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3 Current Account Deficits and Capital Flows in East Asia and Latin America: Are the Early Nineties Different from the Early Eighties?

Gian Maria Milesi-Ferretti and Assaf Razin

3.1 Introduction

A number of East Asian and Latin American countries have been the recipients of a large portion of total international capital flows to developing countries, both in the late seventies to early eighties and in the early nineties. These inflows have financed persistent current account imbalances, as well as the accumulation of foreign exchange reserves. The Mexican crisis and the recent Asian crisis have shown, however, that abrupt reversals in international capital flows can cause severe problems for economies with large external imbalances and have spurred renewed interest in the question of current account sustainability. A number of recent studies have focused on potential early warning indicators in predicting exchange rate, financial, and balance-of-payments crises.[1] This chapter contributes to this literature by examining the sustainability of current account deficits in three East Asian countries (Korea, Malaysia, and Thailand) and three Latin American countries (Chile, Colombia, and Mexico) in the early eighties and in the early nineties. Having been originally written

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1. See, e.g., Eichengreen, Rose, and Wyplosz (1995) on speculative attacks, Frankel and Rose (1996) on exchange rate collapses, Kaminsky and Reinhart (1996) on banking and balance-of-payments crises, Goldstein (1996) on financial crises, and Milesi-Ferretti and Razin (1996) on current account sustainability.

in early 1996, it does not include the 1997–98 Asian crisis, but it nevertheless provides some links between these events and the paper's findings. The methodology builds on Milesi-Ferretti and Razin (1996); this study emphasizes in particular regional aspects and stresses the differences between the experiences of the early eighties and those of the early nineties.

A remarkable feature of the experience of highly indebted East Asian countries in the early eighties was that (with the exception of the Philippines) they avoided the debt crisis that instead affected a large number of Latin American countries. Sachs (1985) argued that differences in external conditions could not account for the differences in outcomes across the two regions and emphasized instead the importance of differences in exchange rate policy and trade openness. A decade later, some of the countries that experienced severe external imbalances in the early eighties have been running large current account deficits again. Given the differences in the macroeconomic policy stance and in the type of financing of these deficits, as well as the similarities in the exchange rate regime, it is interesting to compare these more recent episodes with those of the early eighties in order to draw inferences about what factors make a country that runs persistent external imbalances vulnerable to a crisis.

Given the growth record of the East Asian countries we consider over the past 25 years, a natural question to ask is whether their macroeconomic and structural features make them less likely to experience a reversal in international capital flows. In our sample, East Asian countries are characterized by a higher degree of openness and by higher levels of savings and investment than Latin American countries. In our analysis we provide arguments as to why these macroeconomic and structural features can (but need not) enhance the ability of an economy to sustain protracted current account imbalances, and we highlight the importance of other factors, such as the degree of exchange rate flexibility and domestic financial fragility.

Another important question that we address in this chapter is whether the composition of capital inflows plays an important role in determining the sustainability of external imbalances. There is a significant difference in the composition of capital flows between the late seventies to early eighties and the early nineties. In the earlier period, during which most of the countries we consider had relatively closed capital accounts, capital flows to developing countries took mainly the form of official lending and commercial bank loans, while in the latter period, characterized by increased capital account openness, portfolio flows and foreign direct investment played a major role (see, e.g., Fernández-Arias and Montiel 1996 for an overview and Calvo, Leiderman, and Reinhart 1994 and Corbo and Hernández 1996 for a comparison between the experiences of East Asia and Latin America).

Finally, we examine the implications of differences across decades in the domestic macroeconomic policy stance and the external environment (in particular, terms of trade and world interest rates) for the sustainability of current

account deficits. There is an ongoing debate on whether the resumption of large capital flows to several developing countries (among which those in our sample) in the early nineties has been driven mainly by "pull" factors, such structural reforms and improved macroeconomic policy management, or by "push" factors, such as the low level of real interest rates and weak economic activity in OECD countries in the early nineties (see, e.g., Calvo et al. 1993; Chuhan, Claessens, and Mamingi 1993; Fernández-Arias 1996).

