MACROECONOMIC ADJUSTMENT TO CAPITAL INFLOWS: LESSONS FROM RECENT LATIN AMERICAN AND EAST ASIAN EXPERIENCE

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Capital inflows to some developing countries have increased sharply in recent years. Impelled by better economic prospects in those countries, lower international interest rates, and a slowdown of economic activity in the capital-exporting countries, the inflows have furnished financing much needed to increase the use of existing capacity and to stimulate investment. But capital inflows can bring with them their own problems. Typical macroeconomic repercussions have been appreciation of the real exchange rate, expansion of nontradables at the expense of tradables, larger trade deficits, and, in regimes with a fixed exchange rate, higher inflation and an accumulation of foreign reserves.

Should government intervene to limit some of these side effects—and if so, how? The question is especially pressing in the wake of the Mexican crisis of December 1994. This article looks for answers in the experience of four Latin American and five East Asian countries between 1986 and 1993, examining the effects of the capital inflows on the economy and comparing the different ways in which these countries responded to the problem of "too much" capital.

The debt crisis of 1982 was precipitated by a sudden reduction in capital inflows at a time when highly indebted developing countries were facing a slowdown of the world economy, a large increase in international interest rates, and a sharp loss in terms of trade. Weak economic policies and institutions in many developing countries exacerbated the effects of these shocks. The cutoff of capital inflows forced a quick and steep increase in the size of the net external transfer—translating, in the short run, into sharply reduced domes-

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tic expenditures and imports and, in the longer run, into damage to investment rates and economic growth.

During the decade following the initial shock, most of the highly indebted countries set about adjusting their policies and institutions to the new situation of severely restricted external financing. The goal of adjustment was to restore a sustainable balance of payments, at the same time laying firm foundations for growth. Some countries expected to return to international capital markets, but to rely this time less on debt and more on direct foreign investment and portfolio investment.

For the first few years after the debt crisis, most lending to these countries took the form of official loans from international financial institutions to support the policy and institutional reforms necessary to achieve these goals. Once countries began to make progress in their adjustment efforts, private capital inflows toward them increased significantly—financed in part by the repatriation of the capital that had fled these countries in the early 1980s. In fact, the capital account surplus (including net errors and omissions) for all developing countries increased from $48.7 billion in 1987, to a record level of $162.9 billion in 1993, before easing to $142.2 billion in 1994 (IMF 1995).[1] The new inflows came from commercial bank lending, foreign direct investment, and portfolio capital (investment in stocks and bonds). Portfolio investment, which increased from $11.9 billion in 1987 to $58.9 billion in 1994 (IMF 1995), has been motivated by the potential for providing risk-sharing capital financing to expand the private sector. Host countries have encouraged foreign direct investment, with its promise of access to new technologies and markets, by dismantling restrictions and improving the macroeconomic environment by introducing market-oriented reforms. Other incentives to capital inflows have been the introduction of restrictive monetary policy in conjunction with some type of intervention in the exchange rate market. In any case, much of this inflow is an endogenous response to a change in policies and prospects in the recipient country.

The increase in capital inflows has relaxed the severe financial constraint that host countries faced during much of the 1980s. And the new wave of capital has an added advantage over earlier inflows in that the resources are going to the private sector and are predominantly in the form of equity capital rather than debt financing.

But—paradoxically, with the debt crisis so close in time—the early 1990s have revealed a downside to the inflows: the negative effects of receiving "too much" capital. One example is "hot money"—short-term, highly volatile inflows usually attracted by market imperfections or policy mistakes that create a large gap between domestic and foreign interest rates, the latter adjusted by expectations of devaluation. This type of inflow can be the source of undue or excessive volatility in rates of inflation and in nominal and real exchange rates. These fluctuations can have important economic costs. For example, imperfections in capital markets and barriers to entry in the export and import-competing sectors can

lead to an inadequate supply of capital and shortages in traded goods. Real costs of bankruptcy and reallocation of resources can similarly generate economic costs. So in many countries the economic authorities have tried to discourage hot money by correcting the imperfections and policy mistakes that encouraged such inflows in the first place or by controlling some of the side effects of capital inflows through different types of intervention.

Even predictable capital inflows can cause cyclical fluctuations in the real exchange rate, which in turn might affect the tradable sectors and macroeconomic management as a whole. Admittedly, more stable and lasting capital inflows, elicited by better prospects in the host country rather than by market imperfections, will also set in motion a macroeconomic adjustment process similar to the traditional "Dutch disease" (that is, the adverse effect on other sectors when an increase in the price or volume of an export generates an appreciation of the real exchange rate, thereby reducing incomes in tradable goods sectors except for the booming sector itself). There is no apparent economic reason to interfere with that adjustment process, except to smooth it over time.

This article first reviews the macroeconomic and other related effects of capital inflows as a basis for discussing why a country could be concerned about receiving "too much" capital and for analyzing the different economic policies that countries can use to deal with the side effects of capital inflows. From an examination of the principal mechanisms used for this purpose by nine developing countries, four Latin American and five East Asian, some conclusions are drawn on how to manage capital inflows to minimize their detrimental effects.

The issues are highly relevant for potential recipient countries, particularly in the wake of the Mexican crisis of December 1994. Indeed, the Mexican peso crisis highlights the critical importance of establishing sound macroeconomic fundamentals and avoiding large current account deficits with their associated appreciation of the real exchange rate.[2] The postcrisis effects also illustrate how fundamentals in the host country matter: the so-called "tequila effect" (the impact of the Mexican crisis on other countries) was uneven and caused less distress in those economies with a stronger set of fundamentals, such as Chile, the Republic of Korea, Malaysia, and Thailand.

Macroeconomic and Other Related Effects of Capital Inflows

Capital inflows tend to reduce interest rates and boost domestic expenditure. Increased domestic spending puts in motion a price adjustment process. For the purpose of analysis, suppose that a country produces and consumes three types of goods: an exportable, an importable, and a nontradable. The importable and exportable goods, assuming that the terms of trade between them are fixed, can be grouped into a single category—tradable. Given a pattern of demand for these two categories—tradable and nontradable—if

expenditure increases owing to reduced interest rates resulting from the capital inflow, part of the increase will go into tradables and part into nontradables. The increased spending on tradable goods will increase the size of the trade deficit and in this way will accommodate the capital inflow. If this were all, the adjustment would be easy. In particular, no real appreciation would result. The only concern about capital inflows would be about their sustainability and the country's solvency.

