would be exacerbated if it were combined with a decline in prices of primary commodities.

Western Hemisphere. Favorable economic conditions and the wider availability of new financial products continue to support lending to the private sector in the larger economies. Consumer and mortgage credit in these countries—including in Argentina, Brazil, Chile, Mexico, and Peru—remain the main engine of private sector credit growth. The banking sector appears generally sound, with adequate capitalization, rising profitability, and improved asset quality. Due, in part, to low foreign exchange exposure and interest rate hedging, institutions seem well placed to weather increased volatility in financial markets, at least in the short run.

Emerging Europe. Financial institutions in the region remain profitable, reflecting strong economic growth. Asset quality is generally strong with modest nonperforming loan (NPL) ratios in much of the region, but rapid credit growth—which itself initially depresses NPL ratios—continues to be of concern. Dollarization remains widespread, and unhedged foreign

Figure 1.39. Probability of Multiple Defaults in Select Portfolios
(In percent)



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

¹The life and nonlife-specific credit risk indicators (CRIs) are based on five insurers, whereas the all-insurers CRI is based on 15 insurers, which is why the all-insurers CRI is higher.

Box 1.2. Does the Recent Increase in Stock Market Volatility Signal a Recession?

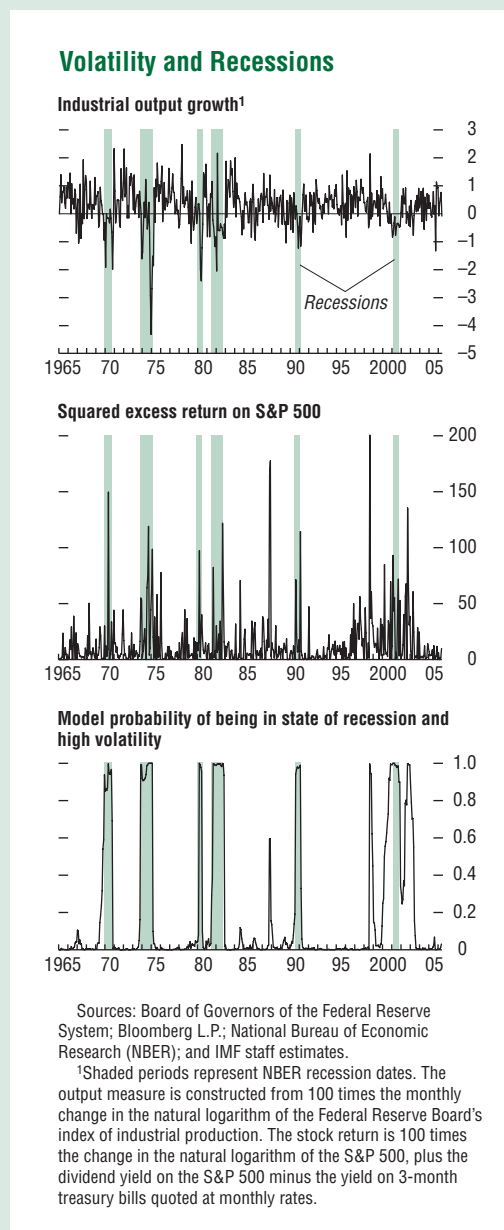
Several research papers have highlighted that, since the 1970s, recessions in the United States have been preceded by and associated with heightened levels of stock market volatility (see upper and middle panels in the figure).¹ One reason for the increase in volatility close to recessions may be that the range of possible future economic outcomes expands as the cycle matures and capacity tightens. With growing uncertainty about the future state of the economy, market participants revise their forecasts and reprice accordingly. A 1996 paper by Hamilton and Lin concluded that a recession is the primary factor that drives fluctuations in stock market returns.² Updating that model through May 2006 (see lower panel of the figure) confirms their finding that the model predictions coincide well with recessions as determined by the National Bureau of Economic Research. However, with an increasingly open U.S. economy and more globalized financial markets, the link between equity volatility and recession seems to have weakened in recent years. The model raises false alarms of recessions in 1998 and late 2002, when stock market volatility increased because of the LTCM crisis and prospects of war in Iraq, respectively. Both were one-off events that proved not to be harbingers of recession.

The model suggests that the recent increase in volatility does not signal a recession. The part of the variance of stock returns that is not forecastable (i.e., the variance of the model residual) has historically been about 10 times larger in recessions than in other periods. Current stock

Note: The main author of this box is Kristian Hartelius.

¹Using dummy variables for economic downturns, Schwert (1989) finds evidence of stock market volatility being higher in recessions. Hamilton and Lin (1996) and Campbell and Lettau (1999) confirm this and further find that stock market volatility is a leading indicator of recessions.

²Observing that stock returns display yearlong episodes of high volatility separated by longer quiet periods, while real output is subject to abrupt changes in the mean growth rate associated with recessions, Hamilton and Lin estimate a regime-switching bivariate time series model on U.S. data. Output is modeled as a Markov-switching autoregressive process, while stock returns are modeled as following a Markov-switching ARCH process.



volatility, as measured by the variance in excess returns, is still well below the levels typically associated with recessions (middle panel of the figure). This is reflected in the lower panel of the figure, where the inferred model probability of being in a joint state of high volatility and recession currently is close to zero.

currency lending is rising rapidly in some countries, even for consumer loans and mortgages. The authorities in a number of countries have introduced measures, often prudential in nature, to limit lending growth, but their effectiveness remains to be seen. Meanwhile, considerable progress is being made in strengthening supervisory frameworks, especially through the implementation of EU directives.

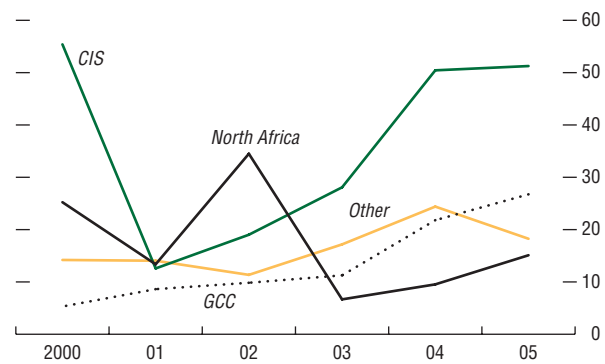
Asia. Financial systems in the region generally continue to improve, supported by rapid economic growth and stepped-up supervision. In many countries, banks are experiencing rising capital adequacy ratios, increasing profitability, and declining NPLs. In a number of key countries, banks have substantially reduced NPLs and provisioning for earlier loan losses. However, although bad loan ratios have fallen, in some countries they remain high and, in a few cases, asset quality has deteriorated. In some countries, banks still suffer from an overhang of bad loans and therefore remain vulnerable to an economic downturn.

Credit growth has continued to be rapid in some countries, raising concerns about potential deterioration in loan quality later. In particular, consumer lending continues to be strong in a number of countries in the context of high household indebtedness. High levels of household debt expose banks indirectly to interest rate increases. Banks are also exposed to interest rate risk on their holdings of government securities.

