

Liberalization of the Capital Account

Experiences and Issues

Donald J. Mathieson and Liliana Rojas-Suárez



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The following symbols have been used throughout this paper:

- ... to indicate that data are not available;
- to indicate that the figure is zero or less than half the final digit shown, or that the item does not exist;
- between years or months (e.g., 1991–92 or January–June) to indicate the years or months covered, including the beginning and ending years or months;
- / between years (e.g., 1991/92) to indicate a crop or fiscal (financial) year.

“Billion” means a thousand million.

Minor discrepancies between constituent figures and totals are due to rounding.

The term “country,” as used in this paper, does not in all cases refer to a territorial entity that is a state as understood by international law and practice; the term also covers some territorial entities that are not states, but for which statistical data are maintained and provided internationally on a separate and independent basis.

Preface

This study was prepared by Donald J. Mathieson, Chief of the Developing Country Studies Division in the Research Department, and Liliana Rojas-Suárez, Senior Economist in the Capital Markets and Financial Studies Division of the Research Department. Katia Berrueta and Norma Alvarado provided excellent assistance in typing the text and tables. Claire Adams, Kellett W. Hannah, and Subramanian S. Sriram provided their usual high-quality technical assistance. The authors are also grateful to Elisa Diehl of the External Relations Department, who edited the manuscript and coordinated production of the publication. Alicia Etchebarne-Bourdin, also of the External Relations Department, provided typesetting assistance.

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I Introduction

The growing integration of financial markets located in the industrial countries and major offshore centers represents a fundamental structural change in the world economy during the past two decades. This increased integration has been fostered by the relaxation of capital controls and broader financial liberalization in the industrial countries as well as by new telecommunications and computer technologies that have facilitated the cross-border transfer of funds. The liberalization of restrictions on external and domestic financial transactions was motivated in part by the desire to improve financial efficiency by increasing competition in domestic financial systems and to reduce financial risks by allowing domestic residents to hold internationally diversified portfolios.

Although such efficiency and risk-diversification gains could accrue to any country with capital account convertibility—that is, one that has eliminated capital controls—complete convertibility has been established only in a number of industrial countries and in relatively few developing countries. Indeed, analyses of the sequencing of structural reforms and stabilization policies for developing economies have traditionally argued that capital controls or dual exchange rates are necessary to prevent capital flows that would undermine the reform program. These policy recommendations, however, stand in sharp contrast to a growing body of empirical evidence that suggests that capital controls have often been evaded. This paper reviews the experiences of industrial and developing countries with capital controls, considers some of the key policy issues raised by the diminished effectiveness of capital controls, examines the potential medium-term benefits and costs of an open capital account, and analyzes the policy measures that could help sustain capital account convertibility. Because the liberalizations of capital account restrictions have typically taken place in the context of broader economic programs, which have included extensive stabilization efforts and structural reforms, the implications of opening the capital accounts need to be analyzed against the background of these other policy changes.

Section II examines the *types of capital controls* employed by countries and the rationales put forth to justify their use. Most restrictions on capital account convertibility have been motivated by four principal considerations. First, quantitative capital controls and transaction taxes have been seen as a means of limiting volatile, short-term capital flows that induce exchange rate volatility or sharp changes in foreign exchange reserves and thereby force the authorities to abandon their medium-term macroeconomic policy objectives. Second, capital controls have been credited with ensuring that the domestic savings of developing countries are used to finance domestic investment rather than the acquisition of foreign assets and with limiting foreign ownership of domestic factors of production. Third, restrictions on capital movements have been seen as strengthening the authorities' ability to tax financial activities, income, and wealth. Finally, it has been argued that opening the capital account should occur late in any stabilization and structural reform program to prevent capital flows from destabilizing efforts to control inflation or to sustain a trade reform.

Section III examines the *effectiveness of capital controls* in industrial and developing countries in terms of their ability to insulate domestic financial conditions from external financial developments and to prevent the cross-border movement of funds by residents and nonresidents. Empirical studies point to four key conclusions. First, capital controls were typically most effective when they were combined with exchange and trade controls to restrict both current and capital account convertibility. However, the introduction of current account convertibility created a variety of channels for disguised capital flows. Second, whereas capital controls in the industrial countries effectively limited their residents' net foreign asset or liability positions during much of the 1950s and 1960s, the collapse of the Bretton Woods system in the early 1970s created the expectation of large exchange rate adjustments and was accompanied by large-scale (often illegal) capital flows that overwhelmed

even the most comprehensive capital control systems. Third, when macroeconomic and financial conditions created substantial incentives for moving funds abroad, capital controls in many developing countries were often of limited effectiveness in stemming capital flight during the 1970s and 1980s. Fourth, recent studies suggest that the effectiveness of capital controls eroded more rapidly during the 1980s than during the 1960s and 1970s.

Section IV considers some of the *implications of the reduced effectiveness of capital controls*, caused in part by structural changes in the international financial system and other factors, which may also have raised the explicit and implicit costs of using such controls. Among these costs are the higher costs of enforcing controls and the resources used in the rent-seeking activities involved in obtaining licenses for restricted capital flows and the evasion of capital controls. New constraints can be placed on the formulation of stabilization policies and structural reforms when the effectiveness of capital controls diminishes. Unsustainable monetary and financial policies will have greater adverse effects on the domestic financial system and on the tax base as capital flight and a growing “dollarization” of the economy take place. The fiscal authorities will also face greater difficulties in taxing income from financial assets, financial transactions, and wealth; moreover, the revenues that can be obtained from an inflation tax will also diminish.

During the early stages of stabilization and structural reform programs, residents often have strong incentives to repatriate external assets even when the sustainability of the program is uncertain. The resulting capital inflows can cause the real exchange rate to appreciate. Although sterilization has been used to limit the inflationary impact of these inflows, it can increase the outstanding stock of government debt and drive up government borrowing costs. Some countries have therefore tightened capital controls to limit capital inflows. Historical experience, however, suggests that whenever there are large incentives for capital flows, residents often find ways to evade the new controls. Moreover, a severe tightening of capital controls could interfere with normal trade financing and thereby vitiate any trade reform as effectively as a real exchange rate appreciation. The potentially adverse effects of a tightening of capital controls raise the issues of what the potential benefits of a more open capital account are and whether there are fiscal, financial, and structural policies that would allow a country initially to “live with” the capital inflows and eventually to achieve and sustain an open capital account.

When accompanied by appropriate macroeconomic and financial policies, a more open capi-

tal account may give rise to four efficiency gains: (1) unrestricted capital flows benefit the international economy by facilitating specialization in the production of financial services; (2) capital account convertibility creates dynamic efficiency by introducing competition in the financial industry from abroad and stimulating innovation; (3) if international financial markets price the risks and returns inherent in financial claims appropriately, global savings can be allocated to the most productive investments; and (4) for countries with limited access to private external finance, freedom of capital inflows and outflows may facilitate renewed access to international financial markets.

Section V examines the experiences of industrial and developing countries with *capital account liberalization* in order to identify the asset price movements and capital flows that have been associated with removing capital controls and the macroeconomic, financial, and risk-management policies that can help sustain an open capital account. A common pattern of asset price movements and capital flows has often emerged after the opening of the capital account in both industrial and developing countries. Since the opening of the capital account has historically occurred in conjunction with extensive stabilization and structural reform programs, the accompanying asset price changes and capital flows have reflected the removal of capital controls as well as perceptions about the likely outcomes of the reforms. The resulting portfolio adjustments have typically led to large private sector *gross* capital inflows and outflows, often a *net* capital inflow, and a real exchange rate appreciation. In some developing countries, moreover, high *ex post* real domestic interest rates and an initially large spread between *ex post* domestic interest rates (adjusted for exchange rate changes) and international interest rates have also occurred.

Experience suggests that the implementation of certain policies designed to mitigate these asset price movements and capital flows can help to sustain capital account convertibility and reduce the financial risks created by an open capital account. These include macroeconomic and financial policies that minimize the differences between domestic and external financial market conditions before liberalization; avoiding taxes on financial income, wealth, and transactions that create strong incentives to move funds abroad; strengthening the safety and soundness of the domestic financial system; and removing or reducing restrictions that inhibit the flexibility of wages and the prices of goods and assets. Moreover, countries can manage the financial risks created by an open capital account by allowing residents to hold internationally diversified portfolios, by using markets for

trading risks (particularly the markets for commodity and financial futures, options, and swaps), and by designing external contracts and debts better. The speed with which a country can move to full capital account convertibility appears to

depend on both how far it has proceeded in implementing the policies that are preconditions for such convertibility and its willingness to take further measures that credibly establish that it will implement the remaining policy steps.

II Restrictions on Capital Account Transactions

The IMF's Articles of Agreement permit the use of capital controls,¹ and most IMF members have imposed some restrictions on capital account transactions throughout the post-World War II period. At the end of 1989, 123 of the 153 territories and member countries analyzed in the IMF's *Exchange Arrangements and Exchange Restrictions Annual Report 1990* (Washington) restricted payments for capital transactions and/or used separate exchange rates for some or all capital account transactions (Table 1). Moreover, whereas the number of industrial countries with capital account convertibility rose from three in 1975 to nine in 1990, only one additional developing country achieved this kind of convertibility.

Types of Capital Controls

The most common restrictions on capital account convertibility have encompassed exchange controls or quantitative restrictions on capital movements, dual or multiple exchange rate arrangements, and taxes on external financial transactions. Quantitative restrictions have typically involved limitations on the external asset and liability positions of domestic financial institutions (especially banks); on the domestic operations of foreign financial institutions; and on the external portfolio, real estate, and direct investments of nonbank residents. In many cases, a government review board scrutinizes, on a case-by-case basis, the foreign direct investments coming into a country.

At a minimum, dual or multiple exchange rate systems involve separate exchange rates for commercial and financial transactions. In most dual exchange rate systems, the authorities stabilize the

commercial exchange rate but allow the financial exchange rate to float. The effectiveness of these systems is determined in large part by the degree to which current and capital account transactions can be kept separate. To achieve this separation, there are often complex sets of rules that define what constitutes current and capital account transactions and that attempt to establish control over residents' foreign exchange transactions and nonresidents' domestic currency transactions. Enforcement of these rules implies that dual (or multiple) exchange rate systems share many, if not most, of the costs of administering a system of quantitative restrictions on capital flows.

Explicit and implicit taxes on external financial transactions and income have also been used to discourage or control capital flows. Interest equalization taxes are designed to eliminate the higher yield that domestic (foreign) residents might see on holding foreign (domestic) financial instruments. High transaction taxes have also been used to discourage short-term capital movements.

Rationales for Capital Controls

The use of capital controls has often been justified on four grounds: (1) to help manage balance of payments crises or unstable exchange rates generated by excessively volatile short-run capital flows, (2) to ensure that domestic savings are used to finance domestic investment and to limit foreign ownership of domestic factors of production, (3) to maintain the authorities' ability to tax domestic financial activities, income, and wealth, and (4) to prevent capital flows from disrupting stabilization and structural reform programs.

Limiting Volatile Short-Term Capital Flows

Taxes on short-term financial transactions have often been viewed as a means of limiting short-term capital flows that can lead to a sharp change in a country's foreign exchange reserves or contribute to excess exchange rate volatility. These flows are

¹Article VI, Section 3 states that

Members may exercise such controls as are necessary to regulate international capital movements, but no member may exercise these controls in a manner which will restrict payments for current transactions or which will unduly delay transfers of funds in settlement of commitments, except as provided in Article VII, Section 3(b) and in Article XIV, Section 2.

Table 1. Restrictions on Capital Account Transactions, 1975, 1980, 1985, and 1990¹

Type of Restriction	1975	1980	1985	1990
Number of countries ²	128	140	148	153
Separate exchange rate(s) for some capital transactions and/or some or all invisibles and restrictions on payments for capital transactions	22	26	32	32
Industrial countries ³	2	2	—	—
Developing countries	20	24	32	32
Restrictions on payments for capital transactions only ^{4,5}	102	107 ⁶	116	120
Industrial countries	17	14	11	11
Developing countries	85	91	105	109
Separate exchange rate(s) for some capital transactions and/or some or all invisibles only	25	31	34	35
Industrial countries	3	3	1	1
Developing countries	22	28	33	34
Neither separate exchange rate(s) for some capital transactions and/or some or all invisibles nor restrictions on payments for capital transactions	23	28	30	30
Industrial countries	3	6	9	9
Developing countries	20	22	21	21

Source: IMF, *Exchange Arrangements and Exchange Restrictions, Annual Report*, various issues.

¹The years indicate the publication year of the reports from which data are collected.

²Belgium and Luxembourg have been treated as one country.

³Grouping definition is based on the existing grouping presented in the latest issue of the IMF's *International Financial Statistics* and *World Economic Outlook* (Washington).

⁴Restrictions (that is, official actions directly affecting the availability or cost of exchange or involving undue delay) on payment to member countries, other than those imposed for security reasons under Executive Board Decision No. 144-(52/51) adopted on August 14, 1952.

⁵Resident-owned funds.

⁶Numbers for industrial and developing countries do not add up to the total, because the positions of two developing countries—Botswana and Haiti—are undetermined.

thought to be driven by investors who ignore fundamentals and conduct transactions on the basis of rumors, trading strategies, or uncertainties about the sustainability of macroeconomic or exchange rate policies. It has therefore been argued that the authorities should limit speculative capital flows rather than alter financial and macroeconomic policies designed to achieve medium-term objectives.

One difficulty in evaluating this argument lies in identifying situations where short-term capital flows were driven by irrational trading strategies rather than by concerns about macroeconomic policy inconsistencies or the expectation of large exchange rate adjustments. In 1971–73, for example, large-scale short-term capital flows preceded the sharp adjustments in the exchange rates of the major industrial countries. However, these capital flows were often motivated by the prospect of a “one-way” bet, because certain exchange rates were viewed as clearly undervalued. Similar situa-

tions arose in many developing countries when balance of payments crises were preceded by high inflation and a growing exchange rate overvaluation. In these countries, short-term capital flows reflected the private sector's attempts to protect the real value of its financial wealth when a fixed or stabilized exchange rate was expected to undergo a substantial depreciation. Moreover, even with flexible exchange rates, conflicting macroeconomic policies in the major industrial countries can generate capital flows as well as exchange rate changes; the appropriate policy response would be to adjust macroeconomic policies rather than to impose capital controls.

