

MANAGING CAPITAL INFLOWS IN CHILE

MANUEL R. AGOSIN
RICARDO FRENCH-DAVIS*

Abstract

This paper characterizes the surge of foreign capital inflows into Chile in the 1990s, it describes the policies to deal with these inflows, and analyzes the results of the policy mix used in terms of effectiveness with which flows were managed and effects on growth and investment. About 60 per cent of the flows have been foreign direct investment (FDI), the remainder being a mix of portfolio inflows, short-term credit, and longer-term borrowing, basically by banks and large domestic firms. The policies adopted have included the imposition of an unremunerated reserve requirement on all financial inflows (excluding FDI), active sterilized intervention on foreign exchange markets to prevent undue appreciation of the peso, and the use of a sliding exchange rate band. These policies appear to have prevented an even larger surge of foreign capital, have kept real exchange rate appreciation within bounds, and are partly responsible for the country's positive growth performance. However, they have tended to lose effectiveness since late-1995, when capital inflows accelerated. The Chilean experience points to the need to face sharp temporary surges in capital inflows with a mix of policy tools rather than with a single instrument.

Síntesis

Este trabajo caracteriza el aumento en los flujos de capital extranjero hacia Chile en los años 1990, describe las políticas utilizadas para administrar dichos flujos y analiza los resultados de la combinación de políticas en términos de la efectividad con que los flujos fueron manejados y de los efectos que los flujos han tenido sobre el crecimiento y la inversión. Aproximadamente 60 por ciento de los flujos han tomado la forma de inversión extranjera directa (IED); el 40 por ciento restante ha estado constituido por flujos de cartera, créditos de corto plazo y endeudamiento de largo plazo por parte de bancos y empresas nacionales grandes. Las políticas adoptadas han incluido la imposición de un encaje no remunerado sobre todas las entradas de capital financiero (excluyendo a la IED), la intervención

* One version of this paper was presented at the UNU/WIDER seminar on Short-Term Capital Movements and Balance of Payments Crises held at Sussex, on May 1-2, 1997. We wish to thank Stephany Griffith-Jones, Manuel Montes, Steven Fidler, and other participants at the Sussex meeting for useful comments. We also thank Julio Cáceres for efficient research assistance.

Professor of Economics, Universidad de Chile and Principal Regional Adviser, ECLAC, respectively.

esterilizada en los mercados cambiarios para evitar una excesiva apreciación del peso y el uso de una banda reptante para el tipo de cambio. Sin estas políticas, las entradas de capital hubiesen sido aún mayores de lo que fueron. Ellas han mantenido la apreciación del peso dentro de límites razonables y son parcialmente responsables del buen desempeño económico del país. Sin embargo, ellas han tendido a perder efectividad desde fines de 1995, cuando las entradas de capital se aceleraron. La experiencia chilena indica la necesidad de enfrentar aumentos abruptos y temporarios en las entradas de capital con una mezcla de herramientas de política en lugar de descansar en un solo instrumento.

1. INTRODUCTION

Towards the end of the 1980s, private capital inflows began to return to Latin America (see Calvo *et al.*, 1993; Ffrench-Davis and Griffith-Jones, 1995; and Ocampo, 1994). Chile was one of the first countries to attract the renewed flows of foreign capital, and one of the countries that has received the largest flows, in relation to its size. The reversal of the drought in capital inflows of the 1980s is undoubtedly welcome. It has relaxed the binding foreign exchange constraint under which most countries labored during the debt crisis. However, both the large magnitude of the new capital flows and their composition have caused problems for which the recipient countries have been, by and large, ill-prepared.

In the first place, there is the problem of domestic absorption. If they are to contribute to long-term development, capital inflows should lead to a significant increase in the investment rate, something which, with the exception of Chile, has not taken place in most countries in the region. In Chile, it will be argued that one reason for the greater degree of success in channeling foreign capital to investment has been the discouragement of short-term flows and the large share of foreign direct investment (FDI) in recent capital inflows. The Chilean experience does indeed suggest that, when capital inflows take the form of FDI, there is a greater likelihood that the investment rate will rise than when foreign capital is in more liquid or short-term forms.

Secondly, large inflows pose difficult dilemmas to policy makers. Without intervention on foreign exchange markets and in the absence of regulations on capital inflows, the real exchange rate will appreciate, which may be undesirable from the point of view of other important policy objectives (e.g., encouraging export growth and diversification, attaining higher domestic investment rates, or meeting targets for the current account deficit consistent with sustainable capital inflows). On the other hand, intervention in the foreign exchange market tends to swell the domestic money supply and increases the difficulties in controlling inflation.

Third, a significant proportion of the recent inflow to emerging markets has taken the form of short-term capital or capital with basically short-term horizons. There have been two components of capital inflows that are clearly of a short-term nature: short-term credits and deposits, on the one hand, and portfolio flows, on the other. In the case of Chile, short-term inflows (mostly but not only in the form of bank lending) fluctuated between 2 and 3.5 per cent of GDP between 1990 and 1993. Thereafter, they have fallen sharply as a consequence of measures to discourage them.

On the other hand, portfolio inflows are new to the Chilean economy. Since they began in 1993, net portfolio inflows have represented between 1 and 2 per cent of GDP, except in 1995, when they disappeared altogether as a consequence of the Mexican peso crisis. Portfolio flows are not usually thought of as short-term capital, but in practice they are. Portfolio investments can be liquidated at a moment's notice and, therefore, may be just as short-term in nature as short-term indebtedness. Typically, portfolio investors operate with imperfect information, they seek short-term capital appreciation, and are prone to bandwagon effects, either in taking positions or in liquidating them. This has been clearly in evidence in the financial crises that have stricken first Mexico (December of 1994) and more recently the Asian economies (since mid-1997, and still unfolding as of this writing). In both cases, the original crisis spread to other "emerging market" countries, as investors lost confidence not only in the economy where the crisis had started but also in those of other developing countries that had received large capital inflows. Large portfolio inflows were thus followed by large outflows, with sharp reversals of initial appreciations in exchange rates and stock market prices.¹

Up to the mid-1970s, Chile had a tradition of capital controls. Since then policy makers have maintained a fairly open capital account, and recent policies, rather than a reversal, represent a significant move toward greater pragmatism. In a nutshell, the policy response during the current surge in the supply of foreign capital can be described as an attempt to discourage short-term capital inflows while maintaining liberal policies toward long-term inflows. Particularly, policies have been geared to increasing the cost of short-term inflows via non-interest-bearing reserve requirements and the introduction of greater uncertainty as regards the exchange rate. The authorities have also resorted to sterilized intervention in order to slow down real exchange rate appreciation and thus protect a development strategy whose main elements are export growth and diversification.

In the last couple of years, this policy mix has lost some of its efficacy. Banks and other borrowers appear to have shifted from short-term loans, which are heavily taxed, to borrowing at longer maturities, which are taxed at a much lower annual rate. Other leakages have developed as well, and financial capital inflows have risen to new highs.

In addition, up to very recently, since the market exchange rate has stuck to the floor of the band and the band has been lowered on several occasions, the Central Bank has effectively been managing a fixed exchange rate system. During 1996-97, despite heavy intervention in foreign exchange markets, the Central Bank had been unable to prevent a sharp real exchange rate appreciation. As of this writing (January 1998), the contagion effects of the Asian currency crisis had begun to make themselves felt. The large inflows of financial capital that had taken place in 1996-97 were beginning to give way to outflows, and the

¹ Nationals of the countries concerned have been observed to behave much in the same way as foreign portfolio investors. In fact, it is believed that, in Mexico, the first ones to lose confidence in the peso and to shift to dollar-denominated assets were Mexican investors. Thus the ultimate cause for exchange rate and asset price volatility appears to be the openness of the capital account and the ease of moving into and out of assets denominated in foreign currency, rather than just the behavior of foreign investors.

nominal exchange rate had started to depreciate. Thus there is a need to look at the system anew and seek new policy options to manage financial flows in the future so as to discourage excessive inflows and protect the economy from excessive volatility in exchange rates.

This paper studies the phenomenon of massive capital inflows in Chile in the 1990s, the policy approaches utilized to deal with it, and its effects on the economy. The next section describes the dimensions and composition of capital inflows. Section III discusses the policy approaches utilized to deal with inflows, section IV deals with impacts on the economy, and section V draws some policy lessons.

2. RECENT CAPITAL INFLOWS: MAGNITUDES AND COMPOSITION

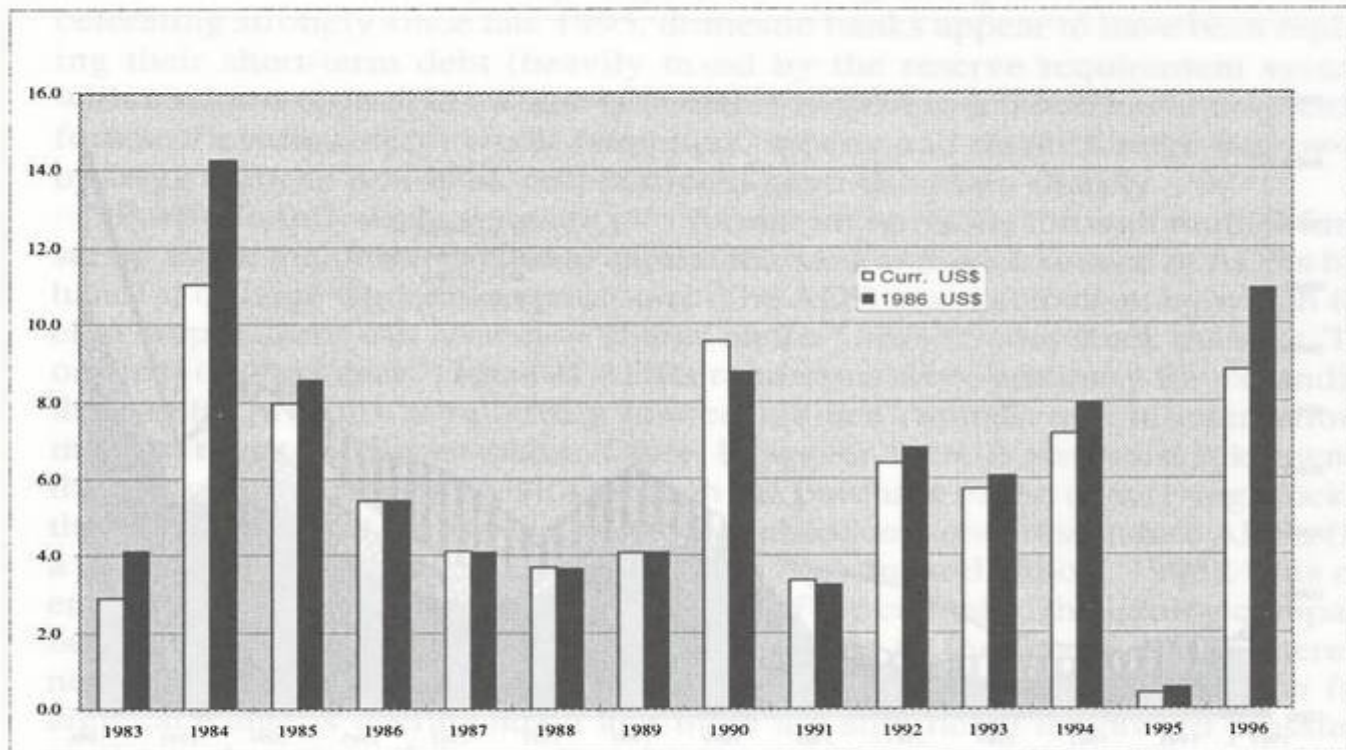
Detailed and (almost) consistent capital account data are available since 1983. Figure 1 shows total inflows as a share of GDP and figure 2 the breakdown of total flows into their private and public components.² Disaggregated US dollar data are shown in annex table 1. In the mid-1980s, and in spite of the debt crisis, capital inflows were relatively large, both in nominal terms and as a proportion of GDP.³ The disappearance of voluntary bank lending was partly compensated by substantial support from the multilateral financial institutions. Thus, public flows became the main form of international financial resources available to the Chilean economy during the 1980s.