There are encouraging trends in financial sector policy. Most countries are upgrading supervisory capacity in preparation for implementing Basel II standards and some countries have initiated comprehensive programs to support financial sector development. Regional financial integration is advancing at a deliberate pace.

Middle East and Central Asia. Continued high prices of hydrocarbons have supported demand for financial services. Credit to the private sector—led by consumer, and, in some cases, real estate, lending—has expanded rapidly in most countries in the region (Figure 1.40).

Figure 1.40. Middle East and Central Asia: Annual Growth Rates in Credit to the Private Sector
(In percent; unweighted average for selected countries)



Sources: IMF, *International Financial Statistics*; national authorities; and IMF staff estimates.

Note: CIS = Armenia, Azerbaijan, Kazakhstan, and Kyrgyz Republic. GCC = Bahrain, Kuwait, Oman, Saudi Arabia, and United Arab Emirates. North Africa = Algeria, Egypt, Morocco, and Tunisia. Other = Iran, I.R. of; Jordan; Lebanon; and Pakistan.

Performance indicators for the banking systems in the region are improving, with particularly strong results in the Gulf Cooperation Council (GCC) countries, driven in part by the widening availability of mortgage and Islamic banking products. Asset quality is also generally improving in the region, although some North African countries continue to show high NPLs, largely because of problems in the state-owned banks. Although there is little sign yet of deteriorating bank asset quality as a result of the credit expansion, some regulators have already taken measures to slow the pace of expansion. An additional concern in a few cases is that reliance of banks on funding from external sources may make the banks vulnerable to a tightening in international financial conditions.

Some institutions may be directly or indirectly exposed to the effects of the correction in stock markets in the Middle East that started in late 2005 and accelerated in early 2006. However, market indices are still at about their end-2004 levels, and the recent peaks may have been heavily discounted. In most cases, the authorities have refrained from directly supporting the market and, in some cases, have taken positive steps toward increasing transparency and accountability. Nonetheless, potential risks to the banking system from exposure to the stock market as a result of margin lending to retail customers for equity investments will need to be monitored closely. Some institutions may also be vulnerable to a correction in the real estate sector and a slowdown in construction, especially in locations that have seen a boom in the construction of office space.

Africa. Financial systems in the African region, in particular in sub-Saharan Africa, continue to strengthen, supported by a favorable macroeconomic environment and high prices for primary products. However, progress in addressing fragilities is slow and banking system weaknesses remain. Available data suggest that, with few exceptions, the capital adequacy ratios are high, although less so if the concentrations in credit risks that plague most countries are taken into account. Although banks

are highly profitable, the trend is downward as opportunities for quick high returns from investing in treasury bills are declining. Average NPL ratios are declining, in large part because of rapid credit growth; marginal NPL ratios do not seem to be improving significantly.

The financial systems remain vulnerable to a range of risks. On the one hand, high oil and other commodity prices have increased the availability of bank lending, which may accentuate credit risk in countries with limited absorptive capacity. On the other, the influx of foreign investment into the treasury securities market in countries in sub-Saharan Africa is a mixed blessing: though these flows provide resources, they might create a new form of dependency on potentially volatile foreign financing. In addition, regulatory gaps remain, for example, in consolidated and cross-border supervision where banks are regionally active. Some risk is also posed by the emerging trend of reviving development banks with a view to determining the sectoral allocation of credit.

Note: The main authors of this annex are John Kiff and a team from the Monetary and Financial Systems Department, led by Daniel Hardy.

Annex 1.3. Investment in Commodity Markets

In recent years, commodities as an asset class have attracted considerable interest from investors. Commodity Trading Advisors (CTAs),²² for instance, have been growing assets at an average rate of 41 percent per year for the last three years (Figure 1.41). More specifically, market participants report that \$35 billion

²²CTAs in the Center for International Securities and Derivatives Markets database are registered with the National Futures Association, an organization that manages registrations on behalf of the Commodities Futures Trading Commission (CFTC), a U.S. regulator. The CFTC defines a CTA as any entity that, for compensation or profit, directly or indirectly advises others as to the advisability of buying or selling commodity futures or option contracts. Assets managed by CTAs may be directed toward financial futures as well.

flowed into commodity futures last year alone.²³ Anecdotal evidence suggests that the increased flow into commodities is largely coming from institutional investors, such as pension plans, as a result of recent asset allocation decisions that have been encouraged by consultants, largely on the basis of results from quantitative models. This annex discusses the growth of institutional investment in commodities, its rationale, and its possible market implications. The key findings are as follows:

- institutional investment in commodities is rising because the case for portfolio allocation remains compelling on the basis of long-term historical data;
- institutional flows into the asset class could suffer some reversal as a result of disappointment with recent performance; and
- institutional flows into the asset class may be a factor in shaping recent market developments.

The case for institutional investment is based on portfolio return enhancement and risk reduction that occurs as a result of diversifying traditional stock and bond investments with commodities. A recent study by Ibbotson Associates showed that investment portfolios may optimally include up to 30 percent in commodities, depending on the level of risk desired.²⁴ However, most studies find that investors benefit from a 10–12 percent allocation on average. Table 1.3 shows the type of data these studies use to make the case for long-term investing in commodities. Two commonly used commodity indices, the GSCI and the DJ-AIG, are often compared with indices for other asset classes.

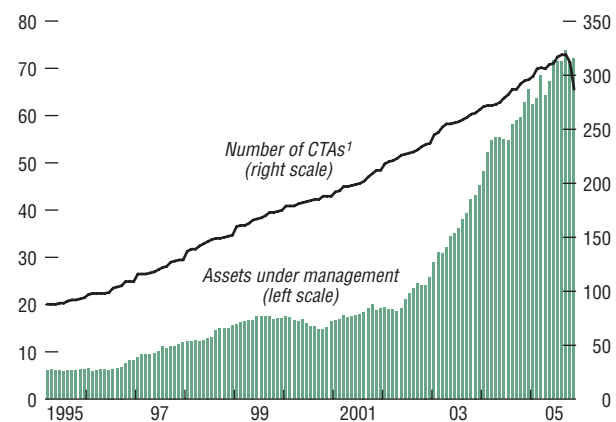
Another reason for including commodities in equity portfolios is that commodities tend to have positive returns more frequently than equities (Figure 1.42). One reason could be that global crises, such as natural disasters and geopolitical conflict, tend to raise commodity prices while affecting equities negatively.

²³Chernoff (2006).

²⁴Idzorek (2006).

Figure 1.41. Growth in Assets of Commodity Trading Advisors

(In billions of U.S. dollars)



Source: Center for International Securities and Derivatives Markets.
¹CTAs = Commodity trading advisors.

