# 5

# Challenges in Managing Capital Flows

The surging flows of international private capital and favorable global economic environment present a significant opportunity for developing countries, particularly for the middle-income countries that are the major recipients of capital flows. These and other countries that have embraced sound macroeconomic fundamentals, open international trade, and financial integration must now find ways to leverage their gains, while building an institutional and policy environment that will maintain the confidence of investors and insulate the economy from external shocks. Few policy decisions would appear as important to future growth and financial stability as those capable of preventing a recurrence of the market and policy failures of the 1990s. Although initial conditions point to better management of capital flows this time around, significant downside risks remain.

At an annual average growth rate of 5.4 percent over the past four years (2002–5), economic activity in developing economies has expanded more than twice as fast as in high-income countries. And as authorities have increasingly adopted price stability—often in the context of inflation targeting—as an integral part of their macroeconomic management, inflation has fallen dramatically in virtually all developing countries, from an annual median of 11.5 percent during 1993–6 to 4.5 percent during 2002–5. At the same time, greater autonomy in monetary policy, afforded by the widespread transition to flexible exchange rates, has allowed authorities to lower local interest rates, which, in many developing countries, are now converging to international levels. With lower local interest rates and greater exchange rate flexibility, the incentive to resort to short-term external borrowing has been reduced, thereby addressing a major policy failure that accompanied the capital surge of the mid-1990s.

These positive developments do not come without risk. Progress in macroeconomic stabilization and reform since the Asian financial crisis has not been fully matched by improvements in corporate governance; in many countries, adherence to global standards and norms is still a work in progress. Many countries still lack adequate capacity to manage risks associated with managed-float exchange rate regimes and partially liberalized capital markets. The large buildup of official foreign exchange reserves by many countries, particularly in Asia, has resulted in a high concentration of currency and interest rate risks on central banks' balance sheets, with potentially adverse fiscal consequences. On the international front, growing uncertainty about the sustainability of the current pattern of global capital flows, in which developing countries export capital to the rest of the world, particularly the United States, constitutes a major vulnerability in international capital markets. The current episode of strong capital flows to developing economies coincided initially with a considerable easing of monetary policy in industrial countries; that period came to an end in the United States in mid-2004 and in the Euro Area more recently. Rising interest rates in the industrialized world may keep some investors closer to home.

This chapter highlights the implications of recent changes in the macroeconomic and financial environment for policy makers in developing countries. It also maps out broad strategies for managing the influx of capital to serve long-term growth and development objectives. Given the differences among developing countries in their stage

of economic development, and the considerable variation in the amount and impact of different kinds of private flows, policy makers will necessarily be guided by country-specific considerations in determining the course of policy. But overall, the three core dimensions of *managing capital flows* at the current juncture are likely to be (i) ensuring macroeconomic stability and sustaining the confidence of investors so that access to international capital markets is sustained and enhanced; (ii) implementing appropriate policies and risk-management strategies to encourage allocation of capital to long-term investment and growth; and (iii) designing appropriate safeguards to enhance resilience through self-insurance and adherence to global norms and standards.

The key messages emerging from the analysis presented in this chapter are:

- Policy responses in the current period of increased capital inflows have differed in important respects from those that prevailed during the previous boom in the mid-1990s. Governments have generally managed to avoid excessive expansion of aggregate demand and large current-account deficits. Their policies have supported modest allocations of foreign capital resources to domestic investment, although the major chunk has been used to build up foreign exchange reserves. So far, fewer countries have seen their real exchange rate appreciate than during the 1990s boom. In many countries, investment rates have not yet risen to the peaks they reached before the East Asian crisis. In Indonesia, Malaysia, and Thailand, for example, investment rates remain lower than precrisis levels by 10 to 20 percentage points of GDP. At the same time, the surge in portfolio inflows has been associated with a dramatic escalation of stock market prices and valuations in many developing countries, particularly in Asia, raising the risk of asset price bubbles—and of reversals of capital flows should those bubbles burst. For oil-importing countries, higher oil prices and the consequent adjustment in the current-account balance have partly offset the impact of strong capital inflows.
- That many developing countries have accumulated foreign exchange reserves far in excess of the level required for intervention and liquidity purposes reflects in part a clear proclivity to self-insure against global financial shocks. As the volume of reserves increases, however, so does the importance of balancing their use for intervention and insurance purposes against their domestic resource costs. Allowing local institutional investors to diversify their investment portfolio globally, while ensuring more effective regulation, could provide a viable channel of capital outflow, as well as an opportunity to further diversify risk. Further, permitting such investments would have the effect of transferring foreign exchange rate risks, currently concentrated on the books of central banks, to domestic institutional investors that have a long investment horizon and can benefit from a more diversified international portfolio. Moreover, opening up a channel for capital outflows would also help to avoid the excessive exchange rate appreciations that can result from surges in capital flows.
- As developing countries become more open to international financial markets, designing and building a sound regime of external financial policy making and regulation presents an urgent challenge. A consensus has formed around the three core components of such a new regime—membership in a credible currency union, such as the European Union, or an exchange rate that reflects market forces; gradual opening of the capital account; and a monetary policy framework that favors price stability. These elements are present to varying degrees in many developing countries involved in private capital markets. Roughly one-half of developing countries are now operating under a floating exchange rate regime (free or managed), while the 11 new and aspiring members of the European Union are taking steps to peg their currencies to the euro. Priority now must be given to two points. First, the complex web of capital controls and exchange rate restrictions that persists in many countries should be simplified and, as macroeconomic policies improve and local capital markets develop, eased gradually over time. During the transition, curbs on short-term debt inflows may need to be maintained, or even strengthened, while restrictions on outflows are eased. Second, authorities must build a system of risk manage-

ment robust enough to respond to the needs of a more flexible exchange rate and open capital account.

- The development and partial application of a set of international norms and standards on transparency, corporate governance, and regulation and supervision of national financial systems has helped increase the confidence of foreign investors in emerging market economies. To promote stability and maintain a financial environment conducive to a balanced expansion and deployment of capital flows in developing countries, the international community must be assiduous in promoting the further application of those norms and standards.
- The world economy is moving toward a multipolar international monetary system in which policy interactions among the major industrial countries of the G-3—*and with key emerging market economies*—will be essential in securing an orderly adjustment of the prevailing global imbalances in external payments. One effect of inclusive interactions would be to lessen market anxiety over the course of global interest rates and capital flows. Emerging market economies, which would suffer disproportionately from the instability induced by a disorderly adjustment, share with the industrial countries the desire for a multilateral approach that will include corrective actions in deficit and surplus countries alike. In addition, policy makers in emerging market economies should take advantage of the opportunity presented by the current benign global financial market environment to build institutions and mechanisms that will enable them to navigate their economies in a world of increasingly open capital accounts and market-based exchange rates.

## Two booms in capital flows—what has changed?

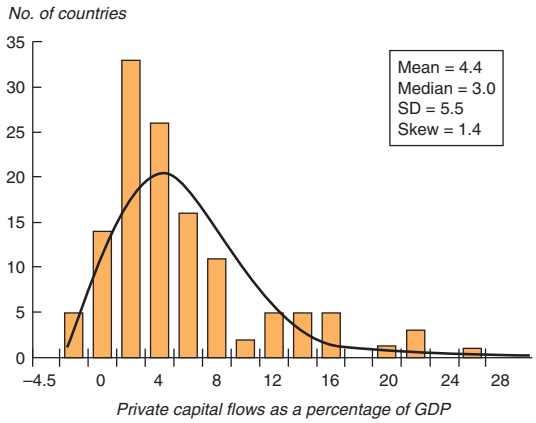
The present surge in capital flows to developing countries differs substantially from the previous episode in the mid-1990s. Greater global economic and financial integration, improved domestic macroeconomic conditions, and sounder domestic policies and institutions have enhanced the capacity of policy makers to deal with infusions of private capital. Compared with the situation in the 1990s, many developing countries today have significantly lower external debt burdens, fewer currency mismatches in their debt structures, higher reserves of foreign exchange, a more flexible exchange rate regime, and more open capital accounts. But the benign external environment in which these improvements were made may become less so in the next few years, as the major industrial countries tighten their monetary policy and as markets come to reassess their views and expectations regarding the evolution of global interest rates and capital flows.

Since the early 1990s, developing countries have experienced two episodes of heavy influx of private capital. The first, occurring in the middle of the past decade (1992–7), resulted in an increase in capital inflows from 3.2 percent of developing countries' aggregate GDP in 1992 to 5.1 percent in 1997. The second began in 2002 and continues to date. So far, it has brought a cumulative total of $1,316 billion in capital to the developing world (approximately $350 billion annually averaged over 2002–5). This last episode has led to an increase in private capital flows from 2.8 percent of developing countries' aggregate GDP in 2002 to 5.1 percent in 2005.

The macroeconomic consequences and policy responses associated with the previous surge have been explored in a large body of academic literature (Johnson and others 2000; Radelet and Sachs 1998; Corsetti, Pesenti, and Roubini 1998). The data from that period reveal several interesting patterns for developing countries that had access to international capital markets: a considerable acceleration in economic growth, a rise of two percentage points in the ratio of investment to GDP, and a considerable and widespread appreciation of national currencies in real terms (19 percent). Moreover, about one-third of the inflowing capital was allocated to the accumulation of official reserves of foreign exchange, which rose, in aggregate, from $216 billion at the end of 1992 to $572 billion at the end of 1997. These facts provide a good point of comparison for the current influx in private capital to developing countries.

Looking at the cross-country distribution of capital inflows during current episode (see figure 5.1), 67 percent of developing countries received private flows within the range of 2 to 10 percent of their GDP, and a further 16 percent received capital flows of more than 10 percent of their

**Figure 5.1 Distribution of private capital flows across developing countries, 2002–4**




*Source:* World Bank Debtor Reporting System and staff estimates.
*Note:* 134 developing countries for which we had data were used. Private capital flows to GDP were averaged over the 3 years.

GDP. The correlation between capital inflows and per capita income is positive but relatively low (0.18), reflecting the fact that many low–income countries also have attracted private capital flows, including The Gambia, Mozambique, Tanzania, and Vietnam.

The Asian financial crises of the mid-1990s provide a cautionary example of the potential macroeconomic effect on recipient countries of large capital inflows. At that time, inflows generated a sequence of currency misalignment, asset price escalation, excessive expansion of aggregate demand, inflationary pressures, current-account imbalances, capital losses on central banks' balance sheets, and financial instability—a calamitous chain of events that affected individual countries in very different ways. A large body of theoretical and empirical research over the past decade has attempted to identify confluences of global financial-market conditions and specific developing-country characteristics that could lead to a recurrence of that sequence (World Bank 1997; Calvo and others 1996; Edwards 2001; Chinn and Ito 2002; Kletzer and Spiegel 2004). That literature, combined with recent experience, points to five important trends, domestic and global, distinguishing the present cresting of capital flows from the previous episode:

- The *pattern* of private capital flows to developing countries has changed in two important respects: first, the share of short-term debt in total debt flows has declined for virtually all major debtors, particularly in crisis-affected countries; second, the composition of flows has rotated toward equity, particularly foreign direct investment (FDI).
- The shift toward more flexible exchange rate regimes has helped overcome a major policy failure underlying the financial crises of the 1990s. That shift, in conjunction with improved macroeconomic conditions, has facilitated a continued process of relaxation or removal of formal controls on many capital-account transactions in many developing countries, despite the severity and global nature of the 1997 financial crisis.
- The current account in many developing countries, particularly major oil exporters and emerging Asia, has moved from deficit to sizable surplus, contributing to the accumulation of foreign exchange reserves. The initial impetus came from countries' strenuous external adjustments to the crises of the 1990s, but high commodity prices, robust global growth over the past few years and intervention to maintain undervalued exchange rates for the purposes of export competitiveness have sustained and, in some cases, amplified the effect. These developments have combined to improve the external debt burdens of developing countries, as debt/export ratios and debt/GDP ratios have declined since their peaks in 1997–8.
- The accelerated development of local bond markets in many countries after the crises of the 1990s has been helpful to the development of a more balanced financial structure, reducing dependence on the banking sector and short-term foreign capital as sources of financing. The presence of a well-functioning government bond market facilitates the conduct of monetary policy through open market operations and helps improve debt management. (This development is discussed in chapter 2.)
- External changes that are likely to affect the climate for capital flows include the euro's growing role as a major international reserve currency, which widens policy makers' choices. Higher international interest rates and likely volatility in exchange rates, by contrast, will constrain policy making. The long and aggressive phase of monetary easing that started

in the United States in 2001 came to an end in June 2004, with the Euro Area following suit a few months later. (See Chapter 1.)

The first three of those trends are discussed below.

### *The composition of capital flows is changing*

The composition of private foreign capital flowing to developing countries during the current surge has shifted decisively toward equity, predominantly FDI. The shift reflects government policies that encourage equity and aim to reduce dependence on external borrowing. Thus, on average, FDI accounts for 57 percent of private capital flows to developing countries (figure 5.2), much higher than portfolio equity (9 percent) and higher even than short- and long-term bank debt combined (33 percent). In the mid-1990s, by contrast, the same figures were 47 percent for FDI, 11 percent for portfolio equity, and 42 percent for debt. The trend toward equity in the composition of private capital flows has been particularly pronounced in the two regions (Latin America and the Caribbean and East Asia and the Pacific) that were most directly affected by the string of financial crises in the 1990s.

