OFFICE of DEVELOPMENT STUDIES

Managing Capital Inflows in Latin America

Manuel R. Agosin
Ricardo Ffrench-Davis

DISCUSSION PAPER SERIES

Managing Capital Inflows in Latin America

Manuel R. Agosin
Ricardo Ffrench-Davis

United Nations Development Programme
Office of Development Studies
Discussion Paper Series

Contents

Foreword

During the past two decades there has been significant progress in the liberalization of capital accounts. While industrial countries achieved nearly universal capital account convertibility in the 1980s, developing countries have adopted relevant policies only rather recently. As a study on this point by the International Monetary Fund (IMF) shows, most of them retain such controls (IMF 1995a).

This Discussion Paper—*Managing Capital Inflows in Latin America* by Manuel R. Agosin and Ricardo Ffrench-Davis—contrasts the policy experience of countries that controlled inflows of short-term flows with that of countries which have allowed free capital inflows. The authors emphasize that capital inflows are desirable but that much depends on their volume and composition. Their main policy conclusion is that it is essential for governments to have a policy apparatus to distinguish between long-term capital inflows and the considerably more volatile short-term flows, which may hurt a country's longer-term growth. This conclusion is in line with the findings of the IMF study. Its country case studies also suggest that controls of capital inflows encourage borrowers to move toward longer maturities. In Chile, for example, foreign direct investment surged from $1.6 billion in 1993 to $4.5 billion in 1994.

To use more private capital for development, it is important for policy makers to learn from each other's experience—the purpose of the present

study. By publishing this paper the Office of Development Studies (ODS) would like to invite policy makers and specialists in developing countries' financial markets to comment and eventually to add their analysis of other possible policy options that countries might want to consider with a view to strengthening their national capacities for capital market management.

The Agosin/Ffrench-Davis paper forms part of ODS' research programme on a new framework for international development cooperation. The main message emanating from the research under this programme is: development assistance will continue to be of critical importance in the future but international development cooperation will have to go well beyond aid. The other Discussion Papers relating to this topic by Roger Riddell and Keith Griffin and Terry McKinley are listed on the back inside cover of this paper.

We look forward to your responses and to a stimulating policy dialogue on this critical issue of development.

Inge Kaul
Director
Office of Development Studies
New York, January 1996

Executive Summary

This paper discusses the recent foreign capital surge in four countries of Latin America—Brazil, Chile, Colombia and Mexico—and their governments' policy responses to the surge. That capital inflows have been huge, posing serious policy challenges to governments, is already commonplace. What has been less discussed in the literature is the divergence in policy responses. At one end of the spectrum, Brazil, Chile and Colombia have attempted to discourage short-term inflows with taxes and reserve requirements on foreign borrowing. At the other, Mexico (like Argentina) has welcomed all forms of foreign capital, considering them a sign of international approval of domestic reform. The results in terms of growth and stability have differed significantly between countries. For Chile, the paper also measures the implicit tax on capital inflows and the revenues that the central bank obtains from this tax.

Introduction

Towards the end of the 1980s private capital inflows began to return to Latin America (see Calvo and others, 1993; Ffrench-Davis and Griffith-Jones, 1995; and Ocampo, 1994). Undoubtedly welcome, the reversal of the drought in capital inflows of the 1980s has relieved the binding foreign exchange constraint under which most countries laboured during the debt crisis. But both the magnitude of the new capital flows and their composition have caused problems for which the recipient countries have by and large been ill-prepared.

The large size of the recent capital inflows relative to the recipient countries' economies has led to a number of problems and policy dilemmas. The first problem is that of absorption. If capital inflows are to contribute to long-term development, they must lead to a significant increase in the investment rate, something that is difficult to achieve and that in fact has not taken place in most countries in the region (except Chile).

Large inflows also pose difficult dilemmas to policy-makers. Without intervention on foreign exchange markets and in the absence of capital controls, the real exchange rate will appreciate, which may be undesirable from the point of view of other important policy objectives (for example, encouraging export growth and diversification, raising investment rates or meeting targets for the current account deficit consistent with sustainable capital

inflows). But intervention in the foreign exchange market tends to swell the domestic money supply and increases the difficulties in controlling inflation.

Sterilized intervention, which is practised by several countries in the region, is not without its problems. The central bank winds up accumulating large foreign exchange reserves with returns below those on central bank debt (which must be issued to conduct the required sterilization operations). Moreover, sterilized intervention tends to keep domestic interest rates high, encouraging further capital inflow.

Much of the recent inflow has taken the form of short-term capital or capital with basically short-term horizons. Although in some countries foreign direct investment (FDI) has been important, in all countries there have been two components of capital inflows that are clearly short-term: portfolio flows and short-term lending or deposits. Portfolio flows usually are not thought of as short-term capital, but in practice they are. Portfolio investors typically operate with imperfect information, seek short-term capital appreciation, and are prone to bandwagon effects, either in taking positions or in liquidating them. This pattern was clearly in evidence in the recent Mexican crisis.

Short-term bank credits can also be very volatile, as they respond to differentials in interest rates adjusted for exchange rate expectations and country risk premiums.[1] In the absence of capital controls in a financially open economy, the equilibrium domestic interest rate must equal the foreign interest rate plus expected exchange rate depreciation (pesos per dollar) plus the country risk premium demanded by foreign asset holders. For inflows to take place, the domestic interest rate must exceed the international rate (in the case of Latin America, mostly on the dollar) by a margin sufficiently large to compensate for the expected depreciation of the recipient country's exchange rate and the country risk premium.

These conditions have prevailed in many countries in Latin America since the late 1980s. Domestic interest rates have remained high as a result of high inflation and restrictive monetary policies, and dollar interest rates have declined, reaching a 30-year low in 1992 and 1993. The two other conditions for interest-arbitrage capital inflows have also been met. As countries began to emerge from the debt crisis and began to be regarded as more creditworthy, country risk premiums declined and expectations for the real exchange rate turned from real depreciation to appreciation. In some cases improving terms of trade contributed to the change in expectations. Expec-

tations of exchange rate appreciation increase expected yields (in foreign currency) on domestic assets, and the declines in the country risk premium reduce the minimum yield required to trigger foreign investments.[2]

As a result, most countries in the region began to receive very large volumes of foreign private capital—both countries that have undertaken significant pro-market reforms (Argentina, Chile, Mexico) and countries where such reforms are more incipient or had not yet begun (Brazil, Ecuador, Venezuela). But flows to reforming countries have been particularly large because, as argued below, the reforms themselves tend to attract foreign capital as long as they are perceived as credible.

The policy response to massive capital inflows has varied widely among countries in the region. At one end of the spectrum are Argentina and Mexico. Argentina has adopted a currency board approach to monetary policy, with a fixed nominal peg to the dollar and a passive monetary policy that simply monetizes increases in reserves (and contracts the money supply when there are reserve losses). In addition to other market-oriented reforms, Mexico has liberalized its capital account, dismantling most of its previous controls on capital movements. At the other extreme are Chile and Colombia, countries that have attempted to discourage short-term capital inflows while maintaining liberal policies towards long-term inflows and have also resorted to sterilized intervention in order to slow real exchange rate appreciation.

Brazil, Chile and Colombia have had a tradition of capital controls. Since the mid-1970s, however, Chile has maintained a fairly open capital account, and recent policies represent a move towards greater pragmatism. In the 1990s Colombia has moved to liberalize substantially its foreign exchange transactions, and its authorities see the recent imposition of reserve requirements on short-term inflows as a temporary measure (Urrutia 1995). All three countries have been applying taxes or reserve requirements to foreign borrowing—Chile since 1991, Colombia since 1993 and Brazil more recently—that increase the costs of such borrowing and represent an attempt to "throw some sand in the wheels" of international capital inflows.

This paper examines the phenomenon of massive capital inflows in four countries—Brazil, Chile, Colombia and Mexico—its effects on their economies and the policy approaches the countries used to deal with it. The paper also draws some policy lessons.