Table 1.3. Asset Class Characteristics

	GSCI Total Return	DJ-AIG Total Return	U.S. Equity	U.S. REITs	EAFE Equities	EM Equities	Global Equities	Global Bonds Broad	EM Debt	U.S. 90-Day T-Bills	U.S. Inflation
<i>(10 years ending July 2006; in percent)</i>											
Annualized return	8.8	8.6	7.5	5.9	7.0	7.5	7.7	5.5	11.8
Annualized volatility	21.6	14.1	15.5	14.2	15.1	24.2	14.6	6.6	12.8
<i>(Correlation data over 10 years, ending July 2006)</i>											
GSCI total return	1.00										
DJ-AIG total return	0.90	1.00									
U.S. equity	0.00	0.12	1.00								
U.S. REITs	-0.04	0.08	0.32	1.00							
EAFE equities	0.09	0.21	0.80	0.29	1.00						
EM equities	0.13	0.27	0.72	0.37	0.76	1.00					
Global equities	0.04	0.16	0.95	0.30	0.94	0.77	1.00				
Global bonds broad	0.16	0.21	-0.05	0.13	0.15	-0.06	0.04	1.00			
EM debt	0.10	0.21	0.58	0.37	0.52	0.67	0.57	0.10	1.00		
U.S. 90-day treasury bills	-0.08	-0.08	0.04	-0.12	-0.09	-0.18	-0.03	-0.14	-0.03	1.00	
U.S. inflation	0.16	0.17	-0.09	0.05	-0.01	-0.02	-0.06	0.09	0.00	0.02	1.00

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

Note: DJ-AIG = Dow Jones-American Industrial Group; EAFE = Europe, Australia, Far East; EM = emerging market; GSCI = Goldman Sachs Commodity Index; and REITs = Real Estate Investment Trusts.

Finally, it is useful to add commodities to a portfolio when inflation is accelerating because rising prices for commodities balance falling prices for stocks and bonds under these conditions (Figure 1.43).

In the past, institutional investors who have accepted these arguments have mostly allocated capital to different types of commodity investment funds. Some funds simply seek to replicate index performance. Others try to outperform indices using judgment and skill to trade futures in markets for energy, metals, and agriculture. Meanwhile “portable alpha” funds use total-return swaps on commodity indices to gain asset class exposure, but they seek to outperform these indices by actively managing exposure to some other asset class, such as fixed income or equities. Even though institutional investors may obtain portfolio exposure to commodities in all these different ways, their investments perform very much like commodity indices. Barclays Capital, a significant provider of commodity investment funds, estimates that \$85 billion in assets track commodity indices, and 65 percent of that total is benchmarked to the GSCI index.

Despite the positive advantages of investing in commodities, many investors may have been

too optimistic in basing their expectations of total return on rising spot prices. Spot price appreciation is just one aspect of total return for commodities (Figure 1.44). The other two components are collateral return and roll yield. The former comes from yield on cash set aside as margin for investments in commodity futures,²⁵ while the latter is obtained from selling futures approaching delivery and buying longer-dated futures with the proceeds. By rolling futures contracts this way, an investor typically profits from price appreciation of commodity futures as the delivery date approaches, a phenomenon known as backwardation. However, some commodity futures fall in price near the delivery date: a phenomenon known as contango. In the latter case, the roll yield is negative; and the total return on a futures contract may be lower than spot return or negative, depending on the relative magnitudes of spot, collateral, and roll returns. The GSCI index presently suffers from negative roll yield, because it has a large allocation (45 percent) to crude oil futures that are in contango for contracts with less than 12 months to delivery

²⁵Index total returns assume a margin of 100 percent.

(Figure 1.45). As a result, the index total return has been lower than spot return for more than a year now (Figure 1.46).

Despite these issues, institutional investment in commodity markets is rising relative to the size of hedging positions of producers and consumers of commodities. Many traders believe that the influx of this capital may explain some of the gradual change in pricing for oil futures contracts from backwardation in 2004 to the present contango.

Note: The main author of this annex is Mustafa Saiyid.

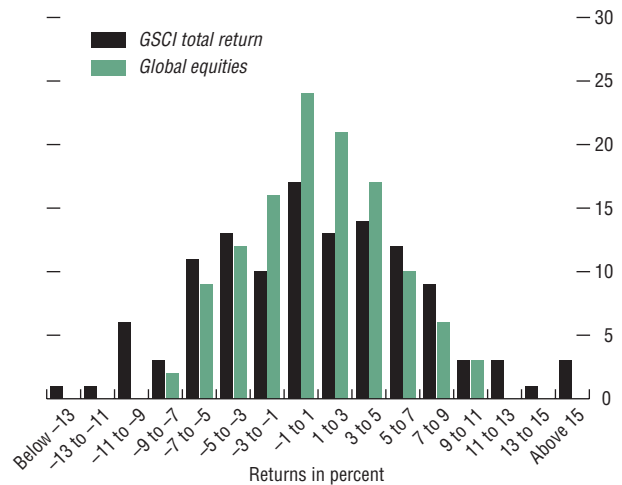
Annex 1.4. Structural Sources of U.S. Capital Inflows

Global imbalances, particularly large and persistent current account deficits among some of the major industrial countries, such as the United States, have attracted considerable attention among academics, market participants, and policymakers.²⁶ However, the explicit timing and dynamics of the adjustment process continues to escape satisfactory analysis, in part owing to the many influences at work.²⁷ A key influence is the inflow of capital to take advantage of particular investment opportunities. Indeed, the increasingly rapid pace of financial globalization, financial innovation, and the development of new investment vehicles have the common goal of addressing the asset allocation requirements of international investors seeking risk-return targets. Within this global environment, economies with well-developed capital markets (e.g., the United States) have historically offered investors the most liquid and transparent markets, as well as superior transaction execution and certainty. As such, the pace of eventual adjustments to current account deficits may be expected to be

²⁶See IMF (2005); Greenspan (2005); Poole (2005); and Geithner (2006).

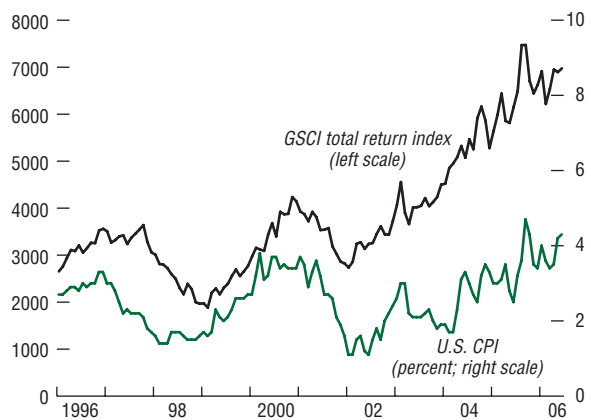
²⁷Roubini and Setser (2004 and 2005) analyze the unsustainable nature of the global U.S. imbalances and present alternative hard-landing scenarios where financing shocks arise from global portfolio shifts out of U.S. dollar assets.