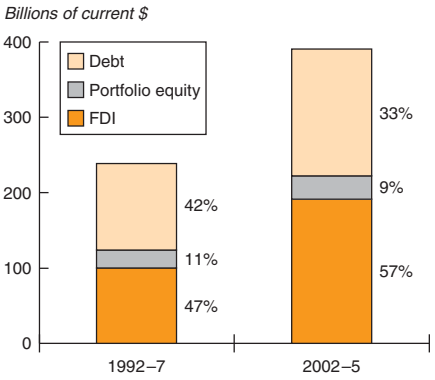
Greater reliance on equity financing also improves countries' external liability profile, because equity flows are more focused on long-term economic prospects and offer better risk-sharing characteristics than debt flows. Moreover, FDI tends to be more stable than debt, in the sense that current FDI is strongly correlated to its past levels; the coefficient of persistence of FDI, using a simple autoregressive estimation for a sample of developing countries, is found to be on average 0.62, while it is 0.52 on debt (both short and long term).[1]

An indication of the improvement brought about by the changing composition of capital flows is the significant reduction in the ratio of external debt to gross national income (GNI) for developing countries as a whole—from a peak of 44 percent in 1999 to about 34 percent in 2004—and particularly for countries in East Asia and Latin America. In Europe and Central Asia, however, the ratios remain relatively high compared with those seen in the early 1990s.

A further sign of improved external liability positions in the developing world can be found in the ratio of foreign exchange reserves to short-term debt. Developing countries as a group are now much better equipped than previously to deal with the potential volatility of private capital flows. Looking at reserve holdings on a regional basis, each of the regions holds in the form of reserves at least 1.5 times their short-term debt (figure 5.3). The ratio is particularly high in East Asia (8.3), largely because of China, whose accumulated reserves are 38 times greater than its short-term debt. The rising ratio of reserves to short-term debt reflects not only the spike in reserve holdings, but also the decline in short-term debt as a percentage of total debt in most developing countries since the mid-1990s (table 5.1).

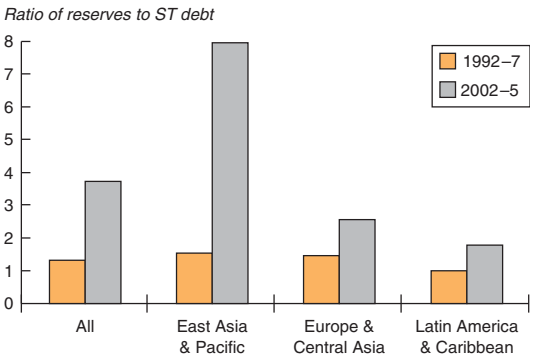
The rotation towards equity and reduced reliance on short-term debt flows have significant policy implications for the management of capital

**Figure 5.2 Composition of financial flows to developing countries, 1992–7 and 2002–5**




*Source:* World Bank Debtor Reporting System and staff estimates.

**Figure 5.3 Ratio of foreign exchange reserves to short-term debt, by region**




*Source:* World Bank Debtor Reporting System and staff estimates.

flows to developing countries, as they enhance the scope for monetary policy autonomy. Equity flows, in contrast to debt flows, tend to move countercyclically with local interest rates, increasing during periods of low domestic interest rates due to the positive impact of low interest rates on domestic growth and corporate profitability and valuation. The classical Mundell-Fleming model (Mundell 1963, Fleming 1962) of the open economy and the implied impossible trinity—that countries can pursue only two of the three objectives of fixed exchange rates, free capital mobility, and independent monetary policy—is predicated on the assumption that capital inflows are composed predominately of short-term debt. In an equity dominated pattern of capital flows, authorities have more autonomy in pursuing interest rate policies geared toward domestic goals.

### *Countries now have more flexible exchange rates and more open capital accounts*

Policies on exchange rates and capital controls are particularly important for developing countries, because external developments have a greater effect on domestic inflation, monetary transmission, and financial stability in developing countries than in industrial countries. Most developing countries are already more open to international trade in goods and services than are developed countries: from 2002 to 2004, developing countries' trade averaged 54.5 percent of GDP, compared to 39 percent in developed countries. But developing countries as a group also face a potentially higher degree of volatility in capital flows, and changes in the exchange rate may translate more quickly into domestic inflation than in developed countries.[2] Even with their recent progress in launching local-currency debt issues on global markets (see Chapter 2), developing countries still have much larger shares of their external debt denominated in foreign currencies than do industrial countries (Eichengreen and Hausmann 1999; Hawkins and Turner 2000). Such conditions predispose an economy to greater vulnerability to external financial shocks.

Virtually all capital flow–related financial crises of the 1990s involved a fixed peg or crawling band exchange rate regime and considerable currency mismatch on the balance sheets of both public and private borrowers (Fischer 2001; Goldstein 2002). When countries maintain such exchange rate regimes (fixed pegs or crawling bands), investors and borrowers may believe there is less need to hedge currency movements, and the risk of borrowing in foreign currency appears to be reduced, encouraging excessive exposure. However, if a crisis does hit, and the central bank cannot maintain the peg or band, the costs to the banking system and corporate sector can be substantial and damaging.

Partly due to this experience, several developing countries have adopted greater exchange rate flexibility, moving to a variety of managed-float regimes, with central banks retaining the ability to intervene in the market to influence the exchange rate and limit volatility. Since the early 1990s, nearly 50 developing countries have abandoned fixed or crawling pegs in favor of managed floats or fully flexible exchange rates (figure 5.4). Notable examples are Mexico (1994), Indonesia (1997), Colombia (1999), Brazil (1999), Chile (1999), and the Russian Federation (2002). In July 2005, the Bank Negara Malaysia adopted a man-

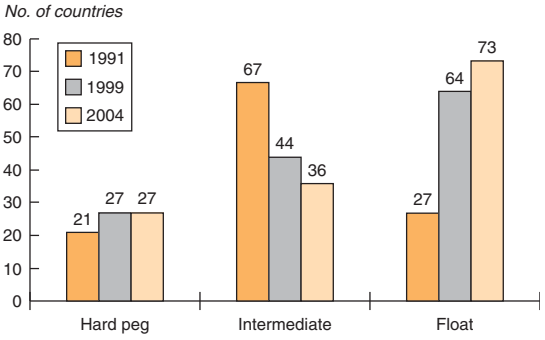
**Table 5.1 Ratio of short-term debt to total debt in major borrowing countries, 1996–2004**

*Percent*

| | Short-term debt/total debt | | |
|---|---|---|---|
| Country | 1996 | 2004 | Change |
| China | 19.7 | 47.2 | 27.5 |
| Poland | 6.1 | 17.0 | 10.9 |
| Czech Rep. | 28.5 | 37.5 | 9.0 |
| Russian Fed. | 9.5 | 17.8 | 8.4 |
| Hungary | 12.3 | 19.5 | 7.2 |
| Venezuela, R. B. de | 7.9 | 12.2 | 4.3 |
| Egypt | 7.4 | 9.7 | 2.3 |
| Algeria | 1.0 | 2.0 | 1.0 |
| India | 7.2 | 6.1 | –1.1 |
| Turkey | 21.7 | 19.7 | –2.0 |
| Argentina | 21.2 | 16.2 | –4.9 |
| Nigeria | 18.1 | 12.8 | –5.3 |
| Pakistan | 9.4 | 3.5 | –6.0 |
| Malaysia | 27.9 | 21.9 | –6.0 |
| Colombia | 20.4 | 14.2 | –6.2 |
| Indonesia | 25.0 | 17.4 | –7.6 |
| Chile | 25.7 | 17.5 | –8.2 |
| Brazil | 19.8 | 11.4 | –8.4 |
| Philippines | 18.1 | 8.3 | –9.8 |
| Mexico | 19.1 | 6.6 | –12.5 |
| South Africa | 41.6 | 27.8 | –13.8 |
| Peru | 22.2 | 8.0 | –14.2 |
| Thailand | 42.3 | 22.4 | –19.9 |
| **Average[a]** | **18.8** | **16.4** | **–2.4** |

*Sources:* IMF, International Financial Statistics and World Bank staff estimates.
*Note:* Major borrowing countries, based on the average volume of total debt stock over the period of 1996–2004 (in descending order).
a. Excluding South Africa.

**Figure 5.4 Changes in exchange rate flexibility, 1991–2004**




*Sources:* IMF Annual Report on Exchange Arrangements and Exchange Restrictions and World Bank staff estimates.

aged float for the ringgit with reference to a currency basket and the People's Bank of China revalued the renminbi and announced that it would be determined with reference to a currency basket.

Evidence also suggests that many developing countries pursuing a managed float are tolerating a greater degree of short-term fluctuation in their currencies.[3] Figure 5.5 displays the frequency distribution of daily percentage changes in the bilateral exchange rates of currencies in several crisis-affected countries against the U.S. dollar during the current and previous surges in capital flows. The left panel shows movements during the 1990s surge; the right panel shows current movements. The bell-shaped daily fluctuations in exchange rates in the current episode indicate two-way movements in bilateral exchange rates.

Successful management and operation of a flexible exchange rate regime requires proper policy frameworks, market microstructure, and institutions to ensure smooth functioning of foreign exchange markets. Policy decisions must be made about whether to rely on interest rates and intervention to stabilize exchange rates at times of high volatility or uncertainty. Such decisions require an assessment of the underlying sources of exchange rate volatility, which in the context of many developing countries often implies gauging the sustainability of capital flows. For example, policy makers might ask whether a surge in capital flows was composed primarily of volatile portfolio capital or speculative debt, on the one hand, or more stable and predictable FDI flows, on the other. When pressure on the exchange rate stems from temporary shocks or volatile capital flows, intervention and interest rates, singly or in combination, should be considered as tools to limit short-run exchange rate fluctuations.

There are institutional and microstructure requirements associated with managing a flexible exchange rate regime. The key steps involve the development of local money, capital, and cross-border derivatives markets to provide the necessary depth, sophistication, and hedging possibilities for managing currency risk, thereby providing stability for private agents and the economy as a whole.

### *Real exchange rate appreciation has been mild*

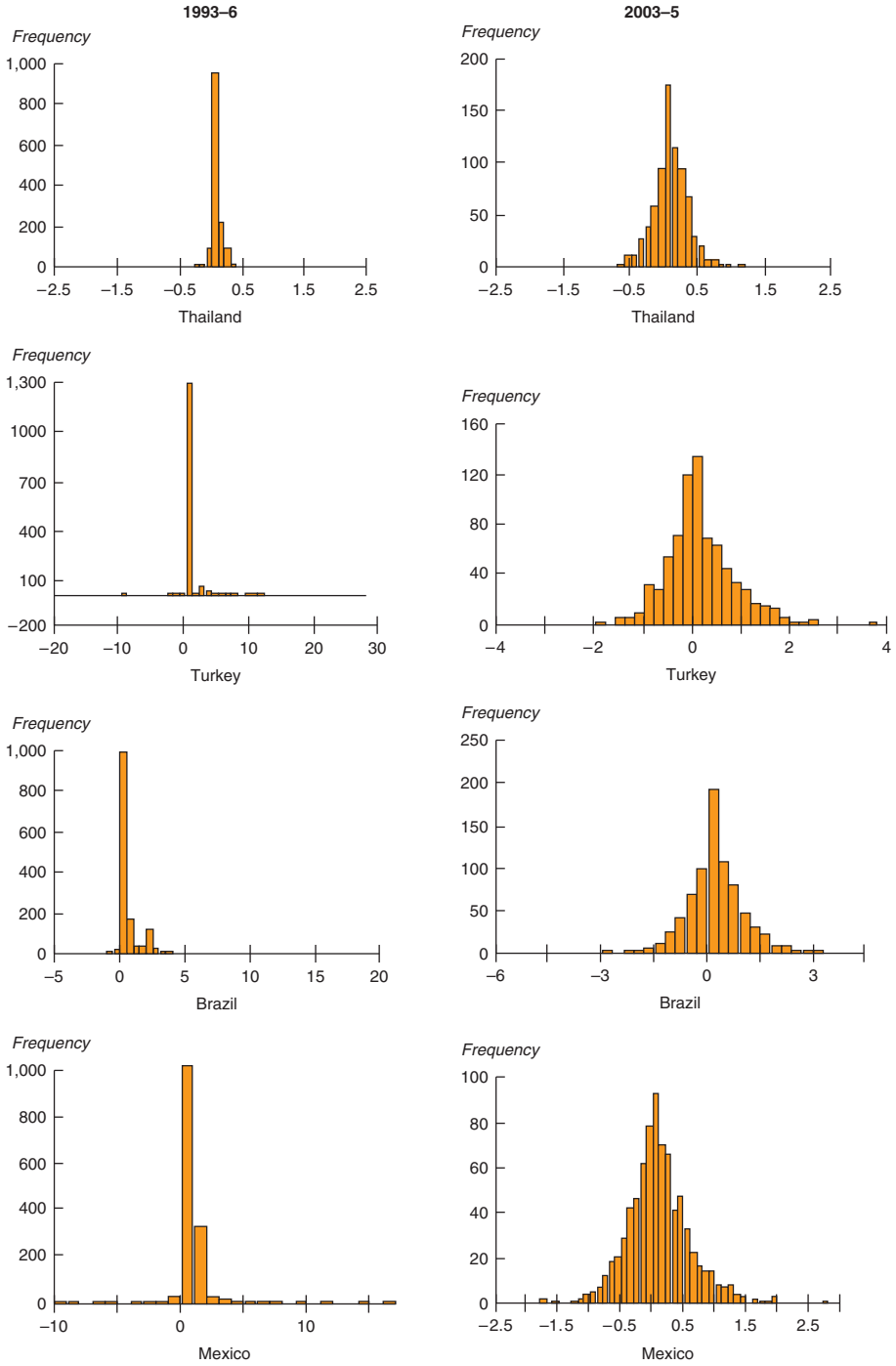
A significant, sustained, and rapid appreciation in a country's real exchange rate is one of the precursors of a currency crisis.[4] Figure 5.6 shows the movements in real effective exchange rates in two of the regions that experienced some of the largest exchange rate corrections during the crises of the 1990s. The appreciation in real exchange rates in the last few years has been much milder than during that period. Latin America shows stronger appreciation over 2004–5 than does East Asia.