1.
Recent Capital Inflows: Magnitudes and Composition

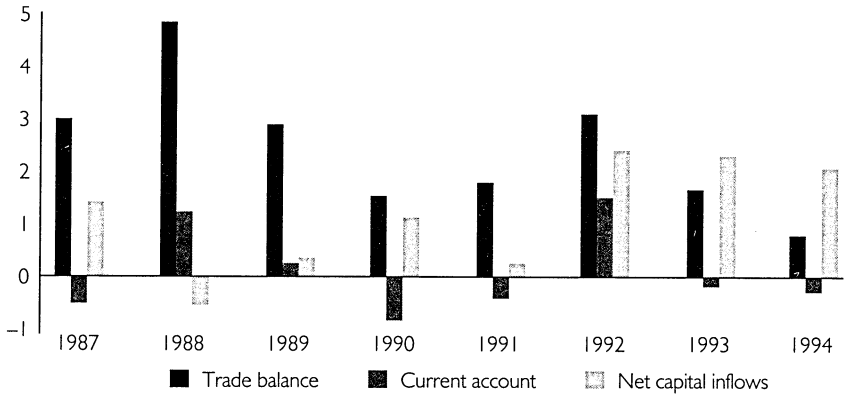
In the 1990s capital inflows in Chile, Colombia and Mexico have been large relative to gross domestic product (GDP) (figure 1.1). In all three countries capital inflows have surged from much lower (or even negative) levels in the mid-to late 1980s. The surge has been particularly impressive in Mexico: whereas in the late 1980s there were net outflows of foreign capital of almost 1% of GDP, in 1991–93 net *inflows* represented more than 8% of GDP. Net inflows receded in 1994, and private flows turned negative once again as the Mexican crisis began to unfold in December 1994.

In Chile and Colombia, the other two countries with large recent inflows, the foreign capital surges have also been important and will probably turn out to be longer-lived. In Brazil the volume of capital inflows relative to GDP has been more modest. But relative to Brazilian foreign trade, inflows have been very large, especially over the past couple of years. After some policy swings, in mid-1995 the central bank authorities moved to impose taxes on foreign borrowing and portfolio foreign investment.

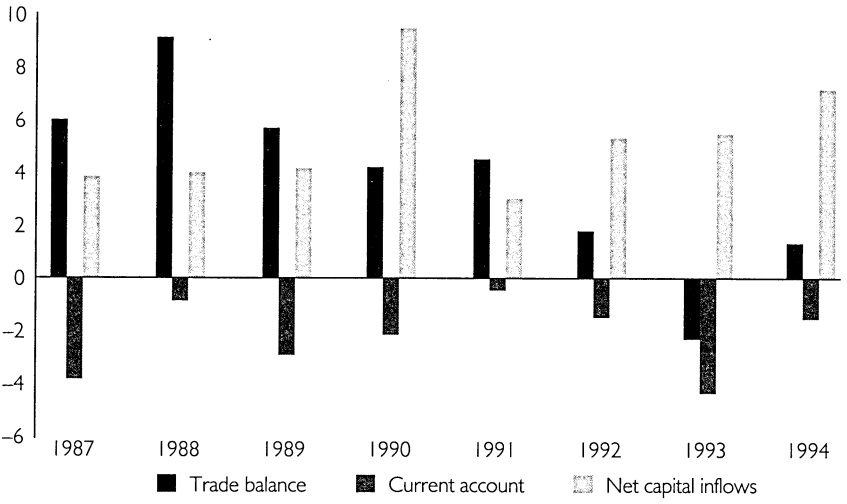
A major difference between Chile and Mexico, the two countries where the capital surges have been sustained for the longest period, has been in the relationship between capital inflows and current account deficits. In

Figure 1.1 Balance of payments of four Latin American countries
(percentage of GDP)

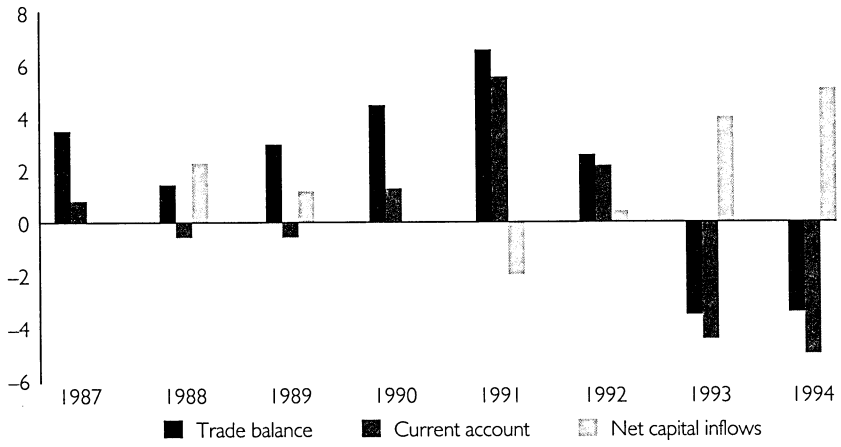
Brazil



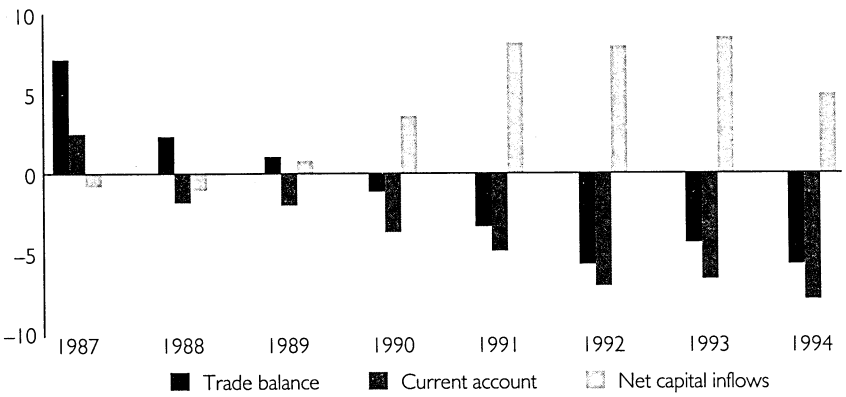
Chile



Colombia



Mexico



Source: Central Bank of Chile, Banco de la República (Colombia), and Comisión Económica para América Latina y el Caribe (CEPAL).

Mexico capital inflows were increasingly matched by equivalent current account deficits; in Chile, by contrast, the current account deficit remained much smaller than the net inflows of capital, which have mostly gone to swell foreign exchange reserves. In Colombia capital inflows (at least, officially recorded inflows) are a more recent phenomenon, they represented a considerably smaller proportion of GDP, and they have been fairly evenly matched by current account deficits.

The composition of flows is also instructive (table 1.1). In Mexico the largest item by far has been portfolio capital (purchases of stocks, bonds and money market instruments by non-residents and repatriated flight capital taking these forms). In Brazil the growth in portfolio inflows has also accounted for a large share of the increase in inflows in recent years. In Chile they have shown a tendency to rise, but they have been overshadowed by net FDI inflows. In Colombia portfolio inflows had been negligible until recently but they have grown rapidly since 1992, when they were liberalized. FDI has been significant, although considerably less important than in Chile.

Short-term foreign borrowing has been an important source of capital inflows in Chile, mainly owing to overwhelming expectations of currency appreciation and a large interest rate differential favouring peso-denominated assets. In Mexico, too, during 1990–92 there were significant inflows of short-term borrowing, although quantitatively they were less important than in Chile. In Colombia bank lending, both short-term and long-term, and repatriated flight capital taking the form of deposits with the banking system, have become quite important since 1992. Moreover, there is evidence that such flows may be hidden in some current account services transactions (see Cárdenas and Barrera, 1994).

The ability to deal with capital surges may have something to do with the composition of inflows. Policies towards inflows also affect their composition. When the supply of foreign capital takes the form mostly of FDI, its impact on key domestic prices is smaller than when the capital on offer is mostly liquid. Imports of capital equipment, a significant component of FDI, do not put pressure on domestic currency or foreign currency markets. But policies to discourage the more liquid forms of capital inflows may themselves account for the prominence of FDI in countries such as Chile, and the absence of such policies could be an important explanation for the much greater share of portfolio capital in Mexican inflows.