Figure 1.42. Distribution of Monthly Total Returns for Commodities and Equities
(In percent of observations; 10 years ending July 2006)



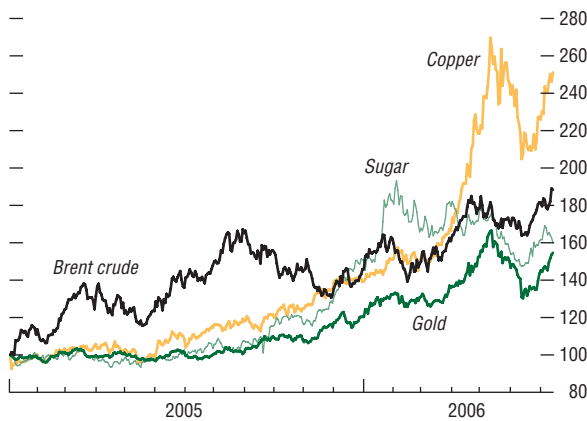
Source: Bloomberg L.P.
Note: GSCI = Goldman Sachs Commodity Index; skewness of GSCI = 0.08; skewness of global equities = -0.6.

Figure 1.43. Commodity Returns and U.S. Inflation



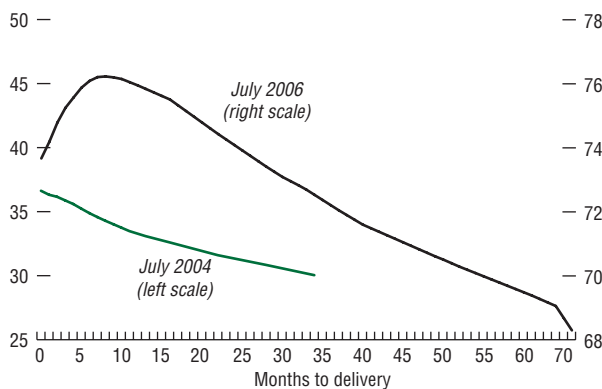
Source: Bloomberg L.P.
Note: GSCI = Goldman Sachs Commodity Index.

Figure 1.44. Performance of Selected Commodities
(Spot prices; January 1, 2005 = 100)



Source: Bloomberg L.P.

Figure 1.45. Brent Crude Oil Futures
(In dollars per barrel)



Source: Bloomberg L.P.

influenced by these and related microeconomic factors. This annex will highlight some of the economic and capital markets–related factors that may be helping to facilitate foreign capital inflows, and perhaps have prolonged, and will smooth, the adjustment process.

Stylized Facts About Net Capital Flows

During 1995–2004, several countries were consistent recipients of net capital inflows, including the United States (3.3 percent of GDP) and the United Kingdom (1.6 percent of GDP), due in large part to strong microeconomic factors.²⁸ These countries offer investors a variety of investment opportunities, and they support investor confidence through their relatively open, large, liquid, and sophisticated financial markets, and (importantly) effective regulatory regimes. Capital inflows not only reflect relatively low domestic saving and weak foreign domestic demand but also, more importantly, they are a consequence of global investors seeking the best risk-adjusted returns and diversification opportunities.²⁹ Indeed, the share of foreign investments in U.S. private debt and equity rose from the 10–15 percent range in the late 1970s through early 1980s to nearly 40 percent by 2005 (Figure 1.47).³⁰ Such

²⁸Although the U.S. external position was largely in balance prior to the 1990s, the large capital inflows since that time have shifted the U.S. investment position from a positive to a negative net asset position equal to 20 percent of GDP. By contrast, Australia has received capital inflows every year since 1974.

²⁹The theme of a “global savings glut” as a factor behind U.S. capital inflows has been the subject of much analysis, including in Bernanke (2005) and Issing (2005). Despite increasingly integrated markets, the correlations among international stock returns have not increased, suggesting that such classes of U.S. assets remain a source of portfolio diversification for global investors (see Bekaert, Hodrick, and Zhang, 2005). Structural changes, such as the surge in U.S. productivity, were reflected in a sharp revaluation of U.S. equity prices during the last half of the 1990s, which helped channel foreign savings flows into U.S. equities throughout the 1990s.

³⁰Since the equity market peak in 2000, private debt holdings of foreign investors have grown rapidly in the

investments essentially reflect foreign investor decisions to allocate savings to U.S. assets.³¹

Influences on Global Savings Flows

Rapidly aging populations in Western Europe and Asia (especially Japan) seek to allocate savings to assets with the best combination of returns and safety. The United States has continued to be a favored destination for such flows, because of both real and financial factors.

Real-economy factors. U.S. economic growth has exceeded that of many other industrial countries, in part because of the acceleration in U.S. productivity in recent years relative to foreign productivity. This has helped raise U.S. potential GDP growth in excess of 3 percent, compared with substantially lower growth rates in the euro area and Japan.³² Moreover, relatively flexible U.S. labor and capital markets helped promote growth through the efficient reallocation of resources across sectors.

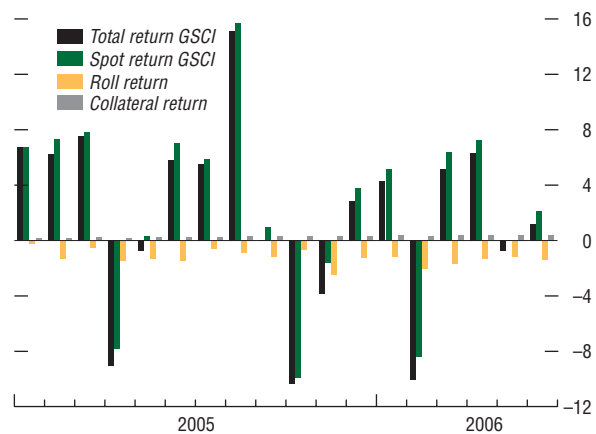
Financial market factors. The role of global financial intermediary played by both the United States and the United Kingdom has been facilitated by their financial markets' size, liquidity, transparency, efficiency, and clarity regarding the "rules of the game" (e.g., bankruptcy code, creditor rights, settlement systems, and consistent tax treatment). Deep and dependably liquid markets enhance investors' ability to perform a variety of transactions to absorb large inflows, pool and manage risks, and promote secondary market activity. The broad menu of available U.S. assets has also produced higher risk-adjusted returns relative to foreign assets, due in part to higher U.S. productivity and real growth noted above. For example,

United States and United Kingdom.

³¹The substantial rise in official foreign holdings of U.S. assets (mainly government securities) during 2002–04 was partly a consequence of exchange rate policies among some Asian countries. However, since 2004, the surge in official holdings has eased, as many of these countries have relaxed their exchange rate stabilization policies and private flows have picked up.

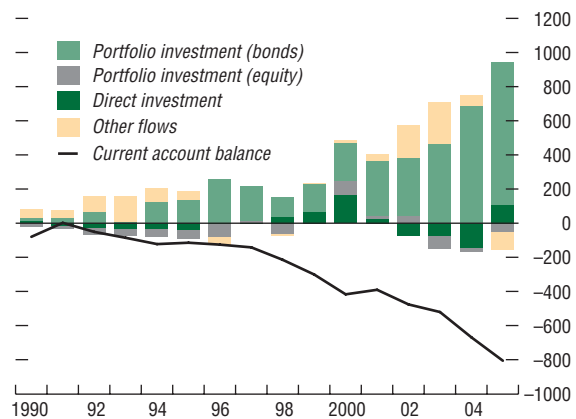
³²See Skoczylas and Tissot (2005).