The story of the return of private foreign capital inflows has been told before (see Agosin, 1995; Agosin, Fuentes, and Letelier, 1994; Ffrench-Davis, Agosin, and Uthoff, 1995), so that a brief summary will suffice. Private capital began to return to Chile in 1986, well ahead of the foreign capital surge to Latin America as a whole. The initial spurt was associated almost exclusively with the debt-equity swap program instituted by the authorities in the second half of 1985. It was not until 1989 that other private flows became significant (see figure 3). In part owing to the large exchange rate subsidy implicit in the swap scheme, the program was successful in attracting significant amounts of FDI in the form of swaps (Ffrench-Davis, 1990). The swap program stopped being used by foreign investors in 1991, mainly because the rise in the international price of Chilean debt made it no longer profitable to invest via debt swaps. However, FDI not associated with swaps continued to grow apace. Thus, FDI represents a large part of the capital inflow that has gone to Chile over the last decade or so. About 60 per cent of FDI through regular channels has gone into copper mining, the remainder concentrating in services. The bulk of investments made with debt-equity swaps went into the processing of natural resources, especially forestry and pulp and paper, and into services (see Riveros, Vatter, and Agosin, 1996; and Calderón and Griffith-Jones, 1995).

² Public flows are those that have the public sector as recipient. The creditor could be either public or private (e.g., the private international banks).

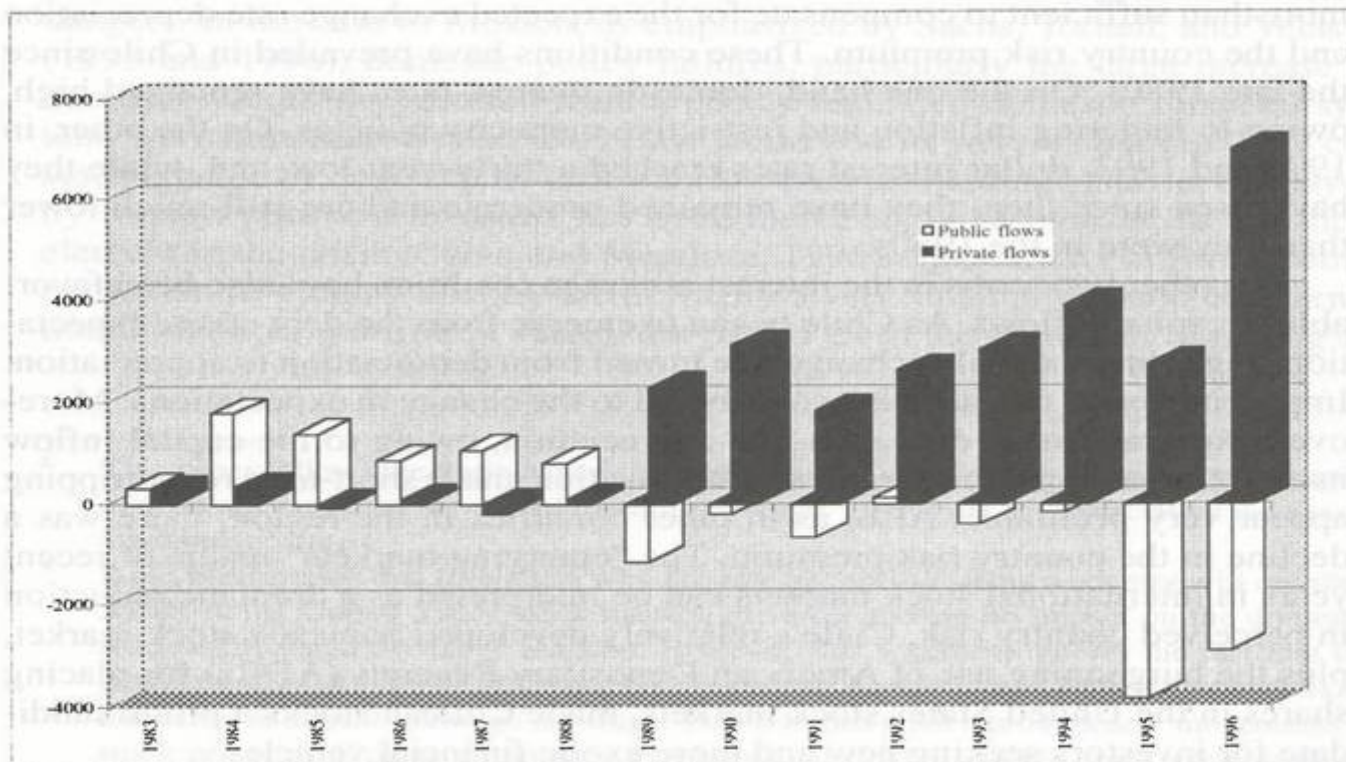
³ This partly reflects the effects of the debt crisis itself, which led to the dramatic real devaluations of the period 1982-85, with the consequent fall in the dollar value of Chilean GDP.

FIGURE 1
CAPITAL INFLOW, AS A SHARE OF GDP, 1983-96
 (Percentage)



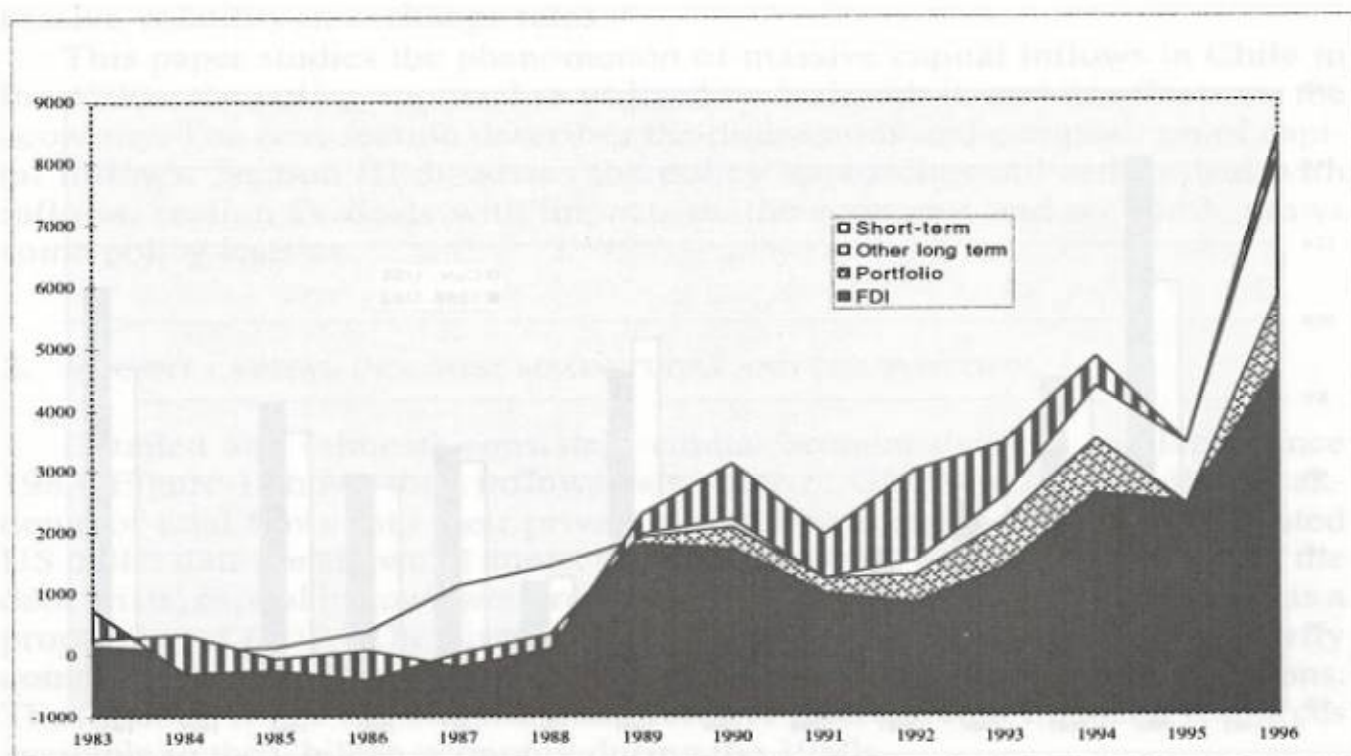
Source: Central Bank of Chile.

FIGURE 2
PRIVATE AND PUBLIC CAPITAL INFLOWS, 1983-96
 (million US\$)



Source: Central Bank of Chile.

FIGURE 3
COMPOSITION OF PRIVATE INFLOWS, 1983-96
(million of US\$)



Source: Central Bank of Chile.

As already noted, short-term private inflows have also figured prominently in the recent capital surge. For interest-arbitraging capital inflows to take place, the domestic interest rate must exceed the international rate by a margin that is more than sufficient to compensate for the expected exchange rate depreciation and the country risk premium. These conditions have prevailed in Chile since the late 1980s. On the one hand, domestic interest rates have remained high, owing to lingering inflation and restrictive monetary policies. On the other, in 1992 and 1993, dollar interest rates reached a thirty-year low, and, while they have risen since then, they have remained moderate and are still much lower than they were in the 1980s.