But this is not all. At the existing relative price between tradable and nontradable goods, the increase in demand for nontradable goods cannot be fulfilled. That excess demand will result, independently of the exchange rate regime, in an increase in the relative price of nontradable goods—in other words, a real exchange rate appreciation. That appreciation, which makes tradables cheaper, will, in turn, create incentives to reallocate factors from the production of tradables toward the production of nontradables, and to switch consumer expenditure from nontradable to tradable goods. The final result is a real appreciation, a larger nontradable sector, a smaller tradable sector, and a larger trade deficit. The real appreciation occurs either through an appreciation of the nominal exchange rate (under a floating exchange rate system) or through an increase in the nominal price of the nontradable good (in a fixed or preannounced exchange rate system).[3]

The real appreciation is the price mechanism at work. The increase in domestic expenditures, made possible by the initial capital inflow, puts the whole process in motion and, together with the real appreciation and the demand and supply characteristics for both types of goods, determines the final size of the trade deficit. This is the standard macroeconomics of the transfer problem. The same sort of process will be set in motion by any capital inflows that end up in lower domestic interest rates or by a relaxation of a domestic credit constraint. A similar adjustment process would result from a mineral discovery or a permanent increase in the terms of trade. The only difference is that in the latter case the export good that benefits from the price increase will end up with an increase in production, while the rest of the tradable sector will lose resources to the expanding export sector and most likely also to the nontradable sector. This is the well-known "Dutch disease" problem referred to earlier (see Corden and Neary 1982 and Corden 1984).

Two outcomes of capital inflows other than the macroeconomic effects just described are important to consider. First, the larger amount of capital brought into the country will expand the volume of funds being intermediated through the domestic financial system and hence the volume of domestic financial assets and liabilities. Second, in a fixed or predetermined exchange rate system, the monetization of large capital inflows will temporarily increase inflation through the rise in the price of nontradable goods that is part of the real appreciation. Furthermore, in countries where wages and prices in general are indexed to past inflation levels, indexation causes prices to increase for a period of time so that the temporary increase in inflation could be quite long lasting.

Why Should More Capital Be a Cause for Concern?

The effects of increased capital inflows are far reaching, with implications for most economic sectors. For this reason governments do well to take account of a large increase in capital inflows, even if they are caused by better economic prospects in the host country. Because of its particular features, portfolio investment is singled out here for more detailed discussion.

Implications for the Economy in General

Recipient countries are usually concerned about a large increase in capital inflows for several reasons. First, in countries that have recently reformed or are reforming their trade policies to increase their integration into the world economy, the trade reform would bring an initial real depreciation accompanied thereafter by a fairly stable real exchange rate adjusted for fundamentals (Thomas, Matin, and Nash 1990). The real exchange rate appreciation that accompanies capital inflows would counter the real depreciation, delaying the supply response of export-oriented sectors and increasing the competition for the import-competing sectors. Thus, for countries that have initiated a trade reform, the real appreciation effect of the capital inflow—particularly of cyclical capital inflows—could work at cross purposes with the liberalization of trade and could undermine the credibility of the reform. A related consequence for countries with a more flexible exchange rate system could be excessive volatility in the nominal and real exchange rates, particularly in the case of hot money.

Second, in countries that are pursuing a stabilization program with a fixed or preannounced nominal exchange rate as an anchor for domestic prices, or where price stability is an objective, the authorities could be concerned about monetization effects. The expansion in high-powered money caused by large capital inflows will have a temporary inflationary effect through the increased price of nontradable goods (assuming that the increase in the supply of money exceeds the increased demand arising from lower interest rates and accelerated economic activity).

Third, for those countries with weak banks (that is, banks with low or negative net worth and a low ratio of capital to risk-adjusted assets) and poor supervision of the banking and financial system, the larger amount of funds to be intermediated may exacerbate the typical moral hazard problems associated with deposit insurance. That is, lenders may take on riskier projects, which could result in a financial bubble and eventually lead to a crisis.

Fourth, if capital inflows are volatile or temporary, their reversibility can have real adjustment costs that derive from resource reallocation, bankruptcies, hysterisis (meaning the asymmetrical problems resulting from the fact that it is easier to exit a business than to enter it), or other market imperfections. If the capital inflows are largely temporary, and if the authorities perceive that the private sector is making decisions based on the assumption that the flows are

permanent, governments may try to avoid the adjustment process entirely, since it will have to be reversed later—an expensive process when irreversible costs are involved.

Fifth is the concern about maintaining a sustainable current account deficit (as a ratio of gross domestic product GDP) in the long run. Too sudden an increase in this deficit, particularly if it comes with a consumption boom, could raise the country's risk premium, restrict its future access to international capital markets, and entail important adjustment costs if the flow is reversed following negative political or economic developments at home or abroad.

Finally, there is a political economy argument. Many governments are subject to strong political pressure from interest groups in the exporting and import-competing sectors to avoid or limit the real exchange rate appreciation associated with the capital inflows. In such cases many governments will be forced to take actions to protect the real exchange rate.

Portfolio Investment: A Special Case

The previous discussion applies to capital inflows in general, not distinguishing among the different types. Portfolio investment (bonds and equity) has particular features, raising specific macroeconomic issues that warrant more detailed analysis.

VOLATILITY. The most outstanding feature of portfolio investment—as opposed, for instance, to foreign direct investment, borrowing from international financial institutions, or long-term bank loans—is that, like hot money, it can be reversed in a very short time: foreign investors may suddenly decide to leave the country in which they are investing. The volatility that this risk of flow-reversal may cause in exchange rates, asset (stocks) prices, or interest rates can be very harmful.[4] When capital inflows of this type have found their way into the banking system and have pushed up domestic expenditures and increased the current account deficit, their reversal can affect the domestic economy through a decrease in asset prices, a jump in interest rates, liquidity problems in the banking sector, or a devaluation of the currency. Furthermore, if the central bank does not react quickly enough and the stock of international reserves is low, the reversal may cause a balance of payments crisis.

Negative shocks—a crisis in another country, a drop in the price of the main exportable good, a rise in the price of the main importable good, a sharp increase in international interest rates, or a change in taxes affecting returns from the inflows—may induce foreign investors to take their money out of the country or to keep it there only if a higher return is provided. Either way, they will react by selling their domestic stock holdings and buying foreign currency with the proceeds. That will cause a fall in the general stock price index and, depending on the exchange rate system, either a loss of international reserves and an increase in domestic interest rates, or a depreciation of the nominal exchange rate, or both.

All these price movements can create considerable uncertainty, discouraging investment, whether foreign or domestic. At the same time, they can be very damaging for the economy as a whole if interest rates, asset prices, or exchange rates fluctuate too widely—because of bankruptcies and hysterisis effects when interest rates increase and, in the case of exporting and import-competing sectors, when the exchange rate appreciates.

MACROECONOMIC FLUCTUATIONS. Another important characteristic of portfolio investment, as opposed to other forms of capital flows such as bank loans, is its behavior during different phases of the macroeconomic cycle. In fact, it has been argued that bank borrowing reinforces the up- and downswings in economic activity that characterize the cycle. This is because banks are willing to lend more during upswings—the expansionary and recovery phases of the cycle—than during recessionary downswings. Private portfolio investors, on the other hand, will refrain from selling every time stock prices are too low (or buying every time they are too high) because they do not want to realize capital losses. This behavior will result in an endogenous smoothing of the cycle. Of course, this reasoning applies only when domestic and foreign assets are not perfect substitutes.