Figure 1.46. Goldman Sachs Commodity Indices
(Monthly returns in percent)



Sources: Goldman Sachs; and IMF staff estimates.
Note: GSCI = Goldman Sachs Commodity Index.

Figure 1.47. Financing of the U.S. Current Account by Instrument
(In billions of U.S. dollars)



Source: IMF, *International Financial Statistics* database.

firm-level data for publicly traded firms suggest that returns on U.S. investments were higher (8.6 percent) than on investments in other G-7 countries (2.4 percent) as well as in emerging market economies (approximately -4.7 percent) for the period 1994–2003.³³ Moreover, the international role of the dollar as a medium of exchange and unit of account has helped to raise the demand for U.S. assets in global portfolios, especially among investors whose domestic currency has been linked to the U.S. dollar.³⁴

Also enhancing the attraction to U.S. and U.K. markets is a strong financial industry and large numbers of skilled specialists at the cutting edge of financial innovations to meet the asset-allocation and portfolio needs of global savers. The value added by such financial institutions is illustrated by the large trade surplus in U.S. and U.K. financial services exports (\$33.8 and \$28.6 billion, respectively) relative to imports (\$12.5 and \$6.1 billion, respectively). In addition, varieties of asset classes and investment vehicles (e.g., credit derivatives and mortgage-backed securities) have been developed and successfully implemented in U.S. and U.K. markets. They allow global investors to obtain broader credit exposures, while targeting their desired risk-reward trade-off.³⁵ Indeed, through investment funds managed by U.S. or U.K. investment advisors, global investors are able to gain exposure to almost any asset class, or any market (e.g., investment managers implementing Asia-oriented investment strategies are often located in the United States or

the United Kingdom). Moreover, for markets with structural frictions (e.g., capital controls), investor exposure can be obtained with derivatives instruments developed and traded almost exclusively in U.S. and U.K. markets.³⁶

Developed and consistently applied legal and regulatory frameworks are important features that bolster investor confidence, and enhance the attractiveness of U.S. and U.K. markets. Since the financial crises of the late 1990s, risk-averse investors in Asia and Europe have been reluctant to invest significantly in other regional EMs, as returns are perceived to be more volatile, and the investments are perceived to be subject to political or legal risks.³⁷ To be sure, there have been instances among U.S. companies of fraud and failures of corporate governance systems (e.g., WorldCom and Enron), but investors have generally seen such instances as exceptional and company-specific.

Policy Message

The persistence of external imbalances, of which the U.S. current account deficit is the largest, may be facilitated by increasingly globalized financial markets and an attractive menu of financial assets offered by U.S. markets to global investors. Capital inflows reflect better relative growth prospects and microeconomic climate and infrastructure, among other factors.³⁸ With such factors contributing to a comparative advantage in producing attractive U.S. financial investment opportunities, net U.S. capital inflows may be sustained for some

³³Such calculations are not subject to differences in composition that are known to cause returns on U.S. capital invested abroad (largely FDI and equities) to be higher than returns on foreign investments (largely in U.S. treasury and related investments). See Brooks and Ueda (2005) for further details.

³⁴The prevalence of dollar assets is illustrated by the fact that almost half of the global stock of U.S. currency, which pays no explicit return, circulates abroad.

³⁵Insofar as equity markets attracted inflows during the late 1990s, foreign demand for asset-backed securities and government agencies grew as equity market returns faltered. This foreign demand for fixed-income investments helped to balance the decline in equity flows.

³⁶Financial innovations enable global investors to obtain some of their desired exposures without directly investing the full amount of their target allocations in foreign markets.

³⁷Nevertheless, EM assets (e.g., sovereign debt) continue to be an attractive asset class for institutional investors as they seek greater diversification and portfolio benefits.

³⁸Caballero, Farhi, and Gourinchas (2006) derive a theoretical framework that illustrates the interaction of relative growth prospects, real rates of return, and the relative attractiveness of financial assets in sustaining the global distribution of external balances.

time period, thereby prolonging and smoothing long-run external adjustments. Ultimately, however, when portfolios adjust fully and have exploited diversification and growth opportunities, the U.S. net investment position will likely stabilize, and the current account deficit will decline to more sustainable levels. When this occurs, the depth, liquidity, sophistication, and stability of U.S. financial markets will raise the likelihood of asset prices adjusting in an orderly fashion.

Note: The main author of this annex is William Lee.

Annex 1.5. Recycling of Surpluses in Emerging Asia

The pressure of current account surpluses and rising capital inflows to Asia has led to liberalization and diversification of capital outflows, both public and private. Because a large share of the total surplus has been accumulated as net international reserves, reserves stocks are often substantially greater than needed for liquidity considerations alone. In many cases, the disposition of what has become a large component of national wealth has emerged as an issue.³⁹ In determining how to discharge their fiduciary responsibilities, authorities may choose to invest a portion of the reserves stock to maximize a measure of risk-adjusted return, likely entailing asset diversification. Alternatively, they may encourage capital outflows through private or semi-public channels, likely also leading to some diversification of the nation's stock of foreign assets. Both trends have been evident in Asia in recent years.

On the official side, some reserves managers are investing a portion of the reserves stock with the goal of maximizing expected returns, given a particular risk tolerance level and the constraints that apply to the use of official reserves. In some cases, this involves the use of

external managers to run a portion of the portfolio. Official or quasi-official entities, such as national pension funds, are adopting modern portfolio management techniques, often raising the share of foreign assets in their portfolios. In many countries, regulatory reform has made it easier for institutional investors to acquire and hold foreign assets. Regulatory changes—often supported by better marketing on the part of asset managers—have also provided individual investors with better access to foreign assets. One consequence of these trends may be a shift away from investments in short-duration high-liquidity instruments.

Background

Since the 1997–98 Asian crisis, a number of Asian economies have run sizable current account surpluses. Individual country experience varies, but the surpluses have generally come about as a result of persistently high domestic savings rates and reduced rates of domestic investment. While the current account positions of some economies have recently deteriorated somewhat, in part because of higher oil payments, China, Hong Kong SAR, Malaysia, Singapore, and Taiwan Province of China continue to register strong current account surpluses, and Japan has run an external surplus of 2–4 percent of GDP for over a decade.

Moreover, since 2003, portfolio equity inflows to many Asian markets (Table 1.4), including to Hong Kong SAR, India, Indonesia, Japan, Korea, and Thailand, have been particularly strong. Equity inflows to China have been less direct, in the form of public listings by mainland firms on the stock exchange in Hong Kong SAR, but these still appear as increased portfolio equity flows to the mainland.

Total reserves held by East Asian monetary authorities, including Japan, as of May 2006, were about \$2.9 trillion, up from slightly more than \$1.4 trillion at the end of 2002. As reserves stocks have risen (Table 1.5), the balance sheet and opportunity costs of holding them have also increased, in some cases

³⁹The criteria normally used to assess the adequacy of reserves stocks include the import coverage ratio, the reserves-to-short-term-debt ratio, and the reserves-to-GDP ratio.