The rest of the chapter is organized as follows. Section 3.2 discusses solvency and sustainability of current account deficits in the context of standard intertemporal models of current account determination, in which the supply of foreign funds is infinitely elastic at the world interest rate. Section 3.3 examines key determinants of the supply of foreign funds in the presence of capital market imperfections, in particular asymmetric information. Section 3.4 describes the country episodes. Section 3.5 presents a cross-country comparison of potential sustainability indicators, related to macroeconomic and structural features of the countries, as well as to the composition of external liabilities and the magnitude of external shocks. Section 3.6 concludes.

3.2 Intertemporal Solvency

The current account balance, CA, is the change in the net foreign asset position of a country. In an accounting framework, it is defined as follows:

$$\text{CA}_t \equiv F_t - F_{t-1} = Y_t + rF_{t-1} - C_t - I_t - G_t \tag{1}$$
$$= S_{pt} + S_{gt} - I_t,$$

where F is the stock of net foreign assets, Y is GDP, r is the world interest rate (assumed for simplicity to be constant), C is private consumption, G is government current expenditure, I is total investment (private and public), S_p is private savings, and S_g is public savings. As the second equality in equation (1) shows, the current account balance is also equal to the difference between the economy's total savings and its total investment. Current account imbalances are a vehicle for the intertemporal allocation of resources.[2]

We assume in this section that capital mobility is perfect, so that the net supply of foreign funds is infinitely elastic at the world interest rate level, postponing the discussion of imperfections in international capital markets to section 3.3. We define intertemporal solvency as a situation in which the country as a whole and each economic unit within the country, including the government, obey their respective intertemporal budget constraints. The basic sol-

2. This section draws on Milesi-Ferretti and Razin (1996). For a more complete discussion of the intertemporal approach to the current account, see, e.g., Obstfeld and Rogoff (1995, 1996) and Razin (1995).

vency requirement can be expressed by iterating forward the difference equation (1) and imposing the standard transversality condition that the present value of net indebtedness in the indefinite future has to tend to zero:

$$-(1 + r)F_{t-1} = \sum_{t}^{\infty} \frac{1}{(1 + r)^{s-t}}(Y_s - C_s - I_s - G_s). \tag{2}$$

The right-hand side of equation (2) is simply the present discounted value of future trade surpluses (deficits), which must be equal to the present level of foreign debt (assets) in order for the country to be solvent.

Solvency, a long-run concept, clearly depends on the evolution of the macroeconomic aggregates on the right-hand side of equation (2). This equation, while valid in an accounting sense, has limited operational use because it does not incorporate any behavioral assumption and thus does not impose any structure on future events or policy decisions. Indeed, if future trade surpluses are sufficiently large, solvency is always ensured. Therefore, researchers have attempted to define a baseline for private agents' behavior and for future policy actions. With regard to private agents' behavior, it is typically assumed that they aim at smoothing their consumption stream, consistently with maximization of a concave utility function. With regard to future policy actions, in the case of public sector solvency the baseline has typically been established by postulating a continuation into the indefinite future of the current policy stance *and* no change in the relevant features of the macroeconomic environment (see, e.g., Corsetti and Roubini 1991). This gives rise to the notion of "sustainability"—the current policy stance is sustainable if its continuation in the indefinite future does not violate solvency (budget) constraints. The definition of sustainability based on solvency considerations is simpler for fiscal imbalances, given that these can be associated (at least to some degree) with direct policy decisions about taxation and government expenditure. Defining sustainability is more complex in the case of current account imbalances, given that these reflect the interaction between savings and investment decisions of the government and domestic private agents, as well as the lending decisions of foreign investors. While government decisions can, to a first approximation, be taken as given, private sector decisions are going to depend on investors' expectations about future government actions. Furthermore, a key relative price—the exchange rate—is a forward-looking variable that by definition depends on the future evolution of policy variables.