Dealing with the Side Effects

For countries with a well-functioning banking system, long-term capital inflows arising from improved economic prospects in the host countries are best accommodated by letting the transfer system work through a combination of a larger current account deficit and a real appreciation.

But if the current account deficit and real appreciation arising from long-term inflows appear too large to accommodate smoothly, the authorities may decide to intervene. In general, governments have been more inclined to intervene when capital inflows are short term or are associated with distortions or imperfections in the domestic economy, because the size or composition of the inflows is liable to create macroeconomic problems of the type discussed earlier. One type of distortion that encourages short-term capital inflows is providing free deposit insurance to weak, poorly regulated banks. Another distortion that could encourage such inflows is offering free currency risk insurance through a swap facility at the central bank (this happened, for example, in Chile until 1990). In such cases, governments should start by trying to eliminate the imperfection that is causing the inflow.

Similarly, short-term speculative capital inflows—hot money—could also be encouraged by a restrictive monetary policy introduced to compensate for an expansionary fiscal policy in a fixed or preannounced exchange rate system. In this case, changing the policy mix toward a more restrictive fiscal policy and a less restrictive monetary policy, by reducing domestic interest rates to a level closer to parity, reduces the incentives for the kind of inflows attracted by inter-

est rate differentials or the expectation of falling domestic interest rates—that is, bank loans and portfolio investment.

If the cause of disruptive inflows cannot be eliminated, governments may instead attempt, by direct or indirect methods, to control the extent and the impact of the flow.

Direct Methods

Direct methods of restricting capital inflows work either through the cost of bringing them in or through a quantity constraint—measures such as ceilings on banks' foreign borrowing, minimum reserve requirements on foreign loans, or ceilings on foreign direct investment. Governments can also try to reduce the inflows by imposing a Tobin's interest-rate equalization tax (requiring foreigners to pay a tax on the interest payments they receive from funds invested abroad). But the increasing integration of world capital markets has made it much easier to get around capital controls; at best, they retain some effectiveness in the short run (Mathieson and Rojas-Suarez 1993; Schadler and others 1993).

Indirect Methods

Indirect methods of dealing with the effects of capital inflows comprise foreign exchange intervention, fiscal adjustment, liberalization of the current account and of capital outflows, and floating the exchange rate.

Foreign exchange intervention—the purchase of foreign currency by the central bank (with accumulation of foreign reserves) to support the nominal exchange rate—takes two forms: sterilized and nonsterilized. Sterilized intervention involves open market operations carried out by the central bank to mop up the liquidity created by the initial purchase of foreign exchange, thus avoiding an increase in domestic expenditures and a temporary increase in inflation. Sterilization can also be achieved through other restrictions that reduce the money multiplier—examples are an increase in the required reserves for commercial banks or a ceiling on their total credit. These restrictions also help avoid the monetization effect of the purchase of foreign currency—that is, they limit the increase in the money supply. But the scope for action is limited by the degree of substitution between foreign and domestic assets. Moreover, sterilization policies have other costs. Generally, the more open the capital account and the higher the degree of substitution between domestic and foreign assets, the less effective the sterilization. It also usually increases the quasi-fiscal deficit of the central bank, and the introduction of higher reserve requirements on bank deposits and ceilings on banks' credit increases the cost of financial intermediation and encourages informal financial activities. (For a recent review of the basic economics of capital inflows using a simple macroeconomic model, see Frankel 1994; for central bank intervention, see Edison 1993; and for the policy issues associated with capital inflows, see Calvo, Leiderman, and Reinhart 1993 and 1994).

The drawback of intervening without sterilization is that interest rates fall and credit expands, leading to an increase in domestic expenditures. Thus, to prevent the economy from overheating, governments in countries with a level of output close to full employment usually augment nonsterilized intervention with another policy to restrain aggregate demand.

Fiscal policy is used for its macroeconomic effect, as well as for the way it affects how money is spent (the expenditure composition effect). The first effect, other things being equal, is part of the policy mix aimed at counteracting the inflationary impact of an expansion in the money supply arising from purchases of foreign exchange inflows. The second effect is a higher (less appreciated) equilibrium real exchange rate, achieved by shifting the composition of aggregate expenditures away from government consumption and toward private expenditure. The reduction in appreciation occurs inasmuch as government consumption is more intensive in nontradable goods and private expenditures are more intensive in tradable goods.

Liberalizing the current account helps to ease the pressure on the domestic economy by shifting expenditure toward tradable goods. Like a restrictive fiscal policy, it has a composition effect that helps to achieve a higher equilibrium real exchange rate than otherwise. Tariff changes should be used for their microeconomic, resource allocation role, however, rather than as a mechanism for macroeconomic control.

Liberalizing capital outflows may induce domestic investors, such as pension funds, to take their capital abroad. This may partially compensate for the effects of capital inflows, although this result is uncertain: some models predict a larger capital inflow arising from liberalization of capital outflows (Labán and Larraín 1993).

Any move toward a *floating exchange rate regime*—for instance, by establishing or widening the band within which a fixed exchange rate is allowed to fluctuate—increases the exchange rate risk that market participants face, with correspondingly less incentive for short-term capital inflows.

Dealing with Volatility

The policies just discussed mainly affect the real exchange rate, the current account, and temporary inflation problems that can arise from a surge in capital inflows. The discussion that follows focuses on measures to counteract the volatility associated with portfolio investment.

Restrictions on capital outflows are sometimes used to reduce the risk of a flow reversal by limiting the amount of capital that foreign investors are allowed to take out of the host country within a given period of time. Although this policy can be effective in reducing the potential damage of a sudden capital outflow, it is also likely to reduce the amount of capital inflow in the first place, limiting the economic benefits of access to external sources of finance.

The opposite policy—*lifting restrictions on outflows* to enable domestic residents to invest in foreign assets—has two different effects: first, inflows may increase as foreigners perceive less risk of getting their investment stuck in the country; second, because domestic assets will be better diversified internationally, the effects of a negative shock will be less severe in the first place. The policy, if credible, will make a flow reversal less likely.

For similar reasons, *opening the current account* may limit the effects of a negative shock. The opening usually means that the host country's real economy will be more diversified, so that damage to one productive sector is less likely to spread through the economy as a whole.

The ultimate purpose of any measure to tackle volatility should be to build an economy more resilient to external shocks, so that foreign investors will be less inclined to flee if a shock occurs. *Maintaining long-term fiscal and monetary targets* has the added advantage of sending positive signals about the economy to foreign investors. In addition, it is essential to sustain a balanced budget in the short and medium terms to avoid an increase in inflation when a negative shock does occur, and to build a large stock of international reserves because of its buffer effect.

