

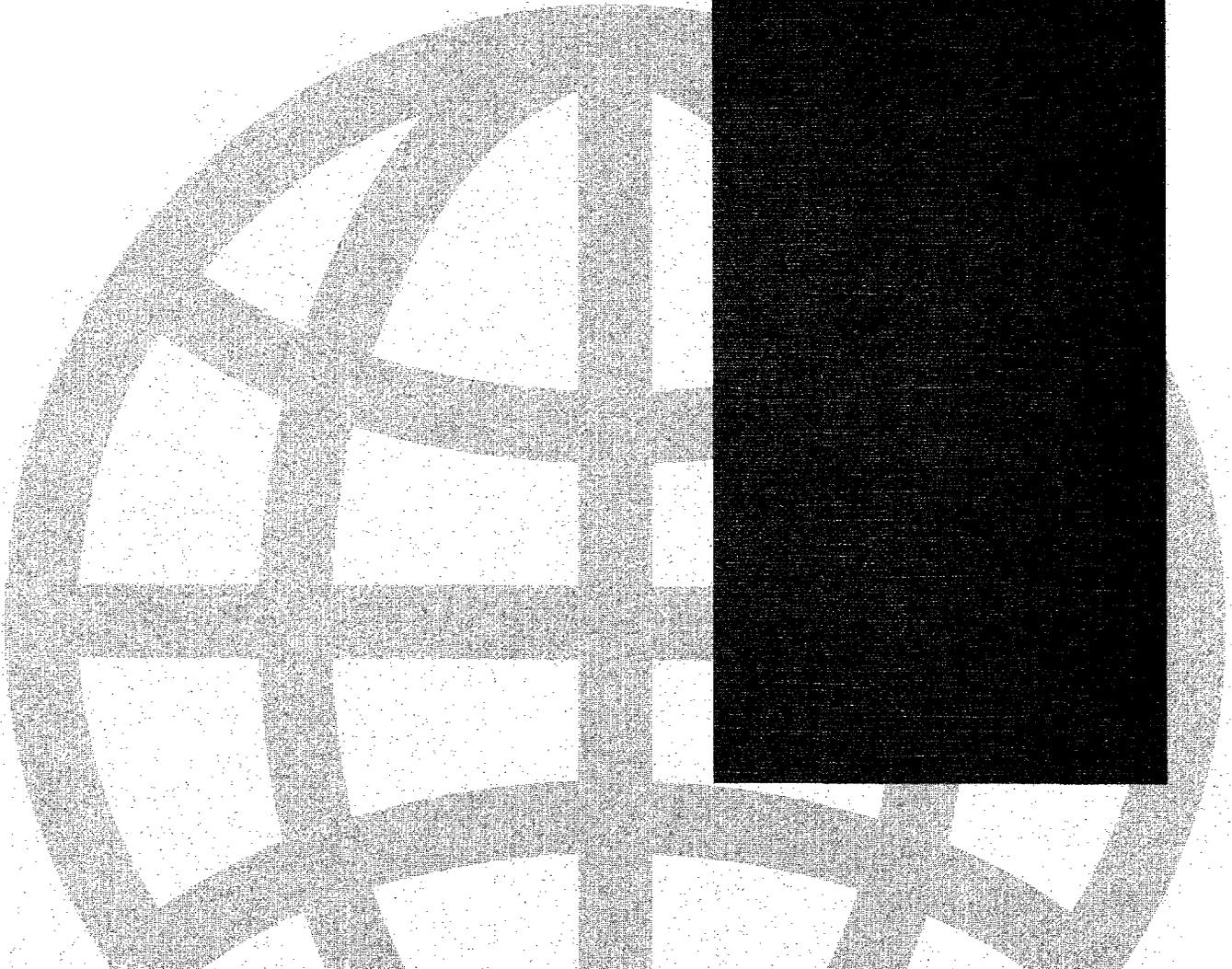
# The Capital Inflow Problem

*Peter J. Montiel*

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## **Abstract**

This paper provides a broad overview of the recent capital inflow episode experienced by a large group of developing countries. Drawing on prior work by the author, various characteristics of the recent capital inflow episode are reviewed, and the empirical literature on the factors driving capital inflows is surveyed, and the policy responses as well as macroeconomic outcomes in the recipient countries are examined. The paper draws lessons from experience for each of the various policy instruments that are available to cope with the macroeconomic implications of large capital inflows.

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# 1 Introduction

The accumulation of external debt that eventually resulted in the international debt crisis was the result of an episode of large capital inflows to developing countries in the form of syndicated bank loans directed almost exclusively to public sector borrowers. As explained in the previous chapter, the debt crisis gave rise to an extended period of external credit rationing for the heavily-indebted countries, characterized by slow growth and high inflation. Many observers at the time predicted that these countries would not regain access to international capital markets for a long time, perhaps decades. Somewhat surprisingly, however, the implementation of Brady plan debt restructurings beginning in 1989 coincided almost exactly with a new episode of capital inflows into developing countries, in many cases rivaling in size those that preceded the debt crisis. The new capital inflows, however, were very different in character from those of the previous episode. Perhaps even more surprisingly, in view of the enormous economic costs associated with the debt crisis, the resurgence of capital inflows was not viewed as an unmitigated blessing by the recipient countries. Indeed, the arrival of large amounts of foreign capital was perceived as posing serious challenges to domestic macroeconomic management.

This paper examines the nature of the new capital inflows, and reviews both the macroeconomic challenges posed by their arrival as well as the policy responses undertaken by the recipient countries. It is organized into four sections. The first section provides an overview of the magnitude and composition of the new capital inflows, emphasizing the contrast with the capital movements that preceded the debt crisis. Section 2 looks at the explanations offered for the resurgence of capital flows into developing countries, reviewing the empirical literature on this issue. In Section 3 we turn to an exploration of the policy challenge posed by the inflows and both the policy options available to the recipient countries as well as the actual response.<sup>1</sup> In the final section, macroeconomic performance by these countries over the course of the inflow episode is examined. An important issue that rose to the fore in association with the capital inflows of the early nineties was vulnerability of the recipient countries to sudden capital flow reversals—that is, to currency crises.<sup>2</sup>

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<sup>1</sup>Section 1 draws on Fernandez-Arias and Montiel (1996), Section 2 on Montiel and Reinhart (1998), and Section 3 on Montiel (1996).

<sup>2</sup>These issues are discussed by Agénor and Montiel (1998, Chapter 17).

## 2 Capital Inflows in the Early Nineties

In this section we examine the characteristics of the recent capital-inflow episode, based on the experience of a broad sample of countries. After describing in broad-brush fashion the changed (relative to previous episodes) international and domestic environments in which the new flows of capital to developing countries have materialized, we discuss their magnitude, timing, regional and country destination, asset composition, and sectoral destination. Finally, we examine macroeconomic outcomes during inflow episodes for a sample of recipient countries.

### 2.1 The Domestic and External Context

The capital-inflow episode of the early nineties emerged in a very different international environment from that which characterized both the previous episode that started in the 1970s and the period 1982-89, with substantial changes in the economies both of the industrial source countries and the developing recipient countries. The scope of such changes covers the macroeconomic and regulatory environments in both sets of countries.

The period 1989-93 was a slow-growth period in the industrial world as a whole. IMF estimates indicate that the rate of growth of real GDP, which reached 4.4 percent for the G-7 countries as a group in 1988, averaged 2.8 percent in 1989-90 and 1.1 percent in 1991-93. Monetary policy was used in countercyclical fashion in the United States during that period, and both nominal and real interest rates fell to extremely low levels in that country after 1988. This was also true of rates of return on other assets, such as real estate. Short-term nominal interest rates peaked at 9.1 percent in 1989, and had fallen to 3.2 percent by 1993. Long-term rates also fell dramatically, by roughly half. Regarding the international trading environment, during the six-year period 1988-93 developing countries as a group, as well as those in the regions of Asia and Latin America specifically, experienced adverse movements in their terms of trade. For developing countries in the aggregate, the cumulative deterioration amounted to 5.5 percent over the period. In spite of slow industrial-country growth and poor terms of trade, however, exports from both Asia and Latin America grew rapidly at the outset of the inflow episode.<sup>3</sup>

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<sup>3</sup>This was also the case during the episode that preceded the debt crisis.

Concerning the regulatory environment, financial liberalization in industrial countries (as discussed by Goldstein and Mussa (1993)) produced changes that made those countries' capital markets more hospitable to borrowers from developing countries. For example, several industrial countries relaxed regulations on foreign public issues in their capital markets. SEC Rule 144A and Regulation S in the United States eliminated settlement delays, and also facilitated registration and the payment of dividends (see El Erian (1992)). Market credit rating standards for public bond issues were eased in Japan, and minimum rating requirements were eliminated in Switzerland (see Jaspersen and Ginarte (1993)). All of these changes had the effect of easing access of developing-country borrowers to capital markets in the industrial countries. In addition to these, the anticipated ratification of the North American Free trade Agreement (NAFTA), with the announced intention to incorporate in the near future other Latin American countries besides Mexico probably operated in the same direction, at least in Latin America.

On the part of the developing countries themselves, many of them undertook substantial changes in policy regimes, moving in the direction of improved macroeconomic management and widespread liberalization. During the pre-1982 capital inflow episode in Latin America, increases in fiscal deficits and inflation were widespread. Before the capital-inflow episode of the early nineties, however, inflation and fiscal deficits had both been reduced, and the rate of economic growth had increased, as discussed by Edwards (1998) in the case of Latin America. Export composition had become more diversified in many countries. For example, in Chile, Colombia, and Mexico, the primary export accounted for about half of total exports in the early eighties, but for only about a third by the end of the decade (Kuczynski, 1992). Among the structural changes adopted by developing countries during the latter part of the eighties were the removal of restrictions on foreign ownership which had impeded inflows of foreign direct investment. Mexico removed many such impediments in 1991, while Chile had done so several years earlier. In addition, broader capital account liberalization was undertaken in a number of countries.

## 2.2 Characteristics of the New Inflows

### 2.2.1 Magnitude

Measuring the size of capital inflows raises a number of conceptual problems. These concern whether the relevant measure should capture both private and official flows, whether flows should be measured on gross or net terms, whether in addition to the changes in the liabilities of domestic residents changes in their foreign assets should be included as well, and if so, whether foreign exchange reserves should be considered as part of those assets. For the purpose of describing recent inflows, we report net changes in the liabilities of domestic agents to foreign private creditors in Figures 1 to 3.

How large, then, were the new inflows, and how did they compare to those that preceded the debt crisis? The answer is that they were quite large compared to the preceding years in the 1980s, but somewhat smaller than in the years preceding the 1982 debt crisis when measured as a proportion of exports or national product. To see this, it is useful to consider the four-year period 1990-1994 as a basis for the measurement of capital inflows in the episode of the nineties, the four-year period 1978-1981 for the measurement of capital inflows in the surge preceding the debt crisis, and the debt crisis period 1982-1989.