The question of whether current account imbalances are sustainable can be reformulated as follows. Is a continuation of the current policy stance and/or of the present private sector behavior going to entail the need for a "drastic" policy shift (such as, e.g., a sudden policy tightening causing a large recession) or to lead to a "crisis" (such as an exchange rate collapse leading to an inability to service external obligations)? If the answer is yes, we have a case of unsustainability. This drastic change in policy or crisis situation can be triggered by

a domestic or an external shock that causes a shift in domestic and foreign investors' confidence and a reversal of international capital flows.[3] Note that the shift in foreign investors' confidence may relate to their perception of a country's *inability* or *unwillingness* to meet its external obligations.

What are the implications of the solvency condition for the long-run level of income and absorption? It is possible to impose some more "structure" on the condition for solvency by considering that for an economy to remain solvent, the ratio of external indebtedness to output cannot grow without bound. Assume that the domestic economy grows at a given rate $\gamma < r$,[4] and let lowercase letters indicate ratios of variables to GDP. Abstracting from changes in the real exchange rate, equation (1) can then be expressed as follows:

$$f_{t+1} - f_t = \frac{1}{1 + \gamma_t}[\mathrm{tb}_t + f_t(r^* - \gamma_t)], \tag{3}$$

where tb is the trade balance. This expression simply says that changes in the ratio of foreign assets to GDP are driven by trade imbalances and by a "debt dynamics" term proportional to $f(r^* - \gamma)$. This latter term rises with the world rate of interest and falls with the rate of growth of the domestic economy. Consider now an economy in steady state, in which consumption, investment, and public expenditure are constant as a fraction of GDP. The long-run net resource transfer (trade surplus) that an indebted country must undertake in order to keep the ratio of debt to output constant is determined by

$$\mathrm{tb} = 1 - i - c - g = -f(r^* - \gamma). \tag{4}$$

In the presence of economic growth a country can sustain permanent current account deficits while remaining solvent even when the growth rate is below the world interest rate, provided these deficits are accompanied by sufficiently large trade surpluses. Clearly, if the long-run growth rate of the economy is zero, the current account must be balanced in order for the ratio of foreign liabilities (assets) to GDP to be constant. In this case, a country that is a debtor in the long run will have to run a trade surplus, equal to $-rf$, to pay the interest on its external liabilities. The size of the net resource transfer implied by condition (4) has been used as a simple measure of solvency in a number of studies. For example, Cohen (1996) considers the Mexican resource transfers (as a fraction of GDP) after the 1982 debt crisis as an "upper bound" on the feasible

3. In the presence of uncertainty, definitions of solvency and sustainability rely on expected values, implying that in some states of the world insolvency will occur. Under these circumstances, the issue becomes how likely the occurrence of a "bad" scenario is and how vulnerable a country is to external shocks.

4. Otherwise, a country could play "Ponzi games" indefinitely—i.e., borrow to repay interest on its outstanding debt, without violating solvency conditions, as long as total indebtedness rises at a rate below the economy's growth rate. This possibility, which can arise in a Samuelson-type overlapping generations model (see Gale 1973), implies that the economy follows a dynamically inefficient growth path.

resource transfers for heavily indebted countries, and he compares this magnitude with each high-debt country's resource transfer as defined by equation (4), in order to assess its solvency prospects (see also Cohen 1992).

Two main approaches to the empirical implementation of intertemporal models of the current account have been used. The first approach emphasizes the consumption-smoothing role of the current account. Consider a small open economy under perfect capital mobility that takes the world interest rate as given. In the absence of adjustment costs, investment will be undertaken so as to equate the marginal product of capital to the world interest rate in every period, regardless of the consumption profile. The latter will be determined by utility maximization considerations, subject to an intertemporal budget constraint. Assume for simplicity that the consumption function takes a quadratic form and that the discount rate equals the real interest rate.[5] In this case, it is easy to show that even in the presence of uncertainty the expected level of consumption will be fixed along the optimal path and will be a function of the expected present discounted value of future net output. It can thus be shown that current account deficits will reflect expected increases in future net output, $Y - I - G$ (see, e.g., Ghosh and Ostry 1995).