Looking at some individual countries, the real exchange rate appreciated in 60 percent of developing countries over the period 1993–6, while only about one-third experienced an appreciation in 2002–4. Moreover, the range of appreciations during the second surge has been significantly smaller (figure 5.7).[5]

### *Easing of capital controls*

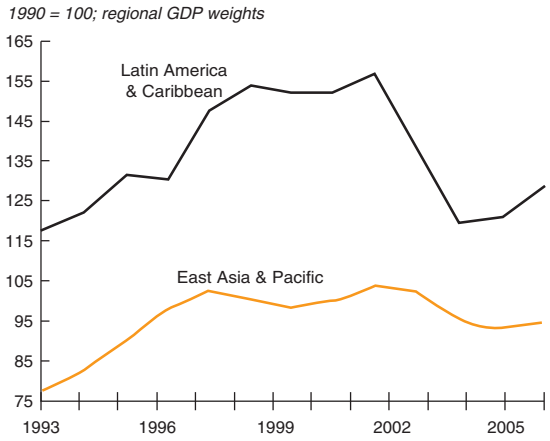
Since the 1990s, the shift to floating exchange rates, the convergence of the currencies of Eastern Europe toward the euro, and the deepening of local capital markets have enabled many developing countries to ease capital controls and foreign exchange restrictions. Progress in formulating and implementing such liberalization measures across developing countries has been uneven, however, as countries have moved at different paces and with different degrees of rigor (see box 5.1). The clearest trend is in the liberalization of exchange rate restrictions. The number of countries that declared their currencies convertible on the current account, which often precedes capital-account convertibility, rose from approximately 62 in 1990 (or 40 percent of the IMF's membership) to 164 in 2004 (or almost 90 percent of the IMF's membership).

**Figure 5.5 Frequency distribution of daily percentage changes in exchange rates for selected developing countries, 1993–6 vs. 2003–5**



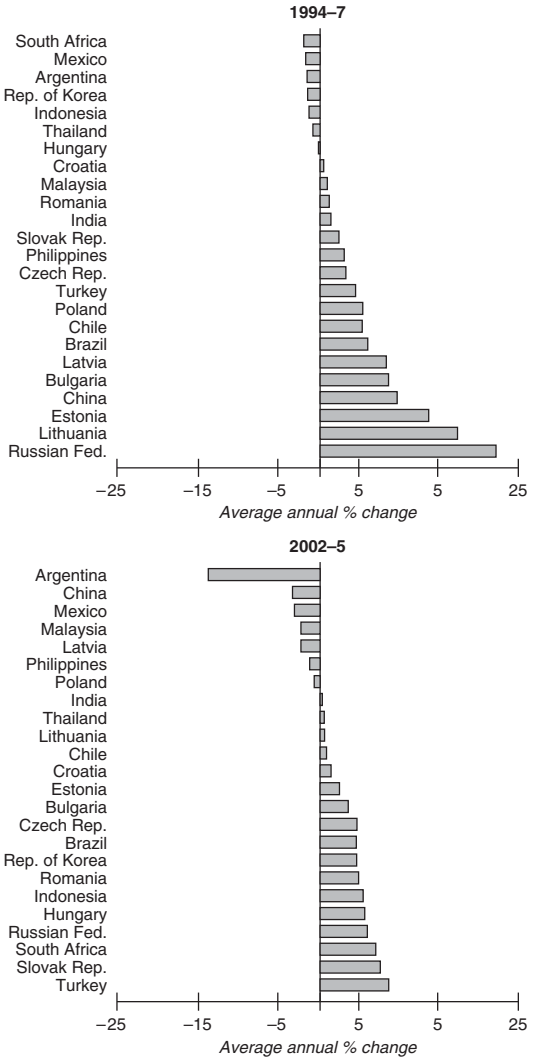

*Sources:* Bloomberg data service and World Bank staff calculations.
*Note:* The figures show the frequency distribution of daily percentage changes in the exchange rate between local currency and U.S. dollars. Increases in the exchange rate represent depreciations against the U.S. dollar, and decreases represent appreciation.

**Figure 5.6 Movements in real effective exchange rates in East Asia and Latin America, 1993–2005**




*Sources:* IMF, International Financial Statistics and World Bank staff calculations.

**Figure 5.7 Real exchange rates for selected countries that receive higher-than-average private capital inflows as a ratio to GDP, 1994–7 and 2002–5**




*Sources:* Bank for International Settlements and World Bank staff estimates.

Three trends stand out in the liberalization of capital-account transactions:

- The easing or removal of quantitative restrictions on residents' issuance of securities, including debt, and outward FDI by private resident entities
- The relaxation of limits on nonresidents' access to local money and securities markets
- The reduction or elimination of taxes on capital-account transactions.

In Chile, for example, the limit on outbound foreign investment by private pension funds was increased in 2003–4 from 16 to 30 percent, enabling local investors to hold diversified portfolios despite the small size of local capital markets. In Malaysia and Thailand, approved domestic institutional investors may now invest up to 10 percent of their assets abroad. In the Republic of Korea, residents are encouraged to invest in overseas mutual funds to mitigate the impact of foreign inflows. And in India, new measures have relaxed overseas investment restrictions on banks and mutual funds, allowing banks to invest in money market and debt instruments abroad and raising from $500 million to $1 billion the limit on mutual funds' investments in companies listed abroad. In Brazil this year, foreign investors were exempted from a 15 percent withholding tax on local government debt investments.

### *Many countries with open capital accounts have floating exchange rates*

The growing group of developing countries that are considered relatively open to capital movements appears in table 5.2. A variety of indices of financial openness were used to compile the list (Chinn and 2002; Miniane 2004; Edwards 2005; Quinn 1997; and Brune and others 2001). The countries in the table all have achieved currency

## Box 5.1 Preconditions for capital-account liberalization

By the early 1990s, under the Code of Liberalization of Capital Movements of the Organization for Economic Co-operation and Development (OECD), developed countries had moved to open their capital accounts fully to cross-border financial transactions, including capital-market securities, money-market operations, and derivatives instruments. Developing countries, by contrast, have continued to maintain, though in varying degrees, a wide range of administrative capital controls and foreign exchange restrictions. Capital-account regulation ranges from quantitative limitations on certain transactions (or on associated transfers of funds) to indirect measures intended to influence the economic incentives of engaging in certain transactions (IMF various years; Dailami 2000; and Eichengreen 2001). Although country circumstances vary, controls generally have three goals: to discourage short-term external debt flows in favor of longer-term investments, such as FDI (a motivation that gained momentum after the East Asian crises); to enhance monetary autonomy and exchange rate stability; and to allow time for the establishment of an institutional and policy framework within which capital-account liberalization will be successful (Rodrik 1999; Stiglitz 2002).

The liberalization of capital accounts must be accompanied by sound economic policies and institutions, so that governments are prepared to deal with the volatility inherent in capital markets. The preconditions for a safe transition to a more open capital account in most developing countries include a track record of fiscal prudence and stability (specifically, low inflation and a low fiscal deficit), a deep and well-regulated financial system, and adequate levels of reserves to provide the necessary buffer against adverse external shocks. Against such a backdrop, a deliberate and sequenced opening will signal to financial markets the government's commitment to sound finance, thereby contributing to more stable capital flows. Once capital-account liberalization has progressed, it is very costly to reverse, and the reinstitution of capital controls should be considered a last resort, appropriate only when alternative policy options have been exhausted. Even then, authorities would have to consider the reputational costs of invoking controls and carefully assess the likelihood that the controls would meet their declared objectives in today's large and rapidly changing global financial environment (Goldfajn and Minella 2005; Edwards 2005; Carvalho and Garcia 2005).

convertibility on the current account of the balance of payments—but they maintain some controls on capital-account transactions. The table also reports on three other aspects of these countries' external financial profile: exchange rate regime, monetary policy framework, and the number of years that currency convertibility on current accounts (signifying acceptance of IMF Article VIII) has been in effect. It also indicates whether there exists an offshore nondeliverable foreign exchange forward market (NDF)[6] for each currency. Most countries that are largely open to capital-account transactions maintain a flexible exchange rate arrangement. This affords policy makers a degree of autonomy in setting interest rates to achieve price stability, something particularly desirable for countries such as Brazil, Chile, Mexico, the Philippines, South Africa, and Thailand, which have adopted inflation targeting as an anchor for monetary policy.

Along with the shift to greater exchange rate flexibility, a number of developing countries have moved to inflation targeting regimes. Twelve of the 32 developing countries considered to be relatively open to capital movements had adopted inflation targeting regimes by the end of 2005—several in the course of the year (table 5.2). Recent research (IMF 2006) indicates that a number of developing countries that have pledged to use inflation targeting as their monetary policy framework have had better macroeconomic performance and in particular have outperformed countries with other frameworks.[7]

Six of the same 32 countries allow offshore trading in their currencies through NDFs, which are similar to ordinary forward foreign exchange contracts, with the exception that at maturity they do not require physical delivery of currencies and are typically settled in U.S. dollars. NDFs are largely short-term instruments—one month to one year—and are increasingly relied upon by foreign investors to hedge their exposures against currencies that are not traded internationally and that are not convertible on capital-account transactions. Once a country permits convertibility and develops onshore foreign exchange markets, NDF markets tend to diminish. Although NDFs are helpful instruments for managing cross-border

**Table 5.2 Profile of external financial policy for developing countries considered relatively open to capital movements**

*As of 2005*

| Largely open countries | Exchange rate regime | Monetary policy | Years since article VIII assumed | Offshore currency derivatives market |
|---|---|---|---|---|
| Bolivia | Intermediate | Exchange rate anchor | 38 | |
| Botswana | Intermediate | Exchange rate anchor | 10 | |
| Costa Rica | Intermediate | Exchange rate anchor | 40 | |
| Croatia | Floating | IMF program | 10 | |
| Czech Rep. | Floating | Inflation target | 10 | |
| Dominican Rep. | Floating | — | 52 | |
| Ecuador | Hard peg | Exchange rate anchor | 35 | |
| Egypt, Arab Rep. of | Floating | M aggregate | 1 | |
| El Salvador | Hard peg | Exchange rate anchor | 59 | |
| Estonia | Hard peg | — | 11 | |
| The Gambia | Floating | — | 12 | |
| Guatemala | Floating | Inflation target | 58 | |
| Hungary | Intermediate | Inflation target | 9 | |
| Indonesia | Floating | Inflation target | 17 | Yes |
| Jamaica | Floating | M aggregate | 42 | |
| Jordan | Hard peg | Exchange rate anchor | 10 | |
| Kenya | Floating | IMF program | 11 | |
| Latvia | Intermediate | Exchange rate anchor | 11 | |
| Lebanon | Intermediate | Exchange rate anchor | 12 | |
| Mexico | Floating | Inflation target | 59 | Yes |
| Nicaragua | Intermediate | Exchange rate anchor | 41 | |
| Panama | Hard peg | Exchange rate anchor | 59 | |
| Peru | Floating | Inflation target | 44 | Yes |
| Philippines | Floating | Inflation target | 10 | Yes |
| Poland | Floating | Inflation target | 10 | |
| Romania | Floating | Inflation target | 7 | |
| Slovak Rep. | Floating | Inflation target | 10 | Yes |
| Thailand | Floating | Inflation target | 15 | Yes |
| Trinidad & Tobago | Hard peg | — | 12 | |
| Turkey | Floating | Inflation target | 15 | |
| Uruguay | Floating | M aggregate | 25 | |
| Zambia | Floating | M aggregate | 3 | |

*Sources:* World Bank staff calculations based on Ito and Menzies 2002; Miniane 2004; Edwards 2005; Quinn 1997; Brune and others 2001 and Annual Report on Exchange Arrangements and Exchange Restrictions, IMF, various years.
*Note*: Monetary policy: Inflation target = Public announcement of medium-term numerical targets for inflation with an institutional commitment by the monetary authority to achieve those targets. M aggregate = Monetary authority uses its instruments to achieve a target growth rate for a monetary aggregate that becomes the nominal anchor or intermediate target of monetary policy. Exchange rate anchor = Monetary authority stands ready to buy and sell foreign exchange at quoted rates to maintain the exchange rate at its predetermined level or range. IMF program = Implementation of monetary and exchange rate policy within the confines of a framework that establishes floors for international reserves and ceilings for net domestic assets of the central bank.

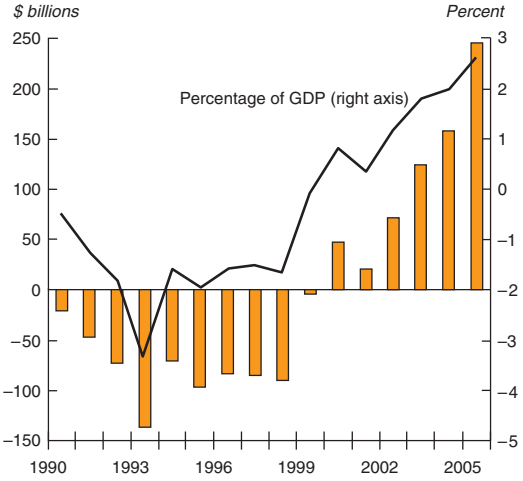
currency risk, regulatory agencies in developing countries need to keep a close eye on them, given the illiquidity of the currencies that underlie NDF transactions and the potential for speculative behavior.

### *Many countries now show surpluses on both their current and capital accounts*

Developing countries as a group have undergone a significant turnaround in the past several years in their external payment positions, moving from an aggregate current-account deficit of $89 billion (1.6 percent of GDP) in 1998 to a sizable surplus of $248 billion (2.6 percent of GDP) in 2005 (figure 5.8). This stands in marked contrast to the pattern observed in the first capital boom of 1992–7, when developing countries as a whole ran an aggregate current-account deficit of 2 percent of GDP per year (or an aggregate deficit of $547.7 billion from 1992–7).