The other two terms in the interest arbitrage condition have also been favorable to capital inflows. As Chile began to emerge from the debt crisis, expectations regarding the real exchange rate turned from depreciation to appreciation. Improving terms of trade also contributed to the change in expectations. Moreover, expectations of exchange rate appreciation, owing to the capital inflow itself and to an improved current account position, made short-term roundtripping appear very profitable. Also, as in other countries in the region, there was a decline in the country risk premium. The "emerging markets" mania of recent years in international stock markets can be interpreted as a dramatic reduction in perceived country risk. Chile's relatively developed domestic stock market, plus the burgeoning use of American Depositary Receipts (ADRs) for placing shares in the United States stock markets, made Chilean stocks a prime candidate for investors seeking new and more exotic financial vehicles.

Short-term private flows were very important until 1993, when they began

to fall off as a consequence of the measures adopted to stem them (see below). They have practically disappeared in net terms. However, some of the decrease in short-term credits may be purely optical. Beginning already in 1994 but accelerating strongly since late 1995, domestic banks appear to have been replacing their short-term debt (heavily taxed by the reserve requirement system) with medium-term debt (which is in effect subject to a much lower tax). Other forms of medium-term credit (suppliers' credits and direct foreign borrowing by large Chilean non-bank corporations) have also risen sharply.

Portfolio inflows have taken two forms: investments through mutual funds set up in the major international capital markets and the issuance of ADRs by a handful of large Chilean corporations. The ADR is a mechanism by which foreign corporations can issue new shares on the United States stock markets. The original or ("primary") issue of ADRs represents an opportunity for expanding the capital of firms at relatively low cost, since capital costs in international markets tend to be lower than in Chile. However, there is also what is known as the "secondary" issue of ADRs through the purchase of the underlying stock in the Chilean market by foreigners and its subsequent conversion into ADRs (for a thorough discussion, see Ffrench-Davis, Agosin, and Uthoff, 1995). This operation does not constitute an enlargement of the capital of the issuing company but only a change in ownership from nationals to foreigners. While there is nothing intrinsically negative about these operations, at a moment when foreign exchange is overabundant and there are significant downward pressures on the exchange rate⁴, it may be necessary to discourage them. These shifts in ownership involve exposing the economy to an additional degree of uncertainty and volatility, since when foreign investors' mood changes they can easily reverse the operation and convert their ADRs into the underlying stock in national currency for sale on the domestic stock market.⁵

The Mexican and the more recent East Asian crises are illustrative of these dangers. In the case of Mexico, as emphasized by Sachs, Tornell, and Velasco (1995 and 1996), domestic policy failures, particularly the large increase in domestic credit that resulted from a poorly regulated domestic financial system, were important factors. Domestic credit booms were, in both of these crises, triggered by large capital inflows. However, the herding behavior displayed by foreign portfolio investors has been increasingly recognized as a critical element in the crisis (Calvo and Mendoza, 1996). Since assets of firms from a particular developing country are normally a very small proportion of international investors' portfolios, it may not pay to go to the trouble of obtaining all

⁴ This paper follows the Latin American convention of defining the exchange rate as units of domestic currency per unit of foreign exchange. Therefore, an appreciation is a downward movement.

⁵ It has been argued that foreigners who become pessimistic about a country will sell their ADRs in the United States stock market, therefore having no impact on the domestic stock and foreign exchange markets. However, this argument ignores the fact that the issuance of ADRs implies that stock prices in the domestic and United States markets must tend to equality through arbitrage. This is in fact what has happened: movements in stock prices of Chilean companies that have issued ADRs in US stock exchanges are highly correlated with those in the Santiago exchange.

the necessary information, which is very costly. Therefore, they tend to go on "signals". The positive signal at the end of the 1980s was that Mexico was undertaking market-oriented reforms (and entering NAFTA) that would, in the eyes of the international banks, raise returns on Mexican corporate assets. However, the rush to invest in Mexico created conditions which turned the positive signal into a negative one. In the case of Mexico, the "signal" for a reversal of the financial capital inflow was the notion that current account deficits had become "unsustainable" and that the exchange rate had appreciated "excessively". Of course, the large current account deficits and the appreciating exchange rate had been principally a consequence of the exogenous (and collective) behavior of foreign investors in the first place.

What this boils down to is that a large component of capital inflow, particularly portfolio capital, is not only volatile but is largely exogenous from the point of view of the recipient country. Even short-term credit has an exogenous component, since the so-called country risk premium has a large subjective element.

From a theoretical point of view, this analysis of the behavior of international financial markets casts doubt on the relevance of the notion of an equilibrium exchange rate. Equilibrium implies that there exists a set of stable "fundamentals" that determine the exchange rate and that are in turn independent of the exchange rate itself. What we have here is the possibility of multiple equilibria: an appreciated exchange rate with large capital inflows and a depreciated exchange rate with capital outflows. Moreover, there are dynamics involved: capital inflows appreciate the exchange rate, which in turn lead to a reversal of the direction of flows. This would suggest that there is a need for policies that reduce the more volatile components of capital inflows; and that the "fundamentals" are not independent of policies toward inflows.

While private flows have increased, public debt has been reduced, generating public outflows. During 1989-91, these net outflows were caused mainly by the counterpart public debt operations involved in debt-equity swaps. More recently, they represent mostly debt prepayments. These were particularly large since 1994. These prepayments have been undertaken to alleviate the large accumulation of international reserves by the Central Bank and to relieve pressures on foreign exchange markets.

Since 1991, several large Chilean corporations have been making direct investments abroad. These flows are now significant and account for almost 2 per cent of GDP.⁶ The destinations are mainly neighboring countries. The largest investments have been in electricity generation and distribution (mostly in recently privatized companies, first in Argentina and then in other Latin American countries), but other sectors such as light manufacturing and retailing are also represented (Calderón and Griffith-Jones, 1995).

It is important to place recent capital inflow in historical perspective. This is done in table 1, which shows total capital inflows in the period 1960-96 as a

⁶ Balance-of-payments data underestimate the size of these investments, because a large share of them is financed with funds raised on international capital markets and which never enter the country.

proportion of GDP, both in current prices and in 1986 prices.⁷ The transformation of the data to a constant-dollar basis was undertaken because the real exchange rate has experienced very wide fluctuations which distort the meaning of changes in the ratio in current dollars. In table 1, we use a periodization that we maintain below in the analysis of growth, saving, and investment data. We take the period before 1971 to reflect a sort of long-run steady state for the Chilean economy, before the wide policy swings that followed. The 1971-73 period corresponds to the socialist experiment. The period from 1974 to 1981 represents the first complete business cycle of the military government, during which the authorities introduced most of the free-market reforms with which Chile is associated. It begins with the deep recession of 1974-75 and ends with the peak of the boom of the late 1970s and early 1980s. The 1982-89 period coincides with the debt crisis and is also of a somewhat greater pragmatism in economic policy. The first three years are marked by depressed economic conditions, followed by quick recovery in 1986-89. This latter year also represents a cyclical peak. Finally, the period since 1990 corresponds to the return to democratic rule and is roughly coincident with the latest episode of foreign capital abundance. During this entire period, the economy has been expanding briskly and has been close to capacity output.⁸

TABLE 1
NET CAPITAL INFLOW, AS A PERCENTAGE OF GDP

	Current prices	1986 prices
1960-70	2.6	4.3
1971-73	1.2	2.1
1974-81	9.0	12.4
1982-89	5.3	6.3
1990-96 (a)	5.8	6.4

Source: Central Bank of Chile

(a) Excluding debt prepayments in 1995-96.

The data show that capital inflows, as a proportion of GDP, were substantially larger in the 1990-96 period than in the 1960s and, surprisingly, only slightly higher than during the debt crisis (1982-89). However, it should be taken into account that Chilean GDP is much larger now (by any measure, but

⁷ The constant price series was derived by deflating the dollar inflow series by an index of foreign prices faced by the Chilean economy. As for the denominator, GDP at constant 1986 prices was transformed to 1986 dollars using the 1986 peso-dollar exchange rate.

⁸ In 1990, there was a policy-induced slowdown in economic growth, as the economy was overheated (for electoral reasons) during the last year of military rule (1989). Thus one can distinguish a "mini" business cycle with a peak in 1989, a trough in 1990, and a subsequent peak in 1992, a year of exceptional economic growth.

certainly in dollar terms) than in previous periods. Consequently, in absolute terms, capital inflows are of a much larger order of magnitude. Moreover, in 1996 and 1997, total inflows soared, reaching levels that were much larger than earlier in the decade and accounting for over 10 per cent of GDP (in 1986 prices).

3. THE POLICY RESPONSE

In the 1990s the Chilean monetary authorities have deployed a wide array of policies to regulate the surge in capital inflows. On the one hand, the Central Bank has attempted to discourage short-term and speculative capital inflows while maintaining open access to the economy for FDI. On the other, it has sought to insulate partially the domestic economy from the impacts of capital inflows by intervening in foreign exchange markets so as to prevent an excess supply from unduly appreciating the real exchange rate and by sterilizing almost completely the monetary effects of the rapid accumulation of international reserves (see Ffrench-Davis, Agosin and Uthoff, 1995).

Two other policy factors have contributed to the successes achieved in managing capital inflow. On the one hand, fiscal policy has been very conservative. Chile is one of the few countries in the world running a public sector surplus during the 1990s, amounting to one to two per cent of GDP. The prudent stance of fiscal policy, which has been one of the factors behind the small current account deficit, has eased the task of the monetary authorities in the management of capital inflows and in preventing undue exchange rate appreciation. On the other hand, as a result of the 1982-83 banking crisis, prudential banking regulations were introduced and have been perfected over the years. This, again, prevented capital inflow from unleashing a lending spree by the commercial banks, which, in turn, eased the task of keeping the current account and the exchange rate within bounds.

Inflow management policies

The main consideration of exchange rate and inflow management policies has been to protect the growth model adopted by the authorities, which is one based on the expansion and diversification of exports. In order for exports to continue to be an engine of growth of the Chilean economy, the level and stability of the real exchange rate are crucial. This objective could have been placed in jeopardy if capital inflows caused excessive exchange rate appreciation and greater future volatility when the direction of net flows went into reverse.

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. The option chosen to make the long-term fundamentals prevail over short-term factors influencing the exchange rate assumes (correctly, in our view) that there exists an asymmetry of information between the market and the monetary authorities, because the latter have a better knowledge of the factors driving the balance of payments; and that they have 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 centered on a reference price linked to a bas-

TABLE 2
REGULATIONS ON CAPITAL MOVEMENTS IN CHILE

Foreign direct investment:

The only restriction on FDI inflows is the requirement that investments remain in Chile for a one-year period. There are no restrictions on profit remittances. FDI must be financed with a maximum debt component of 30 per cent (70 per cent equity). This limit was reduced from 50 per cent in October 1997.