Table 1.1 Net inflows of foreign capital to Brazil, Chile, Colombia and Mexico, 1987–94, as a percentage of GDP

	1987	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*
Brazil								
Foreign direct investment	0.4	0.8	0.2	—	—	0.3	–0.1	..
Medium- and long-term credits	–3.3	–3.0	–1.3	–0.3	–0.4	—	—	..
Portfolio flows	–0.1	0.1	–0.1	0.1	0.9	3.6	2.7	..
Short-term credits	0.1	–0.3	–0.2	–0.2	–0.4	..	..	..
Other	4.4	1.9	1.8	1.5	—	–1.5	–0.4	..
Total	1.5	–0.5	0.3	1.1	0.2	2.5	2.4	2.1
Chile								
Foreign direct investment	5.5	6.3	6.9	6.1	3.1	1.8	3.2	4.2
Medium- and long-term credits	1.8	1.3	0.8	0.9	0.7	1.2	1.4	2.3
Portfolio flows	—	—	0.3	1.2	0.8	1.1	2.3	2.0
Short-term credits	–1.4	–0.8	1.1	2.9	1.9	2.4	1.7	1.0
Other	–2.1	–2.8	–5.1	–1.6	–3.4	–1.0	–3.0	–1.9
Total	3.8	4.0	4.1	9.6	3.0	5.4	5.6	7.6
Colombia								
Foreign direct investment	0.8	0.4	1.4	1.2	1.0	1.7	1.6	2.6
Medium- and long-term credits	0.2	0.1	–0.7	–0.4	—	–0.1	1.2	3.7
Portfolio flows	..	..	..	..	..	0.1	0.4	0.7
Short-term credits	–0.2	–0.6	–1.4	—	–1.3	1.4	2.9	0.6
Other	0.8	–1.6	–1.4	0.5	0.7	2.3	1.5	2.5
Total	—	1.5	0.7	0.2	–1.0	0.8	4.6	5.1
Mexico								
Foreign direct investment	2.3	1.5	1.5	1.1	1.7	1.6	1.4	..
Medium- and long-term credits	–2.0	–0.8	–0.5	2.7	2.7	1.9	—	..
Portfolio flows	–0.3	1.0	0.2	–2.2	3.2	4.3	7.7	..
Short-term credits	–3.4	–0.4	–0.5	1.2	1.2	1.8	0.2	..
Other	2.7	–2.0	—	0.7	–0.3	–1.5	–0.3	..
Total	–0.7	–0.8	0.7	3.5	8.5	8.0	8.9	5.1

Note: Both credit items are private flows. Other flows are mostly official capital transactions. In Mexico, portfolio flows include foreign purchases of government securities and money-market instruments issued by banks. In Chile, other flows are mostly debt amortizations and, particularly in 1987–90, include large figures of counterpart of debt-equity swaps recorded in FDI.
Source: Central Bank of Chile, Banco de la República (Colombia), and CEPAL.
.. = not available — = close to zero or zero

In 1990–94, Chile and Mexico had similar levels of net capital inflows. As a share of GDP, total inflows averaged 6.2% in Chile and 6.8% in Mexico. In Chile the predominant form of inflows has been FDI, which, because of its long-term horizon, is fairly stable. But in Mexico portfolio investments have overshadowed all other forms of funding. These flows are notoriously volatile. Stock markets tend to overshoot their equilibrium levels, and this is exactly what appears to have happened in Mexico. Unsustainably large inflows bid up asset prices above the levels justified by the underlying fundamentals. At the same time they sowed the seeds for their subsequent reversal, as the current account deficit they helped produce (through real currency appreciation) led eventually to a change in market participants' expectations about investments in Mexican assets.[3] Interestingly, Chile and Brazil have recently acted to discourage this type of foreign investment.

In sum, the recent surge in foreign capital inflows into Latin America has taken a wide variety of forms. Different countries have fared quite differently with regard to the volume and composition of flows. Generally, there have been both long-term and short-term components in the surge of foreign capital. The most problematic flows, because of their volatility and procyclical nature, have been interest-arbitraging flows and portfolio investments. Therefore, an exclusive concentration on short-term bank credits and deposits may well miss some of the most important flows: portfolio investments. In all four countries studied these flows, which are new to the region,[4] have been extremely significant, and in one (Mexico) they have dominated capital inflows.

As already noted, one of the major effects of the foreign capital surge has been a significant real appreciation of the exchange rates of the recipient countries (table 1.2). The trend has affected all countries, even Chile and Colombia, which deployed a panoply of measures to discourage temporary capital inflows. Without these disincentives to capital inflows, the appreciations could have been even steeper. In fact, appreciation has been more moderate in countries with policies to discourage short-term inflows (Chile and Colombia) than in those (Argentina and Mexico) that actively welcomed all forms of foreign capital. Brazil also experienced a sharp exchange rate appreciation until 1995, mainly because of fairly permissive policies towards foreign capital inflows. As discussed below, there have recently been important policy changes towards more active management of inflows.

Table 1.2 Real exchange rate for exportsa in Brazil, Chile, Colombia and Mexico, 1986–94 (1990 = 100)

	Brazil	*Chile*	*Colombia*	*Mexico*
1986	160.7	88.4	77.0	130.4
1987	156.8	96.3	85.2	135.2
1988	143.2	102.0	86.5	110.0
1989	108.4	96.4	88.8	103.2
1990	100.0	100.0	100.0	100.0
1991	118.5	98.9	101.0	91.1
1992	127.7	95.3	90.0	84.1
1993	115.4	96.6	87.0	79.8
1994	92.9	96.5	74.8	81.9
1995	71.2	93.0	73.3	120.5

a. Corresponds to the real exchange rate of each country with respect to its principal trading partners, weighted by the relative importance of exports to each partner.
Source: CEPAL, *Balance Preliminar de la Economía Latinoamericana y el Caribe—1995*, Santiago, December 1995.

Actual capital flows to recipient countries and their composition are a result of the interplay of supply and demand. In some countries (such as Chile and Mexico) the potential supply has been quite large. But in Mexico actual capital flows are likely to have been very close to the amounts that financial markets were willing to supply because the Mexican authorities actively welcomed the inflows. In Chile, by contrast, policies effectively discouraged a broad category of inflows. In the absence of such policies actual inflows might have been considerably larger. Chilean policies, of course, have not been without cost or undesired side-effects. Domestic interest rates have remained high, making the task of discouraging short-term inflows more difficult.

2.
The Policy Response

As already noted, there have been two polar responses to the foreign capital surge. At one end of the spectrum, Argentina and Mexico have responded rather passively to the sharp increase in the supply of foreign capital. In fact, in both countries inflows have been viewed as a sign of international confidence in the broad set of pro-market reforms pursued by the authorities, which have included trade liberalization, the opening of the capital account and massive privatizations. The policy package has also included dramatic reductions in inflation and fiscal consolidation.[5]

At the other end of the spectrum, Chile, Colombia and Brazil have followed a more pragmatic policy approach. These countries have adopted strategies to deal with the foreign capital surge that contain three elements: disincentives to short-term inflows, foreign exchange market intervention and sterilization of the monetary impact of rising reserves.

CHILE

In the 1990s Chile adopted a battery of policies towards the surge in capital inflows. The central bank attempted to discourage short-term and speculative capital inflows while maintaining open access to the economy for FDI. It also sought to partially insulate the domestic economy from the

impacts of capital inflows by intervening in foreign exchange markets to prevent an excess supply from unduly appreciating the real exchange rate and by almost completely sterilizing the monetary effects of the rapid accumulation of international reserves (see Ffrench-Davis, Agosin and Uthoff 1995).

The main consideration of exchange rate policy has been to protect the growth model adopted by the authorities, one based on the expansion and diversification of exports. If exports are to continue to be the engine of growth for the Chilean economy, the level and stability of the real exchange rate are crucial. This objective could have been jeopardized if capital inflows caused excessive exchange rate appreciation and greater future volatility when net flows reversed. Sterilized intervention was deemed necessary so as not to fall short of the central bank's inflation targets.

The Chilean authorities opted to regulate the foreign exchange market in order to prevent large misalignments in the real exchange rate relative to its long-term trend. Their decision to make the long-term fundamentals prevail over short-term factors influencing the exchange rate assumes (correctly) that there is an asymmetry of information between the market and the monetary authorities: the authorities have a better knowledge of the factors driving the balance of payments, and a longer planning horizon than agents who operate intensely at the short-term end of the market. However, in the face of uncertainty, rather than a unique price, the authorities have used an exchange rate band centred on a reference price; this is linked to a basket of three currencies in which the dollar, the deutsche mark and the yen are represented with fixed weights according to their share in Chilean trade.[6]

Chilean exchange rate policy has undergone substantial change. The fixed nominal exchange rate used in 1979–82, in the context of an increasing and eventually complete liberalization of capital account transactions, was abandoned after the crisis of 1982 during which GDP declined by 15%. In 1983–1989 the authorities used a strict crawling peg with a floating band of 2% (increased to 3% in 1988 and 5% in mid-1989). The "official" rate was devalued daily, in line with the differential between domestic inflation and an estimate of external inflation. On many occasions discrete nominal devaluations were added, helping to achieve a remarkable real depreciation following the 1982 crisis (119% between 1981 and 1988).