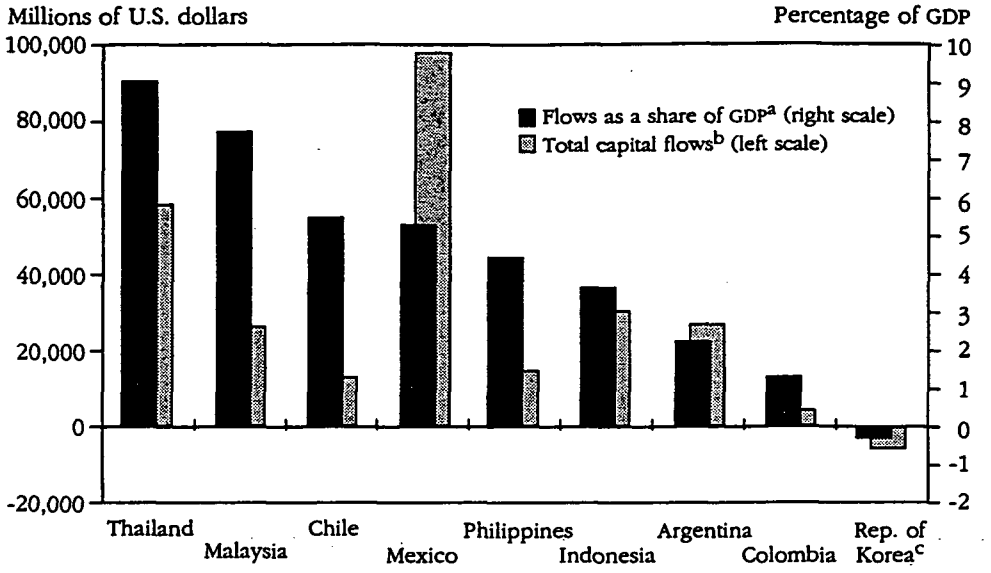
One policy tool that may prove useful in the short run is to mandate that the central bank exercise *greater discretionary power over the allocation of resources.* For example, requiring that private savings—such as pension funds—be invested in government bonds (or in foreign assets) may help to sterilize the expansion in high-powered money caused by a sudden capital inflow. Alternatively, restricting the amount of government bonds that domestic investors can hold may compensate for a sudden capital outflow that sharply reduces liquidity. This type of policy, however, may not be pursued in the long run because of its costs in terms of efficiency and distribution.

In sum, the risk of a reversal in flows of portfolio investment is better dealt with through mechanisms that absorb negative shocks and minimize their effects on the economy, rather than by restricting capital outflows.

Dealing with Capital Inflows: Some Recent Experiences

The typical response of recipient countries when capital inflows resumed in the late 1980s and early 1990s was, first, to absorb them into the economy through the price mechanism described earlier, and later to intervene when the movements in liquidity, exchange rate, interest rates, and current account balances became worrisome. This section reviews the interventions used in the nine countries that (apart from China) have received most of the capital inflows in recent years: four in Latin America (Argentina, Chile, Colombia, and Mexico) and five in East Asia (Indonesia, the Republic of Korea, Malaysia, the Philippines, and Thailand). The inflows for each country are plotted in figure 1.

Figure 1. *Capital Flows, 1986–93*



a. Weighted average (ratio of the sum of capital flows and GDP for 1986–93).
b. Total flows are the sum of current account and change in reserves for 1986–93.
c. Korea started receiving capital inflows in 1990. Flows for 1990–93 totaled US$20 billion, or 1.7 percent of GDP.
Source: IMF, *International Financial Statistics.*

The responses are grouped in eight categories: (1) moves toward a more flexible exchange rate; (2) fiscal restraint; (3) sterilization by means of open market operations that offset the inflows; (4) sterilization to restrict the growth in money supply by using other offsetting means; (5) restrictions on capital inflows; (6) liberalization of the current account; (7) selective liberalization of the capital account (capital outflows); and (8) strengthening of the domestic financial system (table 1).

The specific policies are analyzed under these eight headings with a focus on those policies related to the way countries responded to the surge in capital inflows. Some of the policies, in particular those implemented by Argentina, Mexico, and the Philippines in the late 1980s and by the rest earlier in the decade, are also part of structural and stabilization programs undertaken primarily to foster economic growth. (Note that where these policies are part of a broader package of reforms, they are not identified with an "x" in table 1.)

Table 1. *Major Economic Measures Employed*

Country	*Moves toward a more flexible exchange rate*[a]	*Fiscal restraint*[b]	*Sterilization by open market operations*[c]	*Sterilization by other means*[d]	*Restrictions on capital inflows*[e]	*Liberalizing the current account*[f]	*Selective liberalization of the capital account*[g]	*Strengthening the domestic financial system*[h]
Argentina		x				x		x
Chile	x		x		x	x	x	
Colombia	x		x	x	x	x	x	x
Indonesia	x	x	x	x	x	x		x
Rep. of Korea	x	x	x			x	x	
Malaysia	x	x	x	x	x	x		
Mexico	x	x	x		x	x		
Philippines		x	x	x	x	x	x	
Thailand	x	x	x	x	x	x	x	

a. Progress toward a floating exchange rate, including widening of the band within which the rate may fluctuate, limiting use of swap facilities, and pegging to a basket of currencies.

b. Includes expenditure reduction, expenditure switching toward public investment, and accelerated repayment of public debt.

c. Conventional sterilization through issuing government or central bank debt, or both, to absorb domestic liquidity.

d. Includes increase in banks' reserve requirements, increase in banks' capitalization, and depositing of public sector cash balances at central bank.

e. Includes taxes on capital inflows, minimum reserve requirements on foreign loans, and ceilings on foreign borrowing.

f. Includes tariff reductions.

g. Includes removing restrictions on overseas investments by residents.

h. Includes raising banks' risk-adjusted capital adequacy requirements to the levels set out in the Basle agreement.

Source: Authors' analysis.

Moves toward a More Flexible Exchange Rate

Of the countries in our sample, Argentina has retained its fixed exchange rate system (introduced as the main anchor for its stabilization program in April of 1991). Colombia has maintained its crawling peg policy but widened the band within which the nominal exchange rate is permitted to fluctuate, while Malaysia has kept its policy of pegging to a basket of currencies and also allowed a greater variability of the spot rate. Korea pegs its currency to the U.S. dollar and maintains a narrow band within which the exchange rate can fluctuate on intraday trading according to market forces. In October 1993 Korea widened this range in response to pressures on the exchange rate from inflows, effectively introducing greater exchange rate risk for market participants.

As part of a broader package of reforms, the Philippines in September 1992 eliminated all restrictions on the use of foreign currency for both current and capital account transactions, lifted restrictions on access to dollar loans from offshore accounts, liberalized off-floor trading, and extended the trading hours of the foreign exchange market. As a result the value of the Philippine peso is now essentially market-determined but with greater variability. Chile has had a crawling peg policy in place since the middle of the 1980s. Initially pegging to the dollar and within a narrow band, Chile adjusted its exchange rate policy to increase the uncertainty of exchange rate movements and to accommodate a real appreciation of the exchange rate. To this end the Chilean authorities have appreciated the central parity rate on several occasions, widened the band around the central parity, and changed the peg from the dollar to a basket of currencies.