Table 1.4. Current Account and Capital Inflows: Emerging Asia*(In billions of U.S. dollars)*

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Current account	-28	29	119	113	88	91	128	168	187	255
Gross capital inflows	193	149	-121	100	191	65	81	191	346	345
FDI inflows	71	81	86	104	139	98	80	83	129	162
Portfolio bond inflows	28	18	-2	-4	-1	1	5	11	22	16
Portfolio equity inflows	18	7	1	95	76	25	10	68	55	88
Derivatives, bank borrowing, etc.	76	43	-205	-96	-24	-59	-14	29	140	79
Gross capital outflows and errors and omissions	-107	-164	59	-126	-216	-70	-59	-132	-197	-335
Reserves accumulation (-)	-58	-15	-57	-87	-62	-86	-150	-227	-337	-265

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

Note: Aggregate data for 10 Asian economies: China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, and Thailand. FDI = foreign direct investment.

more than proportionally. Calculated with respect to the authorities' balance sheet, the cost of holding the reserves is the cost of the liabilities issued to acquire them. If currency market interventions are fully sterilized, this is the coupon payment on the debt instruments sold to the public, in some cases adjusted for ex post exchange rate changes. Because the interest rates on domestic bonds tend to rise as the total of such bonds held by the public increases, the marginal cost of accumulating reserves may be increasing. With regard to national income, the marginal opportunity cost of holding reserves is the real return that

would have been earned on the best alternative use of the same resources.

Measures to Diversify and Liberalize Outflows

Diversification has been one clear response to the challenge of reserves accumulation. While remaining within the liquidity restrictions imposed by the definition of reserve assets, it has generally been possible for reserves managers to adjust portfolio composition—at least to some extent—with regard to asset duration, type (e.g., sovereign credit, asset-backed security, or even equity),

Table 1.5. Net International Reserves: Leading Economies*(In billions of U.S. dollars)*

Country (ranking)	1997	2001	2003	2004	2005	April 2006	Percent of Reserves to	
							GDP	Annual imports
1 China	141	213	404	611	820	895	37	124
2 Japan	209	389	654	826	830	841	18	161
3 Taiwan Province of China	84	123	207	243	254	260	73	139
4 Korea	20	103	155	198	210	223	27	80
5 Russia	14	33	74	122	176	219	23	128
7 India	25	46	98	126	132	154	17	98
8 Hong Kong SAR	93	111	118	124	124	127	70	42
9 Singapore	71	75	95	112	115	127	98	59
10 Mexico	28	44	58	63	73	78	10	33
11 Malaysia	20	29	43	65	69	75	53	61
12 Algeria	8	18	33	43	57	66	55	282
13 Turkey	19	19	34	36	50	60	14	51
14 Brazil	51	36	49	53	54	56	7	69
15 Thailand	26	33	41	49	51	56	30	43
World	1,687	2,334	3,330	4,081	4,698	4,941

Source: IMF, *International Financial Statistics*.

Table 1.6. Breakdown of Capital Outflows: Emerging Asia
(In billions of U.S. dollars)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Gross capital outflows	140	165	-9	188	264	147	210	380	567	551
Private capital and official nonreserve outflows	82	151	-65	101	202	61	60	153	230	286
Foreign direct investment outflows	20	26	31	39	79	51	35	22	78	67
Portfolio bond outflows	10	4	-6	4	22	50	50	48	24	62
Portfolio equity outflows	14	17	1	49	36	40	35	40	59	64
Derivatives, bank lending, etc.	37	104	-91	9	64	-80	-61	44	69	92
Reserves accumulation	58	15	57	87	62	86	150	227	337	265

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

Note: Aggregate data for 10 Asian economies: China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, and Thailand. Gross capital outflows and reserves accumulation are entered with a positive sign.

or currency denomination.⁴⁰ A typical strategy is to divide reserves into a “liquidity” pool and an “investment” pool. The former generally consists only of very high-grade short-duration instruments, predominantly in the main reserve currency (in Asia, typically U.S. dollars). Within the latter pool, however, more leeway may be allowed. For many countries, the investment pool is likely to have increased substantially in the past three years.

Some authorities have also taken note of the example of Singapore’s Government Investment Corporation (GIC), established in 1981 to manage the investment of a share of the nation’s official external assets. Certain assets held by the GIC are not eligible to be counted as official reserves, with the result that some of the more than \$100 billion that is managed by the GIC does not figure into the nation’s public stock of official reserves (\$129 billion as of May 2006). In a similar vein, Korea established the Korea Investment Corporation (KIC) in 2005, with the aim of having it manage \$20 billion of the nation’s \$225 billion (May 2006) in foreign reserves. In contrast with the arrangement in Singapore, however, all the assets entrusted by the Bank of Korea to the KIC (about \$17 billion) will continue to be treated as official reserves. A variation on this theme is provided by Malaysia, which has started a publicly owned

investment corporation known as Khazanah Nasional, with about \$20 billion under management, that invests in both domestic and foreign firms.⁴¹ Other regional authorities have also been reported as studying the development of such national wealth managers.

Governments have also moved to generate capital outflows through institutions under their control, notably national pension funds. In Japan, the Government Pension Investment Fund had increased the share of foreign stocks and bonds in its 142 trillion yen (\$1.21 trillion) portfolio to about 13 percent by March 2006, from an initial level near zero in 2001. Korea’s Pension Fund Association raised its allocation to foreign assets to about 8 percent of its 156 trillion won (\$154 billion) portfolio in 2005. More than nine-tenths of the allocation is in foreign fixed income, almost all of which is currency hedged. National pension funds elsewhere, including in Thailand, have also raised targets for holdings of foreign assets.

Foreign direct investment outflows have also increased (Table 1.6), as public or large private firms in emerging economies have sought to benefit from access to overseas natural resources, labor, or distribution networks (see earlier discussion on “South-South” FDI). Outward FDI from China has grown particularly

⁴⁰See IMF (1993, pp. 97–100) for eligibility criteria for reserves assets.

⁴¹Khazanah Nasional may more closely resemble Singapore’s Temasek Holdings than it does the GIC. Temasek manages a portfolio of both domestic and foreign assets.

rapidly, although even at more than \$11 billion in 2005 it was less than one-fifth the total of inward FDI in the same year. Recent streamlining of licensing requirements has apparently contributed to the rapid expansion of outward FDI. In Korea, FDI outflows have also increased, though not as steeply, as the country's leading automobile and electronics manufacturers have expanded some production overseas. Some Indian firms as well have pursued overseas expansion through FDI.