Portfolio investment inflows:

Minimum amount of ADR issue is US\$ 25 million, reduced from US\$ 50 million in September 1994. Minimum risk rating of BBB required for non-financial firms and BBB+ for banking companies. 30 per cent reserve requirement on secondary ADRs since July 1995.

Other financial and portfolio inflows:

Subject to the 30 per cent reserve requirement. These include trade credits, foreign currency deposits, loans associated with FDI, and bond issues. Bond issuers face same quality enhancing restrictions as ADR issuers.

Foreign investment by the Chilean non-financial private sector:

Investors not wishing to have access to official foreign exchange market need only inform the Central Bank of their investments abroad. Those wishing to have access to the official market need permission from the Central Bank. This is not difficult to obtain. At the present time, the formal and free market exchange rates are equal.

Foreign investments of Chilean institutional investors:

Foreign investments by pension funds, mutual funds and life insurance companies are subject to certain limits as to the amounts and types of foreign assets that they can hold. Pension funds are allowed to hold up to 12 per cent of their total assets in foreign assets, and stocks are limited to one half of total foreign holdings.

Foreign investments by banks:

Foreign financial investments by commercial banks are limited to 25 per cent of bank capital and reserves and restricted to fixed income securities issued or guaranteed by foreign governments or Central Banks. Banks are authorized to use foreign currency deposits to finance trade among countries belonging to the Latin American Association for Integration (ALADI). Commercial banks may hold equity in foreign banks provided that their capital/asset ratio is at least 10 per cent.

Source: Adapted from Budnevich and Le Fort (1997).

ket of three currencies, in which the dollar, the deutsche mark and the yen are represented with weights associated to their share in Chilean trade.⁹

The excess supply of foreign exchange began in mid-1990. A summary of policy actions to tackle the excess supply can be found in table 2. Here we give

⁹ 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 (1996).

an analytical account relating policy changes to the events that elicited them. The changes taking place in global markets, the increasing international approval of Chilean economic policies, high interest rates in Chile, and a smooth transition to democracy stimulated a growing inflow of capital to Chile.

In June 1991, a non-interest bearing reserve requirement of 20 per cent was established on external credits (covering the whole range of foreign credits, from those associated with FDI to trade credits). The reserves had to be maintained with the Central Bank for a minimum of 90 days and a maximum of one year. At the same time, a stamp tax on domestic credit, at an annual rate of 1.2 per cent on operations of up to one year, was extended to apply to external loans.¹⁰ In July, an alternative to the reserve requirement was allowed for medium-term credits which consisted in making a payment to the Central Bank of an amount equivalent to the financial cost of the reserve requirement. The financial cost was calculated applying LIBOR plus 2.5 per cent (at an annual rate) 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 which exceeds one year, and, as discussed below, they are particularly onerous for flows at very short maturities.

With continuing capital inflows, over time the system of reserve requirements has been tightened and extended to most international financial transactions. Since May 1992, reserve requirements on external credits stand at 30 per cent and have been extended to time deposits in foreign currency and to purchases of Chilean stocks ("secondary ADRs") by foreigners.¹¹ The period during which the deposit must be maintained has been extended to one year, regardless of the maturity of the loan. The spread charged over LIBOR in the option of paying the financial cost of the reserve requirement is now 4 per cent, up from the original 2.5 per cent. In order to close a loophole through which the reserve requirements were being evaded, the authorities are now screening FDI applications and denying permission to enter capital into the country as FDI (which is exempt from the reserve requirement) when they determine that the inflow is in effect disguised financial capital. In such cases, foreign investors must register their funds as financial investments subject to the reserve requirement.

Since 1991 an attempt has been made to ease capital outflows as a way of alleviating downward pressures on the exchange rate (see Ffrench-Davis, Agosin, and Uthoff, 1995). In particular, Chilean pension funds have been allowed to invest abroad up to 12 per cent of their total assets. The policy was effective in encouraging significant flows of FDI and purchases of foreign firms by Chilean

¹⁰ This tax is not a Tobin tax, because the rate at which it is levied depends on the maturity of the loan. Thus, for example, a six-month loan must pay 0.6 per cent (half of the annual tax rate of 1.2 per cent). The Tobin tax is levied at the same rate on all loans, and this is the mechanism that discourages short-term flows (Tobin, 1978).

¹¹ 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 those funds that do not use a Chilean bank as intermediary, the reserve requirement can be imposed at the moment the asset is registered in the name of an agent with a foreign address. In order to be converted into ADRs, they must also go through registration with the Central Bank.

companies in neighboring countries (Calderón and Griffith-Jones, 1995). However, higher rates of return on financial assets in Chile than abroad and expectations of peso appreciation are still discouraging foreign financial investments by Chilean pension funds and recently authorized closed-end mutual funds for international financial investment. These investments have been rising slowly and can be expected to accelerate as domestic firms and pension funds obtain more and better information about foreign financial assets.¹² An immediate effect of liberalizing outflows has probably been to encourage additional inflows (Williamson, 1992; Labán and Larraín, 1993).¹³

Exchange rate policy

Exchange rate policy has also experienced substantial change over time. The use of a fixed nominal exchange rate 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 per cent. In 1983 through 1989 the authorities utilized a crawling peg, with a floating band of ± 2 per cent (widened to 3 per cent in 1988 and ± 5 per cent in mid-1989). The "official" rate was devalued daily, in line with the differential between domestic inflation and an estimate of external inflation. On a number of occasions, discrete nominal devaluations were added, helping to achieve a remarkable real depreciation following the 1982 crisis (119 per cent between 1981 and 1988).

Since early 1992, the exchange rate band has been gradually widened (with the band now standing at 12.5 per cent on either side of the official rate), and the official rate has been revalued discreetly on a number of occasions. The dollar peg of the official rate has also been 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 capital flows. In order to lower the floor of the band, the authorities have tinkered with the weights assigned to each currency, making the peg to a currency basket rather than the dollar less credible. In addition, they have factored in a 2 per cent annual appreciation into the calculation of the central rate, ostensibly to account for higher productivity growth in Chile than in its main trading partners.

¹² One obstacle to the liberalization of outflows by institutional investors is the lack of knowledge that regulators have of foreign financial assets. Thus the fear that liberalization will lead to a worsening of the asset quality of institutional investors has been a key factor explaining the gradual approach taken to the liberalization of outflows.

¹³ The approach to liberalizing capital outflows adopted by the authorities has been gradual. The essential idea is that a hasty financial liberalization risks leaving too many doors open for outflows, which could be massive in case of market nervousness and shifts to expectations of currency depreciation. This could make more difficult the achievement of exchange rate and macroeconomic stability. The recent international financial crises are clear examples of this.

Since the market exchange rate has been for several years close to the floor of the band, with very little variation in the nominal dollar-peso rate, the policy of maintaining an increasingly wider band has lost effectiveness in dissuading speculative capital inflows. Indeed, speculators observe that, whenever they bet on peso appreciation, the authorities wind up lowering the band.¹⁴ With expectations overwhelmingly in favor of currency appreciation, the large interest rate differential between the peso and the dollar (together with good prospects for large Chilean companies) has given foreign portfolio and short-term investors what amounts to a very profitable one-way bet, in spite of the toll they must pay for entering domestic financial markets (in the form of the reserve requirement). As already noted, disincentives to short-term capital inflows have not prevented a significant real appreciation of the currency in 1996-97 (see figure 4).¹⁵

The authorities have been granted a respite from exchange rate appreciation by the contagion effects of the Asian crisis. Incipient financial capital outflows and greater demand for dollar denominated assets by nationals have caused the market price for the dollar to rise, for the first time in five years, well above the floor of the band.

Effectiveness of measures

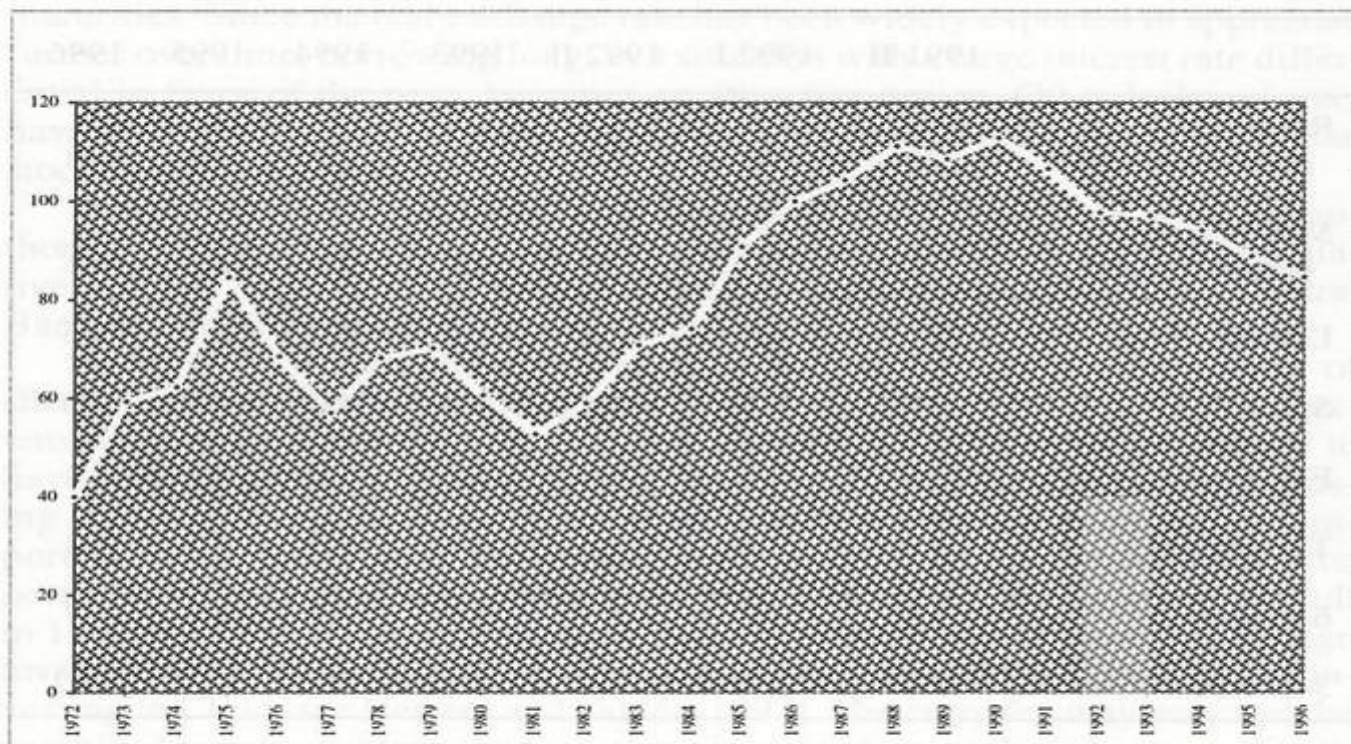
What have been the financial costs imposed on foreign borrowing by the system of reserve requirements and taxes on foreign lending? The total tax consists of the extra interest costs imposed by the reserve requirements and the tax on foreign credits. Table 3 shows the financial costs estimated in two ways: (1) assuming that medium-term borrowers, rather than leaving funds on deposit, pay the financial costs of the reserve requirement, in the manner contemplated in the regulations; and (2) by calculating the tax on foreign borrowing that is implicit in the reserve requirement mechanism. The derivation of the formulae is shown in shown in the appendix.