Mexico introduced an exchange rate band, which was subsequently widened. In December 1994 the central parity was devalued and immediately after that, the exchange rate was allowed to float. Indonesia, which maintains a managed float against the U.S. dollar, imposed limits on the use of facilities for currency swaps to discourage foreign borrowing, but it also widened the spot market bid-ask spread offered by the Bank of Indonesia to encourage more trading among market participants. Since the late 1980s, Thailand has pegged the baht to a basket of currencies, a significant component of which is the U.S. dollar, with the Bank of Thailand setting a day-to-day exchange rate. From 1993 a series of steps was taken to further liberalize the exchange rate system, particularly transactions and volumes of the capital account.

Fiscal Restraint

Several countries in the sample explicitly used fiscal adjustment to counteract the effects of the capital inflow in expanding expenditure and causing the real exchange rate to appreciate. Argentina reduced the fiscal deficit as part of its stabilization program and, following the reversal in capital inflows associated with the "tequila effect," introduced a major fiscal adjustment program. In Indonesia the timetable for implementing several public investment programs was

extended to improve the fiscal position. Korea's fiscal accounts, driven more by the level of domestic activity and tax revenues to avoid an overheating of the economy than by attempts to compensate for the effects of capital inflows, have been strengthened since 1991. Malaysia systematically reversed its public sector deficit of 11 percent of gross national product in 1986, to a surplus of 0.2 percent of GNP in 1993. In the process, expenditures were oriented toward investment, particularly in infrastructure, while fiscal surpluses were used to accelerate repayment of external public debt.

In the early 1980s Mexico strengthened its fiscal accounts but relaxed them again in 1994. The Philippines reduced its public sector deficit from 5.5 percent of GDP in 1990, to 1.7 percent in 1992. Thailand's fiscal adjustment was even more impressive, moving from a public sector deficit of 5 percent of GDP in 1984–85 to a surplus of 5 percent in 1989–90, with most of the turnaround coming from reduced government consumption. Coupled with improvements in efficiency and changes to the tax system, which have made Thai government revenues and expenditures more sensitive to the Thai business cycle, fiscal balances have deteriorated in recent years to a deficit in 1994 of 0.8 percent of GDP, reflecting heightened emphasis on redressing income inequalities across rural and urban areas.

Sterilization by Open Market Operations

All the countries in the sample except Argentina intervened to sterilize—that is, offset—the inflows. Chile used the policy quite intensively to avoid a sharp appreciation of the nominal exchange rate within the band, offsetting the increase in the money supply from growing foreign reserves by issuing central bank bonds of different maturities. Colombia's sterilization took the form of placing central bank bonds denominated in foreign currency at market-determined rates. Indonesia's strategy was to mop up the liquidity associated with the foreign reserve accumulation by increasing the interest rate on Bank of Indonesia certificates to make them more attractive to domestic financial institutions.

Since 1986, when big current account surpluses brought large accumulations of foreign reserves to Korea, the government's policy has been to place foreign exchange and monetary stabilization bonds. Similarly, Malaysia, where foreign reserves have accumulated at the rate of 4.3 percent of GDP a year since 1986, has sterilized the resulting monetization in part through placing government bonds. Mexico issued bonds from 1990 until January 1994 denominated both in pesos and dollars; in Thailand the Bank of Thailand issued its own bonds; and in the Philippines, the central bank issued substantial numbers of its own securities to mop up some of the liquidity brought by the foreign exchange accumulation.

Sterilization by Other Means

Three countries in the sample—Colombia, Malaysia, and the Philippines—have increased reserve requirements along with sterilization to restrict the growth

of money supply brought by the foreign reserve accumulation. In addition, Colombia forced commercial banks to invest in dollar-denominated instruments and the Philippines increased treasury deposits in the central bank. Malaysia restricted lending by commercial banks for credit cards and the purchase of specific consumer products and transferred the deposits of the Employee Provident Fund (a government-administered pension fund) to designated accounts in the central bank.

Among the other countries, Indonesia required public enterprises to shift deposits from commercial banks to the Bank of Indonesia, reducing net domestic credit to compensate for the expansion in high-powered money, and Thailand tightened monetary policy by imposing "voluntary limits" on commercial bank lending to "nonproductive" activities, such as consumer loans, mortgage loans, and the construction of luxury condominiums. Since 1989 Thailand has also been reducing the scope of its preferential credit system for priority sectors, decreasing lending amounts and increasing interest rates.

Restrictions on Capital Inflows

Several of the sample countries have imposed controls on capital inflows that vary considerably in type and extent. Chile introduced a compulsory noninterest-bearing deposit at the central bank for a whole year (or a paid-in-cash tax equivalent to the interest cost of a deposit for the same amount). This compulsory deposit, which started at a level of 20 percent of the inflow and then increased to 30 percent, applies to all investment except foreign direct investment in projects previously screened by the appropriate authorities. In September 1993 Colombia introduced a 47 percent unremunerated reserve requirement on short-term (up to eighteen months) external borrowing by firms. Mexico restricted foreign currency liabilities of commercial banks to 10 percent of total liabilities and then introduced a reserve requirement of 15 percent on all foreign-denominated external borrowing.

Indonesia limited external borrowing by commercial banks and imposed ceilings on annual foreign borrowing by public enterprises. The Philippines introduced some restrictions on foreign loans in late 1994. Thailand reintroduced a 10 percent tax on interest payments on foreign borrowing in March 1990. During the first half of 1994, Malaysia imposed ceilings on the external liabilities of commercial banks that were not related to trade or investment, prohibited residents from selling short-term monetary instruments to nonresidents, and required commercial banks to deposit the ringgit funds of foreign banking institutions in noninterest-bearing accounts of the central bank.

Liberalizing the Current Account

All countries in the sample continued to liberalize their trade regimes, in part to counterbalance the real exchange rate appreciation associated with inflows.

In Argentina the government accelerated and completed a major trade liberalization program that eliminated all export taxes and all quantitative restrictions on imports, except for automobiles, and reduced the maximum import tariff from 115 percent in 1988 to only 20 percent by 1992. Later on, as the real exchange rate continued to appreciate, the authorities compensated export and import-competing sectors by increasing a tax rebate applicable to exports and imposing an import surcharge. The rationale here was to improve the relative price of goods made by import-competing sectors without changing relative prices between import-competing items and export goods.