In the developing world as a whole, average capital inflows (based on net flows from private sources, both long- and short-term) increased from their debt-crisis levels by 1.5 percentage points of GNP to reach almost 3 percent of GNP. For this group of countries, most of the "surge" took place in 1992-93, when total inflows averaged 3.8 percent of GNP, a notable increase over 1.7 percent in 1990-91. Indeed, though inflows over the entire period 1990-93 were somewhat smaller in relation to GNP than those observed prior to the debt crisis, over the three years 1992-94 the magnitudes were quite similar.<sup>4</sup>

### 2.2.2 Timing

The timing of the most recent episode did not tend to be uniform across countries. As shown above, for developing countries as a group a break with prior experience is suggested in 1991 but is not clearly evident until

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<sup>4</sup>It is worth noting that what is measured in each case is the magnitude of ex post flows, which are endogenous with respect to a variety of policy interventions. Thus, even if the flows are driven by events that are external to the recipient countries, these numbers do not have an interpretation as measures of the size of an external shock.

1992-93. However, in some regions a discernible change occurred before that time. The new surge in capital inflows first became manifest in Asia, a region in which by and large developing countries did not lose access to world capital markets during the period following the outbreak of the international debt crisis. Inflows accelerated during 1988 in Thailand, during 1989 in Malaysia, and during 1990 in Indonesia, according to Bercuson and Koenig (BK, 1993). The surge started later in Latin America. The data compiled by Calvo, Leiderman, and Reinhart (CLR, 1992) suggest that the break in the capital inflow experience of this region came in 1990, when total net inflows as defined above amounted to US\$ 24 billion, compared to a peak of US\$ 15 billion during the post-debt crisis period 1983-89. For other regions of the developing world matters are less clear, as indicated in the next subsection.

### **2.2.3 Regional and country destination**

The regional breakdown of capital inflows to developing countries reveals that the surge phenomenon was widespread, but was especially pronounced in East Asia and Latin America. To show this, in Figure 1 we examine the regional allocation of long-term private net flows, using the regional definitions traditionally employed by the World Bank.

Leaving aside the transition economies, and comparing the debt crisis period with the most recent period, it is evident that the “surge” was primarily an East Asian and Latin American phenomenon at the beginning. It had clearly begun in East Asia by 1990, and in Latin America by 1991. The pace of inflows accelerated after 1991. The phenomenon subsequently became more widespread, reaching South Asia as well as Sub-Saharan Africa in 1993.

Within each region, inflows tended to be concentrated in several large developing countries. Over the period from 1989 to mid-1993, for example, 85 percent of all portfolio flows to East Asia were accounted for by China, Indonesia, Korea, and Thailand, while in Latin America Argentina, Brazil, Mexico, and Venezuela accounted for almost 95 percent of portfolio flows over the same period (Gooptu (1993)).

### **2.2.4 Asset composition**

Figure 2 presents our estimates of the broad asset composition of the portfolio of claims acquired by private external investors on developing countries

during the inflow episode of the nineties, decomposing the flows into foreign direct investment (FDI), portfolio (bond and equity) flows, and other. The latter consists primarily of bank lending.

This figure shows that the episode of the nineties was quite different from that of the seventies, in a variety of respects. In contrast to the seventies, equity instruments, both direct and portfolio, played an important role in the nineties, while flows in the seventies were dominated by debt instruments. Even within debt flows themselves, syndicated bank loans were relatively unimportant during the nineties. It is clear that portfolio flows in general dominated the resurgence of capital inflows in the nineties. The greatly reduced role of commercial banks during the current episode is immediately evident in the shrinkage of the category "other" during 1990-93 in Figure 2. Capital flows to developing countries obviously did not expand in the nineties because banks got back into the business of lending to such countries, but rather because a new category of lenders became involved.

A regional breakdown of asset composition reveals that the above trends away from commercial bank lending and in favor of portfolio and equity investment were geographically widespread. However, significant disparities are also apparent. For example, in Latin America other debt flows were negligible, and portfolio investment accounted for the majority of the new inflows, while in East Asia the composition was more balanced, with FDI being the most important item. It thus appears that, though changes in FDI flows were significant in the aggregate, their regional distribution were not uniform. Overall, 44 percent of the increase in inflows was initially in the form of FDI in Asia, though FDI accounted for only 17 percent of the new inflows in Latin America (Calvo, Leiderman, and Reinhart (1993)). Lack of uniformity in the composition of inflows also characterized country experience even within the same region. According to Bercuson and Koenig (1993), for example, long-term flows accounted for 45 percent of the improvement in the capital account in Thailand, but for 70 percent in Malaysia and for all of the improvement in Indonesia.

An important characteristic of the assets acquired by investors in association with the new inflows is that to a large extent they were denominated in domestic currency, in contrast with the syndicated bank loans associated with the previous episode. This means that, unlike in the earlier episode, external creditors were exposed to exchange-rate risk—specifically, the risk of sudden devaluation. This concern has been emphasized by Dooley, Fernandez-Arias, and Kletzer (1994) and is well illustrated by the recent Mexican and Asian

crises (see Agénor and Montiel, 1998, Chapter 17).

### **2.2.5 Sectoral destination**

Figure 3 presents our estimates of the share of long-term private-source capital inflows that was directed to the private sector of the recipient economy (excluding investment guaranteed by the public sector). The last two rows of this table suggest quite a drastic change in the sectoral composition of capital inflows during the recent episode, both in relation to the debt crisis period and to the previous inflow episode. The sectoral identity of the borrower presents by far the most stark contrast between the current inflow episode and previous experience, and has important implications for policy in the recipient countries.

## **3 Factors Driving Capital Inflows**

### **3.1 “Pull” Factors, “Push” Factors, and Changes in Financial Integration**

Explanations for the new surge of capital flows to developing countries in the early nineties have focused on two types of factors, dubbed “push” and “pull” factors. “Pull” factors are those that attract capital from abroad as a result of improvements in the risk-return characteristics of assets issued by developing-country debtors, while “push” factors are those that operate by reducing the attractiveness of lending to industrial-country debtors. Both of these sets of factors could be operative in the context of a given degree of financial integration of the recipient country with world capital markets. A third factor that may have been at work is a change in that degree of integration, as a result of the regulatory changes described in the previous section or of other factors. In this section we describe the variety of explanations that have been offered for the resurgence of capital flows, and then review the evidence on the issue.

The identification of the factors underlying the new surge of capital flows matters not just for reasons of positive economics, but also for the formulation of policy, the subject of the next section. It may be tempting to take the view that flows attracted to the recipient country by domestic “pull” factors do not present a policy problem, because they represent a restora-

tion of creditworthiness—that is, the rectification of the adverse conditions reflected in the debt crisis, while flows “pushed” out of the source countries are an external shock which can easily be reversed and thus call for a policy response. This would be incorrect, however. The distinction between “pull” and “push” factors does not necessarily have normative content. Because both broad categories of factors can incorporate a wide variety of domestic and foreign phenomena, the welfare implications associated with “push” and “pull” factors depend on the specific “pull” or “push” phenomena that are at work, rather than on whether the origin of the shock is domestic or external.

### 3.1.1 “Pull” factors

For example, if social risk-return tradeoffs in the domestic economy are improved by economic reform, the capital inflows attracted by higher domestic returns would be welfare-enhancing, since they reflect wealth-increasing borrowing for the financing of new high-yield domestic investment opportunities that were not previously available and/or welfare-enhancing financing for consumption smoothing motivated by reform-induced increases in national wealth. Similarly, the characteristics of claims on domestic agents acquired by external lenders may have improved as a result of the removal of distortions creating gaps between social and private rates of return. For example, if debt-overhang problems created a gap between social and private rates of return in heavily-indebted countries, then resolution of such problems in the context of Brady Plan agreements may have allowed private rates of return to reflect social returns more accurately and thus helped to create the incentive for a renewed flow of capital. Even an exogenous change in domestic portfolio preferences may trigger welfare-enhancing capital inflows. A domestic money-demand shock, for example (in the form of an increase in money demand), could attract capital inflows by causing the prices of domestic interest-bearing assets to fall. In this case, the capital inflow makes it possible to accommodate the shift in domestic portfolio preferences and would again be welfare-enhancing.

On the other hand, as has been forcefully argued by Dooley (1996), the adoption of fixed exchange rates and deposit guarantees in the context of a liberalized but poorly supervised financial sector may create an opportunity for foreign lenders to reap high and secure private rates of return that do not reflect social returns on the resources that they transfer to the borrowing economy. This is a case of a “pull” factor which is welfare-reducing.

Thus, the welfare implications of capital flows driven by “pull” factors depend on whether these reflect the removal of a previously-existing distortion, an exogenous change in an undistorted environment, or the introduction of a new distortion.

### **3.1.2 “Push” factors**

The most widely cited “push” factor driving capital inflows to developing countries is a deterioration in the risk-return characteristics of assets issued by industrial-country debtors. This could happen, for example, in response to cyclical factors that temporarily depress rates of return on assets in the lending country. The collapse of asset values in Japan at the onset of the current recession in that country, the decrease in interest rates in the United States as a result of stimulative monetary policy adopted in response to the 1990-91 recession, and the reduction of interest rates in the United Kingdom after the pound dropped out of the ERM in September 1992 would each have had the effect of driving capital abroad in search of higher short-run returns. From the perspective of the developing country, this represents an external financial shock, which may be welcome or not depending on the country’s circumstances. For countries that had been credit-constrained and remain heavily indebted, the shock is a favorable one. However, its cyclical origin threatens to make it temporary. An important question for policy in borrowing countries raised by shocks of this type, therefore, is whether the domestic private response is likely to optimally take into account the possibility of reversal.

A different “push” factor with different implications for policy has to do with changes in financial structure in capital-exporting countries. The increased role of institutional lenders such as mutual and pension funds as financial intermediaries, as well as the increased importance of securitization, may represent a secular change which favors lending to emerging markets for portfolio diversification reasons. If so, and given the relatively small share of emerging markets in the portfolios of institutional lenders, the sustainability implications would be very different from those associated with cyclical factors. To the extent that recent flows have been driven by structural “push” factors of this type, flows are likely to be sustained at high levels for an extended period of time.

### 3.1.3 Financial integration

Lastly, the resurgence of capital flows may reflect increased financial integration due to the removal of barriers impeding cross-border capital flows. Such barriers may arise either as the result of policy choices or of technological conditions affecting, for example, information costs. As mentioned before, capital-account liberalization had been widely adopted as the outcome of explicit policy decisions in both industrial and developing countries at the onset of the capital-inflow episode of the nineties. While it may seem that the removal of such distortions is unambiguously welfare-enhancing, this may not be so if previously existing restrictions reflected a second-best response to other distortions in the economy—for instance, the financial-market distortions mentioned above.