There have also been concerns that asset prices on international financial markets have experienced speculative “bubbles,” especially for exchange rates, in which asset prices depart systematically from underlying fundamentals, thus distorting capital flows. Nonetheless, because economists have yet to

model the behavior of exchange rates successfully, they have been unable to identify either the fundamentals driving exchange rates or the extent to which exchange rates have departed from these fundamentals. Meese (1986) concluded that the exchange rates between the United States and some other major industrial countries followed a pattern in the early 1980s consistent with the existence of such bubbles, whereas Flood, Rose, and Mathieson (1991), using daily exchange rate data from the 1980s, found little evidence that such bubbles existed. Moreover, even if bubbles were to occur periodically, it is not clear that permanent capital controls or taxes would be preferable to occasional central bank foreign exchange market intervention.

Doubts about the sustainability of a country's policy stance can potentially lead investors to alter their holdings of domestic and external assets in order to protect the value of their portfolios. Although authorities could use capital controls to prevent these adjustments from occurring, this approach may not build credibility for their policies. Another argument for capital controls is that implicit or explicit government guarantees might distort capital flows. For example, the perception that the government would assist private borrowers to service external debts during a crisis can induce unwarranted external borrowing.

Retention of Domestic Savings

A second rationale for the use of capital controls is that developing countries need to ensure that scarce domestic savings are used to finance domestic investment rather than the acquisition of foreign assets and to limit foreign ownership of domestic factors of production. The uncertainties created by an unstable macroeconomic and political environment in many developing countries can reduce their expected private returns from holding domestic financial instruments (and thereby the return on saving) far below the social marginal product of additional capital. In this uncertain environment, risk-averse savers may prefer to hold a significant portion of their wealth in foreign assets that are perceived to yield higher or more certain real returns. It has been argued that capital controls can be used to help retain domestic savings by reducing the return on foreign assets (for example, through an interest equalization tax or by raising the implicit cost of moving funds abroad) and by limiting access to foreign assets.

Even if capital controls limit the acquisition of foreign assets, however, they still might do little to increase or sustain the availability of savings for domestic capital formation. If domestic financial

instruments carry relatively uncertain and low real rates of return and residents cannot acquire foreign assets, they often respond either by reducing their overall level of savings or by holding their savings in inflation hedges, such as real estate or inventories. Moreover, if domestic residents can hold only domestic financial instruments, their income stream will be less diversified than if their portfolios also contain foreign assets. As a result, residents' domestic wealth and income positions become more vulnerable to domestic macroeconomic shocks.

A related rationale for capital controls is to establish limits on foreign ownership of domestic factors of production, industries, natural resources, and real estate. In part, these controls are seen as preventing either an unwarranted depletion of a country's natural resources or the emergence of a monopoly in a particular industry. Equity and income distribution considerations are also cited as justifications for limitations on ownership of domestic factors of production and real estate.

Although views differ on the benefits and costs of foreign ownership of domestic institutions and factors of production, highly restrictive controls can play an important role in discouraging foreign direct investment. In an era in which many countries face limited access to international financial markets, foreign direct investment may be an important source of external finance and a means of acquiring new technologies.

Maintenance of the Domestic Tax Base

Another rationale for capital controls is that they maintain the authorities' ability to tax financial activities, income, and wealth. Stamp duties and taxes on securities transactions can be important sources of government revenue in countries with large securities markets (for example, Switzerland), and income taxes on interest and dividend income are key components of most tax systems. In addition to such explicit taxes, effective capital controls can allow the authorities to adopt monetary policies that impose an "inflation tax" on individuals holding domestic monetary instruments. A model of the relationship between the inflation tax and capital controls is provided in McKinnon and Mathieson (1981).

Because domestic residents have an incentive to shift some portion of their financial activities and portfolio holdings abroad to avoid these taxes, capital controls have been viewed as a means of either limiting holdings of foreign assets or gaining information on the scale of residents' external asset holdings so that these holdings can be taxed.

Capital Controls and Stabilization and Structural Reform Programs

It has often been recommended that the opening of the capital account occur late in the sequencing of stabilization and structural reform programs in developing countries in order to avoid capital flows that would make the reform unsustainable. For example, Frenkel (1982 and 1983), Edwards (1989), and McKinnon (1991) have argued that, with different speeds of adjustment in goods, factor, and financial markets, stabilization and reform programs should be designed, first, to remove domestic distortions in the goods and capital markets and attain fiscal order so as to reduce reliance on inflationary finance, and, second, to liberalize the economy's links with the rest of the world. External liberalization would first involve reducing distortions to trade in goods and, as a final step, opening the capital account. Because financial markets adjust more rapidly than goods markets, a premature opening of the capital account could stimulate capital inflows that would cause the real exchange rate to appreciate and destabilize the reform program.

The nature of destabilizing capital flows depends on the credibility of the reform program and on the extent of the differences in the speeds of adjustment in goods, factor, and financial markets. For example, if a stabilization program lacks credibility, liberalization of the capital account could lead to currency substitution and capital flight, which could trigger a balance of payments crisis, devaluation, and inflation. Similarly, as Calvo (1983 and 1987) and Stockman (1982) have emphasized, it may be difficult to sustain a trade reform that is expected to be reversed, because residents will use foreign borrowing to import large amounts of goods, especially consumer durables. Conversely, if it is anticipated that the reform program will be sustained, a capital inflow could result (owing to the higher perceived return on domestic assets), which would lead to a real exchange rate appreciation that could, in turn, offset the effects of the trade reform on the prices of domestic traded goods. Moreover, even if there were some uncertainty about the likely success of the reform program, a capital inflow could occur if residents temporarily repatriated funds from abroad to take advantage of the high real interest rates.

Despite these concerns, some authors have stressed the beneficial effects of foreign capital inflows in helping to alleviate the cost of adjustment during a major structural reform. Clark (1986) argued that Egyptian structural reforms succeeded because of the availability of external funds, and Krueger (1981, 1984, and 1989) stressed the role of foreign funds in reducing adjustment costs and making the reforms more acceptable politically. Such funding could nonetheless come from official rather than private inflows and would therefore not necessarily involve opening the capital account. However, Lal (1987) has argued that capital account liberalization, trade reform, the adoption of a floating exchange rate, and fiscal reform should occur at the beginning of the reform process. Since the trade reforms and capital account liberalization would occur simultaneously, Lal suggested that portfolio and real investments would be based on world interest rates and world prices for traded goods; he also argued that the market would determine the appropriate level of the exchange rate more effectively than the authorities.

However, these discussions implicitly assume that capital controls can “effectively” restrict capital flows even if current account convertibility is established. Effective capital controls have been defined as either (1) completely segmenting the domestic financial market from international markets and making domestic interest rates independent of international interest rates or (2) limiting capital inflows so as to create a wedge (possibly variable) between domestic interest rates and foreign interest rates (adjusted for expected exchange rate movements). Whereas type (1) controls amount to “closing the road” between domestic and international financial markets, type (2) controls attempt to set a safe “speed limit” for the scale of capital flows.² However, there is empirical evidence that residents often find ways around capital controls when large differentials exist between the yields on domestic and foreign instruments and that the effectiveness of capital controls eroded at a faster pace in the 1980s than in the 1960s and 1970s.

²Frenkel (1982) has often used this distinction in his discussions of capital controls.

III Effectiveness of Capital Controls

The ability of quantitative capital controls or a dual exchange rate system to insulate domestic financial conditions from those in international financial markets is influenced by the expected gains from, and costs associated with, evading the controls. The incentives to evade capital controls will be stimulated not only by nominal yield differentials (including expected exchange rate changes) but also by differences in the availability of credit, the types of financial products and services that are provided, and the perceived stability and soundness of the financial institutions in domestic and offshore markets. In addition, the risks of expropriation and taxation of domestically held assets can also be important incentives to evade controls. The transaction, communication, and other costs (including bribery) of evading capital controls may be significantly lower for individuals and institutions that regularly engage in (legal) international trade and financial transactions than for others. When the costs are significant, small-scale illegal capital transfers are unprofitable. The scale of disguised capital flows is also sensitive to the penalties imposed on those who try to evade the capital controls. Just how effectively these penalties inhibit illegal capital transactions will depend on the effort put into enforcing capital controls and prosecuting violators. A large and technically sophisticated bureaucracy may be required to enforce a system of complex and comprehensive capital controls.

Channels for Evading Capital Controls

These incentives and costs also play a key role in determining channels that individuals have used to evade capital controls and arbitrage between the official and financial exchange markets under dual exchange rate systems. One of the most frequently used channels has been under- and overinvoicing of export and import contracts. To shift funds abroad, for example, exporters (importers) would underinvoice (overinvoice) a foreign customer and then use these funds to invest in external assets. In this way, they exploit one of the fundamental ten-

sions in most capital control and dual exchange rate systems, namely, the need to control unauthorized capital flows while not interfering unduly with either normal trade financing for imports and exports or the typical transfer operations between a parent firm and its subsidiary for permitted foreign direct investment.

As noted by Kamin (1988), such under- and overinvoicing can lead to a distorted view of what happens to the trade balance just before and after a devaluation. In a study of more than sixty devaluations, Kamin found that, before the typical devaluation, the rates of growth of exports and imports declined sharply, while the current account balance and reserve holdings deteriorated markedly. Immediately after the devaluation, the current account balance recovered as exports rebounded strongly, while imports continued to decline, albeit less rapidly, until they bounced back sharply in the second year after the devaluation. His empirical analysis suggests that the period before the devaluation was preceded by both a real appreciation of the exchange rate and a sharp rise in the black market (unofficial) premium on foreign exchange, which led to underinvoicing of exports and reductions in officially reported exports. These shortfalls in export receipts increased the authorities' reserve losses and led to declines in imports as the authorities tightened restrictions on access to foreign exchange. After the devaluation, the black market premium dropped, thus reducing the incentives for underinvoicing exports, and officially measured exports rose sharply. Improved reserve inflows also allowed the central bank to loosen restrictions on access to foreign exchange, and imports recovered.

Giddy (1980) also argued that multinational companies can use transfer pricing policies to evade capital controls. Before an anticipated exchange rate adjustment, changes in transfer prices and the leading and lagging of intracompany transfers enable these companies to shift funds in and out of a country.

Another trade-related channel for unrecorded capital flows has been the leads and lags in the settlement of commercial transactions or variations

in the terms offered on short-term trade credits. When the Bretton Woods system collapsed in the early 1970s, for example, some industrial countries with extensive capital controls nonetheless experienced significant capital inflows as a result of the prepayment of exports by foreign entities (often the foreign subsidiaries of domestic corporations). This experience suggests that, before a major devaluation, drastic restrictions on trade financing will be difficult to enforce; if, however, restrictions are effectively enforced, capital controls or separate foreign exchange markets will be unable to shield current account transactions from erratic exchange rate fluctuations.

The balances in nonresidents' "commercial" accounts in the domestic financial system, especially in countries with dual exchange rate arrangements, have often been drawn down sharply before a devaluation and then rebuilt relatively quickly after the devaluation. Remittances of savings by foreign workers in the domestic economy and by domestic nationals working abroad, family remittances, and tourist expenditures, although traditionally regarded as current account transactions, have also been used as vehicles for the acquisition or remission of foreign assets.

During the 1960s and 1970s, forward foreign exchange operations in industrial countries with capital controls and/or dual exchange rates provided residents with another channel for moving capital. When a major exchange rate depreciation was anticipated, the forward net foreign asset position of domestic residents often changed dramatically as many exporters responded by hedging a much smaller (or zero) proportion of their anticipated foreign exchange receipts and importers tried to obtain more cover.

Experiences with Capital Controls

While there are clearly many channels for evading capital controls, there are still the empirical questions of just how important these channels have been and under what conditions they may undermine the effectiveness of capital controls. To examine these questions, this section first reviews the experiences of industrial countries with capital controls since World War II and then presents an empirical analysis of the effectiveness of capital controls in developing countries.

Industrial Countries

Immediately after World War II, most industrial countries used exchange, trade, and capital controls to limit both current and capital account convertibility and their residents' net foreign asset and

liability positions (Greene and Isard, 1991). However, because current account controls created a variety of distortions, the industrial countries in Western Europe formally restored current account convertibility (by accepting the obligations of Article VIII of the IMF's Articles of Agreement) by 1961, followed by Japan in 1964. Nonetheless, many major industrial countries continued to maintain capital controls (including dual exchange rates) throughout the 1960s and 1970s, with some (such as France and Italy) abolishing the last of their major capital controls only during the late 1980s. Although many studies have focused on the experiences of industrial countries with capital controls after World War II,³ the experience of Japan in the period 1945–80 and that of Ireland in the early 1980s can illustrate the typical conclusions of these studies. It has been argued that Japan had the most effective and efficiently administered system of capital controls up to the late 1970s;⁴ Japan's experience can thus be used to identify some of the variables that contributed to the effectiveness as well as to the breakdown of capital controls. Ireland's experience, in turn, illustrates the difficulties encountered by countries attempting to reimpose capital controls on previously integrated financial markets.

The legal basis for Japan's post-World War II capital controls was initially provided by the Foreign Exchange and Foreign Trade Control Law, passed in 1949, under which foreign exchange transactions were prohibited in principle and permitted only in exceptional cases according to the directives and notifications of government ministries. Initially, private holdings of foreign exchange were restricted, and export receipts had to be sold to authorized foreign exchange banks. The authorities also specified a standard settlement period and required approval of prepayments or acceptance of advance receipts. Holdings of yen by nonresidents were subject to controls, and private capital movements were, in effect, prohibited. As noted by Fukao (1990), one indication of the effectiveness of these controls was that there was an almost one-to-one relationship between the level

³For example, Yeager (1976) examines the experiences of the major industrial countries in the 1950s and 1960s and provides an extensive bibliography. Baumgartner (1977) analyzes the experiences of a number of European countries (including Germany) with capital controls in the 1970s, and Argy (1987) compares the Australian and Japanese experiences with capital controls in the 1960s and 1970s. Dooley and Isard (1980) provide a general framework for analyzing the effects of capital controls.

⁴For example, Argy (1987) argued that such controls were much more effectively and efficiently administered in Japan than in other industrial and developing countries.

of Japan's foreign exchange reserves and its cumulative current account balance between 1945 and 1962. Supplement A in Fukao's article provides a detailed listing of the various controls Japan used between 1945 and 1990.