In Chile import tariffs were reduced from 15 percent to 11 percent in 1991, and in early December 1995, the government was considering a further reduction of the tariff as a way to increase the equilibrium real exchange rate. Colombia also accelerated its trade liberalization to counterbalance the appreciation effects of the capital inflows, while Indonesia increased support programs for exporters and has recently accelerated liberalization, in particular by reducing (and sometimes abolishing) import tariffs and removing import licensing restrictions. Malaysia reduced some import tariffs in 1989–90 and introduced a more comprehensive trade liberalization program in 1993. Korea implemented an import liberalization program during 1992–94, covering 133 items, with further liberalization scheduled for 1995–97. Following the recent liberalization, Korea's average weighted import tariff eased to 8 percent in 1994, from 11 percent in 1991.

During the period under review, Mexico reduced its average import tariff to 13 percent. In the Philippines the surge in capital inflows coincided with a previously announced gradual reduction of tariffs. Thailand also accelerated trade liberalization: tariffs on capital goods used in manufacturing were reduced from 20 percent to 5 percent, and all exceptions were eliminated, with the net effect of reducing the average tariff level to 9 percent in 1992, down two percentage points from 1990.

Selective Liberalization of the Capital Account

The selective opening of the capital account was generally intended to reduce the volume of net capital inflows, although liberalizing capital outflows was sometimes part of a broader liberalization effort. For example, Argentina reduced most restrictions on capital movements as part of its overall liberalization strategy, while Chile, as part of its strategy to avoid too sharp a real appreciation, allowed pension funds to invest some of their assets abroad, liberalized investment outflows for selected private enterprises, and progressively reduced (and most recently abolished) mandatory surrender requirements of Chilean exporters. In mid-1993 Colombia took steps to further liberalize its capital account, allowing residents to hold foreign assets and permitting access to foreign credit, as well as removing all restrictions on foreign exchange transactions.

Indonesia has had an open capital account all along that facilitated the diversification of assets. Korea selectively liberalized its capital account to facilitate capital outflows by being more lenient when approving requests from firms for foreign direct investment, allowing small- and medium-sized domestic firms to raise capital abroad, and allowing domestic institutional investors and individuals to make foreign portfolio investments. The Philippines eliminated all restrictions on foreign currency operations. Thailand allowed foreign exchange earners to open foreign exchange accounts with domestic banks and domestic investors to transfer up to $5 million freely for direct investment. Although some restrictive regulations were maintained, residents were readily allowed to invest in property and securities abroad, and requirements for approval to repatriate dividends and loan repayments were abolished. In Malaysia, the capital controls adopted during the first half of 1994 were abolished in August of that year, and the remaining controls on capital outflows were principally aimed at monitoring these flows. Those controls included a requirement that residents obtain permission to borrow more than one million ringgit from abroad, a ban on offshore borrowing of ringgit, and approval for nonresidents to gain access to ringgit credit facilities.

Strengthening the Domestic Financial System

Argentina's method for strengthening the financial system was to increase capital requirements for banks even above those outlined for all banks by the Basle agreement (an accord adopted by industrial countries that implies a capital-asset ratio of 8 percent, adjusted for risk). Some of the other countries introduced a gradual increase in capital requirements as part of their strategy for moving to the Basle norm. Generally, countries in the sample moved toward strengthening commercial banks. Indonesia instituted more stringent capital and reserve requirements for banks, both to strengthen the financial system and to reduce credit expansion.

Colombia implemented the Basle agreement and went even further by requiring banks to make special provisions on loans to local governments. These loans, which were growing rapidly, were considered riskier than those covered under standard Basle rules. In addition, the government intensified its monitoring of the banking system to avoid the undue risk-taking made possible by the availability of foreign loans.

Economic Policy: Some Observations and Lessons

The outcomes of the different policies implemented to compensate for the monetary and real effects of the recent surge in inflows of private capital can be expressed in terms of a set of macroeconomic indicators of performance. When these outcomes are tabulated (table 2), some important general obser-

Table 2. *Selected Macroeconomic Data*

Country and indicator	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*
Argentina								
Overall capital account balance[a]	2,304.0	3,134.0	3,318.5	−2,995.2	−1,590.0	1,806.3	10,549.1	11,179.4
As a percentage of GDP	2.2	2.9	2.6	−3.9	−1.1	1.0	4.6	4.4
Government consumption[b]	n.a.	4.9	4.3	4.5	8.4	8.8	9.4	n.a.
Average inflation[c]	90.1	131.3	343.0	3,079.8	2,314.0	171.7	24.9	10.6
Real effective exchange rate[d]	121.3	123.4	133.9	88.1	184.5	256.4	308.2	338.1
Current account balance[b]	−2.7	−3.9	−1.2	1.4	3.3	−0.2	−2.8	−2.9
Chile								
Overall capital account balance[a]	1,179.1	947.6	955.7	1,234.1	2,747.3	1,032.1	2,906.4	2,410.3
As a percentage of GDP	6.7	4.6	4.0	4.4	9.0	3.0	6.8	5.3
Government consumption[b]	12.6	10.9	10.4	9.9	9.8	9.5	9.4	9.7
Average inflation[c]	19.5	19.9	14.7	17.0	26.0	21.8	15.4	12.7
Real effective exchange rate[d]	99.7	105.1	108.0	115.9	127.9	136.0	151.3	152.9
Current account balance[b]	−6.7	−3.6	−1.0	−2.5	−1.8	0.3	−1.6	−4.6
Colombia								
Overall capital account balance[a]	818.8	−34.1	615.3	373.7	86.4	−414.7	490.2	2,396.4
As a percentage of GDP	2.3	−0.1	1.6	0.9	0.2	−1.0	1.0	4.4
Government consumption[b]	9.8	9.8	10.1	10.6	10.3	10.2	10.7	11.9
Average inflation[c]	18.9	23.3	28.1	25.8	29.1	30.4	27.0	22.6
Real effective exchange rate[d]	87.1	86.0	89.3	87.9	86.5	89.4	94.7	102.2
Current account balance[b]	1.5	−0.2	−0.7	−0.4	1.4	5.5	1.5	−4.1
Indonesia								
Overall capital account balance[a]	3,412.9	4,074.1	1,674.0	2,628.5	5,637.0	6,144.6	3,898.9	3,623.8
As a percentage of GDP	4.3	5.4	2.0	2.8	5.3	5.3	3.0	2.5
Government consumption[b]	11.0	9.4	9.0	9.4	9.0	9.1	9.5	9.9
Average inflation[c]	5.8	9.3	8.0	6.4	7.8	9.9	5.0	10.2
Real effective exchange rate[d]	91.6	78.1	82.3	83.4	86.4	89.7	90.6	97.0
Current account balance[b]	−5.4	−3.3	−2.6	−2.3	−3.4	−3.8	−2.1	−1.9