The calculations can be seen in table 3. As a result of the lengthening (in late 1992) of the reserve requirement holding period to a full year, regardless of the maturity of the financial transaction, the implicit tax rate on foreign borrowing increases dramatically as maturities shorten. This characteristic of the system, which likens it in its effects to a unilateral Tobin tax (Tobin, 1978), is the rationale behind the requirement that reserves be held for an entire year. Before

¹⁴ It should be remembered that official policy is to maintain a "crawling band", with the rate of crawl determined by the differential between Chilean and international inflation (minus the 2 per cent productivity differential). Thus the lowering of the floor of the band is consistent with a nominal market exchange rate that remains stuck around a constant level. Of course, the consequence is large real appreciation of the domestic currency.

¹⁵ It must be noted that Chile was coming out of a profound debt crisis which was accompanied by a sharp exchange rate depreciation. Consequently, there was space for some appreciation. However, as Chile was moving from a restricted to an overabundant supply of external savings, the authorities wanted to avoid an overadjustment of the exchange rate. One specifically troublesome feature is that, as expectations of foreign agents change from pessimism 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 while. Obviously, these are transitory rather than permanently higher levels of periodic inflows.

FIGURE 4
REAL EXCHANGE RATE, 1972-96
(1986=100)



Source: Central Bank of Chile.

its imposition, the implicit tax rate (on an annualized basis) was identical on transactions as short as a quarter (the minimum holding period up to late 1992) or as long as a year. These very large estimates of the implicit tax rate on short-term operations suggest that, if the regulations were not evaded, they must have discouraged short-term and portfolio flows.

How effective has been the reserve requirement (together with exchange rate management) in deterring short-term flows and preventing excessive exchange rate appreciation? There are two kinds of evidence to which one can resort. The first kind is qualitative. Chile faced a larger supply of external finance (relative to its GDP) than other countries in the region, because of its better economic performance and greater political stability. However, exchange rate appreciation and the current account deficit (as a share of GDP) have both been smaller than in other countries in the region that have been large recipients of foreign capital. In addition, FDI has been a much larger proportion of inflows in Chile than in other countries. Second, there is econometric evidence that policies towards the capital account have worked rather well. A recent study indicates that the combination of disincentives to short-term inflows with the reforms in the exchange rate régime, at least up to 1994, had been able to reduce significantly the inflow of short-term, interest-arbitrage funds (Agosin, 1995). As noted below, the situation has changed markedly in more recent years.

Some observers have claimed that the efficacy of measures to discourage capital inflows is only temporary, as private sector operators find ways to evade them (for an example of this literature, see Valdés-Prieto and Soto, 1996). In principle,

TABLE 3
CHILE: IMPLICIT TAXES ON FOREIGN BORROWING, 1991-96
(annualized rates)

	1991 II	1992 I	1992 II	1993	1994	1995	1996
Reserve requirement (%)	20	20	30	30	30	30	30
Min. reserve period (months)	3	3	3	12	12	12	12
LIBOR	5.5	4.5	3.6	3.4	5.0	6.1	5.6
Spread	2.5	2.5	2.5	4.0	4.0	4.0	4.0
Fin. costs	2.8	2.6	3.0	3.4	3.9	4.2	4.1
Tax, annual	2.9	2.6	3.3	3.2	3.9	4.3	4.1
6-month	3.0	2.7	3.3	5.0	6.2	7.2	6.7
3-month	3.0	2.7	3.4	8.0	11.0	13.2	12.2

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

Note: For formulas used to calculate the implicit tax, see appendix.

this can be done through several mechanisms. One is the underinvoicing of imports or the overinvoicing of exports. The second one is to delay payment for imports or accelerate export receipts. Thirdly, it is possible to bring in funds through the informal foreign exchange market. Fourth, there is also the possibility of registering short-term funds as FDI. However, this could be a costly option, since Chilean law requires that FDI remain in the country for one year before repatriation.¹⁶ Nonetheless, it was becoming a significant loophole, which, as already noted, the authorities have moved to close. Fifth, it is possible for agents to arrange back-to-back operations in which, for example, an agent pays for imports with a bank deposit in Chile rather than with foreign exchange; at the same time, the exporter is paid in foreign exchange by a bank in his country. All of these (and other forms of evasion, as well) are possible, but they are not costless, and some of them may have undesirable effects on tax liabilities. While some evasion is inevitable, there is no hard evidence that the measures to discourage short-term capital inflows have been massively evaded.

However, it is clear that the reserve requirement has tended to lose effectiveness over time in deterring banks and large corporations from obtaining credit in dollars for converting into pesos. As already noted, since 1995, as

¹⁶ It should be noted that 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.

short-term credits have fallen, medium-term borrowing has bulged. This is clearly the consequence of the way the reserve requirement works, because it is very onerous on short-term credits and much less so on those exceeding one year maturities. Since the real exchange rate has been widely expected to appreciate further over time, borrowing long, in a situation with a large interest rate differential in favor of the peso, becomes an attractive option. Other leakages may have developed as well, as witnessed by the very heavy inflows into the Chilean stock market in 1996-97.¹⁷

In addition, actual exchange rate management (in contrast to what the authorities claimed they were doing) has not contributed to discouraging speculative inflows. In spite of its formal adherence to a crawling band, the Central Bank has in effect been managing a quasi fixed nominal price for the dollar.

Since 1993, the secondary issue of ADRs has become a large source of short-term capital inflow with particularly volatile characteristics. Thus the extension of reserve requirements to these inflows in 1995 can be considered to have been an attempt to deal with an incipient problem which was already causing difficulties in policy management and which could become even more important in the future. It is likely that, in the absence of reserve requirements, portfolio inflows would have been much larger. However, after a temporary lull in 1995, they again bulged beginning in early 1996. It would seem that foreign investors are considering the reserve requirement as a sort option price for investing in Chile (see Herrera and Valdés, 1997). The entry fee may very well be perceived as reasonable in the face of positive fundamentals and a strong likelihood of further real exchange rate appreciation.

Another line of attack against the use of disincentives to short-term capital inflows has been to claim that, as regards their behavior, it is impossible to distinguish between capital inflows such as FDI or long-term lending, on the one hand, and short-term flows, on the other. In a recent article, Claessens, Dooley and Warner (1995) claim that balance-of-payments categories have little to do with the stability of flows themselves, long-term flows being just as likely to be unstable as short-term flows.¹⁸

In order to test their hypothesis for Chile, a series of tests were run to determine the degree of persistence of different types of private flows. In the first place, after determining the optimal lag for each type of flow,¹⁹ we did an autoregressive analysis of quarterly data on FDI, portfolio capital, long-term private borrowing, and short-term private borrowing for the period 1983-95. The results are shown in table 4, which reveals that, indeed, FDI and long-term borrowing have the most persistence, judging by the significance of their own lags. For FDI, the second and third quarterly lags are very significant predictors

¹⁷ But large financial inflows are inevitably bound to turn into outflows at some point. Contagion from the Asian crisis is now having that effect.

¹⁸ Part of the explanation for their result that FDI is just as likely to be volatile as short-term flows may stem from the fact that, for the countries that they chose, FDI flows are a very small percentage of total foreign financing, at least as reported by IMF statistics (which, by the way, sometimes seriously underestimate FDI). Fluctuations of small numbers tend to be larger than fluctuations of large ones.

¹⁹ The minimum lag which produces white-noise residuals.

TABLE 4
PERSISTENCE ANALYSIS FOR COMPONENTS OF PRIVATE
FLOWS, QUARTERLY DATA, 1983-95

Autoregressive equations

Lags (No. of quarters)	FDI	Portfolio	Private borrowing	
			Long-term	Short-term
1	0.201 (1.34)	0.156 (0.74)	0.643 (4.57)**	-0.158 (-1.09)
2	0.495 (3.61)**	0.055 (0.26)	-0.226 (-1.36)	-0.064 (-0.42)
3	0.491 (3.56)**	0.153 (0.72)	0.339 (2.63)**	0.241 (1.65)
4	-0.244 (-1.53)			
Constant (1.344)	47.255 (1.57)	77.695	-10.200 (-0.539)	118.24 (2.11)*
R ²	0.908	0.460	0.500	0.192
Other indicators				
Coefficient of variation (%)	84.2	118.5	-568.4	338.4
R ² of time trend	0.840	0.438	0.148	0.114

* Significant at the 5 % level

** Significant at the 1 % level

of contemporaneous levels; for long-term private borrowing, it is the first and third lags. On the other hand, for portfolio flows and for short-term private borrowing, there just is no persistence at all.

Secondly, we calculated the coefficient of variation and the R²s of the time trends of the same four categories of flows (also shown in table 4). The coefficients of variation are indicators of the variability of flows around their mean; and 1 - R² is an indicator of their variability around their time trend. On both counts, FDI is more stable than short-term borrowing and portfolio flows.