In 1960, the authorities announced a trade and exchange liberalization plan, one of whose goals was to achieve Article VIII status. This program included abolition of foreign exchange controls on current account transactions, creation of "free" yen accounts for nonresidents, liberalized use of foreign exchange for tourist travel, and some relaxation of the controls on capital account transactions related to exports and imports. With this partial liberalization, the scale of capital flows in the 1960s expanded relative to those in the 1950s, and periods of monetary tightening in the summers of 1961 and 1967 were accompanied by capital inflows that required the imposition or tightening of capital controls.

After the deutsche mark was allowed to float in May 1971, Japan initially attempted to maintain a fixed U.S. dollar-yen exchange rate and, as a result, experienced large capital inflows. Official foreign exchange reserves rose from \$4.4 billion at the end of 1970 to \$7.9 billion at the end of July 1971. Moreover, capital inflows in the 11 days between August 16 and August 27, 1971 amounted to \$4 billion. The foreign subsidiaries of Japanese firms were an important source of inflows inasmuch as they used U.S. dollar-denominated loans to make prepayments on exports from the parent company or to purchase yen-denominated securities. The authorities responded initially by severely tightening capital controls—which disrupted trade financing—and, eventually, by floating the exchange rate. Thus, the system of capital controls, which had been highly effective when the exchange rate was viewed as stable and interest rate differentials were limited,⁵ was unable to stem a large-scale inflow once the expectation of a large exchange rate adjustment took hold.

Japan shifted from a fixed to a floating exchange rate in the spring of 1973, and Fukao (1990) argues that the degree of short-term capital mobility declined because of both strict capital controls and the elimination of the prospect of a near-certain capital gain when a large discrete exchange rate adjustment took place. Moreover, the differentials between domestic and offshore money market interest rates after 1974 were much smaller, even during the first and second oil price shocks, than in the period surrounding the collapse of the Bretton

Woods system. Fukao shows that the differentials (in absolute value) between the three-month *gensaki* (repo) interest rate and the three-month Euroyen interest rate were, at most, 6 percent a year during 1974–87 but had reached 20–40 percent a year during 1971–74.

Japan's policies toward capital controls underwent a fundamental change at the end of 1980, when the Law Revising Partially the Foreign Exchange and Foreign Trade Control Law was implemented. Whereas under the old law all foreign exchange transactions were prohibited in principle unless exempted by the authorities, the new law allowed all foreign exchange transactions unless specifically restricted. This change in policy was motivated by a number of factors, including the recognition that Japanese financial institutions were continuing to expand their operations in other major domestic and offshore markets and that "the maintenance of a legal framework that prohibited overseas transactions in principle raised difficulties such as giving the impression to foreign countries that Japan was implementing regulations that were not transparent" (Fukao (1990, p. 43)).

The Japanese experience with capital controls up to 1980 suggests a number of conclusions about their effectiveness. When exchange, trade, and capital controls restricted both current and capital account convertibility in the 1950s, the authorities were able to limit residents' accumulation of net foreign asset positions effectively. The establishment of current account convertibility and the relaxation of controls on trade-related capital flows in the 1960s created new difficulties for conducting an independent monetary policy with a fixed exchange rate. Nonetheless, as long as there was the expectation that the fixed exchange rate would be maintained and domestic and external financial market conditions did not differ markedly, the capital controls continued to limit residents' net foreign asset positions effectively. In the early 1970s, however, the expectation of a large discrete adjustment in exchange rates during the collapse of the Bretton Woods system led to large capital flows (often seemingly trade-related) that overwhelmed the capital control system. Moreover, measures designed to tighten capital controls so as to prevent the capital flows soon began to reduce the volume of international trade.

Ireland's experience in the late 1970s exemplifies the effects of introducing capital controls between previously integrated financial markets. Before December 1978, relatively few official restrictions were imposed on transactions between financial markets in Ireland and those in the United Kingdom. The Irish authorities then imposed a set of exchange controls that included (1) limitations on

⁵Horiuchi (1984) showed that officially controlled real interest rates in Japan were relatively high by international standards, which may have played a key role in limiting residents' incentive to shift funds abroad.

the accounts of U.K. residents in Irish bank and nonbank financial institutions, (2) a prohibition against Irish residents' holding accounts with financial institutions in the United Kingdom, (3) prior approval for all foreign borrowing, (4) prior approval for portfolio investment inflows and outflows, and (5) limitations on the provision of forward cover by authorized banks to nonbank residents except for trade-related transactions.

Browne and McNelis (1990) have recently examined the effectiveness of the Irish capital controls in restoring the authorities' control over domestic interest rates. They based their analysis on an empirical model that correlated quarterly changes in various domestic Irish interest rates with (1) the differential between the sum of the comparable world interest rate, the expected rate of depreciation of the Irish pound and a risk premium, and the previous quarter's domestic interest rate; and (2) the current and lagged values of the domestic excess demand for money. The excess demand for money was represented, in turn, by the gap between the demand for money and the cumulative stock of domestic credit expansion. The demand for money was taken as a positive function of the level of permanent income and the "own" yield on the interest-bearing component of the money stock and a negative function of the expected rate of inflation and the return on government securities. In the empirical analysis, only the excess demand for money in the current and preceding quarters was used. In considering the likely effects of an unanticipated increase in the domestic money supply, Browne and McNelis also differentiated between an initial liquidity effect (which would drive domestic interest rates down) and a subsequent inflation premium effect (which would drive domestic interest rates up). A unique feature of their analysis was that they allowed the effects of external interest rates and domestic money market conditions to vary over time, using a Kalman filter technique to estimate these time-varying coefficients. In particular, they argued that, if economic agents learn how to evade capital controls over time, then the influence of external financial market conditions on domestic interest rates should grow relative to that of domestic money market conditions.

Browne and McNelis based their empirical analysis on data from the first quarter of 1971 to the fourth quarter of 1986 and used data on interest rates on financial instruments of various expected degrees of international tradability. These interest rates included (in order of expected international tradability) (1) the 3-month Dublin interbank market rate, (2) the 90-day exchequer bill rate, (3) the 5-year-to-maturity government security yield, (4) the clearing banks' rate on deposits in the range

of £Ir 5,000–£Ir 25,000, (5) the clearing banks' prime lending rate, (6) the building societies' share account rate, and (7) the building societies' mortgage rate. One empirical result was that there were significant liquidity effects (in the first quarter) following an increase in the money supply and inflation premium effects (in the second quarter) from domestic monetary policy; moreover, the size of these effects increased for five of the seven interest rates considered after capital controls were imposed. However, those two effects canceled each other out within half a year. Moreover, the liquidity and inflation premium effects on the interbank and mortgage rates decayed rapidly over time to zero. As a result, the interbank market continues to be highly integrated with the external market;⁶ and the degree of integration in the mortgage market, which initially declined when capital controls were imposed, eventually recovered and exceeded its initial level. Exchange controls drove a permanent wedge in the interest rate parity relationship only in the markets for small deposits in clearing banks and share accounts in the building societies.

These empirical results suggest that, even when capital controls drive a wedge between the levels of domestic and external interest rates, they may only temporarily break the correlation between movements in domestic and international interest rates over time. Browne and McNelis argued that, whereas firms and individuals may initially be surprised by the timing and intensity of new capital controls, significant interest rate differentials between domestic and external markets can make it profitable for some firms and individuals to incur the costs of establishing new channels for moving funds abroad. "Thus the authorities may find that the only way to make controls effective in the long run is to add new and tighter controls intermittently" (Browne and McNelis (1990, p. 45)).

Gros (1988, p. 438) reached a similar conclusion regarding Belgium's dual exchange rate system:

Taking private arbitrage activity into account leads to the conclusion that dual exchange rates (as well as capital controls) could succeed only temporarily in dampening the effects (on the domestic goods market) of shocks to financial or other markets. To offset such effects permanently, the authorities would have to induce a steadily increasing differential between the two exchange rates. But a steadily increasing differential would also lead to a steadily

⁶The close relationship between the interbank rate and international rates could have reflected the fact that authorized dealers (selected banks) were not prohibited from acquiring foreign exchange deposits and incurring foreign currency debts as long as their total spot-against-forward position did not exceed the long and short limits set by the Central Bank.

increasing incentive for private operators to circumvent the regulations that separate the two markets by buying foreign exchange at the lower rate (usually the controlled or commercial rate) and selling it at the higher rate (usually the free or financial rate).

Moreover, because quantitative capital controls that restrict capital outflows are, in many respects, equivalent to a tax on the ownership of foreign assets, the incidence of this tax depends crucially on the ability of different groups of residents to evade the controls. Browne and McNelis's results imply that such a tax falls most heavily on those residents who have the least power in domestic financial markets and the weakest links or access to international markets (often because of high transaction costs). In a public finance sense, capital controls are thus likely to be a regressive tax.

Developing Countries

Most developing countries have employed capital controls since World War II with the objectives of limiting the acquisition of foreign assets by domestic residents (to keep domestic savings available to finance domestic investment) and moderating or eliminating short-term speculative capital flows during and after a balance of payments crisis. To gauge how effective capital controls have been in achieving these objectives, this section presents an empirical analysis of the effectiveness of capital controls in preventing capital flight and reviews some evidence on the linkages between external and domestic financial conditions in developing countries.

Since the emergence of the debt-servicing difficulties of many heavily indebted developing countries in the early 1980s, capital flight has been of particular concern because of the implied loss of resources for domestic investment. In this discussion, capital flight is equated with the fraction of a country's stock of external claims that does not generate recorded income. This approach is known as the "derived" measure of capital flight and was first suggested by Dooley (1986). The estimated stock of capital flight⁷ for a group of heavily

indebted developing countries increased from \$45 billion at the end of 1978 to \$184 billion by the end of 1988 before declining to \$176 billion at the end of 1990 (Table 2). However, the pace of capital flight varied throughout the period. For example, expansionary fiscal and monetary policies, as well as increasing overvaluation of the exchange rates, resulted in rapid increases in the stock of capital flight during 1978–83, with a 25 percent increase occurring in 1983. In contrast, the stock of capital declined during 1989–90 as a number of countries in the sample initiated successful stabilization programs.⁸ Although several empirical studies⁹ found a significant relationship between capital flight and domestic macroeconomic variables, there is little evidence as to whether such linkages depend on the extent of a country's capital controls.

To determine the effectiveness of capital controls in stemming capital flight, a two-step methodology was employed. First, for the developing countries represented in Table 2, episodes of high and/or accelerating rates of inflation and large balance of payments disequilibria were identified during 1978–90. Most countries experienced these episodes two or three years before implementing IMF-supported adjustment programs (Table 3), including those involving either stand-by or extended arrangements. Table 3 also includes the stabilization programs initiated by the Government of Brazil in February 1986 and March 1990, which were not supported by IMF arrangements.

During each of these episodes, a country was further characterized as having either relatively modest capital controls (which, in a few cases, were relaxed) or extensive controls (which were sometimes increased during the crisis period). Modest restrictions were those that did not eliminate capital transactions but only restricted them by requiring government approval. Restrictions were extensive if, in addition to requiring government approval, a country imposed strict limits on, or prohibited, the inward or outward movements of capital. (Only these two categories were used because classifications of countries based on the degree of capital controls are subjective.) If capital controls were effective, then macroeconomic fundamentals should be less important in explaining capital flight

⁷The methodology for estimating capital flight in Table 2 involves computing the stock of external claims that would generate the income recorded in the balance of payments statistics and subtracting this stock from an estimate of total external claims (see Dooley, 1986). Total external claims are estimated by adding the cumulative capital outflows, or increases in gross claims, from balance of payments data (which consist of the cumulative outflows of capital recorded in the balance of payments plus the cumulative stock of errors and omissions) to an estimate of the unrecorded component of external claims. This last component was estimated by subtracting the stock of external debt implied by the flows reported in the balance of payments from the stock of external debt reported by the World Bank.

⁸A more comprehensive analysis of capital flight during 1978–88 is contained in Rojas-Suárez (1991). A similar pattern of capital flight is evident if such capital flows are measured by the so-called residual approach, which estimates capital flight by adding the increase in a country's recorded external debt to the capital inflow from direct investment and subtracting the current account deficit plus the increase in official reserves. See Morgan Guaranty Trust Company (1988).

⁹For example, see Cuddington (1986), and Meyer and Marques (1990).

Table 2. Capital Flight and Total External Debt for a Group of Heavily Indebted Developing Countries¹

(In billions of U.S. dollars)

Year	Capital Flight ² (1)	External Debt (2)	Ratio of Capital Flight to Total External Debt (1)/(2)
1976	13.72	59.73	23.0
1977	29.24	86.08	34.0
1978	45.48	117.81	38.6
1979	62.17	147.52	42.1
1980	73.56	186.57	39.4
1981	82.53	233.15	35.4
1982	96.83	271.88	35.6
1983	121.49	297.98	40.8
1984	134.69	314.41	42.8
1985	145.67	326.65	44.6
1986	152.06	343.06	44.3
1987	181.31	368.03	49.3
1988	183.88	378.74	48.6
1989	182.39	371.49	49.1
1990	175.81	375.41	46.8

Sources: World Bank, *World Debt Tables* (Washington), various issues; IMF, *Balance of Payments Statistics Yearbook* (Washington), various issues; and IMF staff estimates.

¹Argentina, Bolivia, Chile, Colombia, Ecuador, Gabon, Jamaica, Mexico, Morocco, Nigeria, Peru, Philippines, Venezuela, and Yugoslavia. The selection was based on availability of data for the entire period under study.

²Data refer to net capital flight, that is, the unrecorded stock of capital outflows less the unrecorded stock of capital inflows.

in the group of countries with stringent capital controls than in those countries with either much less stringent or loosened capital controls.

The evaluation of the degree of capital control was based on information contained in IMF, *Exchange Arrangements and Exchange Restrictions Annual Report*, various issues. Information on payments restrictions on current transactions and the restrictions on capital transactions are provided under the headings of "payments for invisibles," "proceeds from invisibles," and "capital."