Rep. of Korea								
Overall capital account balance[a]	−4,411.0	−8,615.0	−11,001.5	−2,187.4	1,765.3	7,636.0	7,942.9	2,725.7
As a percentage of GDP	−4.1	−6.3	−6.0	−1.0	0.7	2.6	2.6	0.8
Government consumption[b]	10.0	10.1	9.5	10.2	10.1	10.3	10.9	10.8
Average inflation[c]	2.8	3.0	7.1	5.7	8.6	9.3	6.2	4.8
Real effective exchange rate[d]	101.4	112.0	134.9	155.4	160.1	168.8	168.5	171.7
Current account balance[b]	4.3	7.2	7.8	2.3	−0.9	−3.0	−1.5	0.1
Malaysia								
Overall capital account balance[a]	1,140.2	−1,164.6	−2,883.1	1,000.0	2,908.7	5,355.2	8,584.9	11,632.4
As a percentage of GDP	4.1	−3.7	−8.3	2.6	6.8	11.4	14.8	18.0
Government consumption[b]	16.9	15.4	14.3	14.4	14.0	14.2	13.1	12.6
Average inflation[c]	0.7	0.3	2.6	2.8	2.6	4.4	4.8	3.5
Real effective exchange rate[d]	96.9	99.6	98.2	97.6	100.4	103.0	116.5	119.4
Current account balance[b]	−0.4	8.3	5.2	0.7	−2.1	−8.9	−2.8	−3.8
Mexico								
Overall capital account balance[a]	2,651.4	3,979.0	−3,310.1	6,540.9	10,928.5	22,725.0	25,923.4	29,521.3
As a percentage of GDP	2.0	2.8	−1.9	3.2	4.5	7.8	7.8	8.1
Government consumption[b]	9.1	8.8	8.6	8.5	8.4	8.9	9.9	10.7
Average inflation[c]	86.2	131.8	114.2	20.0	26.7	22.7	15.5	8.7
Real effective exchange rate[d]	78.2	80.5	104.5	115.8	128.4	146.7	165.3	178.4
Current account balance[b]	−1.3	2.1	−2.2	−3.0	−3.1	−5.1	−7.4	−6.4
Philippines								
Overall capital account balance[a]	243.2	−60.0	530.3	2,000.6	2,597.4	3,284.6	2,653.3	4,144.4
As a percentage of GDP	0.8	−0.2	1.4	4.7	5.9	7.2	5.0	7.6
Government consumption[b]	8.0	8.4	9.0	9.5	10.1	9.9	9.7	10.1
Average inflation[c]	0.8	3.8	8.8	12.2	14.1	18.7	8.9	7.6
Real effective exchange rate[d]	92.0	94.6	100.3	109.2	111.5	117.1	137.4	139.0
Current account balance[b]	4.0	0.6	0.8	−3.4	−6.1	−2.3	−1.9	−6.0

(Table continues on the following page.)

Table 2. *(continued)*

Country and indicator	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*
Thailand								
Overall capital account balance[a]	652.8	1,546.0	3,859.7	6,978.0	10,426.0	12,075.9	8,849.0	14,188.5
As a percentage of GDP	1.5	3.1	6.3	9.7	12.2	12.2	7.9	11.4
Government consumption[b]	12.8	11.3	10.0	9.5	9.4	9.3	10.0	10.3
Average inflation[c]	1.8	2.5	3.9	5.4	5.9	5.7	4.1	3.6
Real effective exchange rate[d]	105.2	110.2	116.4	120.7	128.4	136.1	142.4	147.9
Current account balance[b]	0.6	−0.7	−2.7	−3.5	−8.3	−7.5	−5.5	−5.5

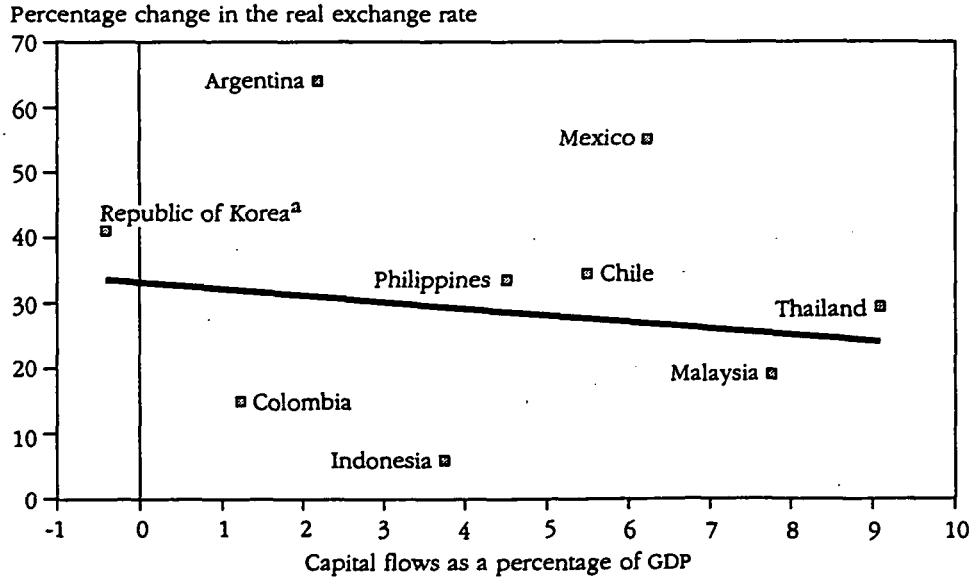
a. In millions of U.S. dollars
b. As a percentage of GDP.
c. Percent.
d. 1985 = 100.
n.a. Not available
Source: IMF, *International Financial Statistics;* IMF, *Balance of Payments Statistics.*

vations and policy lessons emerge, along with conclusions specific to individual countries.

General Observations

- In all the countries the increase in inflation was brief. In fact, since the early 1990s, inflation in Argentina, Chile, and Mexico has been decreasing and has remained fairly stable in the other six countries.
- The countries that received the largest capital inflows (as a percentage of GDP, see figure 2) on average during 1986–93 are *not* those that experienced the largest appreciation of the real exchange rate. Indeed, appreciation in those countries (Chile, Malaysia, and Thailand) has been relatively low.
- Those countries—Chile, Indonesia, Malaysia, and Thailand—in which government consumption has been decreasing as a percentage of GDP are also those in which real exchange rate appreciation has been lower (see figure 3).
- Those countries that did not employ a restrictive fiscal stance relative to GDP—Argentina, Korea, Mexico, and the Philippines—show the highest real exchange rate appreciation, even though they were not the largest recipients of capital inflows.