## 3.2 The Empirical Evidence

A substantial amount of research has begun to document empirically the importance of specific factors in driving the current capital inflow episode. However, no general consensus has emerged concerning the relative roles that various factors may have played at different times. This subsection provides an overview of the main findings of this literature.

Much of the systematic empirical work on the issue of causation has focused on identifying whether the changes that triggered the recent capital-inflow episodes originated in the creditor or debtor countries. A recent paper by Fernandez-Arias provides a useful analytical framework within which to consider this issue. Capital flows are assumed to potentially occur in the form of transactions in various classes of assets, indexed by  $s$ , where  $s = 1, \dots, n$ . The domestic return on an asset of type  $s$  is decomposed into a “project” expected return  $D_s$  and a “country creditworthiness” adjustment factor  $C_s$ , which is bounded between zero and one. The project return depends inversely on the vector  $\mathbf{F}$  of net flows to projects of all types (based on a diminishing marginal productivity argument), while the creditworthiness factor is a negative function of the vector of the end-of-period stocks of liabilities of all types, denoted  $\mathbf{S}$ . Voluntary capital flows (components of the vector  $\mathbf{F}$ ) are determined by the arbitrage condition:

$$D_s(d, \mathbf{F})C_s(c, \mathbf{S}_{-1} + \mathbf{F}) = R_s(R), \quad (1)$$

where  $R_s$  is the opportunity cost of funds of type  $s$  in the creditor country,

taken to depend on creditor country financial conditions  $R$ , while  $c$  and  $d$  are shift factors associated with country creditworthiness and with the domestic economic climate, respectively. The convention adopted is that the functions  $D_s$ ,  $C_s$ , and  $R_s$  are increasing in these shift parameters. Notice that in this framework capital flows will be determined by  $c$ ,  $d$ , and  $R$ —that is, by domestic factors that operate at the project and country levels, as well as by external financial factors. The assumptions made above imply that the components of the vector  $\mathbf{F}$  are increasing in  $d$  and  $c$ , but decreasing in  $R$  and  $\mathbf{S}_{-1}$ .

The country creditworthiness factor  $c$  is taken as reflecting the expected present value of resources available for external payments. If such resources grow at rate  $g$  from an initial value  $W$ ,  $c$  is given by:

$$c = W/(I - g), \quad (2)$$

where  $I$  is a long-term risk-free external interest rate. When creditworthiness is sufficiently low, the solution to equation (1) above may entail extremely low capital inflows or capital outflows (negative values of various components of  $\mathbf{F}$ ) of a magnitude that imply transfers of resources that the country is unwilling to undertake. In this case, voluntary capital flows of such types would cease, and the condition would become an inequality no longer determining the corresponding (involuntary) capital flows. This observation is important for explaining how inflows could be externally driven, yet not uniform across developing countries. In a world in which some countries are creditworthy and others are not, a reduction in  $R$  would generate increased capital flows only for those countries that met the creditworthiness requirement.

The empirical evidence has provided strong support for the role of  $R$  in determining  $\mathbf{F}$ , though more recent research has suggested that the country-specific factor  $d$  and the “mixed” factor  $c$  have also played important roles. The first paper to confront the issue empirically was by Calvo, Leiderman, and Reinhart (1993). They argued that, while domestic factors were undoubtedly important in attracting inflows, such factors cannot explain why inflows occurred in countries that had not undertaken reforms or why when reforms were started earlier, the inflows did not materialize till 1990. They thus emphasized the role of external factors. Their formal analysis took the following form:

- Principal component analysis established a significant degree of comovement among foreign reserves and real exchange rates for

ten Latin American countries during 1990-91. The first principal component explained a larger share of the variation in the ten reserve and real exchange rate series during 1990-91 than in 1988-89. For the rate of inflation, however, the extent of comovement diminished in the more recent period.

- The first principal components of both the reserve and real exchange rate series displayed a large bivariate correlation with several U.S. financial variables used as indicators of foreign rates of return.
- In individual countries, Granger-causality tests most frequently had reserves causing real exchange rates than the reverse. This pattern also held for the first principal components of the two sets of series.
- Structural VARs involving reserves, real exchange rates, and the first two principal components of the U.S. financial variables, suggested that the foreign factors exerted causal influences over the domestic variables, and both variance decompositions and impulse response functions indicated that the foreign factors played a large role in accounting for reserve and real exchange rate movements.

Similar conclusions were reached in subsequent work by Fernandez-Arias (1994), as well as by Dooley, Fernandez-Arias, and Kletzer (1994). Fernandez-Arias used the model described above to decompose post-1989 portfolio (bond and equity) inflows for 13 developing countries into portions attributable to changes in  $c$ ,  $d$ , and  $R$  (he found that changes in  $\mathbf{S}_{-1}$  made no contribution to explaining changes in flows). He did so by regressing deviations in such flows from their 1989 values on corresponding deviations in the external interest rate and in the price of debt on the secondary market (based on a simple burdensharing model that linked  $c$  to this variable), using fixed-effect panel estimates for which the intercept term was interpreted as the change in the domestic investment climate  $d$ . For the “average” developing country in the sample, changes in international interest rates proved to be the dominant force in explaining surges in capital inflows, accounting for over 60 percent of the deviation in such flows from the 1989 level. An extra 25 percent was due to changes in creditworthiness, leaving only about 12 percent to be explained by improvements in the domestic investment climate. Moreover, when account was taken of the role of external interest rates in

determining the secondary-market debt price used as the creditworthiness indicator, thereby decomposing the latter into domestic and foreign components, fully 86 percent of the surge in inflows was attributed to movements in external interest rates. A somewhat different approach is followed by Dooley, Fernandez-Arias, and Kletzer (1994) based on the above-mentioned decomposition of creditworthiness into domestic and foreign components. They argued that the price of commercial-bank debt is a sensitive proxy for capital inflows, because shifts in the demand for claims on developing countries, whether emanating from changes in domestic or external factors, should be reflected in these prices. Thus, rather than explaining capital inflows directly, they attempted to account for the behavior of secondary-market prices on debt since 1989 which, consistent with their interpretation of the relationship between such prices and capital flows, have risen markedly. They found that essentially all of the increase in price could be accounted for by reductions in the face value of debt and international interest rates, leaving almost nothing to be explained by improvements in the domestic environment.

These findings concerning the role of foreign factors did not go unchallenged, however. Schadler, Carkovic, Bennett, and Kahn (1993), for instance, argued that while foreign phenomena may have been important, such influences cannot be regarded as dominant, for essentially two reasons. First, they noted that the timing, persistence, and intensity of inflows has varied considerably across countries that have received inflows, suggesting that investors have responded to changes in country-specific factors over time. Second, they pointed out that surges in capital inflows have not been universal within regions of developing countries, so that external creditors have clearly exercised some cross-country discrimination in the allocation of funds.

The analytical framework described above is helpful in sorting out these issues. The reduced-form solution for  $\mathbf{F}$  from Equation (1) for country  $i$  takes the form

$$\mathbf{F}_i = F(c_i, d_i, R; \mathbf{S}_{-1}), \quad (3)$$

which implies

$$\mathbf{F}_i = F_c dc_i + F_d dd_i + F_R dR + F_S d\mathbf{S}_{i-1}. \quad (4)$$

Notice that the partial derivatives of  $F$  depend on the country-specific values of  $c$ ,  $d$ , and  $\mathbf{S}_{-1}$ , as well as on  $R$ . This means that cross-country differences in capital-inflow variations are perfectly compatible with a primary role for the “push” factor  $R$ . Differences in the timing and persistence of

changes in capital inflows, on the other hand, do indeed suggest a role for changes in “pull” factors.

A separate branch of the “push-pull” literature has attempted to estimate Equation (3) directly. Chuhan, Claessens, and Mamingi (1998), for example, attempted to disentangle the roles of domestic and external factors in motivating portfolio capital inflows. Using monthly bond and equity flows from the U.S. to nine Latin American and nine Asian countries over the period January 1988 to July 1992, they estimated separate panel regressions explaining bond and equity flows as functions of country-specific variables (country credit rating, price of debt on the secondary market, price earnings ratio in the domestic stock market, and the black market premium) as well as external variables (U.S. interest rates and U.S. industrial activity). They found that bond flows (but not equity flows) responded strongly to the country credit rating, while price-earning ratios were uniformly important. However, U.S. interest rates also entered significantly with the theoretically expected negative sign in all the regressions. To assess the relative importance of domestic and foreign variables, they computed the sum of standardized coefficients for the two sets of variables, finding that domestic and external variables have been about equally important in Latin America, but domestic variables had sums of standardized coefficients that were three to four times larger than those of external variables in Asia for both bond and equity flows. Unfortunately, as Fernandez-Arias (1994) argued, the attribution of variation in country-specific financial variables to domestic shocks in Chuhan, Claessens, and Mamingi is improper, because country creditworthiness, as indicated by the price of debt on secondary markets, is itself heavily dependent on external factors.

Stronger evidence supporting a role for domestic factors in attracting capital inflows was provided by Hernandez and Rudolf (1994). Noting that previous work tended not to provide a careful specification of domestic factors, Hernandez and Rudolf examined the extent to which standard creditworthiness indicators could explain long-term capital inflows for a sample of 22 developing countries over the period 1986-93. They used two methodologies:

- First, they split their sample of countries into groups of high capital inflow recipients (HCIR) and low capital inflow recipients (LCIR). They found that the former had domestic saving rates twice as large as the latter, invested a much larger proportion of GNP, exhibited significantly lower fiscal deficits and inflation rates, had lower stocks of debt as well

as larger stocks of foreign exchange reserves and faster rates of export growth. The HCIR countries were also more stable, in the sense that they both exhibited lower variability of inflation and real exchange rates and scored lower on a political risk index.

- Second, arranging their data into a panel of annual observations, the estimated capital-flow equations for a broad category of long-term flows as a function of lagged domestic consumption and investment rates, external interest rates and the ratio of net external debt (gross debt minus foreign exchange reserves) to GNP, the variability of the real exchange rate, and the presence of a Brady bond deal. They found statistically significant (albeit not very precisely estimated) role for domestic creditworthiness indicators, but no role for the external interest rate.