The excess supply of foreign exchange began in mid-1990. The changes in global markets, the increasing international approval of Chilean economic policies, the high interest rates in Chile and the fact that the uncertainty stemming from the 1988 plebiscite and from President Aylwin's induction into office was quickly dispelled, all stimulated a growing inflow of capital to Chile. These events were quickly reflected in a real appreciation of the market exchange rate. Beginning in July 1990, the market rate moved from the top to the floor of the band. The strong inflows of capital continued, with the central bank making large purchases of foreign exchange in the market. Recurrent runs on the dollar and in favour of the peso were reinforced by expectations of a revaluation (and of drops in domestic interest rates), which hampered monetary policy.

In early 1991 the strict crawling peg system was modified. To introduce exchange rate "noise" with the aim of discouraging short-term flows, the rate was abruptly revalued by a small amount on three occasions and then, in compensation, devalued in the following months. Since the first two exchange rate changes were unanticipated by the market, they were an effective tool for temporarily stemming the excess supply of foreign exchange. But the measure could not be repeated too often, because the market would come to anticipate the revaluation and the policy would lose its effectiveness.

In June 1991, in addition to a small (2%) revaluation of the official rate and a drop in the import tariff from 15% to 11%, a non-interest-bearing reserve requirement of 20% was established on external credits. The reserves had to be maintained with the central bank for a minimum of 90 days and a maximum of one year, which meant that the impact fell mostly on short-term flows. At the same time a stamp tax on domestic credit, at an annual rate of 1.2% on operations of up to one year, was extended to apply to external loans. In July an alternative to the reserve requirement was allowed for medium-term credits which consisted of paying to the central bank an amount equivalent to the financial cost of the reserve requirement. The financial cost was calculated by applying LIBOR plus 2.5% to the amount of the reserve requirement. The reserve requirement, the option of paying its financial cost and the tax on foreign credits all have a zero marginal cost for lending that exceeds one year, and are particularly onerous for lending at very short maturities.

Pressures on the foreign exchange market continued in the ensuing months, owing partly to capital inflows (interest rates were low and declining in the United States, Chile's principal international capital market) and partly to a favourable current account. In January 1992 the official exchange rate was revalued by 5% and the floating band in the formal market was expanded to 10%. To deter interest arbitrage by creating more uncertainty for short-term transactions, in March 1992 the central bank initiated dirty floating within the band.

In the ensuing months interest rates continued to decline, exerting pressure on the central bank. But since the Chilean economy was booming, the central bank wanted to increase rather than lower domestic interest rates in order to maintain macroeconomic equilibrium. To avoid encouraging arbitrage, it decided to augment the reserve requirements on capital inflows. In May 1992 it raised reserve requirements on external credits to 30%, later extending them to time deposits in foreign currency. In October the central bank increased the period for which the deposit had to be maintained to one year regardless of the maturity of the loan. At the same time the spread charged over LIBOR in the option of paying the financial cost of the reserve requirement was raised from 2.5% to 4%.

In July of the same year the dollar peg of the official rate was replaced by a peg to a basket of currencies as the new benchmark exchange rate. Given the instability of international exchange rates, these measures were intended to make interest rate arbitrage between the dollar and the peso less profitable by introducing greater exchange rate uncertainty for speculative dollar-denominated capital flows.

Since 1991 an attempt has been made to ease capital outflows as a way of alleviating downward pressure on the exchange rate (for details see Ffrench-Davis, Agosin and Uthoff 1995). But because the rate of return on financial assets remains considerably higher within Chile than outside it, these measures are unlikely to ease the pressure on the exchange rate and, in the short run, may instead act as an incentive to additional inflows (Williamson 1992, Labán and Larraín 1993). Moreover, in the long run such policies risk leaving too many doors open for outflows, which could be massive if the market becomes nervous and expectations shift to currency depreciation. A careless financial liberalization could pose significant obstacles to exchange rate policy and macroeconomic management, generating sources of instability. The recent Mexican crisis is a clear example of this.

Disincentives to short-term capital inflows have not prevented a significant real appreciation of the currency.[7] The appreciation was strongest between early 1991 and late 1992. Although there was a lull during 1993, owing to a sharp decline in export prices, the trend towards exchange rate appreciation reasserted itself in 1994. The terms of trade recovered strongly and, as already noted, there was a surge of both FDI and portfolio capital inflows. Faced with the need to continue purchasing large quantities of foreign exchange in the market to keep the dollar from piercing the floor of the floating band, the central bank revalued the central point of the band by 10% in November 1994.

In the first quarter of 1995 there was a lull in the trend towards currency appreciation, mainly as a consequence of the Mexican crisis, which temporarily dried up portfolio capital inflows. But the pressures towards appreciation reasserted themselves towards the middle of the year. To stem these pressures, in July 1995 the central bank extended the reserve requirement obligation of 30% to foreign financial investments into the country, particularly the purchases of Chilean stocks by foreigners (so-called secondary American depository receipts, or ADRs).[8]

The definitive study on the efficacy of the measures used for deterring short-term flows and preventing excessive exchange rate appreciation has yet to be written. But there is some econometric evidence that they have worked rather well. A recent study indicates that the combination of disincentives to short-term inflows and the reforms of the exchange rate regime significantly reduced the inflow of short-term, interest-arbitrage funds (Agosin forthcoming).

Some observers have claimed that the efficacy of measures to discourage capital inflows is only temporary, because private sector operators will find ways to evade them. In principle, they can evade restrictions in three ways. First, they can underinvoice imports or overinvoice exports. Second, they can delay payment for imports or accelerate export receipts. Third, they can bring in funds through the informal foreign exchange market.[9] Although some evasion is inevitable, there is no hard evidence of large-scale evasion of the measures to discourage short-term capital inflows. In fact, short-term flows have tended to decrease as a share of GDP (see table 2.1). In the absence of the policy measures taken, they might have been considerably larger.

The imposition of reserve requirements on portfolio flows also appears

to have been timely. In 1994 alone gross inflows of portfolio capital represented about 3.5% of GDP. Thus the extension of reserve requirements to these inflows can be considered a pre-emptive strike to deal with an incipient problem that was already causing difficulties in policy management and could become even more important in the future. Although significant, the internationalization of the Chilean stock exchange was just beginning relative to, say, the Mexican market.

What have been the financial costs imposed on foreign borrowing by the reserve requirements and taxes on foreign lending? Table 2.1 shows the financial costs estimated in two ways: (1) by assuming that medium-term borrowers pay the financial costs of the reserve requirements rather than leave funds on deposit; and (2) by calculating the tax on foreign borrowing that is implicit in the reserve requirements which impose extra interest costs.

Table 2.1 Chile: Implicit taxes on foreign borrowing, 1991–94 (annualized rates)

	1991 II	*1992 I*	*1992 II*	*1993*	*1994*
Reserve requirement (%)	20	20	30	30	30
Minimum reserve period (months)	3	3	3	12	12
LIBOR (%)	5.5	4.5	3.6	3.4	5.0
Spread (%)	2.5	2.5	2.5	4.0	4.0
Financial costs (%)	2.8	2.6	3.0	3.4	3.9
Tax, annual (%)	2.9	2.6	3.3	3.2	3.9
6-month (%)	4.5	4.2	5.1	6.5	8.0
3-month (%)	7.9	7.5	8.9	13.6	16.9

Note: For formulas used to calculate the financial costs and the implicit tax, see Appendix.
Source: Authors' calculations, based on data of the Central Bank of Chile.

Under the option of paying the financial cost (*fc*) of the reserve requirements, the tax equivalent (as a percentage of the value of the loan) is as follows:

$$fc = e \times (r + s) + t$$

where e = rate of reserve requirement, r = LIBOR, s = central bank spread

and t = tax rate on foreign borrowing.

Under the option of placing funds on deposit with the central bank to comply with the reserve requirements, the tax equivalent on foreign borrowings with one-year maturities is as follows:

$$\tau = \frac{r \times e + t}{1 - e}$$

A more formal derivation is in the appendix, which also gives various formulae for the implicit tax on maturities of less than one year.

Both options have an almost identical implicit tax rate for one-year loans.[10] The implicit tax rate on foreign borrowing increases dramatically as maturities shorten, because of two factors: the fixed tax of 1.2% and, since late 1992, the requirement that reserves be kept for one year regardless of the maturity of the loan.