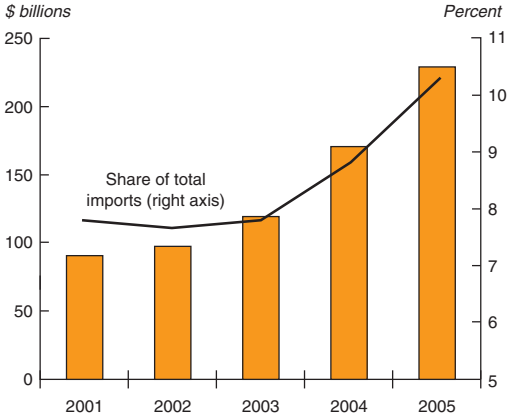
Much of the current-account surplus accumulated during the present surge is attributable to oil exporters and emerging Asia, which are benefiting from high oil prices and strong export growth, respectively. The net oil-exporting countries as a group have seen large gains in their current-account surpluses, posting an aggregate surplus of close to $219 billion in 2005, up from $50 billion

**Figure 5.8 Current-account balance, developing countries, 1990–2005**




*Sources:* IMF, International Financial Statistics and World Bank staff calculations.

**Figure 5.9 Value of oil imports, oil-importing countries, 2001–5**




*Sources:* World Bank Debtor Reporting System and staff estimates.

**Table 5.3 Current account aggregated by region, 1997–2005**

*$ billions*

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005e |
|---|---|---|---|---|---|---|---|---|---|
| All developing countries | –84.7 | –89.4 | –4.1 | 47.1 | 18.8 | 69.8 | 122.3 | 153.1 | 248.4 |
| East Asia and Pacific | 17.2 | 59.8 | 60.3 | 53.7 | 39.8 | 61.2 | 74.9 | 93.6 | 143.4 |
| Europe and Central Asia | –27.7 | –24.5 | –1.3 | 16.3 | 17.6 | 5.6 | –2.0 | 4.2 | 23.2 |
| Latin America and Caribbean | –65.3 | –89.4 | –55.4 | –46.8 | –51.9 | –14.9 | 8.4 | 19.0 | 33.9 |
| Middle East and North Africa | 4.5 | –9.7 | 6.2 | 25.3 | 15.4 | 12.0 | 28.3 | 41.0 | 76.0 |
| Others | –13.3 | –25.4 | –13.2 | –0.7 | –0.2 | 8.1 | 14.3 | –2.3 | –23.5 |
| *Memo item* | | | | | | | | | |
| Oil exporting countries | –32.5 | –47.5 | 26.9 | 87.4 | 41.4 | 49.3 | 91.3 | 131.2 | 219.0 |
| Oil importing countries | –52.2 | –42.0 | –30.9 | –40.3 | –22.6 | 20.6 | 31.0 | 21.9 | 29.5 |
| excl. China | –89.2 | –73.4 | –52.0 | –60.8 | –40.0 | –14.9 | –14.9 | –46.6 | –97.2 |

*Sources:* IMF, International Financial Statistics and World Bank data reporting system.
e = estimate.

in 2002. By contrast, the current-account position of oil-importing developing countries has increased from a surplus of $21 billion in 2002 to a surplus of $30 billion in 2005. The rise in their oil import bills from an aggregate value of $91.2 billion in 2001 to $229.8 billion in 2005 (now equal to approximately 10 percent of their total imports of goods and services—figure 5.9) is substantially greater than the change in their current account, as the boom in non-oil commodity prices has cushioned somewhat the impact of rising oil prices.

Meanwhile, the Eastern Europe and Central Asia regions have recorded a large surplus, largely because of strong oil exports from the Russian Federation that mask deficits elsewhere in the region. And in Latin America, thanks to favorable prices for many non-oil commodity exports and relatively strong global economic growth, the region's surplus increased in 2005 to $33.9 billion (table 5.3)—the largest current-account surplus recorded for that region in 25 years.

The overall surpluses appearing on the current and capital accounts of the balance of payments of many countries reflect an increase in holdings of foreign currency due to net inflows from trade, workers' remittances, and financial transactions (table 5.4).

For developing countries as a whole, these inflows have increased steadily since 2000. In 2005, the combined current accounts and recorded capi-

**Table 5.4 Sources of reserve accumulation, 1997–2005**
*$ billions*

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005e |
|---|---|---|---|---|---|---|---|---|---|
| Change in reserves | 52 | 16 | 33 | 45 | 82 | 172 | 292 | 405 | 392 |
| Current account balance | –85 | –89 | –4 | 48 | 21 | 72 | 124 | 158 | 246 |
| Balance on goods & services | –53 | –44 | 33 | 76 | 48 | 86 | 107 | 128 | 146 |
| Net workers' remittances | 71 | 73 | 77 | 84 | 96 | 113 | 141 | 160 | 167 |
| Capital account | 332 | 260 | 241 | 211 | 210 | 209 | 303 | 418 | 464 |
| Net private capital flows | 293 | 199 | 198 | 188 | 154 | 172 | 272 | 397 | 483 |
| Net official capital flows | 38 | 61 | 42 | 23 | 55 | 38 | 31 | 22 | –19 |
| Residents' foreign asset accumulation and errors & omissions | 195 | 155 | 204 | 213 | 148 | 109 | 136 | 172 | 318 |

*Sources:* IMF, International Financial Statistics and World Bank data reporting system.
e = estimate.

tal accounts of the developing world amounted to $710 billion (7 percent of their aggregate GDP), of which $392 billion was channeled into reserves by the official sector and the rest invested abroad by residents in the form of FDI, portfolio holdings, and other vehicles. (The cited figures include errors and omissions in the balance-of-payments accounts.) The opening of capital accounts by many developing countries in recent years has increased opportunities for capital outflows by firms and other private investors seeking to improve their returns through international diversification.

Policy responses to such influx of liquidity must take into account the difference in the dynamics and cyclical characteristics of current-account positions and private capital flows. Private capital flows to developing countries tend to move procyclically, in line with global economic activity as expressed in GDP, trade, and commodity prices. They increase during upswings in commodity prices, for example, and decrease during downturns, which tends to amplify balance-of-payment swings from oil and other commodities. Current-account positions, by contrast, are less volatile than capital flows; they move in a countercyclical fashion with respect to the business cycle (Lane 2003). Box 5.2 provides an estimate of the sensitivity of private capital flows to international commodity price movements from 1980 to 2005. For developing countries as a whole, private capital flows were twice as large during upturns as they were during downturns, averaging $237 billion (in constant U.S. dollars) during upswings in commodity prices, and $109 billion during downswings.

While capital flows tend to rise during upswings of economic cycles and decline in bad times, remittances tend to be countercyclical relative to recipient countries' economies. Remittances (which are the largest source of external financing in many developing countries) may rise when the recipient economy suffers a downturn in activity, or because of macroeconomic shocks due to financial crisis, natural disaster, or political conflict (Clarke and Wallsten 2004, Kapur 2003, Yang 2004 and 2005), as migrants may send more funds during hard times to help their families and friends.[8] According to official statistics, in 2005 remittance flows are estimated to have exceeded $233 billion worldwide, of which developing countries received $167 billion.

### *Current-account surpluses have fed foreign exchange reserves*

Although the pace of foreign exchange reserve accumulation slowed somewhat in 2005 in several developing countries, including India, Thailand, and Malaysia, the conversion of current-account surpluses into official reserves has continued. For developing countries as a group, the stock of official foreign exchange reserves reached $2 trillion by the end of 2005, compared to $1.6 trillion in 2004 and $1.2 trillion in 2002. In 2005, 92 of 127 developing countries increased their reserves, with the largest accumulations occurring in China and oil-exporting countries (figure 5.10). In relation to the size of their international trade, developing countries' reserve holdings are now twice as large as those in developed countries (figure 5.11). Demand for official foreign currency reserves in major industrial countries has been more subdued, given their free-floating exchange rates, well-developed capital markets, and less vulnerable economies. At the end of 2005, the Euro Area reported $167 billion in reserves (European Central

# Box 5.2 Capital flows are procyclical with respect to non-oil commodity markets

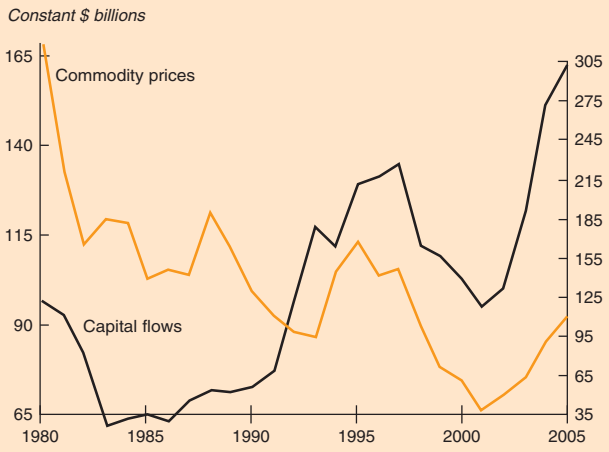
Capital flows to developing countries tend to move procyclically with world commodity prices, increasing when commodity prices are high and decreasing when they are low. Two factors account for this. First, commodity prices typically are negatively correlated with fixed income and equity markets in advanced countries. Capital is pushed to the developing world when returns in mature capital markets are low (typically during upturns), and vice-versa. Second, commodities still account for a large share of developing-country exports and production, affecting their terms of trade and real exchange rates, and potentially influencing business-cycle fluctuations, particularly in countries characterized as having "commodity currencies" (Chen and Rogoff 2002; Mendoza 1995; Cashin and others 2003). Thus the rise in aggregate demand increases domestic borrowing. Equally, as developing countries tend to face quantitative constraints on their borrowing, the rise in creditworthiness that comes with higher earnings on commodity exports increases foreign lenders' willingness to supply funds. The relationship between capital flows and commodity prices is displayed in the figure below, which shows the behavior of net private capital flows (deflated by the U.S. GDP deflator) to developing countries, and the world price (in real terms) of their non-energy commodity exports from 1980 to 2005.

This co-movement poses a problem for the management of capital flows in developing countries because, when commodity prices are falling (signaling a downturn in economic activity), capital flows also tend to fall, potentially exacerbating the effects of an economic downturn for the developing country.

Over the period 1980–2005, downswings in world commodity prices (for those commodities that form a significant portion of developing-country exports) averaged 16 years, while upswings averaged 8.5 years. For developing countries as a whole, private capital flows were twice as large during upturns as they were during downturns, averaging $237 billion (in constant U.S. dollars) during upswings in prices, and $109 billion during downswings. This tendency is also confirmed by detailed regional analyses using region-specific commodity price indices (excluding energy) and capital flow data. The correlation between private capital flows and commodity prices is particularly pronounced in East Asia, Europe and Central Asia, and Latin America. During the upturns in commodity prices, private capital flows in East Asia, for example, were 3.1 times larger than they were during downturns. Similarly, in Europe and Central Asia, private capital flows were 3.2 times larger during upturns than downturns. In the other three regions, private capital flows in total are more modest, although they also tend to move procyclically.

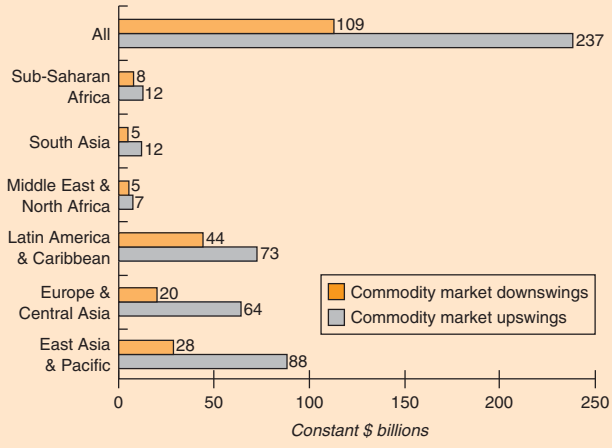
The recent surge in private capital flows is a good illustration of this experience. Net private capital flows rose from $154 billion in 2001 to an estimated $483 billion in 2005, while non-oil commodity prices increased by 55 percent, and oil prices by 119 percent, in dollar terms. This raises an important issue for oil importers: because the non-oil commodity-price cycle may have reached a peak, while oil prices are likely to remain high (see chapter 1), oil importers face the prospect of further declines in their terms of trade, coupled with a fall in private capital flows. It remains to be seen whether the improved macroeconomic environment achieved in recent years will be sufficient to cope with a substantial fall in both export revenues and external finance.

**Private capital flows in line with non-oil commodity prices**



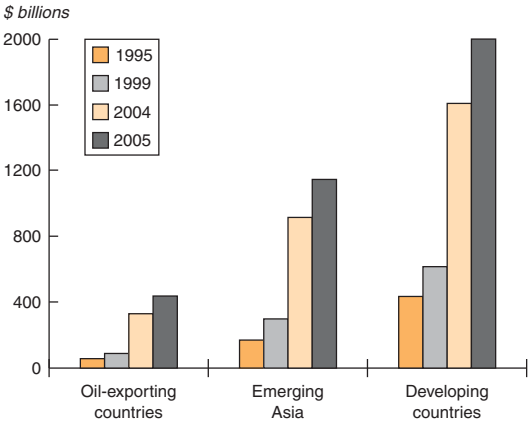

*Sources:* World Bank Debtor Reporting System and staff estimates.

**Volume of private capital flows during cycles, 1980–2005**



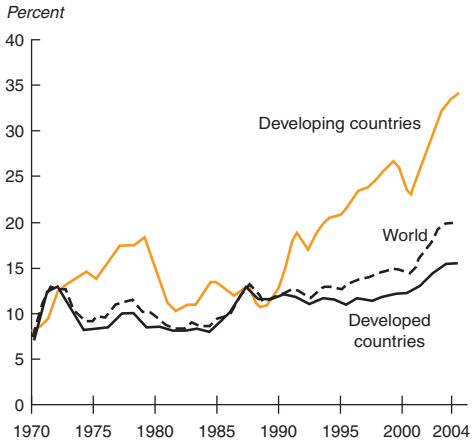

*Sources:* World Bank Debtor Reporting System and staff estimates.