Following Rojas-Suárez (1991), the fundamentals that influence capital flight are taken as those that affect residents' perceptions regarding the risks associated with holding domestic assets. There are two major sources of risk: (1) the prospect that large, unexpected devaluations and/or high rates of inflation will erode the real value of assets denominated in the domestic currency, and (2) the possibility that private or official borrowers will default on their debt-service obligations or will expropriate domestically owned assets. Because a large fiscal deficit financed through central bank credits to the government typically leads to high inflation and/or a large exchange rate depreciation,

the fiscal deficit as a proportion of GDP is taken as a proxy for the risks of macroeconomic instability. The central government deficit was used so that the data would be comparable across all of the countries in the sample. A more comprehensive measure would be the nonfinancial public sector deficit.

If economic agents do not perceive a difference in the default risk between domestic and external debts, then a measure of default risk based on either domestic or external debt markets can be used. For a country with access to international capital markets, the spread between its borrowing costs and the London Interbank Offered Rate (LIBOR) is traditionally used to measure default risk. However, since the emergence of the debt crisis, the countries in the sample (Table 3) have had very limited access to international financial markets, and, therefore, no representative interest rate exists.

An alternative measure of the default risk can nonetheless be obtained from the secondary market price of external debt: LIBOR is subtracted from the implicit yield evident in the secondary market price for that debt. This latter measure is denoted r_k . The implicit yield to maturity for exter-

Table 3. Stabilization Programs in Selected Developing Countries

Country	Initiation Date of the Program and Type of Program	Period Included in the Regressions
I. Countries with mild or decreasing capital controls:		
Argentina	Nov. 10, 1989 (stand-by)	1987–88
Bolivia	Feb. 01, 1980 (stand-by)	1978–79
Bolivia	June 19, 1986 (stand-by)	1985
Chile	Jan. 10, 1983 (stand-by)	1981–82
Ecuador	Jan. 04, 1989 (stand-by)	1987–88
Gabon	Sept. 15, 1989 (stand-by)	1988–89
Honduras	July 27, 1990 (stand-by)	1988–89
Mexico	May 26, 1989 (extended)	1987–88
Morocco	Sept. 12, 1985 (stand-by)	1983–84
Morocco	July 20, 1990 (stand-by)	1988–89
Nigeria	Jan. 30, 1987 (stand-by)	1985–86
Nigeria	Apr. 30, 1990 (stand-by)	1988–89
Uruguay	Dec. 12, 1990 (stand-by)	1989
II. Countries with strong or increasing capital controls:		
Argentina	Dec. 28, 1984 (stand-by)	1982–84
Brazil	Mar. 01, 1983 (stand-by)	1981–82
Brazil	Feb. 1986 (no IMF disbursement)	1984–85
Brazil	Mar. 1990 (no IMF program)	1987–89
Ecuador	July 25, 1983 (stand-by)	1981–82
Mexico	Jan. 01, 1983 (extended)	1981–82
Mexico	Nov. 19, 1986 (stand-by)	1984–85
Morocco	Apr. 26, 1982 (stand-by)	1980–81
Philippines	June 11, 1979 (stand-by)	1978
Philippines	Dec. 14, 1984 (stand-by)	1983
Philippines	May 23, 1989 (extended)	1987–88
Poland	Feb. 05, 1990 (stand-by)	1988–89
Yugoslavia	May 23, 1979 (stand-by)	1978
Yugoslavia	Jan. 30, 1981 (stand-by)	1979–80
Yugoslavia	Mar. 16, 1990 (stand-by)	1988–89

Source: IMF, *Exchange Arrangements and Exchange Restrictions, Annual Report*, various issues.

nal debt (i^s) was obtained from the observed secondary market price on the country's external debt (P) and the application of the following present value formula:

$$P = \sum_{k=1}^n \frac{C}{(1+i^s)^k} + \frac{FV}{(1+i^s)^n},$$

where the face value (FV) is set at 100 because the discount quoted in the secondary markets applies to \$100 worth of contractual debt; the contractual coupon payment (C) is the interest rate on six-month U.S. treasury bills (as a measure of the risk-free interest rate) plus the average interest rate spread agreed to by the country on signature of the contract; and n is the average maturity of the contract. The risk of default on external obligations

during 1985–90 was estimated by subtracting the six-month LIBOR from the calculated implicit yield on external debt. The risk of default on external obligations during 1982–84 was approximated by using data on spreads between the loan rates charged to indebted developing countries on external bank loans and LIBOR provided by the Deutsche Bundesbank (spreads between public sector deutsche mark bonds issued by nonresidents and LIBOR) and the Bank of England. However, the implicit yield evident in the secondary market price for external debt cannot fully represent the cost of borrowing because it is derived under conditions of credit rationing.

In the empirical relationship between capital flight and fundamentals in the two subgroups of

countries, capital flight was assumed to represent the portfolio decisions of domestic residents regarding the proportions of their wealth that they hold in domestic or foreign assets. The desired proportions of wealth held in these assets are taken as depending on the expected real returns and risks associated with holding each type of asset.

The regression analysis presented in the Appendix implies that, although highly restrictive capital controls did not break the linkages between macroeconomic fundamentals and the scale of capital flight, they did delay the response of economic agents to perceived increases in fiscal imbalances. Although the coefficient associated with the default risk variable was larger for the countries with less restrictive capital controls than for those with highly restrictive controls, it was significant for both groups. Thus, although capital controls were effective in reducing the response of capital flight to increases in default risk, economic agents still managed to react in the same period to the increased probability of default.

Kamin's (1988, 1991a, and 1991b) recent work indicates that under- and overinvoicing trade transactions and changes in the terms and conditions under which trade financing is extended were often key vehicles for large-scale capital flows in developing countries with extensive capital controls. In his 1988 study, Kamin examined the behavior of exports and imports just before more than forty major exchange rate depreciations in developing countries. He argued that, when higher inflation was accompanied by a real appreciation of the official exchange rate and a rising black market exchange rate premium, then increased export underinvoicing typically led to reductions in officially measured exports. These shortfalls in export revenues led to reserve losses and, eventually, to declines in imports as the authorities tightened foreign exchange rationing.

While Kamin's (1988) results suggest that extensive underinvoicing of exports before a major exchange rate depreciation is quite common, there is still the question of how large disguised capital flows are likely to be. In a later study, Kamin (1991b) examined the scale of disguised capital flows in Argentina during 1981–90. He maintained that, by mid-1981, the Argentine authorities faced a highly overvalued exchange rate, extensive private capital flight, a growing fiscal deficit (reaching nearly 17 percent of GDP in 1981), rising inflation, declining real GDP, and high levels of domestic and external indebtedness in both the financial and nonfinancial sectors. One element of the authorities' adjustment program was a dual exchange rate system, which combined a fixed commercial exchange rate for trade transactions with a floating

exchange rate for capital account transactions. In late June 1981, the authorities applied a fixed commercial exchange rate to all imports and traditional exports, 90 percent of "promoted" exports, and repayments of previously contracted external debt. All remaining transactions were to take place at the floating financial exchange rate. The authorities also initiated an exchange rate guarantee program for private entities willing to reschedule their external debts to relieve the balance of payments pressures on the central bank and to protect enterprises with large external debts from future exchange rate depreciations. The firms' real domestic debt burden was also reduced when the authorities imposed nominal ceilings upon loan and deposit interest rates at levels below the rate of inflation. In practice, however, three exchange rates were in effect during this period: the legal commercial rate, the legal financial rate, and the illegal parallel rate.

The capital controls and the dual exchange rate system were circumvented through a variety of channels. First, there was a diversion of export receipts from the commercial market to the parallel foreign exchange market through export underinvoicing. During 1982–86, export underinvoicing was estimated to total about \$4 billion, or about 10 percent of merchandise exports. A second source of foreign funds was occasional central bank intervention in the parallel market to support the local currency. Third, the central bank's pre-export financing facility provided subsidized credit to exporters of specific merchandise categories. Users of this facility were allowed to borrow foreign exchange from external sources, convert it at the official exchange rate up to 540 days before the time of exportation, use the local currency proceeds to pay export expenses, and repay the external loan with the proceeds of the exports rather than surrender them to the central bank. When domestic interest rates were high relative to the expected rate of depreciation of the exchange rate, the pre-export facility became an attractive vehicle for legally repatriating capital with the assurance that it could legally be withdrawn again through the sale of exports abroad. Another potential source of funds for the parallel market would have been import overinvoicing, which would have allowed importers to declare more imports than they actually purchased in order to sell their excess foreign exchange at a profit in the parallel market. However, Kamin found that Argentine importers were just as likely to underinvoice as to overinvoice their transactions. He argued that, when unstable macroeconomic conditions, high inflation, and at times large interest rate differentials between domestic and offshore markets created strong incentives for Argentine residents to move funds

abroad, the channels described above allowed them to do so. As a result, "...the controls offered few benefits, were largely ineffectual, and encouraged both poor policymaking by the government and poor legal compliance by the populace."¹⁰

Developing countries' experience with capital flight has raised the issue of the extent of the linkages between their external and domestic financial markets during the 1970s and 1980s. Although it has often been suggested that the lack of access of the residents of many developing countries to credits from international financial markets implies low interdependence between the two markets, a growing number of studies suggest that the influence of external financial conditions has been increasing over time.

Haque and Montiel (1990 and 1991) and Haque, Lahiri, and Montiel (1990), for example, have recently provided empirical estimates that imply a high degree of capital mobility for a large set of developing countries, most of which have extensive capital controls. Haque and Montiel (1991) examined the factors influencing domestic interest rates during 1969–87 for 15 developing countries, including 6 from Asia, 4 from Africa, 3 from Latin America, and 2 from Europe. They based their analysis on the assumption that any domestic market-clearing interest rate (i_t) could be expressed as a weighted average of the uncovered interest parity interest rate (i_t^*)¹¹ and the domestic market-clearing interest rate that would be observed if the private capital account were completely closed (i_t').¹² Hence,

$$i_t = gi_t^* + (1 - g) i_t'; 0 \leq g \leq 1.$$

If $g = 1$, the domestic market-clearing interest rate would equal its uncovered parity value, whereas if $g = 0$, external factors would play no role in determining the domestic interest rate. Because most of the countries in the data sample had "repressed" financial systems with legal ceilings on interest rates, Haque and Montiel first considered the determinants of the unobserved interest rate (i_t')

that would have cleared the domestic money market if the capital account had been completely closed¹³ and then estimated (with a nonlinear instrumental variables technique) the parameters of the demand for money and the capital mobility parameter (g). In 10 of the 15 countries, g was statistically significantly different from zero and insignificantly different from one, suggesting a relatively high degree of capital mobility. Only India had a value of g that was significantly different from one and insignificantly different from zero, which would be consistent with capital immobility. As a result, Haque and Montiel concluded that, on average, domestic market-determined interest rates for this diverse group of countries tended to move quite closely with uncovered parity interest rates. However, they did not test how the degree of capital mobility evolved over time.

Recently, Faruquee (1991) examined the evolution of capital mobility in several Asian developing countries during the 1980s, focusing on the differentials between money market interest rates in Korea, Malaysia, Singapore, and Thailand and the three-month LIBOR on Japanese yen deposits. From September 1978 to December 1990, the mean (in absolute value) and variances of the interest rate differentials were uniformly smaller in the second half of the sample period than in the first half. To examine the behavior of these differentials over time, Faruquee employed an autoregressive conditional heteroscedasticity framework, which tested for greater capital mobility by considering whether the conditional variance of the interest rate differentials had declined over time. The results implied a uniform decline in the conditional variance for Singapore and a similar decline for Malaysia, apart from an upswing in 1984–86. In contrast, Korea showed a sharp decline in its conditional variance between 1980 and 1988 but then an upswing in the following years (although the value during 1989–90 remained below that in 1980). Thailand showed alternating periods of increasing and decreasing openness without a clear tendency toward either direction.

Using these results, Faruquee also considered how the interest rate differentials would respond to a "typical" monetary disturbance in 1980 and in 1990. A monetary expansion in Singapore would have created an interest rate differential of about $\frac{1}{2}$ of 1 percentage point in 1990 versus one of almost 2 percentage points in 1980. Moreover, the deviation from interest rate parity would have

¹⁰Kamin (1991b), p. 45. He also reported that the experience with unstable and high inflation contributed to dollarization in Argentina. This has been evident in the quoting of prices in U.S. dollars by retailers and the use of dollars in the purchase of automobiles, real estate, and other big-ticket items. He estimates that the stock of capital flight at the end of the 1980s exceeded \$20 billion and argues that about \$5 billion in U.S. currency circulated inside Argentina. This compares with domestic M1 and M2 monetary aggregates (measured using the official exchange rate) of \$4.5 billion and \$7.7 billion, respectively, at the time of their mid-decade peak in December 1985.

¹¹This was defined as the sum of the foreign interest rate and the expected rate of depreciation of the exchange rate.

¹²Edwards and Khan (1985) provided the initial framework for this analysis.

¹³Given a conventional demand for money, they argued that i_t' would be a function of income, lagged money, and the closed economy money supply (that is, the money supply net of the monetary effects of capital flows).

lasted for between three and four quarters in 1990 and for between four and five quarters in 1980. In Malaysia, the initial interest rate differentials would have been 50 basis points in 1990 and more than 200 basis points in 1980. However, the elimination of these differentials would have been much more gradual than in Singapore. For Korea, the initial interest rate differential was smaller in 1990 (a little more than 100 basis points) than in 1980 (nearly 200 basis points), and the differential decayed more rapidly in 1990. In contrast, Thailand did not exhibit a more rapid dampening of interest rate differentials in 1990 than in 1980. These results led Faruquee to conclude that there was strong support for the notion that financial market liberalization in the Asian countries in his sample had raised the level of integration between domestic and international financial markets. Moreover, this increased integration occurred even in countries that had not significantly relaxed their capital controls (for example, Korea).

Taken together, these studies suggest that, typically, significant linkages existed between domestic and external financial market conditions even in many developing countries with extensive capital controls and that capital controls may have been less effective in the 1980s than in earlier periods. A number of variables may have helped either to increase the incentives for, or to reduce the costs of, moving funds across borders, including the large differentials that the residents of many developing

countries observed in the real rates of return on holding domestic and external assets during the 1980s. Figure 4.2 of the World Bank's *World Development Report 1989* (Washington) indicates the extent of these interest rate differentials. In addition, the upsurge in capital flight during the late 1970s may have created a "learning-by-doing" effect that helped reduce the cost of evading capital controls. Moreover, holding assets in offshore or industrial country markets may have become more attractive as the extensive financial liberalizations undertaken in the major industrial countries stimulated the development of a variety of new financial products and services. In some industrial countries, the reduction or elimination of withholding taxes on nonresidents' financial income may also have increased the attractiveness of capital flight. Moreover, deposits in the banking systems of the major industrial countries may have been viewed as entailing less risk of financial loss than were deposits in the domestic banking systems in many developing countries, especially those experiencing financial crises and restructurings. A final factor may have been associated with the financing of the growing illicit trade in drugs and other goods. There is some evidence that money laundering techniques became increasingly sophisticated as the 1980s progressed. Channels that were developed to move funds derived from illicit activities could just as readily be used to move funds derived from other activities.