Finally, more recent evidence provided by the World Bank (1997) suggests that the factors driving inflows have been changing over time, and in particular that domestic factors may have played a more prominent role during 1994-95. Adopting the Calvo, Leiderman and Reinhart methodology, the Bank found that quarterly portfolio flows from the United States to 12 emerging markets in East Asia and Latin America were characterized by a substantial amount of comovement (measured by the proportion of the variation captured by the first principal component) during 1990-93, and that the first principal component of these series was highly negatively correlated with the first principal component of a set of representative U.S. asset returns. Both of these findings are consistent with the findings of Calvo, Leiderman, and Reinhart for this period, as described above. However, over the years 1993-95, comovements among portfolio flows became much weaker (the contribution of the first principal component drops to 45 percent, from 75 percent of the variance), and the correlation with U.S. asset returns reversed signs and became much weaker. The implication is that idiosyncratic country factors may have played a much larger role in recent years than they did in the early years of the inflow episode.

### **3.3 An Assessment**

The formal evidence strongly supports the “push” view that falling U.S. interest rates have played an important role in driving capital flows to developing countries. The strongest evidence for the “pull” view during the early

years of the inflow episode is that provided by Hernandez and Rudolf (1994). However, their evidence is not necessarily inconsistent with the “push” view, despite the poor performance of the U.S. interest rate in their capital-flow regressions.<sup>5</sup> Specifically, their focus on long-term capital flows and the weight given to the 1990-86 period in their data suggest that their results may primarily apply to FDI flows and are not necessarily applicable to other types of capital flows, such as portfolio or short-term flows.<sup>6</sup>

However, the apparent importance of “push” factors does not preclude the relevance of “pull” phenomena. Indeed, while “push” factors may help to explain the timing and magnitude of the new capital inflows, “pull” factors are necessary to explain the geographic distribution of flows during this time. Differences in capital inflow levels across countries and within countries across time point to the importance of specific country (or period) characteristics for foreign capital absorption.

## 4 Policy Responses: Issues and Evidence

### 4.1 Policy Options

Almost all of the developing countries that have participated in the capital inflow episode of the nineties maintained an officially-determined nominal exchange rate at the inception of the inflow episode. The macroeconomic challenge posed for such countries by the arrival of capital inflows was the possibility that such inflows would result in overheating—that is, an excessive expansion of aggregate demand, resulting in an increase in domestic inflation and an appreciation of the real exchange rate. The mechanism through which inflows could have this effect is as follows: with a predetermined exchange rate, large capital inflows are likely to generate an overall balance of payments surplus. To avoid an appreciation of the nominal exchange rate, the central bank would have to intervene in the foreign exchange market to buy the excess supply of foreign currency at the prevailing exchange rate. *Ceteris paribus*, this would result in an expansion of the monetary base. Base ex-

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<sup>5</sup>This evidence is also at odds with the results of Calvo and Reinhart (1996), who find that the U.S. interest rate is also significant over longer sample periods (1970-93 in their case) in explaining capital flows to a panel of 11 Latin American countries.

<sup>6</sup>The empirical importance of domestic economic and political factors in explaining FDI has also been stressed by Edwards (1990).

pansion would lead to growth in broader monetary aggregates, which would fuel an expansion of aggregate demand. This, in turn, would put upward pressure on the domestic price level. With the nominal exchange rate fixed, rising domestic prices would imply an appreciation of the real exchange rate.

This causal chain can be broken at various points by policy intervention.. One useful way to organize the menu of policies available to the authorities to resist the emergence of overheating is thus according to where the intervention occurs along the chain of transmission described above. Accordingly, policy interventions can be classified as follows:

- Policies designed to restrict the net inflow of capital, either by restricting gross capital inflows or promoting gross capital outflows. Such policies include the imposition of administrative controls on capital inflows as well as the elimination of a variety of restrictions on capital outflows. They may also include the widening of exchange rate bands with the intention of increasing uncertainty .
- Policies that seek to restrict the net *foreign exchange* inflow (reserve accumulation) by encouraging a current account offset to a capital account surplus. Trade liberalization and nominal exchange rate appreciation would have this effect. In the limit (flexible exchange rates), the latter could avoid any foreign exchange accumulation whatsoever.
- Policies that accept the reserve accumulation associated with a balance of payments surplus, but attempt to ameliorate its effects on the monetary base. These amount to sterilized intervention, as well as attempts to limit recourse to the central bank's discount window.
- Policies that accept an increase in the base, but attempt to restrain its effects on broader monetary aggregates. Increases in reserve requirements and quantitative credit restrictions are examples of such policies.
- Policies that accept a monetary expansion, but attempt to offset expansionary effects on aggregate demand that could result in inflation and/or real exchange rate appreciation. This refers essentially to fiscal contraction.

#### 4.1.1 Restrictions on gross inflows

Though the imposition of capital controls is controversial, a case for imposing them can be made on welfare grounds. The key requirement for controls to improve welfare is the presence of a preexisting distortion that creates an excessive level of foreign borrowing. This could happen, for example, when the act of foreign borrowing itself creates externalities. If the costs of default on an international loan contract are shared by domestic agents other than the borrowing agent, then individual acts of foreign borrowing have negative external effects in the domestic economy. Since individual domestic agents do not internalize such effects, they will tend to overborrow. Capital controls, in the form of a tax on foreign borrowing, would effectively cause agents to internalize the costs that their external borrowing decisions impose on others. As such, they would represent a first-best policy intervention. A variety of second-best cases can also be made for capital controls. These emerge when the negative welfare consequences of a preexisting domestic distortion that cannot be removed are magnified by external borrowing. Distortions in the domestic financial system, for example, may cause resources borrowed from abroad to be allocated in socially unproductive ways in the domestic economy. If the distortion causing the problem cannot be removed, a second-best option may be to limit foreign borrowing.

Beyond the issue of optimality, the use of capital controls faces the question of feasibility. Many economists have questioned the feasibility of direct intervention with capital flows, on the view that controls may be easily evaded. Testing this proposition is complicated by the fact that the efficacy of controls is likely to depend on a wide range of factors, including whether controls are imposed on inflows or outflows, whether controls have been imposed previously, whether their coverage is comprehensive or partial, and a host of other considerations. The upshot is that the effectiveness of controls is likely to differ both across countries as well as over time, making it difficult to draw general conclusions.<sup>7</sup>

Dooley (1996) has recently surveyed the existing evidence on the efficacy

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<sup>7</sup>The incentive to evade depends on differences between foreign and domestic rates of return, and thus on financial policies abroad and at home. The feasibility of evasion, in turn, depends on the structure of trade (which affects the scope for under- and overinvoicing), on that of the domestic financial system (which affects the possibility of evasion by altering the channels of financial intermediation), and the efficacy of policing mechanisms. Such factors explain why the efficacy of controls is likely to differ across countries and over time.

of controls. He concludes that controls can be effective in the sense of preserving some degree of domestic monetary autonomy (that is, influencing interest differentials), but finds little evidence that controls have helped governments meet policy objectives or improve economic welfare in the ways outlined above.

#### 4.1.2 Encouragement of gross outflows

The relevant issues are efficacy and optimality in the case of liberalizing restrictions on outflows, though these issues arise in a somewhat different way. First, in parallel with the previous case, restrictions on *outflows* may not be effective. Evidence on this was mixed prior to the inflow episode of the nineties. Mathieson and Rojas-Suárez (1993), for example, addressed the question directly for a number of developing countries and concluded that controls on outflows have tended to prove ineffective in stemming capital flight. They tested whether capital flight responded to economic fundamentals in the same manner in countries with and without strong restrictions on capital outflows, with mixed results. They found that, while fundamentals continued to influence capital outflows even in the presence of controls, responses to fiscal imbalances were slower, and those to default risk were weaker, in countries with strong capital controls.

Even if outflow restrictions are effective, however, their removal may not have the desired effect of reducing net inflows, because the very act of removing such restrictions may attract additional inflows. Two sets of arguments have been adduced to suggest how this could happen. Labán and Larraín (1998) have pointed out that the presence of effective controls on outflows renders inflows irreversible. If future policies affecting the return on loans to domestic agents are uncertain, the option to keep funds abroad while the uncertainty is resolved becomes valuable, and foreign creditors may thus refrain from lending in this situation. Removing the outflow restrictions eliminates the irreversibility, and thus increases the relative return on domestic lending by eliminating the value of the option to wait. Alternatively, Bartolini and Drazen (1997) have argued that, since controls on outflows are often maintained for fiscal reasons (to facilitate the collection of financial repression taxes) their removal is interpreted by foreign investors as a signal that future capital taxation is less likely, thereby inducing capital inflows.

From the standpoint of optimality, a substantial literature on the sequencing of economic liberalization during the decade of the eighties concluded that

liberalizing capital outflows should be one of the last steps in economic liberalization, essentially on fiscal grounds. The argument was that, as long as domestic fiscal stability is not achieved, reliance on revenues from financial repression would be necessary. Financial openness, by providing domestic asset holders an alternative to the domestic financial system, reduces the revenues that can be collected from financial repression, and thus requires a higher rate of inflation to finance a given fiscal deficit. The distortions introduced by a higher rate of inflation may be more costly than those associated with controls on capital outflows (McKinnon and Mathieson, 1981).

#### 4.1.3 Trade liberalization

From a macroeconomic perspective, trade liberalization lowers the domestic currency price of importables directly, and may lower the price on nontradables indirectly (through a substitution effect). As indicated previously, to the extent that it induces a trade deficit, it absorbs some of the foreign exchange generated by the capital inflow, easing monetary pressures as well. The most controversial issue that arises with respect to trade liberalization as a means to restrict the net inflow of foreign exchange concerns efficacy. Because the trade balance is the difference between domestic saving and investment, the effect of trade liberalization on the trade balance depends on how saving and investment are affected. Both theory and evidence suggest that the effects of trade liberalization on the trade balance are ambiguous, depending on a host of structural characteristics of the domestic economy as well as on the nature of the liberalization program. The former include the importance of nontraded goods, sectoral factor intensities, the nature of accompanying fiscal policies, and the extent of labor market rigidities. The latter include the incidence of tariffs (whether they fall on intermediate or final goods) and their projected future paths.

For example, Ostry (1991) shows that if temporary tariffs on intermediate goods are reduced, and tradables are more intensive in both intermediate and capital goods than nontradables, then the effect of the liberalization program will be to increase saving and reduce investment, thereby unambiguously improving the trade balance. The reduction in tariffs on intermediates will result in a short-run real appreciation as the traded goods sector expands, absorbing resources from the nontraded sector. This real appreciation will cause agents to expect a larger real depreciation over time, since future trade policy is left unaffected. Consequently, the real interest rate

rises, and consumption tilts toward the future, increasing domestic saving. In turn, the increase in future consumption causes a future real appreciation which, relative to the undisturbed equilibrium, shifts capital from the traded to the nontraded sector in the future. Because the traded sector is relatively capital-intensive, the implication is a reduction in today's aggregate investment. With saving higher and investment lower, the trade balance unambiguously improves.