**Figure 5.10 Foreign exchange reserves, by region, 1995–2005**




*Sources:* IMF, International Financial Statistics and World Bank staff calculations.

**Figure 5.11 Foreign exchange reserves as a share of trade, 1970–2003**




*Source:* World Bank staff calculations.

Bank and Euro-System); the United States, $37.8 billion (combined reserves of the Federal Reserve's Open Market Account and the Treasury Department's Exchange Stabilization Fund); the United Kingdom, $40.9 billion; and Japan, $828.8 billion, the largest amount among the developed countries.

The large-scale reserve buildups in developing countries reflect central banks' policies of intervening in foreign exchange markets. In practice, the central banks purchase from private and public entities part or all of their inward flow of foreign exchange, paying for them with a mix of local currency and debt instruments. Massive foreign exchange intervention, therefore, is very likely to have expansionary domestic monetary implications in many developing countries. The authorities in many high-reserve countries have so far managed to contain expansionary outcomes through large-scale and routine sterilizations using open-market operations and other means. In almost all countries included in table 5.5, the change in net foreign assets on the central bank's balance sheets between 2001 and 2005 has been largely offset by a decrease in net domestic assets, leaving reserve money largely unchanged as a percentage of GDP.

### *The accumulation of reserves has concentrated risks on central bank balance sheets*

The effect of the sterilization of capital flows is to transfer much of the currency risk associated with the intermediation of capital flows to the public sector, particularly to the central bank. When the

**Table 5.5 Changes in central bank balance sheets, 2001–5**

*% change relative to GDP*

| | Net foreign assets | | | Net domestic assets | | | Reserve money | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2001 | 2005 | Change | 2001 | 2005 | Change | 2001 | 2005 | Change |
| Brazil | 5.0 | 5.2 | 0.2 | 10.8 | 4.8 | –6.0 | 6.6 | 11.1 | 4.5 |
| China | 19.6 | 34.4 | 14.8 | 22.0 | 6.7 | –15.3 | 42.3 | 35.3 | –7.0 |
| Czech Rep. | 22.5 | 25.0 | 2.5 | –2.2 | –5.0 | –2.8 | 22.3 | 10.7 | –11.5 |
| India | 10.2 | 20.2 | 10.0 | 8.0 | 0.2 | –7.8 | 13.8 | 16.3 | 2.5 |
| Malaysia | 35.0 | 57.4 | 22.4 | –6.8 | –6.5 | 0.3 | 12.0 | 11.0 | –1.0 |
| Mexico | 7.2 | 9.6 | 2.5 | –1.7 | –0.6 | 1.0 | 5.7 | 8.0 | 2.3 |
| Poland | 13.3 | 14.3 | 0.9 | 2.2 | –1.5 | –3.7 | 8.2 | 7.9 | –0.3 |
| Russian Fed. | 9.9 | 24.3 | 14.3 | 5.0 | –8.5 | –13.5 | 10.8 | 13.7 | 2.9 |
| Thailand | 20.2 | 30.0 | 9.8 | 9.1 | 10.1 | 1.0 | 14.2 | 20.9 | 6.7 |
| Turkey | –3.1 | 6.2 | 9.3 | 22.9 | 4.9 | –18.1 | 10.1 | 8.4 | –1.8 |
| Venezuela, R. B. de | 10.5 | 24.9 | 14.5 | 0.0 | –2.3 | –2.3 | 7.3 | 9.2 | 1.9 |

*Sources:* World Bank Data Reporting System and World Bank staff estimates.

central bank carries out an open-market sterilized intervention, it finances its purchase of foreign exchange reserves by issuing an equivalent amount of domestic public debt in the form of government (or central bank) securities. Reserves are typically invested in certain classes of foreign assets deemed to be of "reserve quality" or are used to pay down existing external public debt. At the end of 2005, foreign exchange reserves accounted for about three-fourths of the average assets of central banks of the countries with the largest reserve holdings, ranging from 27 percent in Brazil to 93 percent in Malaysia (table 5.6). Since the interest rates on reserve-grade assets are seldom as high as those on domestic securities, the mismatch often represents a significant loss of revenue, so that more debt has to be issued to cover the shortfall.

The chief domestic implication of high reserves is a large accumulation of public debt. As domestic securities are the counterpart liabilities to foreign assets on the central bank's balance sheet, the bank must be concerned about the effects of a rise in local interest rates. Whether they are issued in the form of the central bank's own obligations or drawn from its existing inventory of government securities, the securities issued to balance out foreign currency reserves must compete for the available supply of domestic savings with securities issued by the private sector. In some countries, such as China, the supply of domestic securities issued by the central bank has grown very rapidly in recent years, from 2.2 percent of GDP in 2003 to 11 percent of GDP in 2005 (box 5.3).

**Table 5.6 Foreign currency reserves and foreign assets as shares of total central bank assets in countries with high reserve accumulations, 2005**
*Percent*

| Country | Foreign reserves/ Total assets | Net foreign assets/ Total assets |
|---|---|---|
| Brazil | 27.9 | 20.9 |
| China | 84.8 | 79.4 |
| India | 79.2 | 88.7 |
| Malaysia | 93.1 | 90.8 |
| Mexico | 86.4 | 86.3 |
| Poland | 91.8 | 93.1 |
| Russian Fed. | 84.8 | 89.7 |
| Thailand | 63.8 | 67.1 |
| Turkey | 62.9 | 27.3 |
| Venezuela, R. B. de | 73.9 | 95.1 |
| **Average** | **74.9** | **73.8** |

*Sources:* IMF, International Financial Statistics, and World Bank staff calculations.

The upward pressure on local interest rates induced by reserve accumulation could have the perverse effect of reinforcing the need for more reserves, as higher interest rates could attract larger volumes of private inflows. Higher local rates may well conflict with the government's policy of stimulating investment and growth. And they almost always cause an increase in the government's public debt; such public finance issues arise even if these assets are held by agencies other than central banks. The fact that governments tend to entrust the responsibility for accumulation and management of official reserves to their central banks adds to the complexity of the problem at hand by bringing to the fore the unique institutional character of central banks, their role in monetary and exchange rate management, and their particular accounting and reporting norms and standards. Central banks have a monopoly position in issuing domestic currency and the rules and agreements governing the distribution of their profits and dividends to the treasury vary considerably and are often determined by negotiation (Courtis and Mander 2003).[9]

### *Countries are adjusting the currency composition of their reserves*

The range of foreign assets of reserve quality encompasses virtually all government securities issued by large industrial countries that are denominated in major currencies and traded in deep liquid markets. The two key qualifying conditions for reserve assets are that they need to be readily available to and controlled by national monetary authorities (IMF 2001). Official holders of reserves may need to access them quickly and under difficult market conditions, when the ability to turn reserve assets into cash for intervention purposes at the prevailing market price is of the first importance.[10]

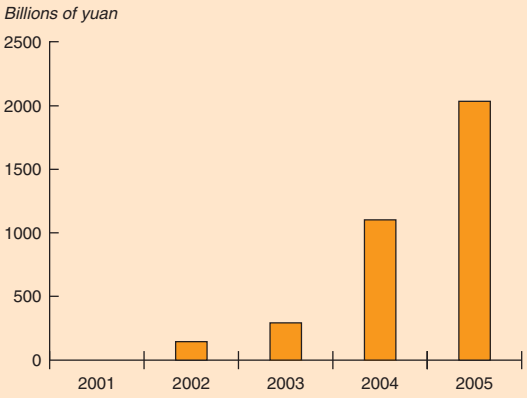
Almost 93 percent of developing countries' reported official reserve holdings as of the end of 2005 were invested in three major currencies: the U.S. dollar, the euro, and the Japanese yen.[11] The euro's share increased from 20 percent of reserves held at end-2000 to 29 percent in 2005, while the share of U.S. dollar reserves declined from 68 percent to 60 percent during the same period (figure 5.12).

The dominant role of the U.S. dollar is likely to have persisted into 2006, as much of the reserve

## Box 5.3 Central bank debt in China

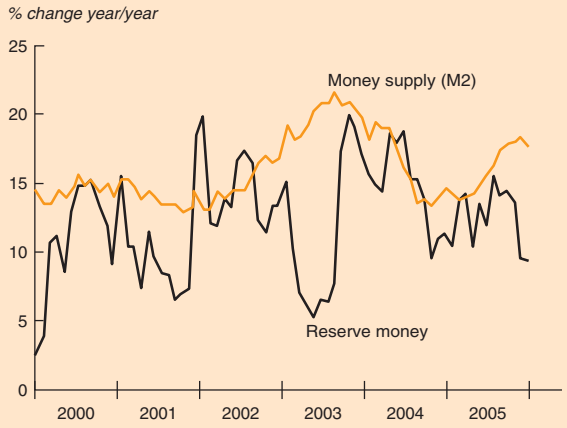
In the face of large capital inflows, the People's Bank of China (PBC) has had to act to stabilize monetary growth, a challenge complicated by the fact that, until July 2005, the PBC pegged the Chinese currency to the U.S. dollar. A close examination of the PBC balance sheet reveals a significant level of sterilization in the form of PBC securities issued to offset the domestic monetary consequences of PBC's purchases of foreign exchange. In 2004 and 2005, the PBC issued bonds worth 805 billion and 922 billion yuan, respectively, in local markets, raising the outstanding stock of such bonds from 303 billion yuan in 2003 to 2,033 billion yuan in 2005 (figure at left). In addition, the authorities have relied on administrative measures, including reserve requirement ratios on domestic banks and credit ceilings on overheated sectors, such as real estate and infrastructure, in order to tighten monetary conditions and contain the inflationary consequences of large reserve accumulation. Such measures, coupled with the closed nature of China's capital markets, have enabled the PBC to follow a prudent course of monetary policy. The pace of growth in the money supply (M2) remained within PBC's target of 15 percent for much of 2004–5, but the rate of growth seems to have accelerated since the third quarter of 2005, possibly because of PBC's move to ease its efforts on sterilization so as to buffer the impact of a currency revaluation (figure at right).

**Domestic bond issuance by China's central bank, 2001–5**




*Sources:* IMF, International Financial Statistics and World Bank staff estimates.

**China's money supply and reserve money, 2000–5**

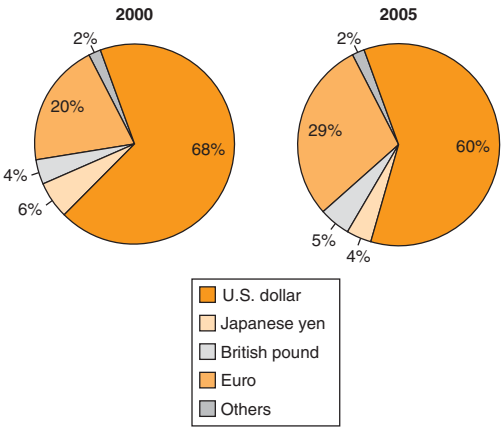



*Sources:* IMF, International Financial Statistics and World Bank staff estimates.

accumulation during the year was done by Asian and oil-exporting countries, whose main exports are priced in dollars and whose currencies are in many cases either linked to the dollar or to a basket of currencies in which the dollar is heavily weighted. Although models of optimal portfolio investment allocation call for more euros in developing countries' reserve holdings (box 5.4), further shifts into euro reserves are likely to be hampered by several factors:

- *Inertia.* Holdings of reserve currency reflect the currency's importance in other areas, such as trade, which evolve slowly. A prime example is the time it took for the U.S. dollar to overtake the pound sterling as the world's major currency, despite the fact that the U.S. economy had overtaken Britain's long before (Cohen 2000).
- *First-mover risks.* Choosing an alternative currency is risky for any individual holder, since it depends for its success on others also deciding to use that currency. In other words, there are network externalities, and such externalities may justify historical dependence on the use of that currency as a medium of exchange.
- *Effects on exchange rates.* Switching out of the incumbent reserve currency may induce adverse movements in dollar/euro exchange rates, so large holders may be reluctant to switch from the existing reserve holdings.

**Figure 5.12 Currency composition of developing countries' foreign exchange reserves, 2000 and 2005**




*Sources:* IMF, International Financial Statistics and World Bank staff calculations.

Such a consideration may be important in the current context for official holders of U.S. dollars in Asia and for oil exporters, and any diversification is likely to be incremental through purchase of non-dollar assets in the future, depending on the pace of their reserve accumulation.

- *Depth*. No market in euro-denominated government bonds, or indeed in the world, is as deep and liquid as that for U.S. Treasury securities. Although the aggregate issuance of Euro Area government debt is of the same order of magnitude as that of U.S. Treasury issues, Euro Area debt is the debt of 12 sovereign entities, rather than one. So far, there has been only limited coordination of the schedule and structure of issues (Bernanke 2004). There is also a lack of debt instruments with short maturities, since Euro Area governments issue relatively few short-term bills.[12]

## The effect of the recent influx of capital flows on domestic investment and asset prices

Improved macroeconomic fundamentals, increased exchange rate flexibility, and greater financial openness have enhanced the ability of national policy makers to deal effectively with the ongoing surge in capital flows. Two domestic changes associated with that surge have already become clear. They are an increase in domestic investment in most recipient countries and a sharp escalation in asset prices in local equity markets. These effects must be considered to be the initial manifestations of the current surge—longer term consequences are still in the making.