Third, we ran unit root tests for FDI and other net capital inflows in real terms for the longish period of 1960-95.²⁰ It is interesting that FDI turns out to have a

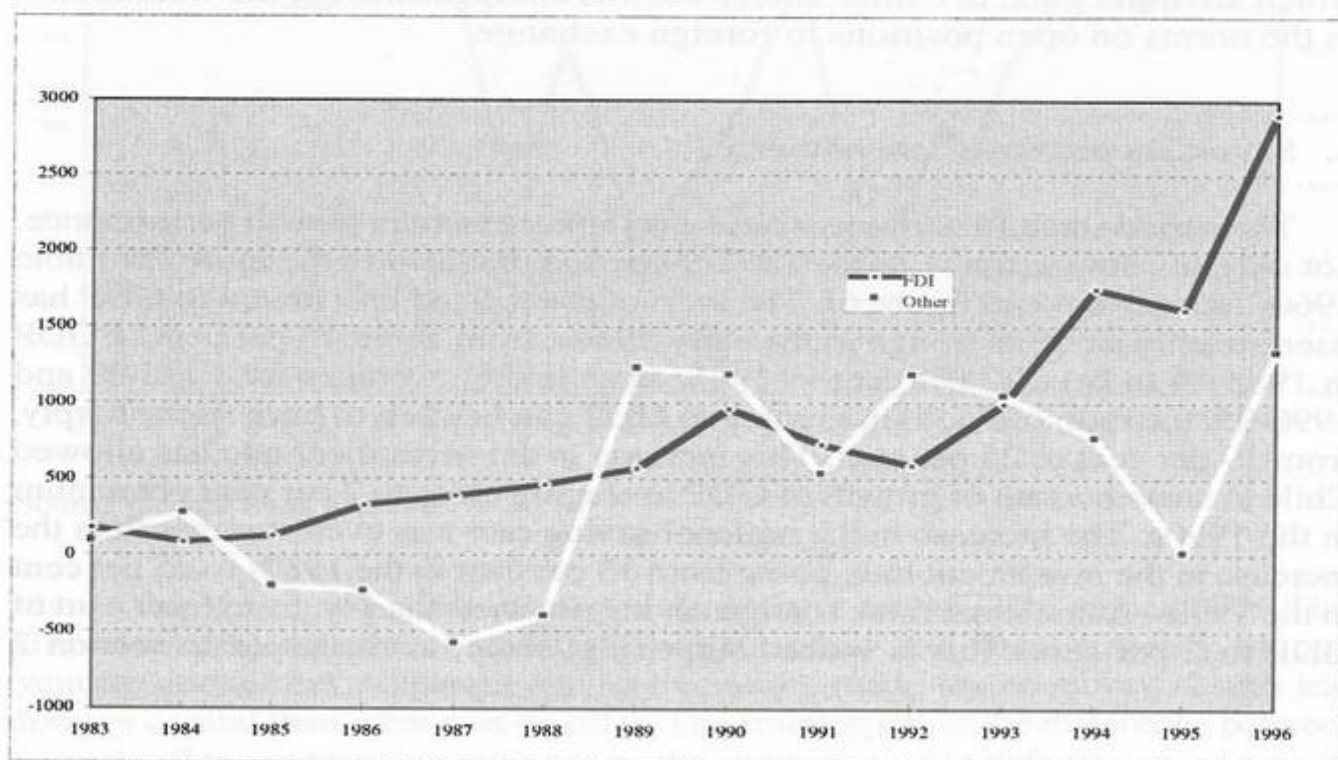
²⁰ "Real" flows are calculated deflating nominal dollar flows by the index of foreign prices estimated by the Central Bank of Chile for the period 1977-95. For earlier years, the index of foreign prices was spliced backward to 1960 using the index of foreign prices calculated by Ffrench-Davis (1984).

unit root, while other flows are stationary (without constant or trend). Therefore, at least in Chile, FDI behaves as a "permanent" variable and other flows as "transitory" disturbances. The behavior of these two series is shown in figure 5.

Thus we can conclude that FDI is considerably less volatile than other kinds of capital inflows, and that it is worthwhile to target policies on the latter. This is what the Chilean authorities have attempted to do, with more success in the early years of application than more recently. Undoubtedly, short-term and portfolio inflows would have been much larger in the absence of the reserve requirement. Second, sterilized intervention in foreign exchange markets prevented undue exchange rate appreciation and a consumption boom, thus keeping the current account deficit within reasonable bounds. However, both foreign capital inflow and exchange rate management policies are now due for an overhaul.

The policy mix used up to now has also had important costs. The accumulation of large volumes of foreign exchange reserves imposes a social cost on the economy, since the returns on these assets have been inferior to the interest payments on the Central Bank liabilities that have been issued to sterilize the monetary effects of reserve accumulation, generating large losses for the Central Bank (estimated at about one half of a percentage point of GDP *per annum*). The disincentives on short-term capital inflow have lessened these costs and have eased the task of sterilizing the monetary consequences of reserve accumulation.

FIGURE 5
FDI AND OTHER PRIVATE FLOWS, 1983-96
(millions of 1986 US\$)



Source: Central Bank of Chile.

The strengthening of banking supervision

As already noted, a tough bank supervision and regulatory environment prevented excess liquidity of banks from fueling a consumption boom and a deterioration in the quality of bank assets (as clearly took place in Mexico). This was a legacy of the banking crisis of 1982-83, in the aftermath of the preceding foreign capital surge, which led to a virtual collapse of the entire banking system.²¹ Some elements of prudential supervision adopted over the years since then include the continuous monitoring of the quality of bank assets; strict limits on lending by banks to related firms; the existence of automatic mechanisms of bank equity adjustment when the market value of equity falls below the limits required by the regulators; and faculties to freeze banking operations, impede fund transfers outside of troubled banks, and restrict the payment of dividends to institutions that fail to comply with capital adequacy requirements (Aninat and Larraín, 1996). Banks are not allowed to open subsidiaries abroad, although this may be relaxed in the near future. Chilean financial markets have also acquired a depth that allows for the orderly infusion of new funds and also for their withdrawal, without affecting the quality of bank portfolios (Larraín, 1995).

Capital adequacy ratios along the lines of the 1988 Basle accord have been incorporated in the new banking law that is now in Congress. At present, minimum legal requirements are below the Basle norms, but banks' capital, in practice, is well above the Basle norm of 8 per cent. In addition, the Central Bank imposes limits on banks' open positions in foreign exchange, but these are still fairly crude, in that they do not differentiate between loans made in foreign currency to firms that earn foreign currency and to firms whose earnings are in domestic currency. Neither do these limits differentiate as between different foreign currencies. Currency risk is an aspect of credit risk evaluation systems, which are quite good in Chile. Therefore, this compensates for the weaknesses in the norms on open positions in foreign exchange.

4. SAVING, INVESTMENT AND GROWTH

The period since 1989 marks a clear-cut improvement in growth performance, not only in comparison with the 1971-89 period, but also to the more favorable 1960s (see table 5 and figure 6). The ratio of gross fixed investment to GDP has risen steadily since its trough in the early 1980s, from about 15 per cent of GDP in 1983-84 to over 27 per cent in 1995. Even taking averages for 1982-89 and 1990-95, the ratio of fixed investment to GDP can be seen to have risen sharply, from 19 per cent to 25 per cent. This increase in the investment rate has allowed Chile to sustain a rate of growth of GDP averaging close to 7 per cent per annum in the 1990s. The increase in the national saving rate was even stronger than the increase in the investment rate, going from 13 per cent in the 1980s to 25 per cent in the 1990s. At the same time, foreign saving declined sharply, from 6 per cent of GDP to 2 per cent. This is indeed surprising, since, as discussed in section 2

²¹ For a lucid description of that crisis, see Díaz-Alejandro (1985).

TABLE 5
CHILE: INVESTMENT, SAVING AND GROWTH INDICATORS, 1960-95
(as a percentage of GDP in 1986 prices)

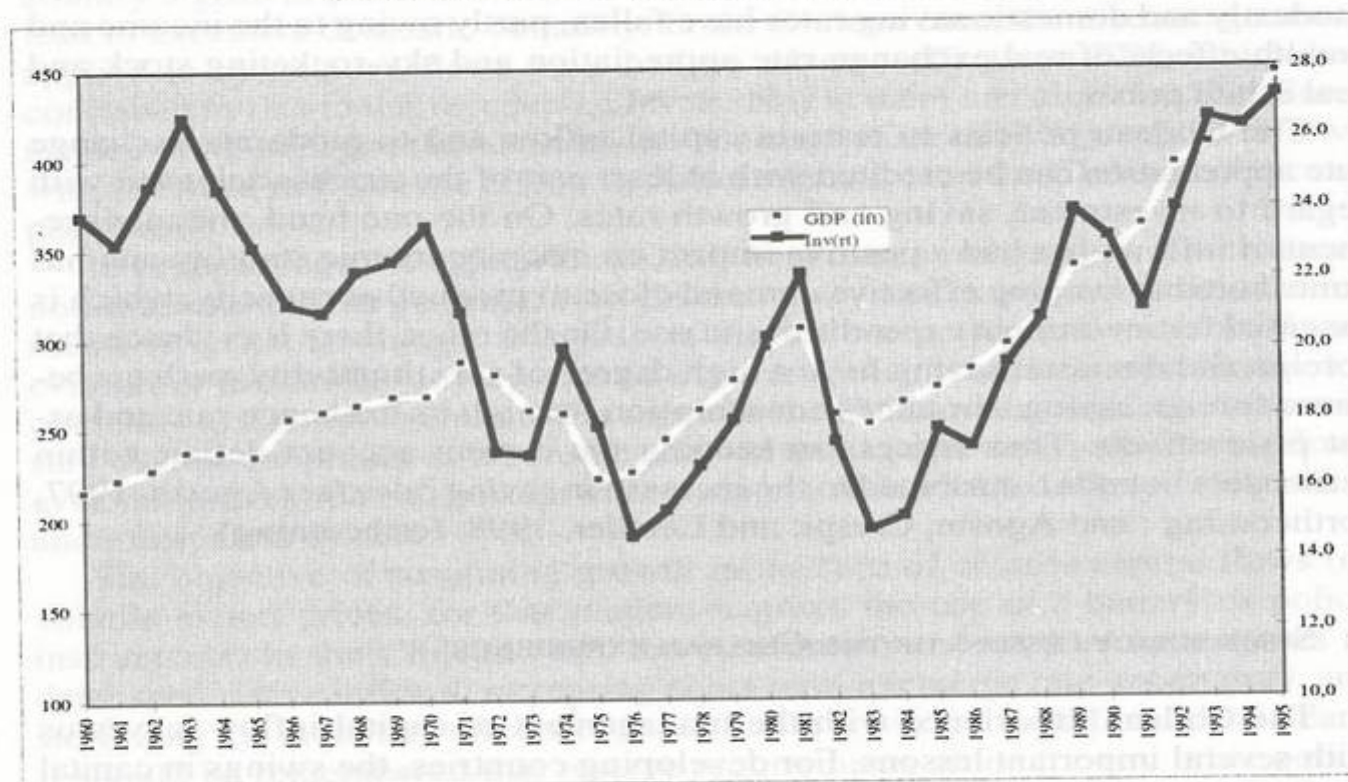
	Gross fixed investment	Gross investment	Machinery & equipment	Public investment (a)	Private investment (b)	National saving	Foreign saving	Per capita GDP growth
1960-70	23.2	25.1	11.1	6.8	16.5	21.9	3.2	2.2
1971-73	18.4	16.9	8.5	3.2	15.2	13.5	3.4	-1.1
1974-81	18.4	22.2	11.0	3.7	14.6	16.3	5.9	1.2
1982-89	18.7	19.8	8.9	2.7	16.0	13.4	6.4	1.1
1990-95	24.9	28.5	13.7	2.7	22.2	25.2	2.3	4.7

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

(a) Central government investment expenditures.