The treasury or the central bank collects revenues through the stamp tax on foreign loans, interest paid by borrowers of foreign funds in lieu of meeting reserve requirements and the bank's earnings on the interest-free reserve requirements. The amounts are not terribly large: from the time reserve requirements and the stamp tax were imposed through the end of 1994, estimated revenues were $355 million, or about 0.7% of 1994 GDP (table 2.2). These policies should therefore be judged by their prudential and regulatory value rather than as revenue-earners.

Table 2.2 Chile: Revenues from explicit and implicit taxes on capital inflow, 1991–94 (millions of US dollars)

	Tax on foreign loans	*Interest paid in lieu of reserves*	*Interest earned*	*Total*
1991	4.7	2.2	—	6.9
1992	28.8	16.6	19.4	64.8
1993	34.2	38.0	39.4	111.6
1994	42.5	64.4	65.3	172.2
Total	110.2	121.2	124.1	355.5

Source: Authors' calculations, based on data of the Central Bank of Chile.

COLOMBIA

Colombia has put in place dramatic economic policy reforms since 1990,

including a thorough trade liberalization in a very short period (essentially 1990–92), a liberalization of the rules and regulations towards FDI and a controlled opening of the capital account of the balance of payments (liberalization of foreign exchange transactions, greater freedom to borrow abroad and authorization of portfolio flows).[11] These policy changes were preceded by fairly steep real exchange rate depreciation (see table 1.2), which gave the economy a cushion to face the stresses associated with the capital inflows that have often accompanied pro-market reforms in Latin America.

Faced with strong inflows that were putting pressure on the real exchange rate, in 1991 Colombia replaced the strict crawling peg that it had used together with effective foreign exchange controls since 1967 with a system combining foreign exchange market intervention and sterilization in a single operation. To cope with the abundance of foreign exchange, the Banco de la República purchased foreign exchange with "exchange certificates", or bonds denominated in dollars with a one-year maturity. The redemption price of these bonds, the "official exchange rate", was fixed daily by the bank. At the moment of issue, these certificates could be sold in the secondary market at a discount. The Banco de la República kept the market discount within specified limits that, in effect, constituted a band for the market exchange rate. If the discount reached 12.5%, the bank entered the market to purchase certificates; when the discount reached a minimum of 5.5%, the bank sold certificates (see Cárdenas and Barrera 1994).

In early 1994 the exchange certificates were replaced with an explicit floating band of 15% with a sliding central parity. Towards the end of 1994 the central parity was revalued by 7%, and its rate of devaluation was predetermined for the year ahead (a sort of "tablita") and fixed at 13.5% a year.

Other measures, including reserve requirements and taxes on short-term capital inflows, have also been used to deal with the excess supply of foreign exchange.[12] For example, in April 1991 authorities began to charge a commission of 5% on foreign exchange sold to the Banco de la República. In addition, a retention fee of 3% was imposed on non-export foreign exchange receipts (exporters were later given a drawback on the fee). In July 1992 the fee was raised to 10%. In that same month, to curtail the inflow of foreign capital through the tourism account, a limit of $25,000 was set for permitted exchanges of foreign currency by each tourism establishment. And in late 1992 the monetary authorities switched from attempting to control the monetary aggregates to discouraging interest rate arbitrage by set-

ting limits on lending interest rates.

In September 1993 the authorities replaced this system with a fairly complex reserve requirement mechanism subjecting all credits of less than 18 months to a 47% reserve requirement for the duration of the loan.[13] The certificates issued by the authorities against the reserves could be repurchased at a discount that depended on the date of repurchase. This mechanism is equivalent to the Chilean scheme of paying the financial cost of the reserve requirement. Credits with maturities of less than 6 months and those for the purchase of capital goods were initially excluded from reserve requirements. However, longer-term credits that were partially amortized before 18 months were subject to reserve requirements on the portions amortized, if the amortizations represented at least 30% of the credit.

In March 1994 reserve requirements were extended to all credits with a maturity of less than 36 months. The period during which the deposits had to be maintained was changed, and borrowers were given the option of constituting deposits of 12, 18 or 24 months. Reserves on 12-month deposits had to be equivalent to 93% of the foreign credit; on 18-month deposits, 64%; and on 24-month deposits, 50%. There was also an option of reselling the certificates of deposit to the Banco de la República at a discount. If loans were of maturities in excess of 36 months and at least 40% was amortized before 36 months, reserve requirements had to be constituted against the amounts amortized.

In August 1994 reserve requirements were extended to all loans of up to 60 months' maturity. Longer-term loans were exempted except for amortizations within the first 60 months (when such amortizations are at least 40% of the credit). For trade credits of 4–6 months, reserve requirements were set at 30%.

In addition, banks must maintain net asset positions in foreign exchange, which severely limits their borrowings in foreign exchange for the purpose of lending in pesos. This measure not only helps prevent inflows, and therefore excessive real exchange rate appreciation, but also protects bank balance sheets and liquidity when the flows are reversed and the exchange rate is depreciating.

Although capital inflows have been large, they are still reasonable relative to GDP and the current account deficit is moderate. Without the measures taken, inflows might have been much larger, in view of the general expectations of currency appreciation stemming from both the eco-

nomic reform and the good prospects for the Colombian current account.[14] Although there is no hard evidence on the effects of the reserve requirement mechanism used in Colombia, perhaps one of its results has been the lengthening of maturities on foreign borrowing and the near disappearance of short-term borrowing since late 1993. Thus Colombia has probably avoided (or at least smoothed) the boom-bust cycle that tends to accompany economic reform combined with a capital surge (see Urrutia 1995).

Because of the way that the reserve requirement system has operated—becoming prohibitive for funds affected—actual tax-like proceeds seem to have been low. It is estimated that less than $100 million was deposited as reserves.

BRAZIL

Brazil has undergone more policy shifts with regard to capital inflows than either Chile or Colombia. Until the adoption of the Plano Real in 1994, hyperinflation and broad macroeconomic disequilibrium prevailed. In recent years there have been several capital surges, and Brazil has responded with policies that have evolved towards more active management of flows.

In 1991 several measures were adopted to stimulate capital inflows, particularly to the stock exchange. Several additional taxes on foreign funding were eliminated, placing tax rates at the same levels as those applying to financial transactions by residents. In addition, Brazilian firms recovered voluntary access to external sources of finance.

In 1992 a huge current account surplus developed as a result of a three-year recession between 1990 and 1992. Despite the recession, inflation averaged over 1,000% a year. There were growing capital inflows, particularly for privatizations, the purchase of bonds and stock market transactions. Brazil chose to continue depreciating the real exchange rate (by 28% in 1990–92) and accumulating reserves. Reserves were used partly to reduce interest payment arrears, as agreed in the renegotiation of the external debt.

In 1993 the hyperinflation and large capital inflows continued, with portfolio inflows reaching $12 billion. The central bank continued purchasing foreign currency, but allowed some exchange rate appreciation. By mid-1993 taxes were imposed on financial inflows, along with minimum maturity terms on foreign borrowing. But the reactivation of demand, the lagged effects of import liberalization and the appreciation of the exchange

rate led to a sharp change in the current account, which went from a large surplus in 1992 to a small deficit in 1993. Despite an increase in the deficit, in 1994 capital inflows were even larger, and reserves continued to accumulate. Between 1992 and 1994, the central bank increased its international reserves by $31 billion.

In conjunction with the launching of the Plano Real, the bank retired from the market, with the result that the exchange rate appreciated sharply (by about a third) in a short period. The plan was successful in reducing inflation, from roughly 40% a month to nearly 2%. Imports rose strongly, a significant trade deficit was generated in the second half of 1994, and a worrisome current account deficit emerged. After some confusing ups and downs, the "Tequila effect" helped Brazil to make a policy shift; beginning in the second quarter of 1995, exchange rate policy became active, a band was established, and dirty floating within the band was adopted.

Several restrictions on inflows were gradually introduced or reimposed. In August 1995 a tax of 5% was imposed on loans in foreign currency and on interbank operations between Brazilian and foreign institutions. Foreign exchange sales on the open market were taxed at the rate of 7%. The tax rate for foreign purchases of fixed-income instruments, previously 5%, was raised to 7%. In September a capital gains tax of 15% on stock market transactions that had applied only to residents was extended to non-residents.