Our analysis of monetary aggregates, based on a sample of 72 developing countries with access to international capital markets, provided no clear signal of excess money supply growth associated with the surge in private flows.[13] Simple correlation and cross-country regression analyses revealed no statistically significant relationship between private capital flows and indicators of domestic money and credit supply. One plausible explanation is the possibility of a shift in demand for real money balances, brought about as many countries have lowered their inflation while simultaneously experiencing robust economic growth. Higher demand for money has absorbed some liquidity reducing the pressure on domestic inflation. Such findings are also consistent with the conclusion that, to date, countries have elected to respond to the surge by accumulating (and sterilizing) large quantities of reserves. This policy response is understandable: authorities in recipient countries see the surge as temporary and seek to avoid adjustments in the current accounts of their balance of payments. Sustained access to capital flows over time, however, is necessary for capital inflows to have a tangible impact on economic growth—to the extent that they increase domestic investment or lead to increased domestic financial intermediation (Bailliu 2000) or to enhanced domestic firm productivity. Reserve accumulation and sterilization cannot be a long-term solution to capital inflows, particularly if developing countries remain attractive for foreign investment in the coming years.

### *Capital flows are sometimes associated with increased domestic investment*

Private capital flows can contribute meaningfully to domestic investment, particularly if they are sustained. The influx of private capital flows is associated with increased domestic investment, on average, as well as for most of the 72 developing countries in our sample. Table 5.7 compares the investment performance (aggregate domestic investment as a percentage of GDP) of a large

## Box 5.4 Optimizing allocations in reserve portfolios

The currency composition of reserves can be viewed in terms of a mean-variance, or capital-asset-pricing, model. Such models typically quantify the attractiveness of reserve assets in optimal portfolios over the long run, in the absence of other factors. In the real world, the choice of reserve currency is subject to considerable inertia, that is, it evolves slowly.

Thus portfolios based on an optimal reserve-portfolio model, when compared to actual reserve holdings, provide an indication of long-run trends in the composition of reserves (after inertia has worked itself out), rather than predictions of near-term reserves changes. The table below provides the optimal reserve allocation across four currencies (U.S. dollar, euro, Japanese yen, and the pound sterling) for a representative country consuming a basket of goods with the same proportions as the SDR weights, on the basis of historical returns on government bonds since the euro's introduction.

A comparison of real SDR returns on the major reserve currencies since 1999 (table below) shows that the pound sterling had the highest ex post return. While the euro's mean return was higher than the dollar's, its standard deviation was considerably larger. As a result, the representative country would hold a proportion of its reserves in euros lower than its SDR weight, while the dollar's proportion would be slightly higher.

*Source:* IMF Annual Report 2005.

**Real returns expressed in SDRs, January 1999–September 2005**

*% per annum*

| | | | Correlations | | | |
|---|---|---|---|---|---|---|
| | Mean | Standard deviation | Dollar | Pound | Yen | Euro |
| U.S. dollar | 1.98 | 15.88 | 1.00 | –0.33 | –0.09 | –0.82 |
| British pound | 4.82 | 17.16 | –0.33 | 1.00 | –0.24 | 0.19 |
| Japanese yen | 1.55 | 26.53 | –0.09 | –0.24 | 1.00 | –0.32 |
| Euro | 3.66 | 21.86 | –0.82 | 0.19 | –0.39 | 1.00 |
| | Optimal share | SDR weight | | | | |
| U.S. dollar | 1.98 | 15.88 | | | | |
| British pound | 4.82 | 17.16 | | | | |
| Japanese yen | 1.55 | 26.53 | | | | |
| Euro | 3.66 | 21.86 | | | | |

sample of recipient countries during the first three years of the current surge (2002–4) with the preceding three years (1999–1). On average, across countries, investment rates stand approximately at the pre–Asian crisis level, although many countries have not yet reached that level. In Indonesia, Malaysia, and Thailand, investment rates remain lower than pre-crisis levels by 10 to 20 percentage points of GDP, suggesting that the over-exuberance in investor behavior during the previous capital flow surge has not yet materialized, although a few countries, such as China, exhibit potential signs of overheating.

Simple cross-country regression of domestic investment on private capital flows or the components of those flows reveals that the FDI component of capital flows has the strongest correlation with domestic investment during 2002–4.[14] This result may reflect the higher share of FDI in capital flows in 2002–4, as compared with 1992–7, since inbound FDI adds directly to domestic investment (see box 5.5). In addition, FDI has the potential to generate positive spillovers in the form of technology transfers, knowledge diffusion, and forward and backward linkages, potentially adding stimulus to overall domestic investment spending (Razin 2003; Alfaro, Chanda, and others 2004).

### *The capital flows surge has not (yet) resulted in excessive demand expansion*

One of the questions that arises during the current surge in capital flows, particularly in the quickly growing economies of China and India as well as in some of the oil exporting Eastern European

**Table 5.7 Investment performance during the surge in capital flows, 2002–4**

*Investment as a % of GDP (averages)*

| | Average over | | | Change |
|---|---|---|---|---|
| Selected Countries | 1994–6 | 1999–2001 | 2002–4 | (2002/4–1999/2001) |
| Azerbaijan | 22.7 | 22.6 | 45.6 | 23.0 |
| Bangladesh | 19.2 | 23.3 | 23.3 | 0.0 |
| Botswana | 25.4 | 23.7 | 27.6 | 4.0 |
| Brazil | 21.8 | 21.1 | 18.8 | –2.3 |
| Chile | 25.6 | 21.5 | 23.2 | 1.7 |
| China | 40.5 | 37.4 | 43.2 | 5.8 |
| Colombia | 24.5 | 13.9 | 14.9 | 1.0 |
| Croatia | 19.0 | 22.4 | 28.8 | 6.4 |
| Ecuador | 21.0 | 20.2 | 25.9 | 5.8 |
| Egypt, Arab Rep. of | 16.8 | 18.6 | 17.0 | –1.6 |
| El Salvador | 18.4 | 16.7 | 16.4 | –0.3 |
| Hungary | 23.4 | 28.8 | 24.9 | –3.9 |
| India | 23.9 | 22.9 | 22.8 | 0.0 |
| Indonesia | 31.2 | 18.3 | 20.4 | 2.1 |
| Jordan | 32.2 | 22.0 | 22.1 | 0.2 |
| Kazakhstan | 22.7 | 20.9 | 26.1 | 5.2 |
| Malaysia | 42.1 | 24.5 | 21.9 | –2.6 |
| Mexico | 21.7 | 22.8 | 21.0 | –1.7 |
| Morocco | 20.6 | 23.2 | 23.5 | 0.2 |
| Nigeria | 16.7 | 21.3 | 23.3 | 2.0 |
| Pakistan | 19.0 | 16.7 | 17.1 | 0.4 |
| Peru | 23.3 | 20.2 | 18.7 | –1.4 |
| Philippines | 23.5 | 19.6 | 17.1 | –2.5 |
| Poland | 18.9 | 23.4 | 19.1 | –4.3 |
| Russian Fed. | 24.9 | 18.5 | 20.7 | 2.2 |
| South Africa | 17.4 | 15.9 | 17.0 | 1.1 |
| Sri Lanka | 25.7 | 25.8 | 22.7 | –3.0 |
| Thailand | 41.4 | 22.5 | 25.3 | 2.9 |
| Tunisia | 24.8 | 27.1 | 25.0 | –2.2 |
| Turkey | 23.8 | 21.5 | 23.3 | 1.7 |
| Venezuela, R. B. de | 16.3 | 26.1 | 19.3 | –6.8 |
| Vietnam | 26.9 | 29.5 | 34.2 | 4.7 |
| Zambia | 12.3 | 18.8 | 24.6 | 5.8 |
| **Total** | **23.8** | **21.9** | **23.3** | **1.3** |

*Sources:* IMF, International Financial Statistics and World Bank staff calculations.
*Note:* A selection of countries is presented; the overall average represents results for a sample of 72 developing countries with access to international capital markets. The countries in the sample account for more than 95 percent of private capital flows to developing countries.

countries, is whether private capital flows are contributing to overheating. Several traditional markers of overheating (acceleration in inflation, rapid increases in domestic investment, and consumer goods imports) have not been evident so far during this current surge. Inflation has decreased in many developing countries (table 5.8) and remained relatively low, and currencies have not experienced significant appreciation in terms of their real effective exchange rate (as noted earlier). Moreover, there is no sign so far of a run-up in consumption and imports, and thus of current-account deficits or of sharp rises in domestic investment. It does not yet appear that the current surge in private capital flows has resulted in the kind of overheating of domestic economies seen just before the East Asian crisis. It is still early, however. Should the surge continue, it could result in higher inflation, currency appreciation, and declines in current-account balances over the next few years.

### *Capital flows are associated with escalation in asset prices*

Although inflation as a whole has remained subdued in most developing countries, one indicator of potential demand pressures is the sharp rise in stock prices. The stock market capitalization of countries included in the Standard and Poor's/IFCI index[15] rose from $1.7 trillion at the end of 2002 to $4.4 trillion at the end of 2005 (figure 5.13). In particular, market capitalization of Asian stock markets tripled during the same period, and stock prices in other major emerging markets saw large increases (more than 100 percent in some cases) in both local currency and U.S. dollar terms (table 5.9). For many countries, stock markets have now recovered to the levels they attained before the East Asian crisis.

The sharp response of these markets to inflows of portfolio capital can be explained by their small size, limited liquidity, and high concentration in a few large issues. As shown in figure 5.14, turnover ratios, as a percentage of market capitalization, for most emerging stock markets in 2004 were less than 40 percent while for the NYSE and NASDAQ they were 90 percent and 249 percent, respectively. India and Thailand were the exceptions with turnover ratios over 100 percent. Trading in most emerging markets is also highly concentrated; for example, in Mexico, trading in eight stocks accounted for 62.7 percent of total trades on the exchange. Therefore, relatively small foreign portfolio inflows can have a major impact on the stock prices in these exchanges.

One benefit of the rise in stock market valuation has been its contribution to corporate restructuring in several developing countries, especially in East Asia. The high market valuations combined with low local interest rates, have made it possible for many firms to pay off debt, thus reducing leverage. The two most highly leveraged corporate sectors—those of the Republic of Korea and Thailand—reduced their debt-to-equity ratios below 75 percent by 2004, down sharply from nearly 400 percent in 1997 (figure 5.15).

## Box 5.5 Investment and private capital flows

In order to more carefully examine the relationship between private capital flows and investment, a more rigorous analysis is required. In principle, both capital flows and domestic investment are endogenous variables affected by third factors (such as the investment climate, productivity, international interest rates, and economic growth). Because factors that stimulate domestic investment also tend to attract private capital flows (and vice versa), the high correlation of capital flows with investment is not surprising. The influence of third variables also suggests that the relationship between capital inflows and domestic investment is nonlinear, so that capital inflows have a positive and significant effect on investment only once a threshold level of financial and economic development has occurred (Rioja and Valev 2004; Bailliu 2000; Alfaro and others 2004).

Econometric analysis offers a more rigorous explanation of the dynamics of capital flows and domestic investment in recipient countries. The underlying methodology and estimation are summarized in the annex. Some key findings are presented below:

- There is strong statistical evidence that suggests private capital flows contribute to increased domestic investment across developing countries with access to international capital markets.
- Taking into account financial development and trade openness, while controlling for other determinants of domestic investment, econometric analysis indicates that for countries reaching a minimum threshold of financial development and capital-account openness, private capital inflows can have a positive and significant impact on investment.
- Financial development affects the ability of developing countries to attract private capital flows and use them for domestic investment. For example, our estimates indicate that in Ghana, where the ratio of M2 to GDP is 17 percent, a one-percentage-point increase in private capital flows (as a share of GDP) would result in an increase in investment of 0.40 percent of GDP, but only if Ghana's domestic financial size (ratio of M2 to GDP) was developed to reach 74 percent, a level comparable to Malaysia's.
- Similarly, a country like Brazil could experience an increase in investment of up to 1 percent of GDP as a result of a one-percentage-point (of GDP) increase in private capital flows—if it became as open to financial flows as Mexico (provided those resources were channeled into domestic investment and not reserve accumulation).

Moreover, since the Asian financial crises, developing countries have made some progress in establishing the institutional and regulatory foundations they need to manage capital flows. At the same time, they have considerably improved corporate financial soundness, as firms in virtually all crisis-affected countries have reduced leverage, enhanced profitability, and undertaken financial restructuring. That progress needs to be set against still evolving reforms in the areas of corporate governance, risk management, and transparency. Weak governance results in poor financial reporting and disclosure, as well as insufficient management accountability, allowing resources to be used for personal or unrelated uses. It can also provide incentives for short-term gain rather than long-term stability.

The links between financial soundness and good corporate governance are clear. Recent research has provided evidence that the quality of corporate governance is positively related to growth opportunities and the need for external financing (Pinkowitz and others 2003). Poor corporate governance limits the ability of firms to raise capital and grow, as capital markets place a lower value on poorly governed firms. Recent research has also highlighted the importance of the country-level dimension of corporate governance, including the relationship between the quality of a country's institutions and the legal protection given to investors' rights, on the one hand, and the effect on investors' potential returns and overall decisions to invest in a particular country, on the other (Doidge and others 2004).