While this example may appear contrived, it merely illustrates the general principle that it is indeed quite possible in theory for a trade liberalization to improve the trade balance. The experience of liberalizing countries, as summarized, for example, in Thomas (1990), suggests that this result is more than a theoretical curiosity.

#### 4.1.4 Exchange rate flexibility

The alternative of inducing a current account offset to capital inflows through nominal exchange rate flexibility, by contrast, raises issues that concern optimality, rather than efficacy. The potential inflationary implications of capital inflows can be completely avoided by refraining from intervention in the foreign exchange market. Permitting a (temporary) appreciation of the nominal exchange rate in response to a favorable external interest rate shock (by restricting the scale of foreign exchange intervention) will dampen and possibly reverse the expansionary effect of the foreign shock on domestic aggregate demand, by appreciating the real exchange rate. A capital inflow arising from a reduction in external interest rates becomes a *deflationary* shock under fully flexible exchange rates. This outcome will be desirable if domestic macroeconomic conditions are such that policymakers seek to avoid stimulating aggregate demand. Thus, to the extent that capital inflows are permitted to materialize, the desirability of foreign exchange intervention depends in part on the requirements for macroeconomic stability.

The tradeoff, however, concerns the implications for domestic resource allocation. If the authorities allow the nominal exchange rate to appreciate in response to capital inflows, the profitability of the traded goods sector will obviously be affected adversely. Aside from possible political economy considerations, policymakers may have two reasons to be concerned with this outcome: first, if the capital inflow is believed to be temporary, an appreciation of the official exchange rate may tend to aggravate the effects of any previously existing domestic distortions biasing domestic resource allo-

cation away from the traded goods sector (and causing the “shadow” value of foreign exchange to exceed its official value).<sup>8</sup> Second, with temporary capital inflows, the associated real exchange rate appreciation will also be temporary, and any costly resource reallocations induced by changes in relative sectoral profitability between the traded and nontraded goods sectors would later have to be reversed. Since such costs represent fixed costs from the perspective of private agents, the associated resource reallocations would not be undertaken unless the incentives for doing so were perceived to be long-lasting. Because private agents will find it in their best interest to avoid the costs of transitory resource reallocation, the noise introduced into relative price signals by allowing excessive nominal exchange rate variability may reduce the efficiency of resource allocation.

The preceding discussion treats the exchange rate as an instrument of short-run stabilization policy. However, the exchange rate also plays another role in small open economies—that of nominal anchor. Indeed, this role is often prominent in stabilization programs, and institutional arrangements have often been devised to enhance the credibility of the anchor. Where the exchange rate plays such a role, the issues are whether institutional arrangements are sufficiently flexible to allow the rate to move and, if so, whether perceptions of the authorities’ anti-inflationary commitment would indeed be jeopardized by an appreciation of the nominal rate (albeit one which may later need to be reversed, if the inflow is temporary). The concern would be that even an appreciation may convey the signal that the exchange rate is not immutable.

#### 4.1.5 Sterilization

The monetary authorities can seek to avoid aggregate demand stimulus with a fixed exchange rate through sterilized foreign exchange intervention. The use of this policy raises a number of feasibility issues. First, by keeping domestic interest rates higher than they otherwise would be, sterilization will tend to magnify the cumulative capital inflow. The higher the degree of capital mobility, the larger will be the accumulation of reserves associated with sterilized intervention. Second, sterilized intervention has quasi-fiscal costs, since the central bank exchanges high-yielding domestic assets for low-

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<sup>8</sup>If the inflow is “permanent”, the associated real appreciation may be matched by an appreciation of the equilibrium real exchange rate, and thus would not necessarily increase the wedge between the “shadow” exchange rate and its official value.

yielding reserves. The magnitude of these costs will be greater the higher the degree of capital mobility and the larger the gap between domestic and foreign rates of return. Thus the fiscal feasibility of this policy is also at issue. Third, even if sterilization succeeds in limiting domestic monetary expansion, it may not insulate the economy from the effects of capital inflows. This would be true under two sets of circumstances:

- If domestic interest-bearing assets are perfect substitutes among themselves, insulation would fail if the shock that triggers the inflows affects domestic money demand. In this case, with shifting money demand but fixed supply, domestic interest rates would change;
- If domestic interest-bearing assets are imperfect substitutes, then a capital inflow may be associated with a shift in the composition of demand for domestic interest-bearing assets, as well as with an increase in the total demand for such assets. In this case, unless the *composition* of domestic assets emitted in sterilization operations matches that demanded by creditors, the structure of domestic asset returns would be altered.

The empirical evidence cited earlier in this book suggesting that most developing countries have been characterized by imperfect capital mobility over recent decades implies that sterilized intervention has been a viable policy option for these countries. By and large, studies that have examined the effectiveness of sterilization directly have supported this conclusion. However, recent capital account liberalization in many developing countries may have changed this situation, increasing the effective degree of financial integration for the liberalizing countries. Thus, whether sterilization remains viable after liberalization is an open empirical question.

#### **4.1.6 Policies to influence the money multiplier**

If for fiscal or other reasons sterilization is incomplete, the implication of a foreign exchange inflow is an expansion in the monetary base. Monetary expansion can still be avoided by a commensurate reduction in the money multiplier achieved through an increase in reserve requirements or other restrictions on credit expansion by the banking system. Feasibility issues arise here in several forms: first, increases in reserve requirements may have little

effect if banks are already holding excess reserves. Second, if reserve requirements are changed selectively for different components of banks' liability portfolios, then their effects could be evaded as bank creditors shift to assets not affected by changes in reserve requirements. Finally, even if changes in reserve requirements are applied broadly across bank liabilities, domestic credit expansion could materialize through nonbank institutions (disintermediation). The scope for doing so—and thus for avoiding an increase in domestic aggregate demand—depends on the sophistication of the domestic financial system.

With regard to optimality, measures directed at the money multiplier avoid quasi-fiscal costs, but do so through implicit taxation of the banking system. The economic implications of this tax will depend on how the tax burden is ultimately shared among bank shareholders, their depositors, and their loan customers. Nonetheless, the likely effect of this policy is to shrink the domestic financial system, an outcome that runs counter to the trend toward financial liberalization in most reforming economies, and which may have diverse implications for economic growth.

#### **4.1.7 Fiscal contraction**

If domestic monetary expansion is not avoided, or if an expansionary financial stimulus is transmitted outside the banking system, the stabilization of aggregate demand will require a fiscal contraction. Feasibility and optimality issues arise in this context as well. Concerning feasibility, fiscal policy may simply prove too inflexible to be available as a tool to respond to fluctuations in capital movements. The budgetary process in most countries may not be able to respond sufficiently quickly, and lags in response may indeed aggravate the stabilization problems created by volatile capital movements. Second, even if fiscal policy can be changed, the desired effects on domestic demand (and thus on the real exchange rate) will be forthcoming—that is, the policy will be effective—only if expenditure cuts fall on nontraded goods.

From the perspective of optimality, similar issues arise in the case of fiscal adjustment as in that of exchange rate changes—that is, should fiscal policy be designed to anchor long-run expectations of inflation and taxation, or should policy have countercyclical objectives? In principle these goals are not mutually exclusive, since short-run deviations from the medium-term fiscal stance can be designed to achieve stabilization objectives. The problem is, however, that if government credibility is lacking, adherence to

the medium-term stance in the face of shocks may be the surest way to achieve it. In a nutshell, the issue is whether the achievement of fiscal credibility is compatible with the adoption of feedback rules for fiscal policy.<sup>9</sup> Finally, if the stabilization objective is adopted, changes in marginal tax rates in response to temporary capital inflows should be avoided, since fluctuations in such rates would distort intertemporal choices.

## 5 Variations in Policy Responses

This section examines the frequency with which policies of each of these types were adopted by countries that experienced surges of capital inflows, as well as the modalities of their implementation. The discussion that follows is based on a sample of fourteen developing countries that experienced surges in capital inflows during recent years. The countries included in the sample are those for which information on policy responses is readily available. They include Indonesia, Korea, Malaysia, the Philippines and Thailand in East Asia, as well as Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, and Mexico in Latin America. Capital flows to other regions are more recent and less information is available on such countries, but Egypt and Sri Lanka are included as well. As a group, these countries accounted for over 70 percent of portfolio and direct investment flows to developing countries during 1989-93. A summary of policy measures undertaken in individual countries is provided by Montiel (1996).

### 5.1 Measures to Impede Gross Inflows

Controls, taxes, or other impediments to inflows were adopted in several countries, and they have taken many forms. The most straightforward of these consist of quantitative restrictions on foreign borrowing. Such restrictions were adopted in response to inflows in Sri Lanka during 1993, taking advantage of exchange controls that remained in place even after substantial capital account liberalization had taken place. Similarly, Indonesia restricted borrowing abroad by public sector entities in 1991. In Mexico, quantitative controls took the form of limits on banks' foreign currency liabilities. While

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<sup>9</sup>Note that, if such a rule were to be applied symmetrically, it would imply that capital outflows should elicit an *expansionary* fiscal response.

this measure may have represented a prudential component in bank supervision, it serves the function of restricting capital inflows through the banking system. Finally, for several months during 1994, Malaysia imposed a wide range of quantitative restrictions on inflows, including both restrictions on sales of securities abroad by domestic nonfinancial enterprises as well as limits on bank foreign exchange liabilities.

Rather than relying on quantitative restrictions, some countries have imposed *explicit or implicit taxes on external borrowing*, thereby increasing the cost of such transactions for domestic and/or foreign agents.<sup>10</sup> The most common form taken by such measures is the requirement that banks with foreign exchange liabilities maintain a nonremunerated account at the central bank, equal to a specified ratio of such liabilities. Such requirements have been adopted in Chile (1991 and subsequently), Colombia (1993), and Mexico (1991).<sup>11</sup> In each of these countries reserve requirements were supplemented with other measures to increase the cost of carrying foreign exchange liabilities. Chile applied a stamp tax to foreign loans, while Colombia imposed a “commission” on the sale of foreign exchange to the central bank. Other ways of taxing foreign borrowing were through the extension of withholding taxes to interest paid on foreign loans in Thailand (1990), as well as through the imposition of interest rate ceilings on deposits held by foreign institutions as part of Malaysia’s comprehensive program of capital controls in 1994. Explicit “Tobin taxes”—that is, foreign exchange transactions taxes applicable to certain classes of financial transactions—were introduced by Brazil in November 1993. The scope of these taxes was expanded in October of 1994, but scaled back in response to the Mexican crisis in early 1995.

Finally, some countries sought to discourage inflows by *increasing the risk* associated with foreign borrowing. Chile, Colombia, and Mexico all adopted exchange rate bands, and widened them during the inflow episode. Chile, in particular, permitted extensive variation of the exchange rate within its band, while the other countries intervened more systematically within the band to stabilize the path of the exchange rate. Indonesia (1991) restricted the use of swap facilities by commercial banks and increased their cost, increasing the risks to such banks of maintaining a foreign currency exposure.