(b) Gross fixed investment minus central government investment. Includes investment by public enterprises.

FIGURE 6
GDP PER CAPITA AND GROSS FIXED INVESTMENT
(GDP in 1986 CHP, investment as % of GDP)



Source: Central Bank of Chile.

above, foreign capital inflow averaged about 6 per cent of GDP in the 1990s. This shows that the policies of sterilizing capital inflow and fiscal austerity, by preventing undue real exchange rate appreciation, made the economy absorb less foreign capital than what was on offer. The counterpart of the difference between capital inflow and foreign saving (i.e., the current account deficit) was, of course, the accumulation of foreign assets by the Central Bank.

The long-term behavior of saving and investment rates shows much less spectacular increases. During the 1990s, they barely exceed the averages achieved during the 1960s, and it is only since 1993 that the investment rate has overtaken its 1963 peak. The real difference between the earlier and the later periods is in the behavior of private and public investment.²² In the light of the long-run data, it is not the most recent period that appears as an outlier, but the periods between 1971 and 1989, which exhibit strong declines in domestic saving and investment rates. There has been a clear downward trend in public investment, compensated only in the 1990s by a vigorous increase in private investment. The main culprit for the fall in public investment has been the decline in investment in infrastructure, schools, hospitals and the like. This is perhaps one of the weakest links in the so-called "Chilean model": In the long run, steady increases in international competitiveness (the basis of the growth strategy for over two decades) require *increases* in investment in social and economic infrastructure, not declines.

Nonetheless, the rise in domestic saving and investment rates since their troughs in the mid-1980s has been remarkable. Moreover, they have taken place at the time of strong capital inflow and even stronger increases in the availability of foreign capital to the Chilean economy. In other countries (e.g., Mexico or Argentina), in the face of large capital inflows, investment rates have risen modestly and domestic saving rates have fallen, partly owing to the income and wealth effects of real exchange rate appreciation and sky-rocketing stock and real estate prices.

The Chilean policies to restrain capital inflow and to moderate exchange rate appreciation can be credited with at least part of the success achieved with regard to investment, saving and growth rates. On the one hand, the management of inflows has had a positive impact on macroeconomic stability and has contributed to keeping effective demand close to productive capacity, which is essential for investment expenditures to rise. On the other, there is evidence that foreign and domestic saving have a high degree of substitutability, perhaps because foreign saving stimulates consumption through its exchange rate and asset price effects. Thus success in keeping the current account deficit within reasonable bounds contributed to the increase in saving rates (see Agosin, 1997, forthcoming ; and Agosin, Crespi, and Letelier, 1998, forthcoming).

5. SOME POLICY LESSONS OF THE CHILEAN EXPERIENCE

The Chilean experience with the management of capital inflow leaves us with several important lessons. For developing countries, the swings in capital flows can be of extraordinary magnitude relative to the size of their economies. Over the last 15 years, Latin American countries have gone from the Scylla of the debt crisis (and the shorter-lived Tequila crisis) to the Carybdis of foreign

²² To obtain private investment, central government investment (excluding that of public enterprises) was subtracted from gross fixed capital formation. Therefore, private investment is here defined as corporate gross capital formation, including the investment of public corporations, plus household investment in housing.

capital abundance during most of the 1990s. Totally passive policy stances will inevitably result in enormous volatility in key domestic prices (exchange rates and interest rates) and economic aggregates. By depressing investment, these fluctuations have adverse effects on long-term growth.

Chile has held on to steady policies toward capital inflow and exchange rate management. By and large, these policies appear to have discouraged the more volatile forms of capital inflow and have prevented excessive exchange rate appreciation. However, in 1996-97, financial capital inflows overwhelmed the capacity of the authorities to limit them with the policy tools they were using. Inflows were very large relative to GDP (over 10 per cent), and the Central Bank was unable to prevent a significant real appreciation of the peso, in spite of heavy purchases of foreign exchange.

Now the economy is experiencing the down side of large financial inflows: outflows of financial capital began in late 1997 and are accelerating in early 1998. The nominal exchange rate has depreciated by over 10 per cent. This most recent episode is clear evidence that a strengthening of the instruments to deal with financial inflows is necessary in order to face future surges.

Contrary to conventional wisdom, it is possible to discriminate between flows which are stable, of a long-term nature, and that do contribute to the country's growth (such as FDI) and those which are basically speculative and lead to excessive domestic volatility. In the Chilean case, the discouragements applied to speculative flows have had no adverse effects on FDI, which has continued to rise to unprecedented levels. Nor is there any sign that FDI flows are declining owing to the Asian crisis. The large share of FDI in capital inflows will, in effect, mitigate the effects of Asian contagion on the Chilean balance of payments.

In order to regulate capital flows, it is best to use instruments which are as non-discretionary as possible. Non-discretionary and (semi) automatic instruments have the advantage that they minimize corruption and evasion. Some evasion is inevitable: any system of discouragements makes it profitable for operators to attempt to circumvent them. In the Chilean case, it has been necessary to close loopholes as it became obvious that agents were using them. However, circumvention can be kept to a minimum with a well-designed, automatic and transparent system.

The objective of sustaining growth in the face of volatile capital flows (or volatile export prices, for that matter) requires the use of a battery of policy instruments. In the Chilean case, the combination of tax-like instruments to deter speculative inflows, increasing short-term exchange rate uncertainty, and sterilizing the monetary effects of capital inflow worked well for several years. It should be remembered that reserve requirements alone (or any other policy that increases the cost of external borrowing), while clearly useful, do not deter speculative attacks when large exchange rate changes are anticipated. Thus a policy package, rather than a single policy tool, is desirable.

Between mid-1995 and the end of 1997, non-FDI private inflows had again risen to unsustainable levels; and the ensuing real exchange rate appreciation had contributed to a widening of the current account deficit. In 1996-97, capital inflows had risen to about 10 per cent of GDP, and the current account deficit now stands at 6 per cent of GDP. Although contagion from the Asian crisis has provided some respite from exchange rate appreciation and foreign currency

abundance, it is likely that the massive capital inflows will continue to be a problem for policymakers, as investors differentiate as between different emerging markets. Thus there is a need to consider new options both with regard to capital inflow management and to the exchange rate régime.

One possibility is to raise substantially the withholding tax on interest rate remittances, which now stands at 4 per cent. Raising it to 30-35 per cent would effectively discourage foreign borrowing at all maturities.²³ With respect to portfolio inflows, the period of application of the reserve requirement could be increased to two years, in order to raise the cost of financial investments in Chile.

As regards the exchange rate régime, the Central Bank must show a greater commitment to its crawling band policy and prevent the exchange rate from sticking to the floor of an easily punctured band. If it wishes to have credibility in its commitment to short-term exchange rate uncertainty, the Central Bank must keep the exchange rate well within the band and must practice vigorous dirty floating within the band. The weights assigned to each currency in the basket used to determine the central rate must reflect long-term real factors and must not be arbitrarily changed to achieve short-term exchange rate objectives.

While a large component of the foreign capital on offer to the Chilean economy is transitory, it is likely that the reduction in country risk perceptions and the long-term improvement in growth prospects may be leading to a higher level of permanent capital inflow. If this is the case, it may be necessary to adopt measures that promote capital outflow or reduce net inflows while guarding against potential moral hazards. One such measure could be to allow pension funds to take up subscriptions in the capital increases of Chilean corporations that are investing abroad. At present, most of the funding is coming from the issue of ADRs in the New York market. If the expansion of these firms' capital were to take place through local placements, this would in effect reduce net capital inflows, without incurring in undue risks for the ultimate beneficiaries (the workers) because issuing corporations are well known to regulators and have a high rating in capital markets.

FDI projects of the nature undertaken in Chile are large relative to the size of the economy. In addition, they are lumpy, with periods of heavy investments followed by others in which investment essentially disappears. This is typically an upward stock adjustment problem, which may involve heavy net inflows of FDI over a period of time. It may pay countries that suddenly become attractive to multinationals to try to spread out over time the adjustment to higher stocks of FDI. This can be done through the auctioning of FDI rights or some queue-

²³ The reserve requirement can be seen as an alternative to a withholding tax, since both have the same effect. However, the reserve requirement mechanism appears to have developed loopholes that are proving increasingly difficult to close. It might also be reasonably argued that interest rates are too high in Chile, and that this is one of the causes for excessive capital inflows. Unfortunately, there is not much room for lowering interest rates, since the economy has been operating at close to potential output for several years. Nor is it easy to tighten fiscal policy. The need to increase spending on health and education precludes any significant decline in public expenditure; on the other hand, raising taxes is politically infeasible at the present time.

ing mechanism for foreign investors. It also suggests that countries in this situation can be selective with FDI, giving priority to projects with large development payoffs.

A large proportion of FDI is going into copper mining. Private mining companies pay income taxes at the same rate as any other foreign firm incorporated in Chile (a 15 per cent profit withholding tax, applied against a 35 per cent tax when dividends are remitted abroad). This is one reason why the Chilean mining sector is so attractive to foreign companies. It would be entirely appropriate to levy a tax on the economic rent generated in mining. This can be done with a profit surtax or a tax per ton of mineral extracted. Of course, the tax would be paid by both foreign and domestic companies in the mining sector.

In addition, since taxes on interest remittances are much lower than taxes on dividends, foreign investors have tended to bring in capital in the form of loans from parent companies (and international capital markets), rather than as equity. Thus the effective tax rate they are actually paying is extremely low, which encourages excessive inflows. This would be corrected if, as proposed above, the interest remittance tax is raised to a rate closer to that on dividends.

APPENDIX

CALCULATING THE IMPLICIT TAX IN CHILEAN DISINCENTIVES TO CAPITAL INFLOWS

There are two main mechanisms through which the Chilean monetary authorities have sought to discourage capital inflow: (1) a tax of 1.2 per cent per year (proportionately less on shorter periods) on all foreign loans; and (2) the imposition of 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 to require that, regardless of the maturity of the loan, reserves had to be maintained on deposit for a full year.

Therefore, there are three elements which raise the cost of foreign borrowing to Chilean agents: (1) in order to constitute the reserve requirement, they must borrow funds in excess of what they need; (2) they must pay the foreign credit tax; and (3) in cases of loans with maturities shorter than one year, they must maintain reserves on deposit for longer than the maturity of their loan.