Investment vehicles now being made available to individual households could constitute an important channel for expansion of capital outflows (see Box 1.1 for discussion on purchases of foreign bonds and investment trusts by Japanese households). In April 2006, China announced a set of measures to give individual savers greater access to foreign assets. Among these, depositors in domestic banks will be allowed to purchase foreign exchange and foreign-exchange-linked products with renminbi funds; previously, depositors were required to furnish foreign exchange in order to have access to such products. In addition, individual investors will be allowed to acquire up to \$20,000 a year in foreign-asset-based mutual funds, although the availability of such funds is currently quite limited. Some private sector analysts say that these and related measures may result in perceptible increases in private capital outflows from China, given interest rates on domestic savings accounts that presently average less than 1 percent.

Elsewhere in Asia, Malaysian authorities increased the limit on holdings of foreign assets by some institutional investors and investment trusts from 10 percent to 30 percent in 2005. Investors are reported to have responded enthusiastically. While statistics on gross outflows are not available, portfolio flows shifted from net inflows of \$5.5 billion in the 12 months through March 2005 to net outflows of \$2.5 billion in the following 12-month period. Private outflows from Korea (Table 1.7) have also accelerated in the past year, in part because of the successful marketing efforts of funds investing in foreign

Table 1.7. Capital Outflows from Selected Asian Economies

(In billions of U.S. dollars)

	2002	2003	2004	2005	April 2006
Foreign direct investment outflows					
Korea	2.62	3.43	4.66	4.31	5.02
Taiwan Province of China	4.89	5.68	7.15	6.03	6.53
Thailand	0.14	0.42	0.05	0.40	0.60
Equity portfolio outflows					
Korea	1.46	1.99	3.62	3.47	7.19
Taiwan Province of China	10.95	21.12	16.52	23.51	29.51
Thailand	0.01	0.15	0.26	0.28	0.52
Bond portfolio outflows					
Korea	2.28	1.60	3.77	6.54	10.48
Taiwan Province of China	4.49	14.16	5.98	11.27	9.36
Thailand	0.91	0.79	-1.48	1.25	n.a.

Sources: CEIC; and IMF, *International Financial Statistics*.

Note: April 2006 data are for trailing 12-month period (March 2006 for Taiwan Province of China). Gross outflows are entered with a positive sign.

equities. Bond outflows have also accelerated, but this has been primarily due to purchases by institutional investors, including life insurers, since the spreads between domestic and foreign interest rates are not large. Thus far, such purchases of foreign fixed-income products have generally been hedged, limiting exposure to currency fluctuations.

Conclusions

There is a broad trend toward liberalization of capital outflows and diversification of foreign asset stocks in Asia that encompasses central bank reserves, heritage and national wealth funds, national pension funds, private pension funds, individual and institutional portfolios, and even the balance sheets of private non-financial firms. These developments reflect, in part, the rising costs of holding official reserves, and are generally to be encouraged. Acceleration and diversification of financial outflows enhance overall financial stability by broadening the asset base from which domestic investors derive their returns. It improves the expected risk-adjusted return to those investors. And, in many cases, it helps to promote

the development of domestic asset management capacity.

As with any capital account liberalization, these changes entail some risks. Investors exposed for the first time to a wide range of globally traded assets may opt to chase returns, choosing asset classes that have recently produced high returns rather than diversifying or selecting assets with more sensible risk-return characteristics. In the aggregate, the effect of shifting some outflows from the official sector to the private sector may be diversification of currency exposure, with potential implications for currency markets. Nevertheless, home bias of existing portfolios is still high, and many Asian economies still have some distance to go in opening up outflows. Accordingly, further liberalization of outflows has the potential to provide substantial benefits.

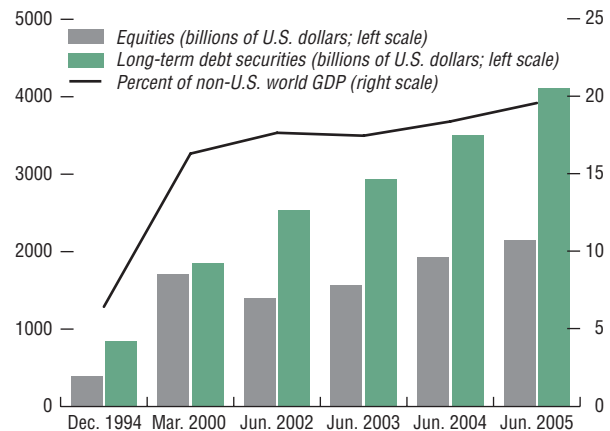
Note: The main author of this annex is Chris Walker.

Annex 1.6. Foreign Investors' Holdings of U.S. Securities

What amount of U.S. securities do foreign investors hold? U.S. Treasury data on foreign holdings of U.S. assets by country of holder and asset class (treasury, agency, corporate bonds, and equities) show that foreign investors have increased their holdings of long-term U.S. securities over time, not only in gross dollar terms but also as a percentage of non-U.S. world GDP (Figure 1.48).⁴² Figure 1.49 shows foreign

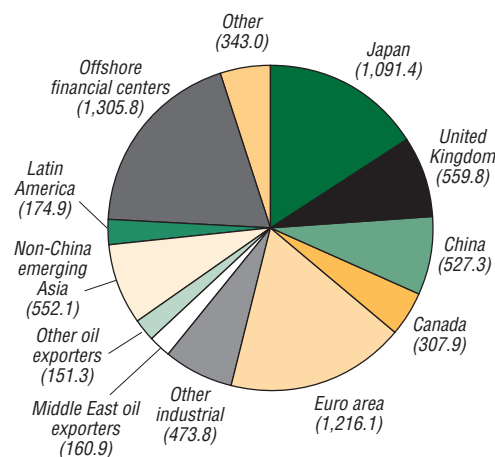
⁴²See U.S. Department of the Treasury, Federal Reserve Bank of New York, and Board of Governors of the Federal Reserve System (2006). These data are subject to considerable custodial bias, which arises when custodians do not know the ultimate residence of the owner of a security, in particular because of "custodial chains." For instance, a U.S. custodian may hold a security on behalf of, say, a Swiss custodian that may, in turn, hold the security on behalf of a French investor. In this case, U.S. custodian would be likely to report the owner of the security as Swiss. This bias thus leads to overestimates of U.S. securities ownership among custodial countries, which notably include Belgium, Luxembourg, Switzerland, the United Kingdom, and Caribbean banking centers. See Bertaut, Griever, and Tryon (2006).

Figure 1.48. Foreign Holdings of Long-Term U.S. Securities



Sources: U.S. Treasury Department, *Treasury International Capital System*; and IMF, *World Economic Outlook*.

Figure 1.49. Foreign Holdings of U.S. Assets
(In billions of U.S. dollars; end-June 2005)



Sources: U.S. Department of the Treasury, *Treasury International Capital System*; and IMF staff estimates.