Two notable features of these experiences are that quantitative controls

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<sup>10</sup>In other cases, measures of this type have been applied in addition to quantitative controls.

<sup>11</sup>In the Mexican case, reserve requirements applied only to the foreign-currency liabilities of the banking system.

and taxes on gross inflows were generally not adopted early in the inflow episode, but rather after a preferred alternative response—typically sterilized intervention—had been weakened or abandoned, and that capital controls have not necessarily become permanent once imposed. Malaysia, for example, dismantled the panoply of controls imposed in early 1994 later in the year, while Brazil reduced the scope of its financial transaction taxes in March of 1995.

## **5.2 Encouragement for Gross Outflows**

Many countries *relaxed controls on capital outflows*. Korea has promoted foreign investment by domestic residents, while Korea, Malaysia, and Thailand have all accelerated the repayment of external debt. Thailand, Chile, and Colombia removed a number of restrictions on capital outflows. This involved measures such as explicitly permitting residents to invest abroad, removing restrictions on repatriation of capital and interest by foreign direct investors, the elimination of ceilings on tourist expenditures by residents, elimination of export surrender requirements, extension of the period for advance purchase of foreign exchange by importers, and others. The Philippines removed all restrictions on the use of foreign exchange for both current and capital transactions.

While many of these measures were encouraged by the inflow surges, in many cases they represented a continuation of a liberalization process already under way when inflows began to arrive. It is noteworthy, however, that financial reforms of a strictly domestic nature were typically not accelerated in response to inflows, and in some cases the policy response to inflows actually ran counter to previous liberalizing measures. This was true of increases in reserve requirements in many countries, as well as the imposition of ceilings on lending rates in Colombia, for example.

## **5.3 Measures to Reduce Reserve Accumulation**

### **5.3.1 Commercial policy**

Several countries *reduced tariffs* during the period of large inflows. This was the case in Korea, Malaysia, the Philippines, Thailand, Chile, Colombia, and Costa Rica, though only the Philippines, Thailand, Colombia and Costa Rica appear to have done so specifically in response to the inflows.

### 5.3.2 Exchange rate policy

In addition to trade liberalization, several countries permitted a *nominal appreciation* of their currencies, or at least a slowdown in their rate of nominal depreciation. This implies reduced intervention in the foreign exchange market by the central bank, and thus less pressure on the monetary base arising from reserve accumulation. Three observations are relevant regarding the application of this policy:

- No country abandoned a predetermined peg for a freely-floating regime over the course of the surge episode, except in response to a currency crisis (Costa Rica experimented with a float, but only temporarily). Official intervention continued to be practiced in all of them. On the other hand, as already mentioned, the tradeoff between holding the exchange rate for the purpose of stabilizing price expectations and allowing it to appreciate to absorb monetary pressures was resolved in the case of some countries by the use of *exchange rate bands*. Brazil, Chile, Colombia, Indonesia, and Mexico all used bands with the intention of focusing price expectations around the predetermined central parity, while allowing movements (appreciation) within the band to absorb some of the pressure from capital inflows. Colombia, Indonesia, and Mexico introduced exchange rate bands during their surge episodes, while Chile widened its previously existing band.
- In the sample of countries covered here, nominal appreciation was more common in Latin America (Bolivia in 1991, Chile in 1990-92 and again in 1994, Colombia in 1991 and 1994, Costa Rica in 1992, and Mexico in 1991) than in East Asia (Korea in 1987-89, Malaysia in 1993, and the Philippines in 1992), possibly reflecting a greater weight given to an inflation than a competitiveness target. In turn, the relative weight given to price stability in Latin America reflects ongoing stabilization efforts in the region.<sup>12</sup>
- By and large, the magnitudes of nominal appreciations have been small. Exceptions were revaluations of 5 and 7 percent in Colombia in 1994 and a revaluation in excess of 9 percent in Chile in 1994.

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<sup>12</sup>This may reflect the set of countries examined, however. According to Calvo, Leiderman, and Reinhart (1993), nominal appreciation was also undertaken by Singapore and Taiwan.

## 5.4 Measures to Restrict Base Money Growth

By far the most common response to the receipt of capital inflows has been *sterilized intervention*. This largely reflects the combination of an exchange regime characterized by predetermined official rates and a policy concern with inflation and real exchange rate appreciation. Sterilized intervention was pursued by all of the countries examined here with the exception of Argentina and Bolivia. Such intervention took the form of open-market sales of government or central bank securities, central bank borrowing from commercial banks (intervention in the interbank market), shifting government deposits from commercial banks to the central bank, raising interest rates on central bank assets and liabilities, and curtailing access to rediscounts. Transfers of government deposits to the central bank have been particularly common in East Asia. They took place in Indonesia, Malaysia, and Thailand. In the Philippines, the government borrowed from the private sector in order to make deposits in the central bank, thus conducting open-market operations on behalf of the latter. A different twist was provided in Mexico, which placed its privatization proceeds in the central bank during 1991, thus sterilizing inflows by selling *real* assets. Reduction of access to the discount window was employed by Korea (1986-88) and Thailand (1989-90). According to Reinhart and Dunaway (1995), Chile, Colombia, Indonesia, and Malaysia were particularly aggressive initially in their pursuit of sterilization when inflows accelerated, seeking to offset all effects of capital inflows on the monetary base, while Chile later, as well as Korea, Mexico, the Philippines, and Thailand were not so ambitious, seeking only to ameliorate effects on the base.

Countries that received substantial inflows tended to use sterilized intervention soon after inflows began to arrive, often in the first year. Indonesia, Malaysia, Thailand, Mexico, and Egypt continued the policy of sterilization longer, while Chile and Colombia eased monetary policy in the second year of capital-inflow episodes. Indonesia eventually eased in mid-1993 and Egypt in mid-1994, but Chile had already reduced the intensity of sterilization by mid-1990, and Colombia by late 1991. Observers have attributed the change in policy to its quasi-fiscal costs, to the effects of sterilization in magnifying the size of the inflows, and to the perception that this policy deprived domestic investment of the benefits of inflows. A clear pattern in the country experience, however, is that the intensity of sterilization was used in countercyclical fashion.

A notable feature of the sterilization episodes is that countries succeeded in keeping domestic interest rates high in spite of the capital inflows, in some cases (Colombia being a clear case) even higher than before the inflows. This suggests that whether desirable or not, sterilization remained a realistic option for these countries, at least in the short run—that is, international capital mobility proved less than perfect, even after substantial liberalization. There is evidence, however (Glick and Moreno (1994)), that capital mobility is stronger in the long run than in the short run, so sterilization may indeed represent only a temporary option in most cases.

### **5.5 Reduction in the Money Multiplier**

Changes in reserve requirements have taken various forms, ranging from altering required reserve ratios on all domestic-currency deposits to raising marginal reserve requirements on foreign-currency liabilities of banks. The latter are best understood as a form of capital control, since they impose a discriminatory tax on a particular class of bank liabilities intended not to discourage overall lending, but to restrain such liabilities. Increases in general reserve requirements were implemented by Korea (1988-90), Malaysia (1989-94), the Philippines (1990), Chile (1992), Colombia (1991), and Costa Rica (1993). Beyond such uniform restraints on the growth of credit, restrictions on the expansion of specific types of lending (credit controls) were used by Korea, Malaysia, and Thailand. Each of these economies had a long history of using directed credit as an instrument of monetary policy. Among countries with higher reserve requirements, money multipliers fell during the surge period in Korea and Malaysia, were stable in the Philippines, Colombia, and Sri Lanka, and rose only in Chile.

### **5.6 Restrictive Fiscal Policy**

Because the ongoing stabilization efforts in Latin America involved fiscal tightening, it is difficult to identify specific instances in which *tight fiscal policy* was adopted in response to capital inflows. Costa Rica may be such a case. While Argentina and Mexico tightened fiscal policy during the surge episodes, both countries were involved in strong stabilization programs which had not yet reached their inflation objectives when inflows began to materialize. By contrast, fiscal tightening was an important component of the policy response in several East Asian countries that were not in the midst of

an attempt to stabilize from high inflation. Tightening occurred in Indonesia (1990-94), Malaysia (1988-92), the Philippines (1990-92), and Thailand (1988-93). Of the East Asian countries included here, only Korea did not implement additional fiscal tightening during the surge episode.

## 6 Macroeconomic Outcomes

How well did these measures succeed in preserving macroeconomic stability in the face of inflows? An overview of macroeconomic outcomes is provided by Montiel (1996). Official foreign exchange reserves rose in all countries and, predictably, the increase was largest in those countries that relied most heavily on sterilized intervention. By contrast, the current account offset to capital inflows was largest in Argentina, Bolivia, and Costa Rica (in 1992-93), all of which sterilized either weakly or not at all. However, surges in money growth—the key channel of transmission described previously—do not appear to have been as universal or as persistent. Among the countries in this study, Indonesia, Malaysia, Argentina, Bolivia, Chile, and Sri Lanka registered accelerations of base money growth on average over the surge period. Base money growth was kept in check in Thailand to a greater extent than in Malaysia and Indonesia, while broad money growth accelerated in all three countries.

Base money growth tended to accelerate on impact in several countries (for instance, the Philippines, Colombia, Costa Rica, and Mexico) before sterilization was undertaken in earnest. Once monetary policy adapted to the persistence of inflows, however, recipient countries were largely successful in keeping base money growth in check. As indicated above, periods of substantial acceleration in base money growth tended to respond to domestic economic conditions, and thus appeared to reflect policy intentions, rather than unavoidable by-products of surges in capital inflows. The lesson, then, is that while the threat to base money expansion from a surge in capital inflows is real, sterilized intervention has been employed successfully almost everywhere to retain control over the monetary base.

Success is not so apparent with respect to the behavior of the money multiplier. In seven of the fourteen countries examined, the money multiplier actually increased during the period, an outcome which runs counter to what would have been required to offset accelerated growth in the monetary base. While it is true that increases in reserve requirements did not figure promi-

nently in any of these cases (until recently in Malaysia), sustained reductions in the money multiplier have not been substantial in any of the countries examined, in spite of the fact that reserve requirements were raised early in the surge episode in some of them (for instance, in both Korea and the Philippines in 1990). By and large, then, control of money supply growth has been achieved by restricting the growth of the base, rather than by reducing the money multiplier.

In spite of the limited expansion in the monetary base, stock prices surged during the early phases of the episodes, both in Asia and Latin America. This suggests that controls, sterilization, and increases in reserve requirements may not have succeeded in preventing the transmission of the expansionary demand shock to the recipient economies, even if explosive monetary growth was avoided. In spite of what appears to be a widespread boom in asset markets, there were no instances in which inflation accelerated drastically during the inflow episode. This does not imply, however, that all of these countries registered a satisfactory inflation performance—several of them may have failed to reach inflation targets that could have been attainable otherwise.