We examine three cases. Case I is the simplest and assumes that the foreign loan is for one year and, of course, the reserve requirement is also for one year. Case II assumes that the loan is for a period shorter than one year and that reserves must be maintained for the same period as the loan (essentially, the regulations in force from June 1991 until October 1992). Case III assumes that the loan is for a fraction of the year and that reserve requirements must be left on deposit for a full year (the regulations since October 1992).

Case I

In this case, 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 (r) and the international interest rate (r):

$$\tau_1 = \hat{r} - r \quad (\text{A1})$$

and

$$\hat{r} = \frac{r+t}{1-e} \quad (\text{A2})$$

where t = fixed tax rate (in our case, 1.2 per cent)
 e = reserve requirement rate

Therefore,

$$\tau_1 = \frac{r+t}{1-e} - r = \frac{t+re}{1-e} \quad (\text{A3})$$

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:

$$fc = e * (r + s) + t \quad (A4)$$

where s = Central Bank spread. This formula is valid only for medium and long-term borrowing, because short-term borrowers do not have the option of paying the financial costs and must constitute reserve requirements.

Case II

In this case, we work with an interest rate (i) for a shorter period that is related to the annual interest rate (r) by the following compound interest rule:

$$r = (1 + i)^n - 1 \quad (A5)$$

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

In this case,

$$\tau_2 = \hat{r}_2 - r \quad (A6)$$

where

$$\hat{r}_2 = \left(1 + \frac{i + t/n}{1 - e}\right)^n - 1 \quad (A7)$$

Case III

In this case, the non-interest bearing reserve deposit must be left for a full year, while the loan itself is for a fraction of the year. Again, we calculate an interest rate (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:

$$\hat{i}_3 = \frac{i + t/n}{1 - e} + \frac{e}{1 - e} [(1 + i)^{n-1} - 1] \quad (A8)$$

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

$$\hat{r}_3 = (1 + \hat{i}_3)^n - 1 \quad (A9)$$

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:

$$\tau_3 = \hat{r}_3 - r \quad (A10)$$

ANNEX TABLE I
NET CAPITAL INFLOW INTO CHILE, 1983-97
(In million US\$)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997a
FDI	168	70	130	392	1132	1436	1822	1726	894	476	993	1683	1807	3622	3016
Regular inflows (b)	171	80	116	329	431	566	727	1395	1057	885	1479	2712	2708	4784	4116
Debt swaps	-	-	16	66	707	886	1105	339	-40	-32	-55	-104	-214	-82	-1
Outflows	-3	-11	-2	-3	-7	-16	-10	-8	-122	-378	-431	-926	-687	-1079	-1099
Portfolio flows	-	-	-	-	-	-	87	359	225	452	730	908	-61	1101	2027
Inflows	-	-	-	-	-	-	87	359	225	452	820	1259	35	1239	2179
ADRs	-	-	-	-	-	-	-	105	-31	282	790	1273	32	863	1635
Outflows	-	-	-	-	-	-	-	-	-	-	-90	-351	-96	-137	-152
Private long- and medium-term credits	562	-371	-357	-782	-1105	-1112	66	136	-7	227	434	831	1001	2604	2322
Suppliers' credits	...	...	...	...	...	...	134	86	85	77	129	403	265	651	610
Banking sector	...	...	...	...	...	...	67	164	87	386	448	760	970	2982	2863
Non-bank borrowing	...	...	...	...	...	...	18	32	61	32	249	389	574	610	217
Amortizations	...	...	...	...	...	...	-153	-145	-240	-269	-392	-721	-808	-1638	-1368
Short-term private inflows	-473	635	163	481	-226	-230	310	895	728	1484	881	495	-7	-344	-1846
Trade credits	-518	167	-66	220	136	328	658	650	-398	1818	165	221	-466	-493	-1558
Banking sector	-99	1	42	-47	-99	-3	105	251	400	-217	207	177	-843	-74	-1508
Informal market	75	280	257	85	-172	-445	-332	137	429	17	603	675	1568	1140	1430
Errors and omissions	68	188	-70	223	-91	-110	-121	-143	298	-134	-94	-578	-266	-917	-210
Public sector flows	320	1794	1378	872	1053	805	-1135	-204	-675	111	-415	-166	-3839	-2886	-355
Debt prepayments	-	-	-	-	-	-	-	-	-	-	-	-	-1391	-2253	-
Total net inflows	576	2128	1314	964	854	899	1149	2912	1166	2749	2623	3751	-1098	4098	5164
Excl. debt prepayments	576	2128	1314	964	854	899	1149	2912	1166	2749	2623	3751	293	6352	5164

Source: Central Bank of Chile.

(a) First three quarters.

(b) Includes credits associated with FDI.

REFERENCES

- Agosin, M. R. (1997). "Entrada de Capitales y Desempeño de la Inversión: Chile en los Años Noventa", in R. Ffrench-Davis and H. Reisen (eds.). *Fujos de Capital e Inversión Productiva: Lecciones para América Latina*, Mc Graw-Hill, Santiago.
- Agosin, M. R. (1995). "El Retorno de los Capitales Extranjeros a Chile", *El Trimestre Económico*, No. 248, October-December.
- Agosin, M. R., G. Crespi, and L. Letelier (1998). "Explaining the Increase in Saving in Chile", Network of Economic Research Centers, Inter-American Development Bank, Washington, D.C.; forthcoming in a book to be edited by M. Gavin and R. Hausmann.
- Agosin, M. R., R. Fuentes and L. Letelier (1994). "Los Capitales Extranjeros en las Economías Latinoamericanas: Chile", in Ocampo.
- Aninat, E. and C. Larraín (1996). "Flujos de Capitales: Lecciones a Partir de la Experiencia Chilena", *Revista de la CEPAL*, No. 60, December.
- Budnevich, C. and G. Le Fort (1997). "Capital Account Regulations and Macroeconomic Policy: Two Latin American Experiences", in UNCTAD, *International Monetary and Financial Issues for the 1990s*, Vol. VIII, New York and Geneva.
- Calderón, A. and S. Griffith-Jones (1995). "Los Nuevos Flujos de Capital Extranjero en la Economía Chilena: Acceso Renovado y Nuevos Usos", *Serie Desarrollo Productivo*, No. 24, CEPAL, Santiago.
- 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*, Vol. 40, No.1, March.
- Calvo, G. A. and E. G. Mendoza (1996). "Petty Crime and Cruel Punishment: Lessons from the Mexican Debacle", *American Economic Review*, Vol. 86, No. 2, May.
- Claessens, S., M. P. Dooley, and A. Warner (1995). "Portfolio Capital Flows: Hot or Cold?", *The World Bank Economic Review*, Vol. 9, No. 1, January.
- Devlin, R., Ffrench-Davis, R., and S. Griffith-Jones (1995). "Surges in Capital Flows and Development: An Overview of Policy Issues", in Ffrench-Davis and Griffith-Jones (1995).
- Díaz-Alejandro, C. F. (1985). "Goodbye Financial Repression, Hello Financial Crash", *Journal of Development Economics*, Vol. 19, No. 1/2, September-October.
- Elbadawi, I. A. (1994). "Estimating Long-Run Equilibrium Real Exchange Rates", in J. Williamson (editor). *Estimating Equilibrium Exchange Rates*, Institute for International Economics, Washington, D.C.
- Elbadawi, I. A. and R. Soto (1994). "Capital Flows and Long-term Equilibrium Real Exchange Rates in Chile", World Bank, Washington, D.C., manuscript.
- Ffrench-Davis, R. (1984). "Índice de Precios Externos: Un Indicador para Chile de la Inflación Internacional", *Colección Estudios CIEPLAN*, No. 13, June.
- Ffrench-Davis, R. (1990). "Debt-equity swaps in Chile", *Cambridge Journal of Economics*, Vol. 14, March.

- 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*, Lynne Rienner Publishers, Boulder.
- Helpman, E., L. Leiderman, and G. Bufman (1994). "A New Breed of Exchange Rate Bands: Chile, Israel and Mexico", *Economic Policy*, No. 19, October.
- Herrera, L. O. and R. Valdés (1997). "Encaje y Autonomía Monetaria en Chile", Central Bank of Chile, Santiago, manuscript.
- International Monetary Fund (1995). "Evolution of the Mexican Peso Crisis", in *International Capital Markets - Developments, Prospects, and Policy Issues*, Washington, D.C., August.
- Labán, R., and F. Larraín (1993). "Can a Liberalization of Capital Outflows Increase Net Capital Inflows?", *Documento de Trabajo No. 155*, Instituto de Economía, Pontificia Universidad Católica de Chile, Santiago.
- Larraín, C. (1995). "Internacionalización y Supervisión de la Banca en Chile", *Estudios Públicos*, No. 60, Spring, Santiago.
- Ocampo, J. A., ed. (1994). *Los Capitales Extranjeros en las Economías Latinoamericanas*, Red de Centros de Investigación Económica Aplicada, FEDESARROLLO y Banco Interamericano de Desarrollo, Bogotá.
- Repetto, A. (1994). "Políticas Macroeconómicas y Tipo de Cambio Real: Chile, 1980-91", *Colección Estudios CIEPLAN*, No. 39, June.
- Riveros, L., J. Vatter, and M. R. Agosin (1996). "La Inversión Extranjera Directa en Chile, 1987-93: Aprovechamiento de Ventajas Comparativas y Conversión de Deuda", in M. R. Agosin (ed.). *Inversión Extranjera Directa en América Latina: Su Contribución al Desarrollo*, Fondo de Cultura Económica, Santiago.
- Sachs, J., A. Tornell, and A. Velasco (1995). "The Collapse of the Mexican Peso: What Have We Learned", *Economic Policy*, No. 22.
- Sachs, J., A. Tornell, and A. Velasco (1996). "Financial Crises in Emerging Markets: The Lessons from 1995", *Brookings Papers on Economic Activity*, No. 1.
- Tobin, J. (1978). "A Proposal for International Economic Reform", *Eastern Economic Journal*, Vol. 4, July-October.
- Valdés-Prieto, S. and M. Soto (1996). "New Selective Capital Controls in Chile: Are They Effective?", Pontificia Universidad Católica de Chile, Santiago, manuscript.
- Williamson, J. (1992). "Acerca de la Liberalización de la Cuenta de Capitales", *Estudios de Economía*, Vol. 19, No. 2, December.
- Williamson, J. (1996). *The Crawling Band as an Exchange Rate Régime: Lessons from Israel, Chile, and Colombia*, Institute for International Economics, Washington, D.C.