MEXICO

Mexico clearly adopted a more *laissez-faire* approach to the surge in foreign capital. In fact, the Mexican capital account has been dramatically liberalized since the mid-1980s, partly in connection with Mexico's signing of the North American Free Trade Agreement (NAFTA). The capital account liberalization was part of a broad effort to liberalize the economy, which included a drastic trade liberalization; accession to the General Agreement on Tariffs and Trade (GATT) and the Organisation for Economic Co-operation and Development (OECD); privatization of state enterprises; and the liberalization of FDI policies (see Lustig 1992, Ten Kate 1993, and Ros 1994). In addition, there was a serious—and largely successful—effort at fiscal consolidation. Mexico presents a classic case of the effects of an economic reform perceived as credible by international capital markets. With the globalization of international financial markets, such reforms encourage capital inflows that are unsustainable in the long run and that, through

overshooting, sow the seeds for their later reversal.

In Mexican policy relating to the capital account of the balance of payments, the changes have almost all been in the direction of opening up and liberalization—both for long-term flows such as FDI and for short-term flows such as foreign borrowing or purchases by non-residents of stocks, bonds and money market instruments. The rules and regulations towards FDI were liberalized beginning in 1984: new sectors were opened to foreign investors, restrictions on majority foreign ownership were relaxed in several sectors, and the administrative procedures for the approval of projects were simplified. Since 1989 investments of less than $100 million in fully owned subsidiaries have received automatic approval.

Before 1988 foreign portfolio investment was strictly regulated and actively discouraged in Mexico. The liberalization of financial markets after 1988 made an important contribution to the surge in foreign portfolio investments (Ros 1994). In 1989 Mexican firms were allowed to issue special shares for purchase by foreigners. At the end of 1990 foreigners were allowed to purchase Mexican bonds and money market instruments. The possibility of placing ADRs on the New York Stock Exchange (with the associated purchases by foreigners in the Mexican market of the same securities) and the rapid growth of investments in Mexican securities by Mexico mutual funds were made possible by almost simultaneous regulatory changes in Mexico and the United States (see Culpeper 1995).

In 1990 Mexican commercial banks began to issue short-term dollar-denominated certificates of deposit. Faced with massive inflows from this source, in April 1992 the monetary authorities decided to put a 10% cap on the share of foreign liabilities in the total liabilities of banks. They also set a liquidity coefficient of 15% for dollar liabilities, requiring that this share be invested in low-risk or risk-free assets (Gurría 1995). But these measures were insufficient to stem the inflows from this source.

Mexico made important changes in its exchange rate regime in November 1991, eliminating controls and the dual exchange rate system that had operated in Mexico since 1982. Banco de México introduced a widening exchange rate band, with a fixed floor and a ceiling that depreciated by a fixed peso amount every day. Until the crisis of late 1994 the monetary authorities had undertaken active sterilized intervention in the foreign exchange market. Until March 1994 the bank made large net purchases of foreign exchange, at a rate close to the bottom. Nevertheless, the peso

appreciated steadily from its lows after the devaluations of 1986–87 (see table 1.2). During the rest of 1994, as a result of adverse political developments (the Chiapas insurrection and the assassination of the presidential candidate Colosio) and a rise in US interest rates, the still growing current account deficit began to exceed new capital inflows, and the bank made large sales of foreign exchange. At the same time, faced with growing investor nervousness, the government switched from issuing peso debt (Cetes) to issuing dollar-indexed short-term securities (Tesobonos). This shift ended up adding to the depth of the economic and financial crisis after the crash of the peso in December 1994.

During the period of capital inflows, Mexican inflation was reduced, but remained above international inflation. Thus, the real exchange rate appreciated persistently. The real appreciation continued until March 1994, when the rate jumped from the floor to the ceiling of the band. Then, after the onset of the crisis in December 1994 the peso was officially devalued by 15%, and shortly thereafter the exchange rate was left to float freely upward. After 20 December 1994 the correction was swift, with a 100% rise in the nominal price of the dollar in less than three months. Inflation in 1995 jumped to over 50%, gross investment dropped sharply (30%) and GDP fell by 7%.

What accounted for the boom-bust cycle associated with massive inflows of portfolio capital, followed by equally massive outflows? What was the role of poor macroeconomic management? In particular, did inadequate fiscal restraint play an important part, as has been suggested by those who unwaveringly support capital account liberalization? Or can the blame be assigned to inadequate regulation of the more volatile forms of capital inflows, which have a propensity to overshoot their equilibrium levels? The answers to these questions are crucial to policy-making in an increasingly globalized international financial system.

The main explanation seems to be that both policy-makers and international portfolio investors came to hold overly optimistic expectations about Mexico's prospects in the wake of economic reforms, and that this led to excessive capital inflows and excessive domestic spending. Neutralizing inflows as large as those of Mexico in recent years is no doubt a difficult and costly task. The inflows alone tend to unleash a spending boom, centred on importables, as the ensuing appreciation of the exchange rate leads to higher real incomes in terms of tradables. The increase in the money sup-

ply, arising from incompletely sterilized increases in reserves, has similar expansionary effects. In the meantime the stock of external liabilities can accumulate very rapidly. In Mexico they rose by over $90 billion between 1991 and 1994. Most of these liabilities were short-term or very volatile. Therefore, disincentives to capital inflows are unavoidable in circumstances such as those faced by Mexico in the first half of the 1990s.

POLICY AND ECONOMIC PERFORMANCE

Have countries that have used disincentives to short-term capital inflows performed better in terms of growth and stability than countries, such as Argentina and Mexico, that have been more permissive? Of course, a simple inspection of growth rates, inflation and similar variables will not provide a sure answer, since these variables respond to a large variety of influ-

Table 2.3 Latin America: GDP growth rates, inflation rates and cumulative current account deficits (percentages)

	Brazil	*Chile*	*Colombia*	*Mexico*	*Latin America and the Caribbean*
GDP growth rates					
1980–90	1.7	2.8	3.7	1.7	1.2
1990–94	2.3	6.3	4.0	2.6	3.6
1995[a]	4.0	8.0	5.5	–7.0	0.5
Cumulative current account deficit (percentage of GDP)					
1991–94	–0.5	10.4	2.4	25.4	9.7
Inflation rates					
1991	476	18.7	26.8	18.9	200
1992	1,149	12.7	25.2	11.9	419
1993	2,489	12.2	22.6	8.0	888
1994	929	8.9	23.0	6.9	337
1995[a]	22	8.3	20.0	52.0	25

a: Preliminary.
Source: CEPAL, *Statistical Yearbook for Latin America and the Caribbean 1994*, CEPAL, *Economic Survey of Latin America and the Caribbean 1994–1995*; and *CEPAL Preliminary Overview* of the economy of Latin America and the Caribbean, 1995, Santiago, December 1995.

ences, of which capital inflows are only one. Moreover, countries that have allowed their real exchange rates to appreciate in response to large capital inflows have in effect experienced lower rates of inflation for a while. That was certainly the case for Mexico (table 2.3). And in Argentina inflation rates are now at or even below international levels, owing to the use of the exchange rate as the nominal anchor. But the costs of maintaining a fixed nominal exchange rate and fully free international capital movements are proving to be very high: in 1995, unemployment reached nearly 20% of the labour force, GDP dropped by 3% and gross investment fell by 20%.

Despite the caveats about a naked-eye inspection of economic performance indicators, it is suggestive that, in the 1990s, Chile and Colombia have experienced higher or steadier rates of GDP growth than Mexico (and Argentina). At the same time inflation rates in these two countries have been somewhat higher than in Mexico, where inflation eventually converged towards international levels while inflows were positive. But when inflows were reversed, causing depreciation of the exchange rate (which probably overshot its long-term "fundamental equilibrium" level), Mexican inflation shot up to levels much higher than those experienced in either Chile or Colombia.

An indicator of financial sustainability is the cumulative current account deficit. In this respect, the figures in table 2.3 are telling. Even though the volume of foreign capital inflows in Chile as a share of GDP was quite similar to that in Mexico, Chile effectively used a much smaller amount. The cumulative disequilibrium of Mexico's external accounts during 1990–94 was two and a half times that in Chile's external accounts. From this perspective, the Mexican crisis looks inevitable, and Chile's success in maintaining broad macroeconomic balances and avoiding large cycles is easy to explain.