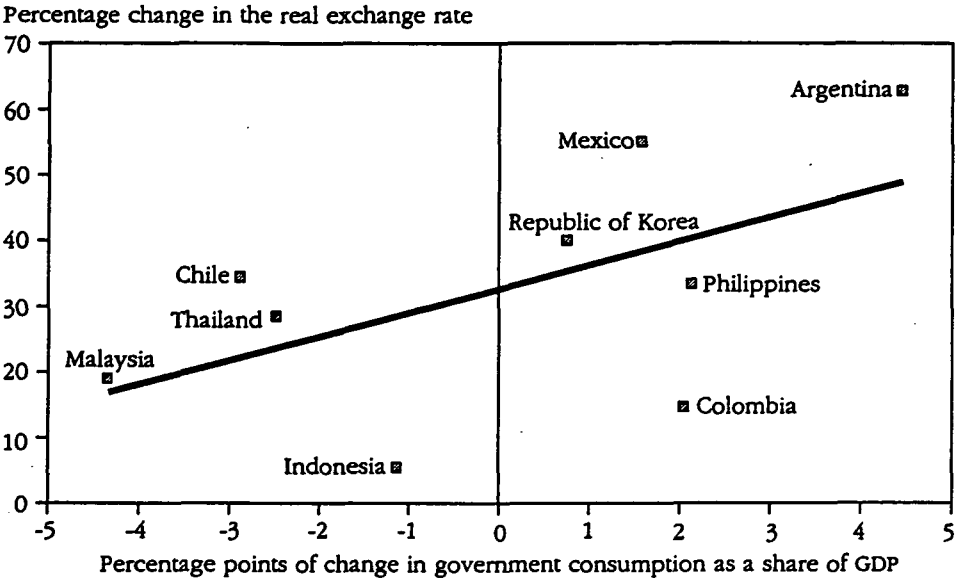
Figure 2. *Capital Flows and Change in the Real Exchange Rate, 1986–93*



a. Korea started receiving capital inflows in 1990. Flows for 1990–93 totaled US$20 billion, or 1.7 percent of GDP.

Source: IMF, *International Financial Statistics.*

Figure 3. *Changes in Government Consumption and the Real Exchange Rate, 1986–93*



Source: IMF, *International Financial Statistics.*

Country-Specific Conclusions

Overall, the evidence does not indicate any clear regional difference in the way countries have responded to the surge of capital inflows, although arguably the Asian countries (except for Korea and the Philippines) have tended to rely more on restrictive fiscal policy than the Latin American group (other than Chile). Some conclusions about economic policy specific to individual countries can, however, be drawn from the cases studied:

- The experiences of Chile and Colombia clearly illustrate the difficulties that a country faces in the more integrated and global capital markets of the 1990s when it wants to combine a restrictive monetary policy intended to combat inflation with policies to manage the real exchange rate. The lesson is that, when restrictive monetary policy accompanies an exchange rate target, sterilized intervention tends to exacerbate, rather than ameliorate, capital inflows. That happens because sterilization tends to maintain or even increase the differential between domestic interest rates and expected foreign interest rates (adjusted for expected devaluation). Furthermore, as the experience in Chile and the Philippines also shows, sterilized intervention may significantly worsen the quasi-fiscal deficit of the central bank.

- A comparison of the experiences of Indonesia, Malaysia, and Thailand with those of Colombia, Korea, Mexico, and the Philippines suggests that, where minimizing the real exchange rate appreciation is an objective, sterilized intervention is most effective when accompanied by fiscal restraint. The former countries substantially tightened fiscal policy while implementing sterilized intervention, whereas fiscal adjustment in the latter group was less severe.

Policy Lessons

The experiences of the nine countries examined in this study afford some pointers for policy.

The central bank can play at least a temporary role in averting some of the side effects of capital inflows.

In the long run *a tight fiscal policy* seems to be the most effective means of minimizing the appreciation of the real exchange rate normally caused by a capital inflow. The resultant increase in public savings leaves more room for the inflows to finance investment in the private sector, and a firm fiscal stance increases the confidence of the international investor community.

A mixed policy seems preferable to a purely fiscal policy in the short run because fiscal policy is generally too inflexible to deal on its own with volatile capital flows. Nevertheless, in the medium and long terms, the high volatility of portfolio investment flows predicates a consistent fiscal policy aligned with fundamentals.

Sterilized intervention has been ineffective in protecting the real exchange rate from appreciating. The policy may work in the short run, but the maintained or even increased domestic interest rates that go along with it provide additional incentives for capital inflows. Finally, this policy is not sustainable on its own in the long run because, in worsening the quasi-fiscal deficit of the central bank, it has an expansionary effect that eventually leads to real appreciation—which in turn may bring speculative attacks on the exchange rate.

Moving toward a floating exchange rate and increasing the extent to which it is determined by market forces—a step taken by most of the sample countries—appears to be more successful than a fixed exchange rate regime: first, in supporting an effective monetary policy; second, in increasing the exchange rate risk faced by market participants and thus in discouraging, at least to some extent, speculative capital inflows; and, third, in relieving some of the upward pressure on inflation that is stimulated by capital inflows.

Letting domestic interest rates fall to levels consistent with international interest rates (augmented by expected depreciation) seems necessary to abate the inflows of short-term, speculative capital. As the experiences of Colombia and Indonesia show, letting the domestic interest rate adjust reduces the incentives for capital inflows and eliminates the quasi-fiscal losses of the central bank. The

aggregate effects on demand of the lower interest rate need to be handled through a fiscal adjustment.

Quantitative constraints or ceilings on foreign borrowing by banks or other large borrowers, or *sterilization,* through forcing large investors (pension funds or public enterprises) to purchase liabilities of central banks may prove effective in the short run as long as domestic interest rates and capital inflows do not rise in the process. But given the worldwide integration of financial markets and the sophistication of financial intermediaries, *such policies do not seem to work in the long run,* and they may also damage the economy as a whole because of related pervasive effects on resource allocation and efficiency. These policies will probably also be a disincentive to international investors.

In sum, the benefits for economic growth that capital inflows can bring to developing countries—namely, relaxing the balance of payments constraint and facilitating investment—can be realized if the associated macroeconomic adjustment problems are properly handled. By the same token, mismanagement in the recipient country can virtually eliminate the benefits and may even ultimately cause a reversal of flows. The key to higher sustainable rates of investment and growth seems to be fiscal policy—not only because of the highly integrated financial markets around the world, but also because monetary policy becomes less effective whenever there is a nominal exchange rate target. This is particularly true for those flows that are highly volatile, such as private portfolio investment. For more long-term capital inflows, the authorities should allow the adjustment mechanism to work through a real appreciation, accompanied by a fiscal adjustment to reduce the size and smooth out the required appreciation.

Notes

Vittorio Corbo is professor of economics at the Catholic University of Chile, and Leonardo Hernández is on the staff of the International Economics Department of the World Bank. This article is a revised and expanded version of Corbo and Hernández (1993), a paper presented at a World Bank conference on portfolio investment in developing countries. The authors are extremely grateful to Alistair Boyd for his assistance in revising the paper and to two anonymous referees for their helpful comments and suggestions.

1. All dollar amounts are U.S. dollars.

2. Another lesson from the Mexican crisis concerns the taking of undue risks in managing internal and external debt. This issue, although extremely important, is not discussed in this article.

3. The dynamics of an economy with a floating exchange rate system are different from the example given here, but the final outcome—a real exchange rate appreciation—remains; see Dornbusch 1976 and Calvo and Rodriguez 1977.

4. On an empirical basis, there is no conclusive evidence concerning the different degree of volatility of the different types of foreign financing (see Claessens and others 1993).

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