IV Implications of the Reduced Effectiveness of Capital Controls

As structural changes in the international financial system and other factors have reduced the ability of capital controls to insulate domestic financial market conditions from those in external markets, they may also have increased some of the explicit and implicit costs of using controls, imposed new constraints on the formulation of stabilization and structural reform policies, and raised the question of whether countries should respond to the reduced effectiveness of capital controls by tightening them or by adapting to a more open capital account.

Cost of Maintaining Capital Controls

Even if capital controls become less effective over time, they can still inhibit or heavily “tax” certain classes of external financial transactions, limit the access of some individuals or institutions to international financial markets, restrict competition in domestic financial markets, and discourage the repatriation of capital flight. Capital controls can thereby create inefficiencies in the domestic financial system and inhibit risk diversification, which can, in turn, weaken the competitive position of domestic producers in international trade and increase the vulnerability of domestic spending and wealth to domestic financial shocks.

As new channels have developed for moving funds abroad, the costs of enforcing capital controls, investigating suspected violations of the controls, and prosecuting violators of the capital controls code have risen. Kamin (1991a) has also argued that capital controls can add to an economy’s adjustment costs if they create the illusion that the authorities can target nominal variables (such as the exchange rate) without addressing the fundamental causes of inflation and balance of payments problems. As the effectiveness of capital controls erodes, moreover, inappropriate macroeconomic policies can be sustained only if capital controls are further tightened, thereby increasing the distortions they can potentially create.

Capital controls also create an implicit market value for the licenses for approved but restricted capital account transactions. These licenses are seldom sold at public auctions but are usually allocated to individuals and institutions according to a set of rules administered by the capital controls bureaucracy. A dual exchange rate system can be regarded in some respects as one in which the rights to engage in external financial transactions are auctioned to the highest bidder. However, to the extent that certain types of approved (and licensed) capital transactions are allowed to take place at the official exchange rate, then a market value for these licenses will also be created. These arrangements, therefore, often provide a strong incentive for individuals to attempt to capture the “rent” inherent in these licenses through bribery, corruption, and political influence. Rent-seeking activities may be viewed as highly profitable from an individual’s perspective; however, they have been identified as an important source of economic inefficiency in many economies with extensive controls on external trade and financial transactions (Bhagwati and Brecher, 1984). As macroeconomic instability in many developing countries in the 1980s increased the attractiveness of holding external assets, the implicit rents associated with licenses rose.

A more subtle cost is associated with the spillover effects of efforts to evade capital controls in other areas. The techniques used to evade capital controls and move funds to a parallel exchange market or abroad could often be used to evade taxes and restrictions on other types of activities as well. Exchange controls in some countries reportedly provided an impetus for the expansion of the underground economy.

Constraints on the Formulation of Macroeconomic and Structural Policies

When the effectiveness of capital controls erodes, the formulation of macroeconomic and structural policies may be further constrained. Even when external financial market conditions

are unchanged, for example, an increasing willingness and ability of domestic residents to evade capital controls implies that unstable domestic monetary and financial policies that create a large differential between the expected real returns on domestic and external assets typically lead to increased capital flight, a growing dollarization of the economy, and a smaller domestic monetary system and domestic tax base. As the domestic financial system shrinks, the revenues that the authorities can obtain from an inflation tax (at a given rate of inflation) will also be reduced.

The reduced effectiveness of capital controls can also make it more difficult for the authorities to tax financial income, transactions, and wealth. For example, high taxes on financial income and wealth can create a strong incentive for domestic residents to hold a significant proportion of their wealth as external assets, which are often subject to much lower taxes or none at all. As a result, new taxes and/or cuts in government spending will be needed as the effectiveness of capital controls erodes and leads to a decline in real tax revenues.

Even if capital controls are not relaxed, there can be strong incentives for residents to repatriate their external assets during the initial phase of stabilization and structural reform programs. Moreover, as a result of the capital flight that occurred during the 1970s and 1980s, residents of many developing countries now hold external assets whose estimated value (measured in U.S. dollars) at either the official or the parallel market exchange rate is larger than the size of their domestic financial systems (see Table 4). Thus, even if residents repatriated only a modest proportion of their external assets, relatively large capital inflows could result. These, in turn, could cause the real exchange rate to appreciate and potentially undermine the trade reform.

Policy recommendations have generally focused on three alternatives for dealing with capital flows: (1) “sterilizing” capital inflows, (2) tightening capital controls, and (3) implementing measures that allow the country to live with the capital inflow and limit the potentially adverse effects of any real exchange rate appreciation. When the exchange rate is fixed or less than perfectly flexible, open market sales of government debt by the central bank and the issuance of new government debt by the fiscal authorities have been viewed as ways of offsetting the effects of capital inflows on the domestic monetary base. Such operations would increase the stock of government debt in private portfolios but would do little to satisfy a generalized demand for increased holdings of a broad range of domestic assets, given the configuration of yields on domestic securities (including equities

and private debt instruments) when the capital inflow began. Indeed, for the private sector to be satisfied with placing all of its repatriated funds into government securities, it would probably expect a high real return on them, which could drive up government borrowing costs substantially.

If capital inflows cannot be effectively sterilized, another policy alternative is to tighten capital controls at the beginning of the stabilization and reform program. The effectiveness of tighter capital controls is likely to depend on whether the capital inflows are motivated primarily by short-run speculative considerations representing attempts to take temporary advantage of high domestic real interest rates or by a desire to repatriate a portion of the residents’ external assets over the medium term because of a credible reform program. By tightening capital controls, the authorities could gain additional short-term control over capital inflows and thereby some influence on the real exchange rate. As has been discussed, however, the effectiveness of additional control might be short-lived, and, if residents are motivated primarily by medium-term considerations, historical experience suggests that they will eventually find channels for evading the new controls. Moreover, if the authorities’ objective was to limit capital inflows over the entire period during which the structural reforms (especially the trade reform) were being phased in, then they might have to tighten capital controls repeatedly to maintain the same level of control. This kind of action could interfere with the financing of normal trade transactions and thereby undermine a trade reform as seriously as would a real exchange rate appreciation.

The potentially adverse effects of a severe tightening of capital controls raise two questions: (1) what are the potential benefits of a more open capital account, and (2) are there fiscal, financial, and structural policies that would allow a country initially to live with the capital inflows and limit the potentially adverse effects of any real exchange rate appreciation and, eventually, help the country achieve and sustain an open capital account?

Potential Benefits of a More Open Capital Account

While much of the discussion on the use of capital controls has focused on the difficulties that can be created by capital flows (Section II), recent discussions about removing capital controls in the European Community have pointed to the potential benefits of an open capital account. Capital

Table 4. Stocks of Capital Flight and Broad Money in Selected Developing Countries¹

Year	Capital Flight ² (1)	Broad Money ³ (Official Exchange Rate) ⁴ (2)	Broad Money (Parallel Market Exchange Rate) ⁵ (3)	Ratio of Column (1) to Column (2) (4)	Ratio of Column (1) to Column (3) (5)
	(In billions of U.S. dollars)			(In percent)	
1976	13.7	94.0	86.4	14.6	15.9
1977	29.2	113.9	104.7	25.7	27.9
1978	45.5	143.1	131.6	31.8	34.6
1979	62.2	184.3	171.2	33.7	36.3
1980	73.6	235.1	215.7	31.3	34.1
1981	82.5	238.0	211.4	34.7	39.0
1982	96.8	175.2	135.8	55.3	71.3
1983	121.5	171.5	103.7	70.8	117.1
1984	134.7	160.3	112.5	84.0	119.7
1985	145.7	150.5	100.1	96.8	145.5
1986	152.1	127.2	99.5	119.6	152.9
1987	181.3	125.0	91.6	145.0	197.8
1988	183.9	145.7	104.8	126.2	175.5
1989	182.4	121.3	101.8	150.4	179.2
1990	175.8	146.9	116.5	119.6	150.9

¹ Argentina, Bolivia, Chile, Colombia, Ecuador, Gabon, Jamaica, Mexico, Morocco, Nigeria, Peru, Philippines, Venezuela, and Yugoslavia.² See footnote 7 on page 12 for the definition of capital flight.³ Broad money is taken as money plus quasi money (lines 34 and 35 in the IMF's *International Financial Statistics*) totaled across all countries in the sample.⁴ The official exchange rate is line ae in *International Financial Statistics*.⁵ The parallel market exchange rate is taken from various issues of the *International Currency Analysis, World Currency Yearbook* (Brooklyn, New York).

account convertibility is likely to be sustainable only if supported by appropriate macroeconomic, financial, and structural policies.¹⁴ However, the potential benefits of an open account, as well as the costs of maintaining capital controls, will influence whether countries respond to the growing ineffectiveness of capital controls by moving toward more restrictive controls or more open capital accounts. The following efficiency and welfare gains are associated with the removal of capital controls (Crockett, 1991). First, free capital flows allow the international economy to attain the efficiency gains created by specialization in the production of financial services.¹⁵ As with trade in goods, countries will find it more efficient to import than to produce some financial services. Many wholesale financial services, whose production entails economies of

scope, scale, or risk pooling (for example, marine insurance), may often be obtained most efficiently through importation.

Second, capital account convertibility can promote dynamic efficiency in the financial sector. Increased competition from abroad will force domestic producers to become more efficient and can stimulate innovation and improve productivity.

Removing capital controls can also improve the global intermediation of resources from savers to investors if international financial markets price the risks and returns inherent in financial claims appropriately. Under such conditions, global savings can be allocated to the most productive investments. In addition, enterprises will be able to diversify their activities abroad more easily and adopt new technologies and managerial techniques, especially those involving the use of new financial products to manage risks and finance investments.

In addition, capital account convertibility allows residents to hold an internationally diversified

¹⁴ These preconditions for establishing capital account convertibility are discussed in Section V.

¹⁵ These efficiency gains can be reduced if asset prices are distorted by such variables as tax differentials.

portfolio of assets, which reduces the vulnerability of their income streams and wealth to domestic financial and real shocks. Furthermore, the removal of capital controls may facilitate an economy's access to international financial markets and reduce borrowing costs. For a lender to extend credit over the medium term, the expected yield on

the loan must cover any potential default on, or disruption to, debt-service payments. Thus, if, in a crisis, a country is expected to tighten controls or impose limits on debt-service payments during the period of the loan, lenders may either refrain from lending or incorporate a risk premium into their lending rate.

V Establishing Capital Account Convertibility

To obtain the benefits of a more open capital account, a country must be able to sustain whatever degree of capital account convertibility it establishes. Two policy-related questions arise: (1) what difficulties is a country likely to encounter when it relaxes capital controls initially and when it subsequently removes them, and (2) what policies can a country use to facilitate the transition to an open capital account and to sustain capital account convertibility?

Experiences with Capital Account Liberalization

Countries have followed quite divergent strategies in establishing capital account convertibility. Although some countries (such as Argentina, the United Kingdom, and Uruguay in the 1970s) removed most of their capital controls over a short period, most countries have proceeded more gradually, first relaxing constraints on trade-related capital flows, then those on long-term foreign direct and portfolio investment flows, and finally those on short-term financial flows. Both approaches have had their share of success and failure. The experiences of New Zealand, the United Kingdom, and a number of Latin American countries illustrate both the asset price movements and capital flows that have often accompanied the removal of capital controls and the policies that have helped sustain capital account convertibility. These countries undertook capital account liberalization as only one element in broader stabilization and structural reform programs. Moreover, the credibility and consistency of the other economic policies played a key role in determining the sustainability of an open capital account.

Industrial Countries

New Zealand and the United Kingdom removed their capital controls relatively quickly and sustained current account convertibility. New Zealand's capital controls, which had been in place since 1938, encompassed surrender requirements on the receipt

of foreign exchange, limitations on holdings of foreign securities, restrictions on overseas borrowing, and limits on the raising of funds on the New Zealand capital market by foreign-owned companies. In the United Kingdom, investors were required to obtain prior approval for most categories of foreign currency investments and were denied access to the "official" foreign exchange market for certain types of foreign investments. In addition, holdings of other foreign currency assets, such as bank deposits, were restricted to those needed for trade purposes, and the lending of sterling to nonresidents, including trade credit, was restricted.

The United Kingdom relaxed capital controls in June and July 1979 and abolished them in October of that year. At the same time, it introduced fiscal policy reforms in the context of the Medium-Term Financial Strategy (MTFS), which encompassed changes in spending and tax policies. In addition, the practice of announcing monetary aggregate targets was continued, with a gradual deceleration in the rate of monetary expansion envisaged. Moreover, when the actual budget deficit and the rate of monetary expansion exceeded the MTFS's first-year targets, the second-year budget proposed higher taxes and lower targets for the rate of monetary expansion than had been aimed at in the previous two years. Because this tightening of fiscal policy occurred when the economy was in a recession, Maynard (1988) argued that it was crucial in establishing the credibility of the Government's anti-inflation policy.

New Zealand effectively abolished exchange and capital controls in December 1984 as part of a general financial liberalization designed to improve allocative efficiency and remove artificial barriers to competition in financial markets. These financial reforms also involved removing most interest rate controls (July 1984), withdrawing credit expansion guidelines (August 1984), removing all reserve and other ratio requirements, and adopting a floating exchange rate (March 1985). The ratio requirements included minimum holdings of cash and government securities (as a percentage of assets) for savings banks and minimum investments in govern-

ment securities (as a percentage of assets) for life insurance companies, pension funds, finance companies, and building societies. As part of their fiscal reform, the authorities introduced a medium-term perspective to the formulation of the budget and announced measures that would remove a wide range of subsidies and tax incentives, increase energy prices progressively so as to cover supply costs, and establish tax and transfer policies to improve the safety net for low-income groups. Because the extensive financial reforms led to sharp changes in the relative rates of growth of traditional monetary aggregates, the authorities did not initially announce monetary aggregate targets but instead monitored a range of indicators to assess monetary conditions with the general objective of achieving low inflation. They also initiated more gradual, and less comprehensive, trade liberalization and labor market reforms. The trade liberalization involved relaxing the import-licensing system (with tariffs becoming the primary means of protection), increasing reliance on public sales of import licenses for consumer goods, and reducing the number of export incentive schemes.