3.
Policy Lessons

The evidence on the latest surge in foreign capital inflows into Latin America suggests that it is essential to have in place a policy apparatus that distinguishes between long-term, stable capital inflows such as FDI and those that are considerably more volatile and that have adverse effects on long-term growth. Volatile flows include short-term financial credits to banks and large domestic firms, short-term deposits by non-residents in the domestic financial system and purchases of stocks and bonds by non-residents. These transactions seek to arbitrage interest rate differentials or to obtain quick capital gains. These flows cause very sharp increases (bubbles) in domestic asset prices and unsustainable exchange rate appreciations that are later reversed when the effects on domestic relative prices and the current account balance become evident (see Devlin, Ffrench-Davis and Griffith-Jones 1995). Then there ensues an overshooting in the other direction, with asset prices falling and the real exchange rate depreciating more than is justified by the underlying fundamentals.[15]

In attempting to differentiate between volatile short-term investments and long-term, more stable inflows such as FDI (or long-term borrowing from multilateral institutions), the cleanest option is to impose a small tax on inflows. Such a tax is prohibitively expensive for very short-term round-trip-

ping but a negligible cost for long-term investors. In Latin America, Chile's approach comes closest to such a device. Brazil also began implementing a tax on credits in foreign currency in August 1995. As discussed above, the non-interest-bearing reserve requirement system may perform as a close equivalent to a tax on inflows. In Chile the implicit tax can be quite steep on very short maturities. Colombia also uses a reserve requirement system. But it seems to be less effective than the Chilean system, in which the reserve requirement applies to all credits regardless of maturity and is therefore difficult to evade.[16]

The Mexican case affords an interesting contrast to the experiences of the three other countries analysed in this paper. Mexico has used few controls on foreign capital inflows; indeed, it has gone the other way, dismantling those in place before the liberalizations of the second half of the 1980s. Those restrictions had been quite effective in limiting foreign portfolio investments in Mexico. The results seem to be clear: unnecessary fluctuations of the exchange rate, large swings in output and employment, and low economic growth.

The problems posed by foreign portfolio investments must be appropriately tackled. It is unclear that developing countries have much to gain from this form of internationalization of finance.[17] Firms able to issue stock in international markets can obtain finance at much lower cost than in domestic capital markets—clearly a positive thing. But allowing foreign portfolio investors to purchase stock in domestic markets results only in a change in the ownership of existing assets, and the problems of volatility and overshooting associated with these investments are likely to be as acute as (or even more acute than) those associated with other forms of short-term capital flows.

When portfolio investors discover a new emerging market, massive capital inflows follow until foreign investors have acquired the desired stocks of portfolio capital. These inflows, in turn, can appreciate the exchange rate to a point at which the resulting current account deficits become unsustainable. In due course, capital inflows turn into outflows, and the exchange rate overshoots in the opposite direction. Disincentives to portfolio inflows can be used to dampen the speed at which the desired stock is approached. These disincentives can take several forms: a tax on capital gains on transactions in domestic stock (the option chosen by Brazil beginning in September 1995), placing limits on the share of firms' capital that can be owned

by non-residents (the approach adopted by the Republic of Korea), auctioning quotas for such investment, taxing the purchase and sale of stock by non-residents and placing reserve requirements on such transactions (the Chilean policy since July 1995).

Even FDI might need to be slowed. As the recent Latin American experience shows, such inflows can be quite massive. After many years of underinvestment, owing mainly to the effects of the debt crisis, multinational companies engaged in a typical a process of stock adjustment. While stocks of FDI are adjusting to their desired levels, flows can be massive indeed. Small economies have difficulties absorbing these large inflows. So a case could be made for auctioning rights to make foreign direct investments, placing investment applications on an informal queue or choosing from all the projects on offer those most likely to enhance development. All these options entail a much more pragmatic approach to FDI than the uncritical embrace of recent years.

The measures discussed in this paper should not be considered revenue-earners. Only for Chile was a calculation of the revenue impact of these measures feasible, and for this country the revenues from taxes on capital inflows or from their equivalents are small. Thus in developing countries, where international financial transactions are minuscule by international standards, these measures should be adopted essentially for their regulatory and prudential value. The surge in foreign capital inflows in recent years has shown, however, that such inflows can be enormous by *national standards* and, if countries do not adopt appropriate policy measures, that they can have very disruptive effects on the domestic economy.

Appendix

Calculating the Implicit Tax in Chilean Disincentives to Capital Inflows

The Chilean monetary authorities have used two main mechanisms to discourage capital inflows: (1) a tax of 1.2% on all foreign loans regardless of their maturity and (2) reserve requirements for a period of up to one year on foreign borrowing, bank deposits in foreign currency and, recently, some portfolio inflows. Until October 1992 reserve requirements had to be maintained for a period that fluctuated between 90 days and a year. The regulations were changed in October 1992 to require reserves to be maintained on deposit for a full year, regardless of the maturity of the loan.

There are therefore three elements that raise the cost of foreign borrowing to Chilean agents: (1) to meet the reserve requirement, they must borrow more funds than they need; (2) they must pay the foreign credit tax; and (3) for loans with maturities of less than one year, they must maintain reserves on deposit for longer than the maturity of their loan.

This appendix examines three cases. Case 1, the simplest, assumes that the foreign loan is for one year and that the reserve requirement is also for one year. Case 2 assumes that the loan is for less than one year and that reserves must be maintained for the life of the loan (essentially as under the regulations in force from June 1991 until October 1992). Case 3 assumes that the loan is

for a fraction of the year and that reserve requirements must be left on deposit for a full year (as under the regulations in force since October 1992).

CASE 1

In case 1 foreign borrowing is made more expensive by the effect of the reserve requirements and the tax on foreign borrowing. The tax on foreign borrowing (τ_1) is equal to the difference between the effective annual borrowing costs ($\hat{r}$) and the international interest rate (r):

$$\tau_1 = \hat{r} - r$$

and

$$\hat{r} = \frac{r + t}{1 - e}$$

where t = the fixed tax rate (in this case, 1.2%) and e = the reserve requirement rate, therefore:

$$\tau_1 = \frac{r + t}{1 - e} - r = \frac{t + re}{1 - e}$$

CASE 2

In case 2 the interest rate (i) applied for a shorter period is related to the annual interest rate by the following compound interest rule:

$$r = (1 + i)^n - 1,$$

where n is the number of such periods in a year (for example, n = 12 for a one-month loan).

In this case, $\tau_2 = \hat{r}_2 - r$, where

$$\hat{r}_2 = (1 + \frac{i + t}{1 - e})^n - 1.$$

CASE 3

In case 3 the non-interest-bearing reserve deposit must be left for a full year even though the loan itself is for a fraction of the year. Again, the interest

rate is calculated (based on the year equivalent) for the period of the loan. There are *n* such periods in a year.

The real cost of borrowing ($\hat{i}_3$), including the cost of the reserve requirement and the tax, is:

$$\hat{i}_3 = \frac{i + t}{1 - e} + \frac{e}{1 - e}\,[(1 + i)^{n-1} - 1].$$

On an annualized basis, the real cost of borrowing ($\hat{r}_3$) is:

$$\hat{r}_3 = (1 + \hat{i}_3)^n - 1.$$

As in the other cases, the implicit tax (on an annualized basis) is the difference between the real cost of borrowing and the international interest rate:

$$\tau_3 = \hat{r}_3 - r.$$

Notes

1. If there are to be interest-arbitraging capital inflows, the following condition—which is behind the paper's analysis of recent changes in the incentives to capital movements—must hold: $i = i^* + E\,(dep) + cr$, where i = the domestic nominal interest rate, i^* = the foreign interest rate, $E\,(dep)$ = the expected rate of depreciation of the domestic currency, and cr = country risk premium.

2. The "emerging markets" mania of recent years in international stock markets can be interpreted as a dramatic reduction in perceived country risk premiums (only for countries with more developed domestic stock markets, of course).

3. For theoretical discussions of this phenomenon in the context of international bank lending decisions, see McKinnon (1991) and McKinnon and Pill (1995).

4. Portfolio capital, especially the placement of long-term bonds in the London market, was an extremely important form of international finance in Latin America before World War I. But the recent massive investment in Latin American equity is in fact a new phenomenon.

5. The main difference in the responses of Argentina and Mexico has been in the degree to which central banks have sterilized increases in international reserves. While Mexico practised partial sterilization, Argentina's currency board approach to exchange rate and monetary policy, in force since April 1991, precludes it altogether. After the "Tequila effect" of late 1994, however, some flexibility was introduced in order to soften the effects of the loss of reserves on aggregate demand and on the liquidity crunch threatening the survival of many domestic banks.

6. For a comparative analysis of bands in Chile, Israel and Mexico, see Helpman, Leiderman and Bufman (1994). For an analysis of Chile, Colombia and Israel, see Williamson (forthcoming).