Significant real exchange rate appreciation was widespread outside East Asia. In Latin America, Chile experienced a mild appreciation, but the degree of appreciation was strong in Argentina and Mexico. In Asia, all of the countries examined avoided a real appreciation, though the real exchange rate appreciated temporarily in the Philippines. The inflation and real exchange rate outcomes can be reconciled as reflecting the combination of limited acceleration in the growth of monetary aggregates (due to the policies described above), and the use of the exchange rate as a nominal anchor. Fiscal restraint appears to have played a role in avoiding stronger real appreciation as well as more rapid inflation, particularly in several East Asian countries (Indonesia, Malaysia, the Philippines, and Thailand).

Increases in current account deficits have been common during inflow episodes. Larger deficits were registered by Korea, Malaysia, the Philippines, Thailand, Argentina, Bolivia, Costa Rica, Mexico, and Egypt. In Latin America, about half of the monetary impact of the capital account surplus associated with the inflow episode has been offset by an increase in the current account deficit. However, despite some increase in investment in most Latin American countries, the current wave of capital inflows does not seem to have been associated with an investment boom (private or public) in the region (see also Calvo, Leiderman, and Reinhart (1992, 1993)). Thus, the increases in current account deficits have accommodated a reduction in

domestic saving. In contrast, saving rates were stable in the east Asian countries, and increased sharply in Thailand. Several Latin America countries appear to have experienced consumption booms led by private sector consumption. This was true of Argentina, Bolivia, Chile, and Mexico, but not of Colombia. In East Asia, only the Philippines experienced a similar boom. Egypt seems to have done so as well.

## 7 Policy Lessons

A systematic attempt to draw lessons about policy effectiveness and optimality based on this experience would require linking individual policies to their outcomes in particular countries, and attaching benefits and costs to such effects. Transferring these lessons elsewhere would further require interpreting such policy effects in terms of the structures and circumstances of the countries concerned. This is essentially a case-study enterprise which is beyond the scope of this paper. The lessons to be reported in this section instead are those that have been drawn by observers of individual country experiences as well as those that can be crudely inferred from cross-country patterns of policy choices and macroeconomic outcomes. They concern policy effectiveness, rather than optimality.

Consider first policies that attempt to intervene directly to limit net capital inflows: *capital controls* and the *liberalization of outflows*. The experience described here sheds some light on the well-known issues discussed previously concerning the costs and benefits of each of these.

In the case of *capital controls*, potential costs consist of the microeconomic distortions introduced when such controls represent neither a first- nor second-best policy response (see Fernandez-Arias and Montiel (1995)). Little evidence exists to date on the magnitude of such costs for the countries that have recently received large inflows. Nonetheless, it is revealing that the countries that resorted to controls did so after *a*) having initially liberalized capital transactions, and *b*) after having reduced the application of other measures (typically sterilized intervention) to counter the effects of the flows. The implication is that policymakers in these countries perceived the costs of direct intervention to be less than those of sterilization.

Whether controls generate any benefits at all, on the other hand, depends on their effectiveness. On this issue there is some indirect evidence. The fact that substantial inflows have followed the removal of controls in several cases

(for instance, Korea in 1992), and that inflows have slowed after controls were reimposed (Chile in 1991 and Malaysia in 1994) suggests that controls *can* work, at least in some cases and at least temporarily. In Chile, moreover, controls have been credited with altering the composition of flows in favor of those with longer maturities.

With regard to *liberalization of outflows*, two issues were raised previously: Does liberalization matter, if previous restrictions were ineffective in constraining outflows anyway? And, are they effective in restraining net inflows, since they may attract more inflows at the same time that they promote outflows? The episodic evidence suggests (weakly) that such restrictions may matter, but they may have little effect on net capital flows.

What is clear from country experience is that substantial inflows followed the removal of restrictions on outflows in many countries, an experience—as discussed by Bartolini and Drazen (1997)—which has also characterized industrial countries. Whether the removal of outward restrictions diminished net inflows to any significant extent is impossible to say on the basis of present evidence, but it is clear that they did not represent a complete solution to the inflow problem anywhere that they were used. The observation just mentioned—that the inflow episode was often preceded by capital account liberalization including the removal of restrictions on outflows—is certainly consistent with the view that the removal of restrictions on outflows simply attracts additional inflows.

Concerning measures to limit the overall balance of payments surplus, though the current account deficit increased markedly in the majority of countries reviewed, it is difficult to attribute this to direct measures such as *trade liberalization*. Too many other things were happening at the same time to make such an attribution and, as suggested previously, even the theoretical effect of liberalization on the trade balance is ambiguous. Instead, the lesson that emerges from experience concerns trade liberalization as an endogenous, rather an exogenous, variable. It is clear that, in spite of the theoretical ambiguities described above, trade liberalization is often inhibited by a perceived balance of payments constraint. Thus, a surge of capital inflows presented several countries with a good opportunity to pursue trade liberalization, and at least eight of the fourteen countries examined did so (Montiel, 1996). Contrary to the fears expressed in the sequencing literature of the eighties, no instances of major reversals of trade liberalization can be documented for this group of countries. Even in the case of the Philippines, where an import surcharge was imposed in the midst of the inflow

episode, this happened in the context of a broad trend toward commercial liberalization in the country.

Concerning use of the *exchange rate* to achieve the same result, the lessons are several:

- The adoption of an *exchange-rate band* provides an option that combines the nominal anchor function of the exchange rate with a mechanism to allow nominal exchange rate movements to absorb some of the pressures exerted by capital inflows in the foreign exchange market. Among the countries that operated bands, none of them experienced an acceleration of inflation as a result of the additional flexibility allowed for nominal exchange movements. One interpretation of this experience is that the additional flexibility acquired through bands can be purchased at near-zero cost to the nominal anchor function of the exchange rate.
- Nominal exchange rate adjustment was essentially confined to two countries (Chile and Colombia) in the group considered. As a result, real exchange rate appreciation was largely effected through price level adjustments. Nonetheless, many countries managed to avoid real appreciation over the course of the surge episode. Thus, while real appreciation may be inevitable eventually if inflows are sustained, the loss of competitiveness does not have to be absorbed immediately. The role of fiscal policy in generating these outcomes is considered below.
- The link between real appreciation and the emergence of current account deficits is not airtight. On the one hand, avoiding real appreciation has not necessarily implied avoiding current account deficits. The emergence of large current account deficits was not restricted to countries that experienced real appreciations (Malaysia and Thailand both had large adverse movements in the current account balance with stable real exchange rates). On the other hand, both countries that experienced very substantial real exchange rate appreciation (Argentina and Mexico) also exhibited very large current account deficits.

Lessons concerning *sterilized intervention* are mixed. An important lesson is that sterilization has clearly been possible in spite of capital account liberalization and of the large magnitude of recent inflows. Indeed, many countries registered an *increase* in domestic interest rates over the period

of sterilization. This may reflect the operation of “pull” factor increasing the domestic demand for money (see Frankel (1994)). Thus, perfect capital mobility does not yet seem to characterize any of the countries reviewed.

However, many countries did not sustain policies of aggressive sterilization consistently over the inflow period. This suggests that sterilization was not a panacea, despite its widespread appeal among countries experiencing surges. In the absence of data on quasi-fiscal costs, the importance of fiscal rigidities that made the quasi-fiscal costs of sterilizing too burdensome cannot be dismissed as an explanation, but it is clear that shifts in domestic economic circumstances that made lower interest rates more attractive have also played a role.

Finally, the effectiveness of sterilization in insulating economies from the effects of external financial shocks is open to question. By and large, sterilization does not seem to have completely insulated recipient economies from the effects of capital inflows. Asset markets, in particular, typically recorded massive increases in value during the surge periods. This is consistent with an imperfect-substitutability story in which foreign creditors demand domestic financial assets different from those issued by the central bank in the course of its sterilization operations.

Turning to *fiscal policy*, the experience reviewed suggests that this has not proven to be a very flexible instrument in responding to inflows. Not many countries found it possible to engage in additional fiscal tightening in response to inflows, and where additional fiscal tightening took place the changes in the fiscal stance were not typically large compared with previous fiscal adjustments in the countries concerned. This may reflect a variety of factors, including “stabilization fatigue” arising from the substantial fiscal adjustment that many countries had already undertaken prior to the inflow episode, or political economy considerations that make it difficult to undertake fiscal austerity when the external constraint is not binding.

Whatever the reason for the nature of the fiscal response, however, the absence of additional fiscal tightening may have played an important role with regard to outcomes for the real exchange rate. Real appreciation was avoided in all of the East Asian countries that tightened fiscal policy in response to inflows, as well as in Costa Rica. The frequency of real appreciation elsewhere supports the implication of theory that, in the presence of capital inflows, the avoidance of real appreciation requires a fiscal contraction to free up the requisite supply of nontraded goods without a relative price change.

Nonetheless, tighter fiscal policy was not sufficient to avoid a real appre-

ciation. Real appreciation accompanied fiscal tightening in Argentina and Egypt, but each of these countries was in the midst of stabilizing from high inflation, and it is likely that the behavior of the real exchange rate reflected inflation inertia. If this interpretation is correct, the implication is that real appreciation would have been more severe in these countries if fiscal policy had been looser.

## 8 Concluding Remarks

One of the most important developments in developing-country macroeconomics during the decade of the nineties was the transition for several large developing countries from a position of near financial autarchy induced by the international debt crisis to a rather advanced degree of integration with world capital markets that resulted in very large new flows of private capital into those countries. The transition was led by East Asian countries that had been much less affected by the debt crisis than had the major countries in Latin America, but many of the latter also soon began to participate in the new capital inflow episode. To date, however, a large number of small low-income countries, particularly in sub-Saharan Africa, remain much less integrated with international financial markets.

The new capital inflows were driven by a combination of push and pull factors, as well as by technological and institutional innovations in both creditor and debtor countries that facilitated cross-border capital flows. Unlike the situation prior to the debt crisis, capital flows tended to go to private sector borrowers in developing countries, and to consist primarily of portfolio and equity flows, rather than syndicated bank loans.

These capital inflows have posed important macroeconomic challenges for the recipient countries, principally in the form of the potential for macroeconomic overheating, and an increase in macroeconomic volatility. Countries have responded with a large variety of macroeconomic measures to preserve stability, ranging from imposing restrictions on inflows, to allowing greater exchange rate flexibility in the context of exchange rate bands, to engaging in extensive sterilized intervention in the foreign exchange market and tightening fiscal policies. By and large, they have been successful in preserving macroeconomic stability in the face of inflows, and the inflow period has generally been one of lower inflation and higher growth for the recipient countries.