In both countries, the removal of capital controls and the implementation of the other reforms were followed by sharp adjustments in capital flows and an initial appreciation of the real exchange rate (see Table 5). In the United Kingdom, for example, pension funds, insurance companies, and unit investment trusts sharply increased the proportion of their cash flows devoted to the purchase of external assets (Bank of England, 1981). In addition, overseas investment, which had previously been financed in foreign currency, was increasingly financed by borrowing denominated in sterling. Foreign currency deposits held by U.K. residents also increased by £5 billion (approximately a 100 percent increase) between the end of September 1979 and the end of June 1981.

These outflows by U.K. residents were partially offset by foreign private capital inflows; however, net identified capital outflows (including net errors and omissions) totaled \$18.8 billion in 1981, compared with \$6.3 billion in 1980 and an inflow of \$3.8 billion in 1979 (Table 5). Despite this pattern of capital flows, the real effective exchange rate appreciated by 16 percent in 1979, 20 percent in 1980, and 6 percent in 1981. Maynard (1988) has argued that the initial appreciation of the real exchange rate reflected the relatively high level of U.K. interest rates in 1979 and 1980, the United Kingdom's emergence as a net oil exporter, a series of large current account surpluses, and the growing credibility of the Government's anti-inflation program (especially following the tightening of fiscal policy implied in the 1981 budget).

In New Zealand, there was initially a historically large net capital inflow and a real appreciation of the exchange rate. Net capital inflows (including errors and omissions) reached \$2.1 billion in 1985 and \$3.7 billion in 1986. The real effective exchange rate also experienced uneven but substantial appreciation (by roughly 27 percent between 1984 and 1988).

Despite the real exchange rate appreciation and the sharp changes in capital flows, New Zealand and the United Kingdom sustained their commitment to capital account convertibility. In addition to making the removal of capital controls just one element in comprehensive stabilization and structural reform programs, the authorities of both countries established the credibility of their commitment to reduce inflation through fiscal reform and a tightening of monetary policy. However, the pace of other structural reforms differed, with New Zealand, for example, initially retaining a higher degree of trade protection than the United Kingdom (which was already highly integrated with other members of the European Community). Those similarities and differences suggest that a credible anti-inflation policy plays an important role in sustaining capital account convertibility.

Developing Countries

During the past two decades, a number of developing countries have also liberalized their capital accounts, as part of comprehensive stabilization and structural reform programs, with varying results. These differences can be illustrated by considering the capital account liberalizations of (1) the Southern Cone countries of Latin America (Argentina, Chile, and Uruguay) during the mid-1970s, which saw an initial period of success but abandoned the reform effort in the midst of domestic financial crises and balance of payments difficulties, and (2) the sustained and gradual liberalization of Mexico's capital account in the context of a comprehensive adjustment program during the late 1980s.

Failure of Capital Account Liberalization in the Southern Cone

In the early and mid-1970s, Argentina, Chile, and Uruguay removed a number of restrictions on activities in domestic financial and commodities markets as well as on current and capital account transactions.¹⁶ However, the pace and sequencing of the reforms differed significantly in the three

¹⁶Studies of these liberalizations have been undertaken by Corbo, de Melo, and Tybout (1986); Hanson and de Melo (1983); and Sjaastad (1983).

Table 5. New Zealand and United Kingdom: Capital Flows and Real Exchange Rates
(In billions of U.S. dollars)

Item	New Zealand Capital Flows				
	1984	1985	1986	1987	1988
Capital account balances	2.2	1.3	3.3	-1.6	0.7
Of which:					
Direct investment abroad	-0.2	-0.1	-0.4	-0.5	-0.2
Direct investment in New Zealand	0.3	4.2	0.3	0.2	0.4
Portfolio investment
Net errors and omissions	1.1	0.9	0.4	0.9	-0.1
	Real Exchange Rate (1985 = 100)				
	98.2	100.0	101.1	116.8	124.5
Item	United Kingdom Capital Flows				
	1978	1979	1980	1981	1982
Capital account balances	-8.0	1.9	-8.2	-20.6	-6.4
Of which:					
Direct investment abroad	-6.8	-12.5	-11.2	-12.2	-7.2
Direct investment in the United Kingdom	3.8	6.5	10.1	5.9	5.4
Portfolio investment	-2.3	1.5	-4.5	-8.7	-13.3
Net errors and omissions	3.4	1.9	1.9	1.8	-3.7
	Real Exchange Rate (1985 = 100)				
	82.5	96.1	115.4	121.9	114.5

Sources: IMF, *Balance of Payments Statistics Yearbook* and *International Financial Statistics* (Washington), various years.

countries. For example, Argentina and Uruguay removed most of their capital controls in the early stages of their reforms. In contrast, although Chile undertook the most extensive trade liberalization, it eliminated controls on international capital movements much more gradually. In particular, whereas it gradually reduced restrictions on medium-term capital flows, it maintained restrictions on short-term capital inflows until late 1981. Nonetheless, all three countries moved quickly to liberalize domestic financial markets, with Uruguay removing interest rate ceilings by 1974 and Argentina and Chile by 1976.

The extent of the fiscal reforms undertaken in the three countries also differed significantly. Chile relied primarily on reducing expenditures, eventually generating an overall fiscal surplus during 1979-81; during the same period, Uruguay also attained a balanced fiscal budget. In contrast,

although Argentina reduced the size of its fiscal deficit as a proportion of GDP, the deficit amounted to almost 8 percent of GDP throughout 1976-80.

Table 6 summarizes the key asset price movements that accompanied these three reform programs. Throughout most of the reform period, all three countries experienced ex post real interest rates that were considerably higher than those prevailing abroad (even after adjustment for the rate of depreciation of the exchange rate) and sharp real exchange rate appreciations.

The sharpest real exchange rate appreciation occurred after 1978 following a fundamental change in exchange rate arrangements. From the initiation of the reforms until February 1978 in Chile and until December 1978 in Argentina and Uruguay, large initial exchange rate depreciations were followed by a "passive" crawling peg

exchange rate arrangement, in which the exchange rate was adjusted to reflect differentials between domestic and external rates of inflation. During that period, the fiscal reforms, which facilitated reductions in the rates of monetary expansion, led to lower inflation in all three countries. Nonetheless, by late 1977, inflation remained high, at about 50 percent in Chile and Uruguay and over 200 percent in Argentina (Table 6). At that time, all three countries began to publish schedules (*tablitas*) of future exchange rates that implied daily rates of depreciation for their exchange rates that were below the existing difference between domestic and foreign rates of inflation. These *tablitas* were viewed as a mechanism for conveying the governments' commitment to reduce inflation and, thereby, for influencing expectations about inflation.

However, as the rate of depreciation of the exchange rate declined with the implementation of the *tablitas*, the spread between domestic interest rates (adjusted for the preannounced rate of depreciation of the exchange rate) and external interest rates widened, which provided domestic residents with an incentive to borrow external funds to finance domestic expenditures. In all three countries, the resulting inflows of foreign capital were accompanied by relatively slow declines in inflation and real exchange rate appreciations. Indeed, by the end of 1980, the real exchange rates in Argentina, Chile, and Uruguay had appreciated by 74 percent, 37 percent, and 67 percent, respectively, relative to their values before the *tablitas* were implemented. As the real exchange rates appreciated, the trade balances deteriorated further, which generated expectations that the preannounced exchange rate regime would not be sustainable (Corbo, de Melo, and Tybout, 1986). These developments eventually undermined the credibility of the reform programs, which was manifested in capital flight; in the abandonment of the *tablitas* by Argentina in early 1981, by Chile in June 1982, and by Uruguay in November 1982; and in a series of financial crises in the early 1980s.

These experiences have raised the question of why the capital account liberalizations ultimately proved unsustainable. Most analyses (see, for example, McKinnon, 1991; and Corbo, de Melo, and Tybout, 1986) have attributed these difficulties to inconsistencies between the *tablitas* and other macroeconomic, incomes, and financial policies. For example, Argentina made little progress in reducing the fiscal deficit. Because the financing of the deficit was a fundamental source of inflationary pressure, the resulting real exchange rate appreciation created an unsustainable current account position. Although Chile ran a government budget

surplus during its *tablita* period, the problems that the real exchange rate appreciation created for its current account position were exacerbated by a system of backward indexation of wages, which adjusted wages to reflect past rather than current rates of inflation. With inflation declining, albeit slowly, the backward indexation of wages raised real wages. High real wages, the real exchange rate appreciation, and the persistence of high real interest rates contributed to the deterioration of the Chilean current account position and reduced output. In Uruguay, the sharp real exchange rate appreciation was accompanied, beginning in 1981, by a growing fiscal deficit that was financed to an important degree by an increased issuance of foreign debt. As the inconsistencies between these macroeconomic policies became more apparent, capital flight, a balance of payments crisis, and the abandonment of the stabilization plan followed.

Mexican Experience

After debt-servicing difficulties emerged in August 1982, Mexico embarked upon a series of adjustment programs during 1983–87, under which it tightened fiscal and monetary policies and liberalized exchange and trade controls. In contrast to the Southern Cone experience, where a comprehensive liberalization of domestic financial markets was undertaken early in the reform process, the Mexican financial sector remained highly regulated during 1983–88.¹⁷ In particular, ceilings on bank lending and deposit interest rates were retained until early 1989. In addition, the capital account was liberalized very gradually: although several exchange controls were relaxed, restrictions on foreign direct investment were loosened only in 1989, and some controls on other capital flows were retained. Moreover, with the exception of financial institutions located in the areas bordering the United States, bank deposits denominated in foreign currencies have not been allowed in the domestic financial sector.

The fiscal reforms during 1983–87 led to a surplus in the primary fiscal balance—defined as the net public sector balance excluding interest payments on the Government's debt; the overall public sector deficit remained high, however, owing to substantial interest payments on both domestic and foreign debt. With limited access to external financing, the Mexican Government relied increasingly on the issuance of treasury bills as an alternative to central bank credit.

¹⁷For a review of financial liberalization in Mexico, see Coorey (1992).

Table 6. Argentina, Chile, and Uruguay: Interest Rates, Inflation Rates, and Real Exchange Rates

Year	Argentina				Chile				Uruguay			
	Real Interest Rate ¹	Inflation Rate	Real Effective Exchange Rate ²	Ex Post Peso/Dollar Spread ³	Real Interest Rate ¹	Inflation Rate	Real Effective Exchange Rate ²	Ex Post Peso/Dollar Spread ³	Real Interest Rate ¹	Inflation Rate	Real Effective Exchange Rate ²	Ex Post Peso/Dollar Spread ³
1977 =												
Q1	-26.2	191.3	35.4	-42.0	91.7	90.4	66.1	66.7	-1.5	64.5	55.8	...
Q2	3.7	122.0	38.5	-16.3	41.9	74.7	80.6	16.4	2.1	58.6	57.5	...
Q3	-15.9	161.8	48.7	18.5	35.2	53.5	87.6	-17.1	-3.8	68.4	61.2	...
Q4	37.9	215.2	47.7	137.5	54.8	49.9	81.1	4.2	21.4	45.5	63.1	23.0
1978 =												
Q1	28.8	196.3	53.0	112.8	51.3	33.1	78.7	16.9	43.1	23.7	63.7	54.8
Q2	-1.1	185.1	58.3	94.8	33.5	34.7	81.1	11.6	13.4	52.5	61.8	4.8
Q3	17.6	126.3	64.8	78.0	30.3	33.4	83.6	22.3	17.9	47.6	60.0	1.8
Q4	-9.7	166.9	67.5	38.0	49.1	27.2	82.8	38.3	15.6	49.4	60.0	12.5
1979 =												
Q1	-23.0	204.3	69.6	33.3	33.7	25.4	83.7	12.7	0.4	68.9	70.6	14.8
Q2	-11.5	138.4	75.7	42.3	19.2	34.6	86.3	9.6	-5.3	73.2	76.5	14.8
Q3	-4.8	169.5	82.2	73.9	5.1	51.8	86.0	3.1	-14.6	90.0	82.1	20.5
Q4	53.3	96.7	84.3	63.7	13.9	41.1	90.6	26.9	-11.1	86.9	93.4	28.6
1980 =												
Q1	19.5	97.1	92.8	44.3	25.0	29.5	97.8	30.9	0.4	66.7	99.9	30.0
Q2	9.2	98.2	97.2	48.3	7.7	33.3	99.0	17.5	18.6	41.8	99.0	22.1
Q3	42.6	73.2	102.8	74.5	10.1	28.1	101.0	18.4	5.4	57.4	100.7	14.5
Q4	13.9	87.6	117.2	60.8	5.7	34.4	107.9	16.1	22.6	34.6	100.1	13.3
1981 =												
Q1	52.8	71.6	118.6	20.0	28.6	18.4	115.3	24.4	30.9	25.1	108.6	17.1
Q2	-19.6	129.8	73.6	-1,280.6	34.9	11.7	125.8	20.7	23.1	29.7	123.5	19.6
Q3	28.9	177.2	82.0	51.0	38.1	9.3	125.5	17.3	13.0	40.4	126.8	11.4
Q4	1.0	125.0	78.2	-1,041.7	44.4	6.7	122.6	20.7	27.4	25.2	124.8	16.2
1982 =												
Q1	...	161.8	64.5	...	50.8	2.9	128.9	20.4	38.5	7.7	127.3	9.4
Q2	...	71.3	53.4	...	48.8	-0.8	119.0	14.8	36.1	11.4	129.5	8.2
Q3	...	324.5	46.2	...	30.2	26.1	89.4	...	32.3	22.7	133.2	7.3
Q4	...	342.6	38.5	...	20.9	55.8	83.8	...	44.0	18.8	67.4	-96.5

Sources: IMF, *International Financial Statistics*, various issues; Corbo, de Melo, and Tybout (1986); Sjaastad (1983); and IMF staff estimates.