Table 1.8. Characteristics of Foreigners' Portfolio Holdings of U.S. Assets*(In percent; holdings as of June 30, 2005)*

	Japan	U.K.	China	Canada	Euro Area	Other Industrial Countries	Middle East Oil Exporters	Other Oil Exporters	Non-China Emerging Asia	Latin America	Offshore Financial Centers	Other	Totals
Portfolio weights													
Equities	16.3	46.5	0.5	71.6	36.8	56.4	51.3	25.4	22.2	18.6	36.3	5.6	31.2
Treasuries	61.1	9.0	56.5	6.4	12.6	14.9	34.0	7.8	47.7	41.1	10.2	26.2	27.4
Agencies	13.1	4.5	36.1	1.7	9.3	9.1	8.8	55.4	21.8	24.5	10.8	5.9	13.7
Corporates	9.6	40.0	6.9	20.3	41.4	19.7	6.0	11.4	8.3	15.9	42.8	62.4	27.6
Portfolio characteristics¹													
Average annual return	7.7	8.9	7.0	9.6	8.6	9.1	9.0	8.1	7.9	7.9	8.6	7.7	8.4
Average volatility ²	4.89	8.11	3.80	11.15	7.00	9.58	9.32	5.83	5.58	5.05	6.92	4.15	6.52
Percent of total foreign holdings	15.9	8.2	7.7	4.5	17.7	6.9	2.3	2.2	8.0	2.5	19.0	5.0	100.0
Total exposure to U.S. assets													
In percent of M2 ³	16.6	23.3	14.5	55.9	14.1	31.8	38.1	34.2	17.7	18.6	...	23.2	23.1
In percent of GDP ³	23.9	25.4	23.7	27.2	12.3	26.1	20.3	13.3	18.8	7.4	...	12.0	21.4
						Bonds							
						Equities	Treasuries	Agencies	Corporates				
Memorandum items:													
Foreign official institution holdings of long-term securities													
Portfolio weights		8.9				71.9		16.2				3.0	
Percent of total foreign holdings of U.S. securities					23.5								
Return characteristics of U.S. asset classes (1/1/90–6/30/06)													
Average annual return			10.2			6.9		7.0				7.7	
Average volatility ¹			14.4			4.2		3.2				4.4	

Sources: Merrill Lynch; U.S. Treasury Department, *Treasury International Capital System (TICS)*; and IMF staff estimates.¹Calculated based on average performance over January 1, 1990, to June 30, 2006, if portfolio weights had been held constant at weights as of June 30, 2005.²Calculated as annualized average of 30-day rolling volatility.³These statistics cannot be calculated for offshore financial centers because GDP and M2 data are not available for all offshore financial systems from TICS data.

holdings of U.S. assets, distributed into country and regional groupings, as of end-June 2005.⁴³

There are several reasons these data may not capture foreign investors' ultimate exposures to the U.S. dollar. First, they do not take into account the possibility that foreign investors may have hedged dollar exposure through deriva-

⁴³Regional groupings are largely self-explanatory, with the exceptions that (1) Luxembourg was included in offshore financial centers rather than the euro area, (2) large Latin American oil exporters were included in Latin America rather than in other oil exporters, (3) Middle East oil exporters are as defined in the U.S. TIC data, and (4) besides countries not categorized elsewhere, "other countries" also include holdings classified in the TIC data as "country unknown" (which consists largely of holders of long-term bearer bonds) and holdings of "international organizations."

tives markets, or may have natural hedges in the form of offsetting dollar-denominated trade flows.⁴⁴ Second, they do not take into account additional exposure from foreigners' holdings of non-U.S. securities that are dollar-denominated. Third, they do not take into account offsetting dollar-denominated liabilities. Fourth, the data may overestimate dollar exposures to the extent that some U.S. securities are denominated in currencies other than the dollar.

⁴⁴Note, however, that as short-term U.S. interest rates have risen, the cost of hedging will also have risen. Official holders, to the extent that they have influencing their currencies' values against the dollar as an important objective, may not hedge, because doing so would negate the impact on their currencies.

Using daily data on the relevant asset class returns over the period January 1990–June 2006, Table 1.8 shows the return and volatility characteristics of each of the portfolios calculated above (in dollar terms), had portfolio weights been held constant at end-June 2005 levels. The table also shows exposures calibrated against GDP, and against a rough proxy for financial wealth, M2. The results show that

- exposures are substantial, amounting to roughly 23 percent of global GDP (excluding the United States) and about 21 percent of global M2 (again, excluding the United States);
- scaled by GDP, and reflecting its close integration with the U.S. economy, Canada had the highest exposure at 56 percent of GDP. Latin America had the lowest exposure at 7 percent of that region's GDP. Scaled by the proxy for financial wealth, exposure is as large as 27 percent of M2 for Canada, and only 14 percent of M2 for the euro area; and
- average portfolio volatility depends on the portfolio weights held by each region. In this respect, the volatility of Canada's holdings, which have the highest weight in equities, is correspondingly the highest. China, which holds almost all of its U.S. assets in the form of U.S. treasury and agency bonds, has the lowest portfolio volatility.

Conclusions

A low-probability but potentially high-cost risk to the global financial system is that a dollar decline could become self-reinforcing and hence disorderly. In other words, foreign investors could conceivably sell their U.S. asset holdings into a dollar decline, leading to further losses and further sales of U.S. assets. The data on foreign holdings of U.S. securities show that foreign investors' exposures to U.S. assets are large and growing.⁴⁵

⁴⁵Warnock (2006) documents that the exposure to U.S. security markets has increased for nearly every country over the decade 1994 to 2004.

Investors who hold portfolios of U.S. assets with a large allocation to equities, predominantly *private* investors, already face relatively high volatility in their portfolios. One lesson to draw from this may be that any additional volatility from a substantial dollar decline would be relatively less important to these investors than to those that hold largely bonds. This suggests that foreign investors who hold large proportions of their U.S. holdings in equities may be better positioned to absorb additional volatility from a substantial dollar adjustment, since this would form a relatively smaller component of overall portfolio volatility. Bonds are held somewhat disproportionately by the *official* sector, which generally holds U.S. assets for noncommercial reasons and hence is thought less likely to undertake large and rapid portfolio adjustments in response to prospects for losses and increased volatility. This may imply that a dollar decline would be less likely to be self-reinforcing than if foreign private holders held a greater proportion of their portfolios in U.S. bonds.

However, as foreign official holders expand their holdings beyond liquidity needs (as discussed in Annex 1.5), return considerations may become more important. In addition, this conclusion might be tempered as the weight of Middle Eastern countries in official reserve holdings increases, given their as-yet unknown willingness to hold dollar assets through a substantial dollar decline.⁴⁶ Nonetheless, a number of facts continue to support the baseline market view that dollar adjustment will remain orderly, including the weight of foreign official holders in U.S. assets along with their interest in maintaining orderly currency adjustment and, as documented in Annex 1.4, the fact that U.S. capital markets retain many structural attractions for foreign asset holders. Still, the risks of such a disorderly adjustment would be reduced

⁴⁶The TIC data are generally thought to underestimate holdings of Middle East oil exporters, in part because custodial bias is thought to be particularly large with such holders. In the last year, there have, in fact, been indications that these countries have diversified their reserve holdings away from U.S. assets to some extent.

by appropriate policy actions (as outlined in Chapter I) on the part of the authorities in countries that are the main counterparts to global imbalances.

Note: The main author of this annex is Elie Canetti.

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