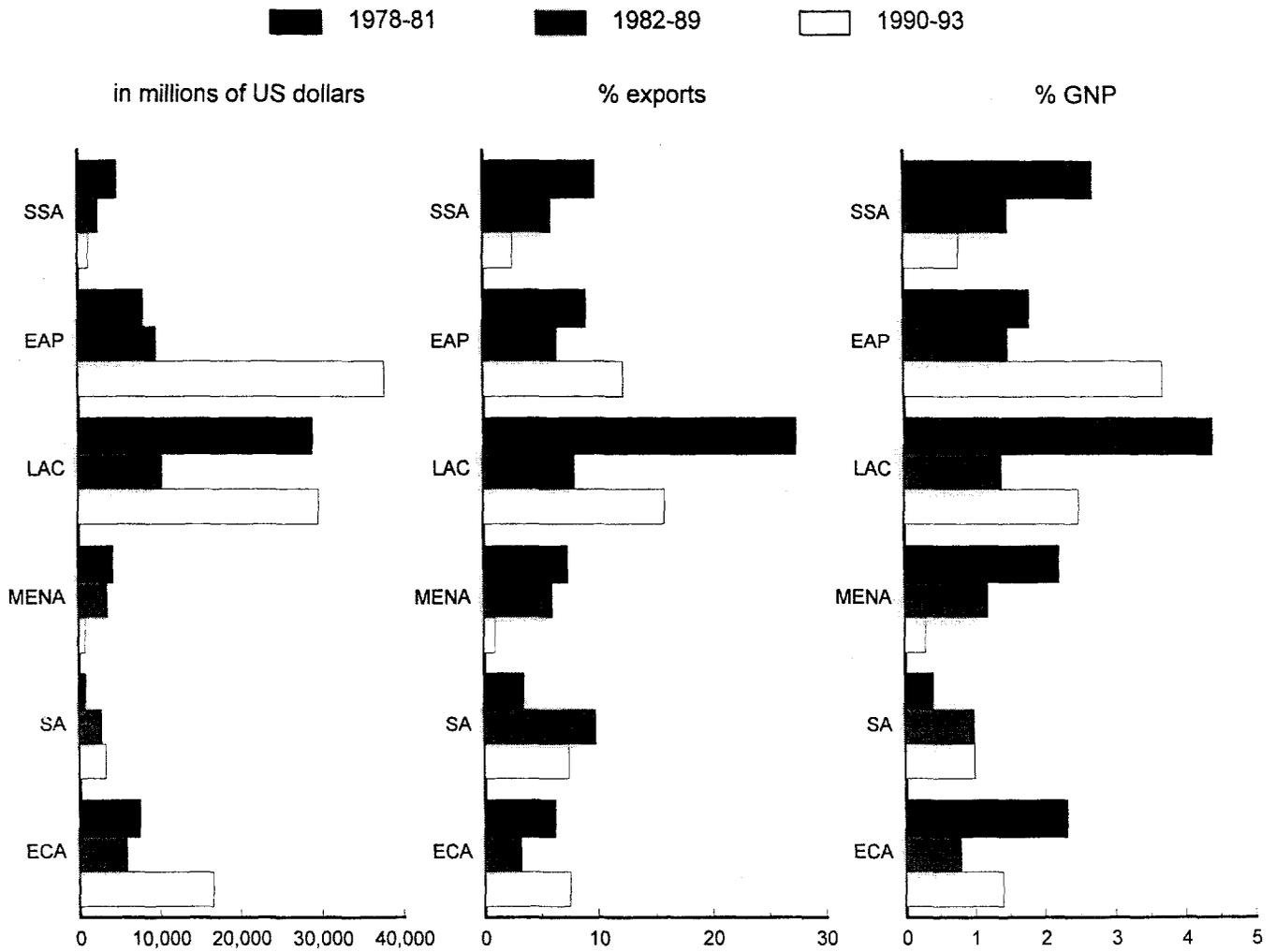
However, enhanced financial integration has also made developing countries vulnerable to capital flow reversals as well as exchange rate crises, and the new financially-integrated regime has witnessed some rather dramatic examples of such events.

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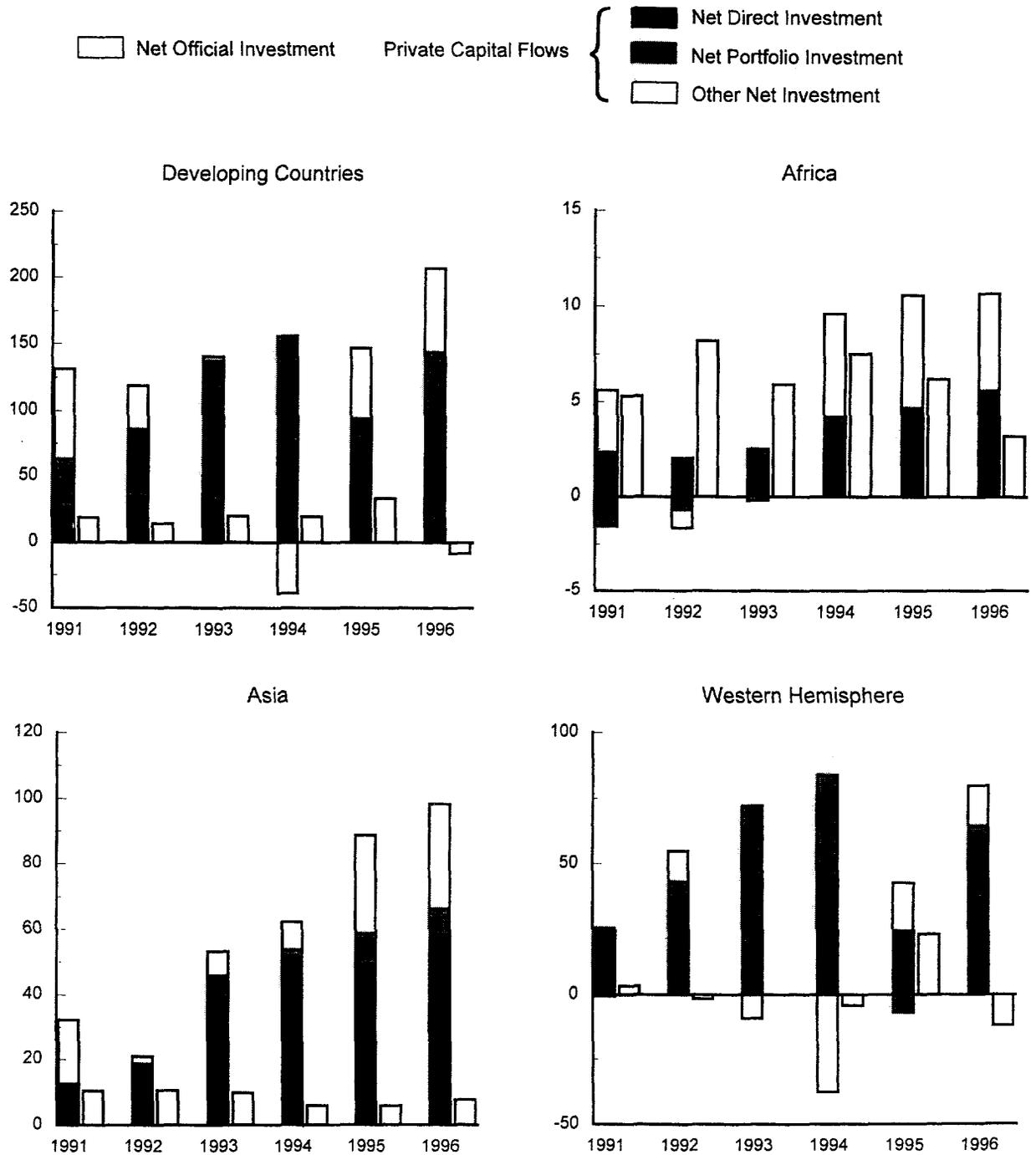
Figure 1  
Annual Long-Term Private Capital Net Flows <sup>1/</sup>



Source: World Bank, *Debtor Reporting System* and *World Debt Tables*, 1994-95.

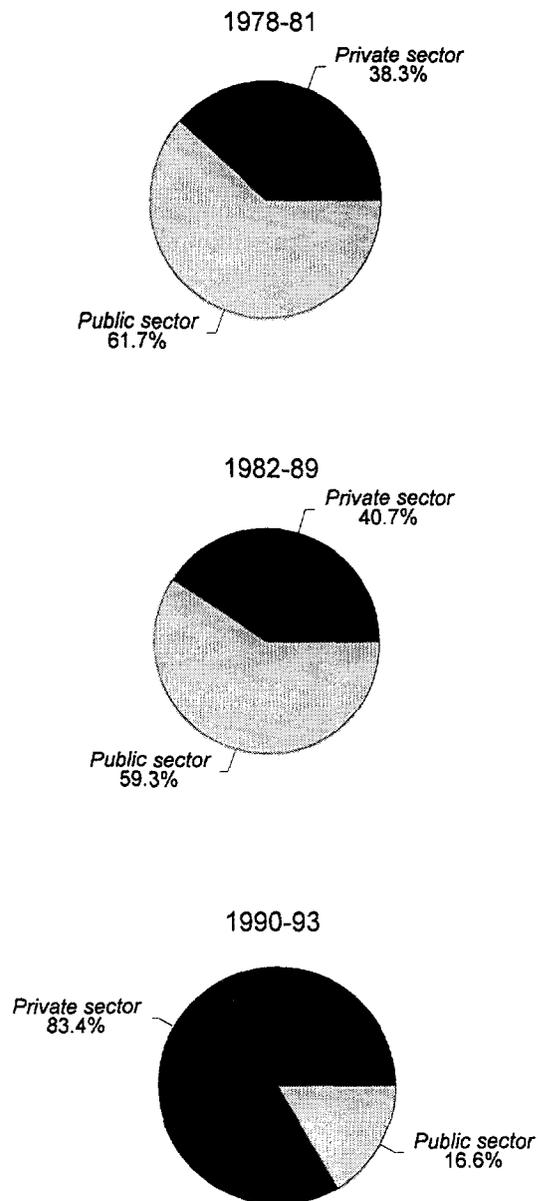
<sup>1/</sup> SSA: Sub-Saharan Africa; EAP: East Asia and the Pacific; LAC: Latin America and Caribbean; MENA: Middle East and North Africa; SA: South Asia; ECA: Europe and Central Asia.

**Figure 2**  
**Capital Flows to Developing Countries**  
(In billions of U.S. dollars)



Source: *World Economic Outlook*.

Figure 3  
Sectoral Destination of Long-Term Private Capital Net Flows  
(percentages)



Source: World Bank, *Debtor Reporting System* and *World Debt Tables*, 1994-95.





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