¹Average annual lending rate during the quarter minus the inflation rate.

²Base 1980 = 100.

³Defined as $\frac{(1+i_t)}{(1+i_t^*)(1+\hat{s}_t)} - 1$, where i_t is the average annual domestic interest rate, \hat{s}_t is the devaluation rate, and i_t^* = LIBOR for Chile and the U.S. dollar lending rate for Argentina and Uruguay. The spread for Chile is constructed from information contained in Sjaastad (1983).

Despite the adjustment programs, it proved difficult to achieve a sustained reduction in inflation during 1983–87. Nonetheless, the real exchange rate remained relatively stable, as a major depreciation in mid-1986 was followed by a gradual depreciation of the peso relative to the U.S. dollar (Table 7).

To achieve a lower rate of inflation, the Mexican authorities introduced in December 1987 a comprehensive economic program that encompassed a tightening of fiscal and monetary policies and a wage-price-exchange rate freeze in the context of a social pact with labor and business. The main objective of this Pact of Economic Solidarity was to stop the inertial component of inflation by breaking the *de facto* wage indexation. Moreover, after a large initial devaluation in December 1987, and a smaller one in February 1988, the exchange rate remained stable for the rest of the year.

Although the new stabilization program reduced inflation sharply, the real exchange rate appreciated and the peso-U.S. dollar interest rate spread increased sharply in favor of peso-denominated assets. Between December 1987 and December 1988, for example, the real exchange rate appreciated by about 29 percent. As in the Southern Cone, these developments led to concerns about the sustainability of the economic program and the exchange rate policy, which were reflected in high nominal and real interest rates. Evidence presented in Khor and Rojas-Suárez (1991) indicates that the expected future spot exchange rate was consistently more depreciated than the actual future spot exchange rate during 1988 in response to uncertainty about the sustainability of the exchange rate policy. Moreover, when the Government eliminated controls on interest rates in April 1989, domestic real interest rates rose and the interest rate spread widened (Table 7).

The Mexican authorities reacted quickly, however, and introduced a revised economic program in late 1988 aimed at improving the credibility of exchange rate policy and reducing real interest rates. The two major features of the program were the announcement of a fixed rate of depreciation of the exchange rate at 1 peso per U.S. dollar a day from January 1989 to May 1990 and a further intensification of the fiscal adjustment. The macroeconomic, exchange rate, and financial policy mix of this program thus differed in a number of respects from those employed in the Southern Cone countries in the 1970s. First, although Mexico and the Southern Cone countries preannounced their exchange rate adjustments, the financial liberalization of domestic markets in Mexico was accompanied by an *increased* rate of depreciation of the Mexican peso. Second, and perhaps more

important, Mexico further tightened its fiscal and monetary policies to enhance the credibility of the exchange rate policy and made them consistent with a long-run rate of inflation *below* the observed rate. During 1989–90, for example, the primary surplus reached the historically large value of 8 percent of GDP.

Despite these fiscal adjustments, however, domestic real interest rates remained high in 1989 and attracted a large foreign private capital inflow. Net flows of foreign private capital (including errors and omissions) reached US\$4.7 billion in 1989 after having recorded an outflow for most of the period since 1983. Since Mexican borrowers had only limited access to international capital markets, a significant proportion of these short-term inflows represented the repatriation of the external assets of domestic residents.

These high interest rates did not seem to be sparked by expectations of a large unanticipated exchange rate depreciation. Indeed, the differential between the interest rates on the peso- and dollar-denominated treasury bills declined sharply relative to the preannounced depreciation of the exchange rate during 1989–90. However, the announcement of a possible agreement with commercial banks aimed at reducing Mexico's external debt and debt-service payments in July 1989 was accompanied by a decline in domestic interest rates; further reductions occurred after the final agreement was signed in February 1990. These interest rate movements suggest that the debt-reduction agreements had an important effect on the perceived default risk associated with holding Mexican claims. Khor and Rojas-Suárez (1991) present empirical evidence that interest rates on domestic financial markets in Mexico were linked to perceptions of the default risk associated with holding Mexico's external debt. Subsequently, real interest rates declined further as the fiscal reform was sustained, inflation was reduced,¹⁸ and the rate of depreciation of the exchange rate was slowed.¹⁹ Mexico was therefore able to manage the transition to lower real interest rates and reduced inflation without reintroducing controls on the domestic financial system or tightening capital controls. Nonetheless, it did sustain a large capital inflow despite maintaining some controls on short-term capital flows.

¹⁸By the end of 1991, the 12-month rate of inflation was down to 20 percent.

¹⁹It was only in May 1990 that the Mexican authorities reduced the depreciation of the exchange rate to 0.80 peso per U.S. dollar a day. In mid-November 1990, the depreciation was established at 0.40 peso a day, and in November 1991, the depreciation was further reduced to 0.20 peso per U.S. dollar a day.

Table 7. Mexico: Interest Rates, Inflation Rates, and Real Exchange Rates
(In percent)

Year	Real Ex Post Interest Rate ¹	Inflation Rate	Real Effective Exchange Rate ²	Ex Post Peso/Dollar Spread ³
1986 = Q1	17.3	111.6	63.7	-31.4
Q2	12.3	84.4	62.5	-8.9
Q3	18.8	104.7	56.8	-27.3
Q4	18.4	113.0	55.7	5.2
1987 = Q1	13.1	139.1	52.5	4.9
Q2	9.4	142.7	54.6	7.2
Q3	-3.5	143.3	59.1	18.9
Q4	-18.6	169.5	57.5	-42.5
1988 = Q1	35.4	272.3	64.4	56.0
Q2	15.3	54.3	69.9	24.8
Q3	20.3	19.4	74.3	23.5
Q4	29.5	12.9	73.9	41.1
1989 = Q1	32.9	24.6	73.4	21.3
Q2	42.2	17.2	75.3	28.1
Q3	17.8	13.7	75.7	10.9
Q4	2.5	19.6	74.2	16.5
1990 = Q1	24.5	46.0	74.8	21.7
Q2	15.8	23.6	76.7	15.7
Q3	8.8	24.3	76.8	12.4
Q4	8.5	25.8	78.6	13.3
1991 = Q1	10.5	32.7	80.8	10.5
Q2	8.1	15.3	84.8	7.1
Q3	4.8	11.4	85.9	7.8
Q4	...	19.6	86.7	10.2

Sources: IMF, *International Financial Statistics*, various issues; Rojas-Suárez (1992b); and IMF staff estimates.

¹Three-month treasury bill rate minus the inflation rate observed in the subsequent quarter (annualized).

²Based on relative movements in consumer prices. Trade-weighted exchange rate index (1980 = 100).

³Defined as $\frac{(1+i_t)}{(1+\hat{s}_t)(1+LIBOR)} - 1$, where i_t = domestic interest rate; \hat{s}_t = devaluation rate.

Implications of Capital Account Liberalization for Asset Prices and Capital Flows

The experiences of industrial and developing countries with establishing capital account convertibility suggest that there have been some similarities in the initial asset price movements and capital flows that have characterized the opening of the capital account. As a result, the implementation of certain policies can make it more likely that capital account convertibility can be sustained. As already noted, the opening of the capital account has historically occurred in conjunction with extensive stabilization and structural reform programs and has often been accompanied by large increases

in gross capital inflows and outflows and, especially in developing countries, *net* capital inflows that were large relative to the size of the domestic financial system. In contrast, the United Kingdom experienced a *net* capital outflow. In developing countries, high ex post real domestic interest rates and, sometimes, a significant spread between the ex post domestic interest rates (adjusted for exchange rate changes) and comparable international interest rates emerged when the domestic financial system was liberalized in conjunction with the opening of the capital account. High real interest rates have also occurred in countries that have liberalized their domestic financial systems and retained capital controls. In all of the countries reviewed, however, the real exchange rate appreciated despite dif-

ferences in exchange rate arrangements, the speed with which capital controls were removed, the ultimate sustainability of the capital account liberalization, or even whether there was a *net* capital inflow or outflow.

An opening of the capital account should be accompanied by an expansion of gross capital flows as residents and nonresidents take advantage of the opportunity to diversify their portfolios internationally. However, there could potentially be either a net capital inflow or net outflow. To the extent that capital controls were effective before their removal, residents would presumably not have been able to attain their desired net foreign asset (or liability) positions; nor would nonresidents have been able to acquire their desired holdings of domestic assets or to borrow from domestic lenders. After capital controls are removed, the scale of net capital flows will therefore be determined by the relative size and direction of the portfolio adjustments undertaken by residents and nonresidents.

Given the very different approaches that countries have followed in establishing capital account convertibility, it is perhaps somewhat surprising that all of the countries examined experienced a real exchange rate appreciation. Because so few countries have established capital account convertibility, it is difficult to judge whether this type of real exchange rate movement will always occur. Moreover, country-specific structural changes often influenced real exchange rate movements. For example, the removal of capital controls in the United Kingdom coincided with its emergence as a major oil exporter. A number of countries that have implemented stabilization without liberalizing capital account restrictions have also experienced real exchange rate appreciations. When such policies are viewed as credible and likely to be sustained, they create the prospect of improved economic conditions, raise the expected return from holding claims on the domestic economy, and thereby increase residents' and nonresidents' desired net holdings of claims on the domestic economy. This increased demand could be satisfied, in part, by an appreciation of the real exchange rate, which would raise the real value of domestic claims relative to foreign claims. In addition to affecting the relative value of the existing stocks of foreign assets and domestic claims, an appreciation of the real exchange rate, which reduces the competitiveness of a country's exports and leads to a current account deficit, would also create a channel for increasing the net stock of external holdings of claims on the domestic economy.

Despite the difficulties involved in estimating the anticipated rate of inflation, there is some evidence

that the high ex post real interest rates that emerged when some developing countries opened their capital accounts also corresponded to high ex ante rates.²⁰ A number of factors have often been cited as contributing to the emergence of high real interest rates. Since establishing the credibility of the authorities' anti-inflation commitment typically involves implementing restrictive monetary and credit policies, it has been argued that adjustment to slower rates of monetary and credit expansion will give rise to higher real interest rates in order to equilibrate the growing demand for money (reflecting a lower anticipated rate of inflation) and slower monetary expansion.

In some countries, inconsistent macroeconomic and exchange rate policies at times cast doubts on the sustainability of the authorities' exchange rate policy, and the prospect of a large exchange rate depreciation caused domestic interest rates to rise.²¹ Moreover, in countries where private and official borrowers had experienced difficulties in meeting their debt-service payments on domestic and external debt, domestic interest rates often embodied a high implicit default risk premium.²² In countries where prudential supervision of the financial system was inadequate, Diaz Alejandro (1985) and McKinnon (1991) argued that high loan interest rates at times reflected high-risk lending activities. Moreover, imperfections in domestic financial markets that raised the operating costs of domestic banks contributed to large spreads between lending and deposit interest rates. In Chile, for example, several regulations in the financial sector raised costs (Sjaastad, 1983).

The spreads between domestic and foreign interest rates (adjusted for exchange rate changes) have been more pronounced in developing countries than in industrial countries. For the industrial countries, the opening of the capital account was followed quickly by the establishment of covered interest rate parity with offshore markets for shorter maturity instruments. For the developing countries that had liberalized domestic interest rates, large ex post interest rate differentials (adjusted for exchange rate changes) often persisted. In part, the arbitrage of interest rate differentials may have been inhibited by the remaining capital controls (when the capital account was opened gradually), by inefficiencies in the domestic financial system that raised the cost of arbitrage activities, and by the absence of certain institutions or markets (such as forward foreign

²⁰See Rojas-Suárez (1992b) for evidence on the Mexican case.

²¹For the case of Argentina, see Calvo and Fernández (1982).

²²For the case of Mexico, see Khor and Rojas-Suárez (1991).

exchange markets). In addition, the arbitrage of financial market conditions differed substantially before and after the emergence of the debt crisis in 1982. In the Southern Cone countries in the late 1970s, for example, the relatively high domestic interest rates attracted large-scale lending from foreign financial institutions, whereas the inflows that Latin American countries experienced in connection with stabilization programs implemented after the crisis derived primarily from a repatriation of external assets held by domestic residents. Although the prospect of earning relatively high interest rates stimulated the large inflows of foreign capital before 1982, Ize and Ortiz (1987) have argued that these flows were influenced by how residents and nonresidents perceived risks associated with holding the country's domestic and external financial instruments. In particular, they suggested that, before the debt crisis, the external government debt (or publicly guaranteed private foreign debt) of developing countries was viewed as having a more "senior" claim on debt-servicing resources than domestic government debt. The emergence of debt-servicing difficulties in the early 1980s contributed to large interest rate spreads in many developing countries by increasing the perceived default risk associated with holding claims on these countries and by eliminating the perceived seniority of external debt.

Preconditions for Establishing Capital Account Convertibility

As discussed earlier, some countries had difficulty sustaining an open capital account because of the resultant capital flows and asset price movements, including the appreciation of the real exchange rate. However, these experiences also suggest that if countries implement certain policies before opening the capital account, it is more likely that they will be able to maintain capital account convertibility. The policies include macroeconomic and financial policies that help reduce the differences between domestic and external financial market conditions as well as remove or reduce restrictions that inhibit the flexibility of wages and the prices of goods and assets. In addition, countries can minimize abrupt changes in capital flows by limiting the use of taxes on financial income, wealth, and transactions that create strong incentives to move funds or financial transactions abroad. They can also take steps to strengthen the safety and soundness of the domestic financial system.

One of the key macroeconomic preconditions for opening the capital account that has charac-

terized a number of successful liberalizations is a fiscal reform that significantly reduces the fiscal deficit and finances the remaining deficit in a non-inflationary manner. Indeed, in order to establish credibility that the reform program and capital account convertibility can be sustained, countries may initially have to undertake a more substantial fiscal reform than would ultimately be needed for price stability and sustained growth. A large fiscal deficit financed by money creation gives domestic residents a strong incentive to move funds abroad to escape the inflation tax. As a result, sustaining an open capital account means that the inflation tax cannot be used as an important source of revenue. Moreover, even a large fiscal deficit financed by bond issuance may not be compatible with an open capital account if a rising stock of external and internal debt leads to doubts about a country's ability to service these debts and, thereby, about its creditworthiness.