## Lessons and policy agenda

In the last few years, many developing countries have deepened their integration into global capital markets through greater exchange rate flexibility, development of local capital markets, reduced dependence on short-term external debt, and gradual liberalization of cross-border trade in financial

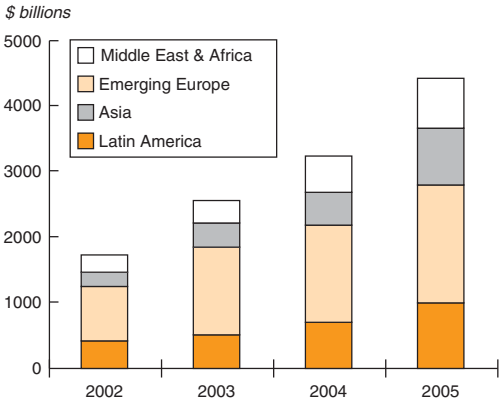
## Table 5.8 Indicators of overheating in selected developing countries, 2002–4

*Change from immediately preceding 3 years: annual period averages in %*

| | Current account balance | | | GDP growth | | | Inflation | | |
|---|---|---|---|---|---|---|---|---|---|
| Selected countries | 1999–2001 | 2002–4 | Change | 1999–2001 | 2002–4 | Change | 1999–2001 | 2002–4 | Change |
| Azerbaijan | –5.7 | –23.7 | –17.9 | 9.5 | 11.0 | 1.5 | –1.7 | 3.0 | 4.7 |
| Bangladesh | | | | | | | 3.3 | 4.0 | 0.7 |
| Botswana | 11.3 | 6.3 | –5.0 | 6.1 | 4.8 | –1.3 | 8.0 | 8.0 | 0.0 |
| Brazil | –4.5 | 0.4 | 4.8 | 2.2 | 2.5 | 0.4 | 6.3 | 10.0 | 3.7 |
| Chile | –0.9 | –0.3 | 0.6 | 2.0 | 3.9 | 1.8 | 3.7 | 2.0 | –1.7 |
| China | 1.8 | 3.4 | 1.6 | 7.5 | 9.0 | 1.5 | –0.3 | 0.0 | 0.3 |
| Colombia | 0.1 | –1.3 | –1.4 | 0.1 | 3.3 | 3.2 | 9.3 | 6.3 | –3.0 |
| Croatia | –4.4 | –7.1 | –2.7 | 2.1 | 4.4 | 2.2 | 4.3 | 2.0 | –2.3 |
| Ecuador | 2.7 | –2.7 | –5.3 | 0.5 | 4.2 | 3.7 | 62.0 | 7.7 | –54.3 |
| Egypt, Arab Rep. of | | | | | | | 2.7 | 6.3 | 3.7 |
| El Salvador | –2.1 | –3.9 | –1.8 | 2.4 | 1.9 | –0.5 | 2.3 | 2.7 | 0.3 |
| Hungary | –7.5 | –8.3 | –0.7 | 4.4 | 3.5 | –0.9 | 9.7 | 5.7 | –4.0 |
| India | –0.5 | 0.9 | 1.4 | 5.4 | 6.5 | 1.1 | 4.3 | 4.0 | –0.3 |
| Indonesia | 4.4 | 2.9 | –1.5 | 3.2 | 4.8 | 1.6 | 12.0 | 8.3 | –3.7 |
| Jordan | | | | | | | 1.3 | 2.3 | 1.0 |
| Kazakhstan | –1.8 | –1.2 | 0.5 | 8.7 | 9.5 | 0.8 | 9.7 | 6.3 | –3.3 |
| Malaysia | 11.2 | 11.0 | –0.2 | 5.1 | 5.5 | 0.4 | 2.0 | 1.3 | –0.7 |
| Mexico | –3.0 | –1.5 | 1.5 | 3.4 | 2.2 | –1.2 | 10.7 | 5.0 | –5.7 |
| Morocco | 0.9 | 3.2 | 2.2 | 2.4 | 4.0 | 1.6 | 1.3 | 2.0 | 0.7 |
| Nigeria | 8.1 | 11.9 | 3.8 | 2.8 | 5.3 | 2.5 | 11.0 | 14.0 | 3.0 |
| Pakistan | 0.3 | 3.0 | 2.6 | 3.3 | 4.9 | 1.6 | 3.7 | 4.3 | 0.7 |
| Peru | –2.6 | –1.1 | 1.5 | 1.3 | 4.6 | 3.2 | 3.0 | 2.0 | –1.0 |
| Philippines | 6.5 | 3.3 | –3.2 | 4.1 | 4.7 | 0.5 | 5.7 | 4.0 | –1.7 |
| Poland | –5.5 | –3.0 | 2.5 | 3.0 | 3.5 | 0.5 | 7.7 | 2.3 | –5.3 |
| Russian Fed. | 13.9 | 8.9 | –5.0 | 7.2 | 6.4 | –0.8 | 42.7 | 13.7 | –29.0 |
| South Africa | –0.2 | –1.4 | –1.3 | 3.1 | 3.4 | 0.3 | 5.3 | 5.7 | 0.3 |
| Sri Lanka | –3.8 | –1.9 | 2.0 | 2.9 | 5.3 | 2.4 | 8.3 | 8.0 | –0.3 |
| Thailand | 7.7 | 5.1 | –2.7 | 3.8 | 6.1 | 2.3 | 1.3 | 2.0 | 0.7 |
| Tunisia | –3.5 | –2.8 | 0.7 | 5.2 | 4.3 | –0.9 | 2.7 | 3.3 | 0.7 |
| Turkey | 0.4 | 0.1 | –0.3 | –1.6 | 7.6 | 9.2 | 58.0 | 26.3 | –31.7 |
| Venezuela, R. B. de. | 4.6 | 11.5 | 6.9 | 0.4 | 0.3 | –0.1 | 17.7 | 25.0 | 7.3 |
| Vietnam | 3.2 | –2.9 | –6.2 | 6.2 | 7.3 | 1.1 | 0.7 | 5.0 | 4.3 |
| Zambia | –14.4 | –6.3 | 8.1 | 3.6 | 4.4 | 0.8 | 24.7 | 22.0 | –2.7 |
| **Total** | **0.4** | **1.7** | **1.3** | **3.4** | **4.9** | **1.5** | **15.9** | **10.4** | **–5.6** |

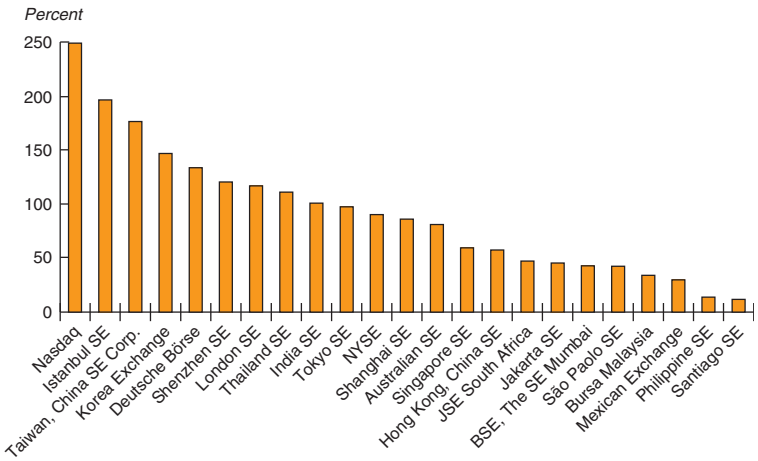
*Sources:* IMF, International Financial Statistics and World Bank staff calculations.

## Figure 5.13 Market capitalization




*Sources:* World Federation of Exchanges and World Bank staff calculations.

## Figure 5.14 Turnover on world stock exchanges, 2004




*Sources:* World Federation of Exchanges and World Bank staff calculations.

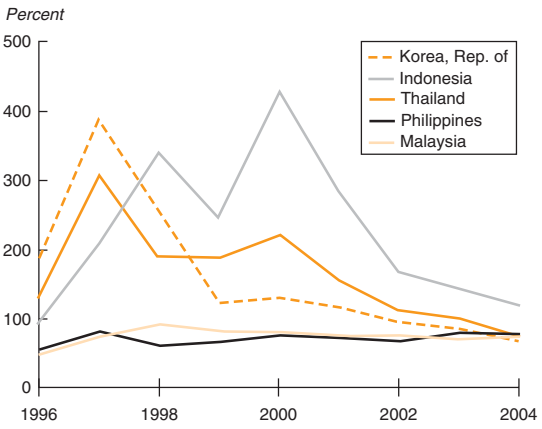
**Table 5.9 Stock market performance in emerging markets, 2002–5**

*% increase in stock market valuation*

| Region/Country | Local currency | | U.S. dollar | |
|---|---|---|---|---|
| | % change, 2002–5 | Average annual change, 2002–5 | % change, 2002–5 | Average annual change, 2002–5 |
| **Latin America** | | | | |
| Argentina | 277.1 | 92.4 | 319.2 | 106.4 |
| Brazil | 167.4 | 55.8 | 305.3 | 101.8 |
| Chile | 107.3 | 35.8 | 143.4 | 47.8 |
| Mexico | 181.9 | 60.6 | 177.3 | 59.1 |
| Peru | 136.5 | 45.5 | 142.4 | 47.5 |
| **Asia** | | | | |
| China | 92.2 | 30.7 | 97.1 | 32.4 |
| India | 165.8 | 55.3 | 183.1 | 61.0 |
| Indonesia | 183.6 | 61.2 | 158.0 | 52.7 |
| Malaysia | 36.6 | 12.2 | 37.4 | 12.5 |
| Philippines | 113.0 | 37.7 | 114.5 | 38.2 |
| Thailand | 128.3 | 42.8 | 140.0 | 46.7 |
| **Europe** | | | | |
| Czech Rep. | 442.9 | 147.6 | 290.9 | 97.0 |
| Hungary | 175.2 | 58.4 | 189.1 | 63.0 |
| Poland | 111.6 | 37.2 | 149.1 | 49.7 |
| Russian Fed. | 181.9 | 60.6 | 213.4 | 71.1 |
| Turkey | 244.8 | 81.6 | 323.5 | 107.8 |
| **Middle East & Africa** | | | | |
| Egypt, Arab Rep. of | 887.0 | 295.7 | 947.6 | 315.9 |
| Morocco | 68.6 | 22.9 | 84.6 | 28.2 |
| South Africa | 90.5 | 30.2 | 157.7 | 52.6 |

*Sources:* Standard & Poor's IFCI index and World Bank staff calculations.

**Figure 5.15 Ratios of debt to equity in selected countries, 1996–2004**




*Sources:* Thomson Financial and World Bank staff calculations.

assets. Those developments, coupled with the shift from potentially volatile short-term debt to more stable FDI, have improved the context for capital flows, raising the likelihood that the economic outcomes of the present surge in capital flows will be better than those observed in the 1990s. The associated policy agenda for developing countries is broad and complex. However, several key themes are clear.

*Policy responses to the latest surge in private flows have included the buildup of large foreign exchange reserves.*

Governments have attempted to minimize the macroeconomic problems associated with large inflows of foreign capital by recycling those resources into official reserves. Central banks have purchased foreign exchange from local banks and other authorized financial intermediaries and invested the proceeds in liquid assets in major industrial countries, particularly in U.S. Treasuries. Recognizing that this process cannot continue indefinitely, policy makers in developing countries are exploring alternative policies, including improving the return on reserve holdings by asset diversification, transferring part of the currency risk to the private sector (notably by allowing institutional investors to invest some portion of their foreign-currency earnings overseas, rather than selling them to the central bank), relying more on the stabilizing role of exchange rate changes, and encouraging expansion in aggregate demand (both consumption and investment). In East Asia, efforts are being made to increase the size

and depth of regional financial markets to recycle reserves into productive investments within the region. Such policy responses need to be orchestrated carefully, taking into account the potential threats of macroeconomic imbalances, overheating, and asset-price escalation, as well as the need to improve risk management practices.

For countries with large holdings of foreign exchange reserves, allowing local institutional investors to diversify their investment portfolio globally could provide a viable channel of capital outflow, as well as an opportunity for greater risk diversification. Allowing such investments would have the salutary effect of transferring foreign exchange risks, currently concentrated on central banks' books, to domestic institutional investors, which have a longer investment horizon and can benefit from a more diversified international portfolio. Other vehicles for reducing the pressure on the central banks' balance sheets might include the creation of specialized investment vehicles similar to the Government Investment Corporation of Singapore, the Korea Investment Corporation, and Kazanah in Malaysia to manage a portion of foreign exchange reserves for long-term investment.

The assets of institutional investors in several developing countries, especially in East Asia and Latin America, have been growing at a fast clip due to rapid growth of pension funds and insurance companies. The establishment of corporate pension funds in countries such as the Republic of Korea and Thailand has contributed to that growth. Until recently, institutional investors in most developing countries have followed very conservative investment policies, with government securities accounting for the lion's share of their assets. Institutional investors in most developing countries are generally prohibited from investing in foreign securities. Exceptions include Chile, Malaysia, the Republic of Korea, and Thailand. At the end of 2004, Chile's institutional investors held 27.3 percent of their assets in foreign securities, compared with just 2.8 percent for Thailand and Korea, which only recently have gained the right to make limited overseas investments.

*Oil exporters face a different set of policy challenges, including the need to design appropriate stabilization funds and to rely on market instruments to hedge against volatility in the oil market.*

Oil exporters, most of which are heavily dependent on a single commodity for foreign exchange, face opportunities and challenges distinct from those of other developing countries.[16] Oil is a commodity with an active spot market, as well as a growing liquid futures market that offers up to 5-year contracts, affording oil-exporting countries a broad range of options and market instruments, such as oil derivatives, to manage the future stream of foreign exchange revenues. But, in practice, governments have been reluctant to enter futures and derivatives markets for several reasons, including their limited capacity for large-scale hedging, insufficient expertise to trade successfully, and limited access for countries with poor credit.

A high concentration in a single export commodity translates into a high degree of volatility in export earnings. In 2005, 14 of 31 oil-exporting countries depended on oil exports for more than 50 percent of their foreign exchange—among them Libya (94 percent), Saudi Arabia and Kuwait (85 percent), and Iran (73 percent). Several countries have put aside a fraction of their oil revenues in so-called stabilization funds or funds for the future. Experience with such funds has been mixed. To make the best of them, robust governance and legal frameworks are required to insulate the funds from political interference. The government must set clear investment objectives, adopt sound investment policies, and appoint professional managers to invest money with proper safeguards and transparency.

*The development of international norms and standards on transparency, corporate governance, and regulation of national financial systems has raised the confidence of foreign investors in emerging market economies.*

A hallmark of efforts to improve the international financial architecture in the late 1990s was the development, by the international financial community, of a set of international norms and standards on transparency, corporate governance, and regulation and supervision of financial systems. The new standards were designed specifically to guide the countries affected by the Asian crises of the late 1990s to return to international financial markets, and more generally to pave the way for the gradual and sequential liberalization of international capital movements. International scholars have argued that the adoption of open-door financial policies and practices tends to cluster in time and space (Simmons and Elkins 2004) and that governments comply with international norms

and legal commitments if their peers do so and if the reputational cost of reneging is perceived to be high (Simmons 2000). Those arguments have provided a strong intellectual basis for a standards-centered approach to bolster market confidence.