7. Chile was coming out of a profound debt crisis that was accompanied by a sharp exchange rate depreciation. Consequently, there was room for some appreciation. But because Chile was moving from a restricted to an overabundant supply of external savings, the authorities wanted to avoid an overadjustment of the exchange rate. A troublesome feature of emerging markets is that, as investors' expectations change to optimism, they seek to reach a new desired stock of investment in the emerging market over a short period. This implies excessively large inflows for a time. Obviously there are transitory flows rather than permanently higher periodic inflows.

8. For an analysis of this issue, see Ffrench-Davis, Agosin and Uthoff (1995). It is not difficult to impose reserve requirements on foreign portfolio investments. If the funds that will be used for the investment are deposited with a Chilean bank, the foreign deposit is liable to reserve requirements. For funds that do not go through a Chilean bank, the reserve requirement can be imposed when the asset is registered in the name of an agent with a foreign address. Funds being converted into ADRs must also be registered with the central bank.

9. Potentially, short-term funds could be registered as FDI. But this could be a costly option, since Chilean law requires that FDI remain in the country for one year before repatriation. The loans associated with FDI are subject to the reserve requirement. Since the average maturity of these loans is about seven years, the incidence of the restriction is low.

10. Short-term borrowers do not have the option of paying the financial costs of borrowing and must meet reserve requirements.

11. A discussion of the Colombian trade policy reform can be found in Ocampo (1993). Policies towards the capital account are described in Cárdenas and Barrera (1994). For an account of the liberalization of FDI regulations, see Steiner and Giedion (1996).

12. The importance attributed by the monetary authorities to the excess supply of foreign exchange and the appreciation of the Colombian peso since 1991 suggest that the capital inflows recorded in the balance of payments seriously underestimate their real magnitudes.

13. This information was kindly provided by Dr. Miguel Urrutia, general manager, Banco de la República.

14. Recent petroleum investments will transform Colombia into a major oil

exporter in a few years.

15. At the microeconomic level these fundamentals are, of course, the future earnings prospects of firms. At the macroeconomic level they include sustainable current account positions and long-term capital flows.

16. These policies are quite similar in effect to the tax proposed by Tobin on foreign exchange transactions (see Tobin 1978 and 1994): both the policies and the Tobin tax are attempts to "throw sand in the wheels" of speculative international capital flows. But there are significant differences between the approaches followed by the more activist Latin American countries and the Tobin tax. The Tobin tax is far more comprehensive, since it would be imposed on all foreign exchange transactions, not merely on certain categories of capital inflows. The Tobin tax would also be much smaller than the explicit and implicit tax rates on capital inflows in Latin America. While proposals for the Tobin tax range from 0.15% to 0.5%, the tax rates on capital inflows have been several times larger.

17. For a discussion of this issue, see CEPAL (1995, chapter 10); and Stiglitz (1994).

Bibliography

Agosin, M.R. Forthcoming. "El retorno de los capitales extranjeros a Chile." *El Trimestre Económico.*

Agosin, M.R., L. Letelier, and R. Fuentes. 1994. "Los capitales extranjeros en las economías latinoamericanas: Chile." In Ocampo 1994.

Calvo, G., L. Leiderman, and C. Reinhart. 1993. "Capital Inflows and Real Exchange Appreciation in Latin America: The Role of External Factors." *IMF Staff Papers* 40(1).

Cárdenas, M., and F. Barrera. 1994. "Efectos macroeconómicos de los capitales extranjeros." In Ocampo 1994.

CEPAL (Comisión Económica para América Latina y el Caribe). 1995. *Latin America and the Carribbean: Policies to Improve Linkages with the Global Economy.* Santiago.

Culpeper, R. 1995. "Resurgence of private flows to Latin America: the role of North American Investors", in Ffrench-Davis and Griffith-Jones 1995.

Devlin, R., R. Ffrench-Davis, and S. Griffith-Jones. 1995. "Surges in Capital Flows and Development: An Overview of Policy Issues." In Ffrench-Davis and Griffith-Jones 1995.

Ffrench-Davis, R., M.R. Agosin, and A. Uthoff. 1995. "Capital Movements, Export Strategy, and Macroeconomic Stability in Chile." In Ffrench-Davis and Griffith-Jones 1995.

Ffrench-Davis, R., and S. Griffith-Jones, eds. 1995. *Coping with Capital Surges: The Return of Finance to Latin America.* Boulder, Colo.: Lynne Rienner.

Gurría, M.A. 1995. "Capital Flows: The Mexican Case." In Ffrench-Davis and Griffith-Jones 1995.

Helpman, E., L. Leiderman, and G. Bufman. 1994. "A New Breed of Exchange Rate Bands: Chile, Israel and Mexico." *Economic Policy*, no. 19, October.

IMF (International Monetary Fund). 1995a. "Capital Account Convertibility; Review of Experience and Implications for IMF Policies". By IMF staff led by P. J. Quirk and O. Evans. Washington, D.C.

———. 1995b. "Evolution of the Mexican Peso Crisis." In *International Capital Markets: Developments, Prospects, and Policy Issues.* Washington, D.C.

Labán, R., and F. Larraín. 1993. "Can a Liberalization of Capital Outflows Increase Net Capital Inflows?" Working paper 155. Pontificia Universidad Católica de Chile, Instituto de Economía, Santiago.

Lustig, N. 1992. *Mexico: The Remaking of an Economy.* Washington, D.C.: The Brookings Institution.

McKinnon, R.I. 1991. "The International Capital Market and Economic Liberalization: The Overborrowing Syndrome." In *The Order of Economic Liberalization: Financial Control in the Transition to a Market Economy.* Baltimore: Johns Hopkins University Press.

McKinnon, R.I., and H. Pill. 1995. "Credible Liberalization and International Capital Flows: The 'Over-borrowing' Syndrome." Stanford University, Department of Economics, Stanford, Calif.

Ocampo, J.A. 1993. "Economía y economía política de la reforma comercial colombiana." Serie Reformas de Política Comercial 1. CEPAL (Comisión Económica para América Latina y el Caribe), Santiago.

Ocampo, J.A., ed. 1994. *Los capitales extranjeros en las economías Latinoamericanas.* Fedesarrollo and Interamerican Development Bank, Bogotá.

Ros, J. 1994. "Mercados financieros y flujos de capital en México." In Ocampo 1994.

Steiner, R., and U. Giedion. 1996. "Características, determinantes y algunos efectos de la inversión extranjera directa en Colombia." In M.R. Agosin, ed., *Inversión extranjera en América Latina.* Santiago: Fondo de Cultura Económica.

Stiglitz, J.E. 1994. "The Role of the State in Financial Markets." In *Proceedings of the World Bank Annual Conference on Development Economics 1993.* Washington, D.C.: World Bank.

Ten Kate, A. 1993. "Structural Adjustment in Mexico: Two Different Stories." In M.R. Agosin and D. Tussie, eds., *Trade and Growth: New Dilemmas in Trade*

ODS DISCUSSION PAPER SERIES

1 *Sustainable Human Development: Concepts and Priorities* by Sudhir Anand and Amartya K. Sen

2 *Reconciling Economic Reform and Sustainable Human Development: Social Consequences of Neo-Liberalism* by Lance Taylor and Ute Pieper

3 *Health Implications of Economic Policies: A Framework of Analysis* by Sudhir Anand and Lincoln Chen

4 *Rival States, Rival Firms: How Do People Fit In? The Global Unemployment Challenge* by Isabelle Grunberg

5 *Beyond the "East Asian Miracle": An Asian View* by Izumi Ohno

6 *Aid in the 21st Century* by Roger Riddell

7 *New Approaches to Development Cooperation* by Keith Griffin and Terry McKinley

8 *Managing Capital Inflows in Latin America* by Manuel R. Agosin and Ricardo Ffrench-Davis

Inquiries

For any questions concerning ODS' Discussion Paper series, please contact Inge Kaul, Director, or Patricia de Mowbray, Deputy Director, UNDP Office of Development Studies (ODS), Room 409, 4th Floor, 336 E. 45th Street, New York, NY 10017 USA

Tel (212) 986-0376

Fax (212) 986-1237

Orders

For entering your name into our mailing list and/or ordering publications, please contact Flora Aller or Rocio Kattis.

Tel (212) 986-0304

Fax (212) 986-1237

Office of Development Studies
United Nations Development Programme
One UN Plaza DC1 Room 2144
New York, NY 10017
USA