The problems that Argentina, Chile, and Uruguay encountered in the early 1980s also suggest that maintaining capital account convertibility requires strengthening the prudential supervision of financial institutions as well as carefully formulating financial policies that establish more flexible interest rates, restructure and recapitalize domestic financial institutions, and more clearly define the scope of the protection offered by the official safety net that underpins the domestic financial system. Domestic interest rates on "traded" financial instruments must be comparable to those prevailing in international financial markets. In addition, the domestic financial system must be strengthened so that it can compete effectively with external financial institutions and withstand the effects of high asset price variability. Therefore, any financial system with large holdings of bad debts or nonperforming loans must be restructured, and, eventually, the capital position of domestic financial institutions (especially banks) must be raised to meet appropriate capital adequacy standards, such as those established for international banks by the Basle Committee on Banking Supervision.

In order to limit the potential fiscal costs associated with maintaining an official safety net under a financial system with an open capital account, the authorities must take measures to limit the moral hazards associated with such a safety net. Most national financial systems have historically been stabilized through short-term emergency liquidity assistance by central banks, some form of private or official deposit insurance, and direct short- or medium-term emergency liquidity assistance for large troubled institutions. Although such policies can help contain the effects of a financial crisis,

they expose the authorities to credit risks either through lending at the central bank's discount window, lending to troubled institutions, or deposit insurance obligations. Moreover, just as with other types of insurance, these safety nets can create a "moral hazard" problem if the insured behave differently because of the existence of the insurance. If deposits are fully insured, for example, depositors may have little incentive to monitor the activities of a bank's managers, and an element of market discipline will be lost. The credit risks associated with an official safety net have traditionally been limited by minimum capital adequacy standards; codes of behavior in financial markets; restrictions on risk taking; systems of prudential supervision; and institutional arrangements for managing the risks inherent in payments, clearance, and settlement systems.

Removing capital controls and establishing capital account convertibility will lead to the introduction of new financial techniques and instruments, new sources of funds, and new participants in domestic financial markets. Although such changes increase competitive pressures that can lead to important efficiency gains, they can potentially introduce new and highly complex elements of risk—some of them systemic—that make the pricing of financial instruments more difficult and that can contribute to abrupt changes in credit flows once previously unforeseen risks become evident. In addition, more complex financial structures and ownership linkages can make the detection of fraud and other illegal activities more difficult.

Countries that have opened and liberalized their financial systems have been confronted with potential official credit risks stemming from institutional failures that can be created by the mispricing of risk, widespread fraud, or large domestic and international macroeconomic shocks. These countries must decide whether they need to change the scope and coverage of their official safety nets and how to manage the risks inherent in an open and liberalized financial system. In particular, countries that had heavily regulated and relatively closed financial systems may have to develop new institutional arrangements and financial policies in response to large macroeconomic, terms of trade, and financial shocks. One key characteristic of many repressed financial systems is an inflexible financial structure in which most financial institutions hold relatively undiversified portfolios that contain few external assets. Credit is allocated by rule rather than by price. Large, economy-wide shocks that create debt-servicing difficulties in the enterprise sector therefore have an immediate effect on the financial sector's income and capital positions.

However, in repressed financial systems, the monopolistic or oligopolistic position of the finan-

cial institutions has often allowed the institutions to operate with relatively large spreads between lending and deposit interest rates (often buttressed by official interest rate ceilings). Although the spreads often reflected inefficient operations, they have typically been large enough to enable financial institutions to earn high profits, which they could use, over time, to strengthen their capital position. Debt-servicing difficulties for enterprises, if not too large, could therefore be absorbed into the banks' spreads and capital positions. Typically, central bank assistance was needed only for large shocks.

As a repressed financial system is liberalized and the capital account opened, questions arise as to whether the central bank will be called upon more or less frequently to support the financial system and whether the authorities will have available new techniques or options for dealing with a financial crisis. The answer to the first question determines whether the efficiency gains associated with liberalizing and opening the financial system have to be "purchased" at the expense of greater public sector funding obligations. The still rather limited experience with liberalizing and opening financial systems suggests that offsetting forces are likely to influence how frequently the official safety net will be used. If financial institutions, firms, and households hold more internationally diversified portfolios, then their income streams and wealth positions will be better hedged against the effects of economy-specific shocks. By itself, portfolio diversification raises the minimum size of an economy-wide shock that can create difficulties for enterprises, households, and the financial system and can serve as an important buffer against requests for official assistance. This is an important but often undiscussed benefit of a more open capital account.

However, other developments may increase the need for official support when large shocks occur. In a liberalized financial system, competitive pressures on financial institutions will increase and lead to smaller interest rate spreads (an important efficiency gain) and an erosion of oligopolistic profits. In a system with explicit or implicit deposit insurance, competitive pressures are known to lead financial institutions (especially banks) to substitute insured deposits for capital as a source of funding. The resulting weakened capital positions (as well as the smaller interest rate spreads) mean that banks will be more exposed to debt-servicing difficulties in the nonfinancial sector.

To the extent that the capital positions of financial institutions deteriorate with financial liberalization, then liberalizing the financial system without opening the capital account (the standard sequencing recommendation) may actually

increase the need for central bank assistance more than the combination of simultaneously opening the capital account and liberalizing the financial system. The need for assistance increases because financial institutions in a closed financial system typically have less diversified portfolios than those in a more open system.

Thus, enhanced capital adequacy requirements and strengthened prudential supervision will be necessary to offset some of the moral hazard problems created by the existence of an official safety net and thereby to reduce the need for official assistance. They are likely to be even more important in countries that liberalize their financial system but maintain a closed capital account.

If a large domestic or external shock does occur, the second question is whether the central banks of industrial and developing countries will have new techniques or instruments for dealing with a financial crisis caused by a more open and liberalized financial system. One way countries can smooth the costs associated with a crisis over time is by borrowing from international markets, which a number of industrial countries have done (for example, the United States in dealing with the savings and loan industry problem). Most developing countries, however, do not have this option because, historical experiences suggest, their perceived creditworthiness is likely to deteriorate as a large shock hits and it becomes clear that there are serious debt-servicing problems through the domestic economy.

Developing countries are also unlikely to have the option of borrowing from domestic bond markets—which may be too small—and will have difficulty taking the losses directly into the fiscal budget by changing current spending and taxation. Thus, directly or indirectly, the losses to the banking system are likely to be taken onto the books of the domestic central bank. This process can involve an exchange of central bank assets for the bad assets in the banking system.

The need to manage these periodic large shocks suggests that, even if the monetary authorities in developing countries switch to market-based monetary policy instruments to influence the growth of the monetary base or to meet seasonal demands for liquidity, direct credits to troubled financial (and possibly nonfinancial) institutions will probably remain part of the central bank's "tool kit." Indeed, given that relatively large terms of trade or financial shocks hit developing countries more frequently than they do industrial countries, such credit instruments are likely to remain relatively more important in developing countries.

For many heavily indebted developing countries, debt-reduction operations will be important for

improving their perceived creditworthiness and for facilitating renewed access to international financial markets. Provided that this group of countries accompanies such operations with credible macroeconomic structural policies, they may also reduce the borrowing costs faced by their residents.

Domestic taxes on financial income, wealth, and transactions can also strongly influence residents' choices regarding the location of financial institutions, the composition of their portfolios, and where financial transactions occur. Industrial countries' experiences with capital account convertibility have repeatedly demonstrated the need to harmonize domestic taxes on the financial sector with those prevailing in other countries. Razin and Sadka (1991) have argued that, unless all countries can agree on a common set of taxes on financial activities and income, the optimal domestic tax on income from capital would be zero. Harmonization should be accomplished before capital controls are completely removed if large-scale, tax-motivated capital flows are to be avoided.

Countries that establish prudent macroeconomic, financial, and fiscal policies stand to obtain the greatest efficiency and risk-diversification benefits from an open capital account. The experience of the 1980s shows, however, that periods of high asset price variability have characterized international financial markets. Asset price variability can have especially adverse effects on employment, output, and wealth in economies in which regulations and institutional arrangements inhibit wage, price, and interest rate adjustments. For example, wage indexation arrangements that prevent real wages from adjusting to a large financial shock (for example, a sharp rise in international interest rates) will result in a larger adjustment in employment and output. Eliminating or reducing such regulations and institutional arrangements could help an economy to adjust more smoothly to both real and financial shocks.

Thus, economies with capital account convertibility must adapt their domestic economic and financial structures to withstand the effects of asset price variability. They can offset asset price variability to some extent by using the emerging global markets to trade financial risks and by designing external contracts and debts better. During the 1970s and 1980s, the residents and governments of many developing countries often took relatively "open" positions with regard to their exposure to international asset price variability, especially to interest rate movements. For example, a sizable proportion of the external debt of the residents of most of these countries was denominated in U.S. dollars, and the interest rate was linked to LIBOR. As a result, sharp changes in LIBOR

could lead to large changes in debt-service payments. Developing countries have attempted to limit or offset the impact of external financial shocks through self-insurance (for example, by holding larger foreign exchange reserves to offset larger external debt positions) and official multilateral assistance (for example, through the IMF's compensatory and contingency financing facility). Market-based hedging instruments are also available; these include exchange-traded futures and options contracts, over-the-counter forward agreements, and swap arrangements on major international interest rates, exchange rates, and commodity prices.²³ Whereas futures contracts could be used to hedge against short-term movements in international interest rates, for example, interest rate caps could be used over a medium-term horizon to protect against highly adverse interest rate increases. Governments can often facilitate the use of market-based hedging strategies by the private sector by removing existing legal restrictions on their use.

One limitation on the use of market-based hedging strategies is that there is a relatively limited number of interest rates and commodity prices for which there are active and liquid derivative product (for example, futures or options) markets. Nonetheless, even if derivative product markets are absent, contractual arrangements can often be adjusted to incorporate a fixed interest rate or commodity price or to make payments contingent on future developments. For example, the debt-reduction package negotiated between Mexico and its commercial creditors in February 1990 included a "value recovery" clause, which will allow banks holding discount bonds or par bonds with an inter-

est rate below contractual rates to receive, starting in 1996, a portion of oil revenues accruing from a real oil price of more than US\$14 a barrel. Those payments would equal 30 percent of the incremental oil revenue and would be subject to an annual limit equal to 3 percent of the banks' eligible claims at the time the agreement was signed.

Even if countries put in place the policies needed to sustain capital account convertibility, they must still decide how quickly to move to full convertibility. Fischer and Reisen (1992) have argued that capital account liberalization can be facilitated if capital controls are gradually phased out. They suggest, in particular, that controls should first be removed on foreign direct investment and trade-related flows and that those on other flows should be removed only after extensive progress has been made on the stabilization and reform programs. A number of industrial economies have implemented a phased reduction; this process, however, creates new avenues for disguised capital flows and can work effectively only if domestic and external financial market conditions do not differ markedly. In contrast, New Zealand and the United Kingdom successfully sustained an open capital account after abruptly removing capital controls early in their reform process. The speed with which a country can move to full capital account convertibility appears to depend on how far it has proceeded in implementing the policies that are preconditions for convertibility as well as on its willingness to take further policy measures that credibly establish that it will carry through with the implementation of the remaining policy steps. Moreover, historical experience suggests that the consistency of macroeconomic, financial, and exchange rate policies is more important for sustaining an open capital account than is the sequencing of the removal of capital controls.

²³See Mathieson and others (1989) for a more detailed discussion of the use of these instruments.

Appendix Capital Flight and Capital Controls

Letting w_t equal stock of wealth at time t , then the analysis in the main text suggests that desired holdings of domestic (DA) and foreign (CF) assets will be given by

$$(CF/w)_t^d = f_1(v_t) \quad (1)$$

$$(DA/w)_t^d = f_2(v_t), \quad (2)$$

where d denotes the desired proportion and v is the vector of expected returns and risks associated with domestic and external assets.

In the presence of capital controls, it may take time for domestic residents to shift from domestic to external assets when, for example, the risks associated with holding domestic assets increase. A simple stock adjustment model can allow for this possibility. Thus,

$$\frac{(CF/w)_t - (CF/w)_{t-1}}{(DA/w)_t - (DA/w)_{t-1}} = \lambda \left[\frac{f_1}{f_2} - \frac{(CF/w)_{t-1}}{(DA/w)_{t-1}} \right]. \quad (3)$$

The stock of broad money ($M2$) is used as a proxy for the stock of domestic assets. To the extent that other domestic assets can escape the inflation tax or expropriation risk, then using $M2$ could bias the results. In particular, if domestic residents were to substitute $M2$ assets for other domestic assets that were either insulated from the inflation tax or free from expropriation risk, the ratio $CF/M2$ would rise even if no foreign assets were accumulated. However, the limited domestic financial markets of the countries in the sample typically do not offer a broad range of financial instruments that constitute good inflation hedges; nor are they free from expropriation risk. As a result, a rise in expropriation risk is likely to entail a portfolio substitution away from *all* domestic financial instruments toward external assets. In this

situation, the ratio $CF/M2$ will represent the general flight to external assets.

Equation (3) was estimated in levels with the lagged ratio $(CF/M2)_{t-1}$ on the right-hand side (with coefficient $1-\lambda$). In addition, different future (time $t+1$), current, and lagged values of the government deficit and risk variables were employed to gauge the factors influencing expectations regarding fundamentals. In all cases, the estimated λ s were not statistically different from one, implying that portfolios were adjusted within the year. The coefficients on most of the future and lagged values of the fundamentals proved to be statistically insignificant; thus, equations (4) and (5) report only the most significant current and lagged values of the fundamentals for the two groups.

$$(CF/M2)_t = \text{constants} + 5.3 rk_t + 17.2 (Def/GDP)_t \quad (4)$$

(8.160) (2.000)

$$R^2 = 0.96$$

$$(CF/M2)_t = \text{constants} + 1.7 rk_t + 10.8 (Def/GDP)_{t-1} \quad (5)$$

(2.092) (2.677)

$$R^2 = 0.96$$

where the values in parenthesis represent t -statistics. The constant terms consist of a general intercept term and a dummy variable for all but one of the countries. Equation (4) corresponds to the set of countries with modest or significantly reduced capital controls, and equation (5) corresponds to the set of countries with extensive or tightened capital controls. Using the sample means for each group's variables, the elasticities of the capital flight variable with respect to the risk and deficit variables are .44 and .36, respectively, for the countries with less restrictive capital controls, and .13 and .51, respectively, for the countries with highly restrictive capital controls.

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