Building on the success of earlier norms embodied in the IMF's safeguards assessments and the Special Data Dissemination Standards (adopted in 1996), international norms on transparency, financial infrastructure, and corporate governance were formulated on the basis of voluntary compliance, with monitoring responsibility assigned to multinational financial institutions. At the request of a member country, the IMF and the World Bank assess compliance with the international standards by preparing and publishing reports on the observance of standards and codes (ROSCs). International norms—standards of appropriate and broadly accepted behavior—enhance stability as investors are able to form accurate expectations of governments' behavior.

*The world is moving toward a multipolar international monetary system in which the monetary and financial policies of the major industrial countries of the G-3—and of key emerging market economies that are important players in global trade and finance—are of predominant importance.*

One aspect of the new multipolar world is that the U.S. dollar is no longer without a serious competitor as an international currency. The emergence of a large and deep market for euro-denominated securities widens the opportunities for diversification available to developing countries as well as to other countries. Accumulating euro-denominated financial assets in proportion to the Euro Area's share of global production and trade allows governments to hedge against real-side fluctuations. The euro also provides a potential anchor currency for economies closely linked to the existing Euro Area that wish to peg to a major and widely circulated currency.

The emergence of the euro alongside the dollar may introduce some instability, however, as the lack of synchronization between the United States and the Euro Area may occasionally produce large movements in exchange rates that could have serious consequences for developing countries. Policy coordination may not be necessary in normal times, when floating exchange rates and monetary policies oriented primarily to domestic targets for inflation and economic activity facilitate adjustment to the shocks hitting the two regions. But at times of financial market instability, policy coordination may be needed to limit large swings in exchange rates.[17]

A second aspect of the multipolar world is that a wider set of countries now matter in the resolution of policy imbalances. Developing countries, which would suffer disproportionately from the instability induced by a hard landing, have a shared interest in seeing multilateral cooperation in international monetary relations. The scope of cooperation should cover global liquidity, the optimal mode of adjustment, and the role of key currencies. The large size of the U.S. current account deficit has as its counterpart large surpluses in Asia and among oil exporters. The anticipated need for a real effective depreciation of the dollar to help correct that deficit will have to occur against a wider set of currencies than those of the industrial countries (the Plaza Agreement involved the G-5 countries), which may well make policy coordination more difficult. However, it is clear that countries with large reserve holdings have a shared interest in a smooth adjustment of dollar's exchange rate.

*Managing capital flows effectively will remain critical to ensuring economic progress in developing countries*

Private capital flows to developing countries hit an historic high in 2005, but there remains considerable room for growth, given developing countries' demographic profiles, per capita investment levels ($400 in 2004, compared with $6,000 in developed countries), and economic prospects. Investors in developed countries invest less than 3 percent of their portfolios of common stocks in developing countries; and only 5 percent of global bonds issued in recent years originated in developing countries. As developing countries' financial markets become increasingly integrated with global financial markets, those percentages are likely to rise (as are developing countries' holdings of foreign assets). To take advantage of those opportunities and protect market access, it will be essential for developing countries to vigorously maintain macroeconomic stability. They also will need to strengthen domestic financial markets and institutions to cope more effectively with the risks associated with growing capital flows and to maximize the efficiency of capital allocation. Sustaining the economic policies and institutions that can effectively deal with capital flow surges is likely to remain a key issue for developing countries for many years to come.

# Annex: Capital Flows and Domestic Investment

Because private capital flows may have a larger impact on investment where the financial sector is well developed and restrictions on capital movements are few (Bailliu 2000), we studied interactions between private capital flows, financial development, and capital controls. We tested the relationship between private capital flows and investment in a simultaneous equation system, where we were interested in both the direct effect of private capital flows on investment and the indirect effect, which was determined through the interaction of private capital flows with financial development and capital account restrictions, respectively.

The dependent variables in our analysis are investment and private capital flows, each as a percentage of GDP. The explanatory variables include trade openness, financial development, capital controls, and a set of control variables. Trade openness (TO) is defined as exports plus imports divided by GDP. Financial development (FD) is measured using M2. Restrictions on movements of private capital (CC) are measured by the Chinn-Ito index (2002). The index is larger when there are fewer capital controls. Private capital flows (CF/GDP) include both debt and equity flows. The control variables are: government size (measured by government expenditure) and institutional development (measured by the Freedom House index of political freedom). Several other control variables were tried (such as average years of schooling, inflation rates, and the extent of paved roads), but they proved insignificant in the analysis.

The motivation for including these control variables comes from several theoretical relationships. Government size is a control for policy at the country level. Political freedom is a proxy for institutional quality. The data set consists of a panel of observations for a sample of 72 developing countries with access to international capital markets. The sample was drawn from all regions and includes countries in a broad range of developmental stages. China was excluded because of the size of its money supply in relation to GDP, which is far greater than any other developing country and might have biased the results. The data were averaged over five-year intervals over 1980–2004 to produce a set of five observations per country. The simultaneous equation model we used in our analysis takes into account the endogeneity of investment and private capital flows and is written as follows:

$$\left(\frac{1}{GDP}\right)_{it} = \alpha_i + \beta_1\left(\frac{CF}{GDP}\right)_{it} + \beta_2\left(\frac{FD}{GDP}\right)_{it} + \beta_3\left(\frac{CC}{GDP}\right)_{it} + \beta_4\left(\frac{CF}{GDP}\right)_{it} * \left(\frac{FD}{GDP}\right)_{it} + \beta_5\left(\frac{CF}{GDP}\right)_{it} * \left(\frac{CC}{GDP}\right)_{it} + \gamma_i X_{it} + \varepsilon_{it} \quad (5.1)$$

is the equation for investment and

$$\left(\frac{CF}{GDP}\right)_{it} = \phi_i + \delta_1(growth)_{it} + \delta_2\left(\frac{FD}{GDP}\right)_{it} + \delta_3\left(\frac{CC}{GDP}\right)_{it} + \theta_i X_{it} + \varepsilon_{it} \quad (5.2)$$

is the equation for private capital flows.

**Table 5A.1 Domestic investment and private capital flows**

*Iterated 3SLS regressions*

| Dependent variable is private capital flows | | | Dependent variable is investment | | |
|---|---|---|---|---|---|
| Variables | Regression 1 | Regression 2 | Variables | Regression 1 | Regression 2 |
| GDP per capita | 0.000005* | 0.000005* | Private capital flows | 1.37* | 1.58* |
| GDP growth | 0.62* | 0.62* | GDP per capita | –0.000008* | –0.000008* |
| Trade openness | 0.12* | 0.12* | Trade openness | –0.04 | –0.15 |
| M2 | –0.05* | –0.05* | M2 | 0.10* | 0.14* |
| Capital controls | –0.002 | –0.002 | Capital controls | 0.001 | –0.002 |
| Gov't spending | 0.021 | 0.021 | PCF × M2 | | –1.2 |
| Political freedom | 0.001 | 0.001 | PCF × capital controls | | 0.11 |
| | | | Gov't spending | 0.12* | 0.11* |
| | | | Political freedom | –0.002* | –0.002* |
| Constant | –0.03* | –0.02* | Constant | 0.17* | 0.15* |

*Note:* Regression 1 is without interaction effects; regression 2 is with interaction effects. Iterated 3SLS iterates over the estimated disturbance covariance matrix and parameter estimates until they converge. The technique does not require the assumption that errors are normally distributed. PCF = private capital flows.
* = significance at the 5-percent level or better.

In each equation, $X$ represents a vector of country specific characteristics: openness to trade, GDP per capita, government spending, and political freedom. We used an iterated three-stage least squares (3SLS) technique (Zellner and Theil 1962) to estimate the simultaneous equation system to take into account the nonlinearity of the investment equation and the endogeneity of the regressors. First, estimation of private capital flows (column 1) showed that GDP per capita, GDP growth, and trade openness had positive and significant effects on private capital flows, while financial development measured by M2 had a small negative effect. For the baseline regression (shown in the first column of the right-hand panel) of investment, we found that private capital flows, government spending, and financial development (measured by M2) had a positive and significant effect on domestic investment. Political freedom also had a significant effect—the coefficient is negative because higher values of political freedom in this index imply less freedom. Capital controls and trade openness were insignificant at the 10-percent level. (The coefficient estimates from the 3SLS are presented.)

Next we performed a 3SLS regression that included, in the equation for investment, the interaction effects reported in column (2) in the table, which shows first that when interaction effects are included, private capital flows and M2 have positive, significant, and direct effects on domestic investment, whereas GDP per capita and political freedom (the absence of freedom) have small negative effects. Turning to the interaction terms, private capital flows have both a direct and indirect effect on domestic investment. The indirect effect comes through the extent of financial development and capital controls, which is determined by the coefficient estimates on the interaction terms (PCF × M2 and PCF × capital controls).

We then considered the marginal effects (obtained by differentiating investment with respect to capital flows using the coefficient estimates from our estimations) of capital flows on growth and investment. We calculated the net effect (both direct and indirect) of private capital flows on investment as:

$$\beta_1 + \beta_4\left(\frac{FD}{GDP}\right)$$

for the interaction with financial development and as

$$\beta_1 + \beta_5\left(\frac{CC}{GDP}\right)$$

for the interaction with capital controls. From this, we determined the effect that deepening the financial sector or loosening capital controls might have on investment through their interactions with private capital. (An example is discussed in the text.)

## Notes

1. The coefficient of persistence referred to here is measured as the coefficient on the lagged term in the regression of the annual ratios of FDI to GDP and debt to GDP, respectively, against a constant and their one-year lag values for each of the 72 developing countries with access to international capital markets over the period 1980–2004.

2. The conventional wisdom was that pass-through of exchange rate changes into import prices is relatively rapid and more complete in developing than developed countries (Ho and McCauley 2003). Rapid pass-through was cited as a rational for exchange rate management, as changes in exchange rates could translate into significant inflationary pressure. However recent research has shown that pass-through underwent a transformation during the 1990s for many developing countries and now is much slower and less complete (Frankel, Parsley and Wei 2005), although still faster and more pervasive than for developed countries.

3. Even when countries announce greater exchange rate flexibility as a policy, their day-to-day practice may be quite different. See Calvo and Reinhart (2002) for a discussion.

4. See for example, Schneider and Tornell (2004) and Fischer (2001). The increased vulnerability from real exchange rate appreciation comes through loss of trade competitiveness and possible worsening of current account balances.

5. During 2002–4, about half of the variation in the real effective exchange rate appears to have come from the nominal exchange rate, rather than from movements in relative prices. A simple variance decomposition of the real effective exchange rate into its components (nominal exchange rate and differences between relative prices) shows that the nominal rate accounts for about 53 percent of the variation in the real rate during this period.

6. The offshore nondeliverable forward market for selected currencies is typically used to hedge currency risks in markets where capital controls prevent effective onshore currency risk hedging.

7. The move to inflation targeting may be a consequence of the shift in many developing countries to policies that promote macroeconomic stability. If that is so, it cannot be credited directly with improving macroeconomic performance. As discussed in IMF (2006), the available evidence is only suggestive; the time series is too short and the number of countries with such targets are too few to make a definitive statement.

8. Yang (2005) found that the increase in remittances makes up for 13 percent of income losses in the current year and 28 percent within four years of a hurricane. In contrast, increases in ODA and FDI make up for roughly 26 and 21 percent within four years.

9. Also, despite considerable progress in recent years in achieving convergence of financial accounting standards between the United States and European Union, and in implementing the IMF's safeguards assessment policy, there is yet no accepted international accounting standards that are suited to the nuances of central banks' particular role and mandate. Important questions remain on the proper treatment of unrealized gains or losses, asset valuation, and reporting and disclosure of derivatives contracts that the central bank may be counterparty to either for risk management or foreign exchange intervention purposes (see, for example, Hawkins 2003).

10. In this regard, reserves need to be distinguished from other assets held by the official sector primarily for investment purposes, rather than for intervention in the foreign exchange market.

11. Swiss francs and several other currencies are used as foreign exchange reserves, but their shares are too small to be meaningful in this analysis.

12. It is possible to imagine innovative solutions that would increase the liquidity of European markets, for instance the creation of a single issuer of government short-term paper, as proposed by Alexandre Lamfalussy (Speech at the European Central Bank, April 29–30, 2002). However, the prospect for such an institution, which presumably would buy up all the Euro Area governments' issues, seems distant.

13. The 72 countries in our sample account for more than 95 percent of all private capital flows to developing countries. The countries in the sample range from large emerging markets (such as China, Malaysia, and Thailand) to small commodity-based economies. They were drawn from all regions and from both mid- and low-income categories.

14. The implication is that capital inflows and investment are correlated—at least some of the capital inflows are going to domestic investment. As the regression excludes other determinants of investment, the degree of this relationship may be overstated.

15. Excluding Bahrain, Israel, Republic of Korea, Saudi Arabia, and Taiwan (China).

16. In the last two years, oil-exporting countries have benefited from the sharp increase in oil prices. In 2005, total oil exports from developing countries increased to an estimated $522.7 billion, up 37.6 percent from 2004. Oil exports from the Middle East were estimated at $242.7 billion, 46.4 percent of the total. In addition to the Middle Eastern countries, the Russian Federation was one of the major beneficiaries of the hike in the price of oil.

17. In the mid-1980s, when the U.S. dollar was widely perceived to be overvalued, the Plaza Agreement of September 1985 helped bring it to a "soft landing". In the current environment a coordinated policy of intervention in foreign currency markets is neither desirable nor feasible, given the changes in global finance market conditions and actors over the past two decades.

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