This relation between the current account and expected changes in net future output has been used as the basis for tests of current account behavior by Sheffrin and Woo (1990), Otto (1992), and Ghosh (1995) for a sample of industrial countries and by Ghosh and Ostry (1995) for developing countries. The basic idea is an application of Campbell's (1987) methodology for testing the permanent income theory of consumption and consists in the estimation of a vector autoregression model linking the (detrended) current account and changes in net output to past values of the same variables. The current account needs to be detrended in order to control for the presence of long-run trends in foreign savings (see n. 5 below). The model implies that the current account should incorporate all available information for predicting future changes in net output, and therefore, the coefficient on past net output changes in the equation determining current net output changes should be zero. The simple model sketched above allows one to construct a predicted current account path that can be compared with the actual one in order to gauge whether, according to the model, actual current account balances have been "excessive."

An alternative method of estimating an intertemporal model of current account determination has been used by Glick and Rogoff (1995) and Leiderman and Razin (1991). The methodology consists in the determination from an intertemporal model with investment adjustment costs and perfect capital mobility of the predicted responses of the investment and the current account to productivity shocks (global and country specific, temporary and permanent), as well as to other shocks, and in the subsequent estimation of the model.

5. The latter assumption is not innocuous: it implies the absence of a "consumption-tilting" term that would lead to an increasing or a decreasing consumption path.

While the presence of investment adjustment costs and stochastic productivity lends more realism to the model, the data requirements for this type of estimation have so far limited its application to industrial countries only.

What is the relation between external solvency, current account sustainability, and "excessive" current account deficits? The concepts of solvency and sustainability discussed earlier in this section are binary—a country is either solvent or insolvent, and a current account deficit either sustainable or unsustainable—and imply an increasing order of restrictiveness. The first concept, based on the intertemporal budget constraint, can accommodate a variety of future behavior patterns. The second is based on a continuation of the current policy stance and therefore imposes more structure on future behavior.[6] The notion of excessive current account deficits provides instead a quantitative metric based on deviations from an optimal benchmark (structurally derived from a model under the assumption of perfect capital mobility and efficient financial markets). One problem in using this metric as a basis for evaluating how close to unsustainability is a given path of current account imbalances is that its benchmark relies on the absence of capital market imperfections; consequently, deviations from the benchmark can simply reflect the existence of liquidity constraints or other financial market imperfections. We discuss how these imperfections can affect the supply of external funds in section 3.3; we do not, however, attempt to incorporate imperfect capital markets in an encompassing intertemporal model. Instead, we rely on the insights of the theoretical discussion to examine the issue of sustainability of protracted current account imbalances following a nonstructural approach. We can thus incorporate a broader set of theoretical considerations than those that can be accommodated in a structural approach using the state-of-the-art equilibrium models, at the cost of lacking the ability to provide a quantitative analysis of sustainability.

3.3 Supply of External Funds and Debt Flows

So far we have considered a world in which market imperfections such as asymmetric information, moral hazard, and absence of bankruptcy arrangements do not play a role in shaping international borrowing and lending. These problems, however, are relevant, in particular for developing countries, typically characterized by shallower financial markets and higher vulnerability to external shocks, such as changes in the terms of trade. A vast literature, mostly spawned by the debt crisis experiences of 1982,[7] has used imperfect capital market models to study how the equilibrium level of international lending depends on the form of creditor sanctions (including loss of reputation), the ability of the borrower to make credible commitments (e.g., through investment),

6. Within the notion of sustainability, we can also include cases in which a timely reversal of the current policy stance is sufficient to prevent a "hard landing."

7. For an early analysis of sovereign borrowing in private financial markets predating the debt crisis, see Eaton and Gersovitz (1981).

the relative bargaining power in debt renegotiations, and so forth (see Eaton and Fernández 1995 for a recent theoretical survey on sovereign debt, and see Cline 1995 for a retrospective on the debt crisis).

In this section we first present a simple illustrative framework that emphasizes the factors that determine international investors' willingness to lend to a given country and their interaction with factors affecting the country's willingness to meet its external obligations. We turn next to the issue of asymmetric information between borrowers and lenders and its relation to the composition of capital flows.

3.3.1 Willingness to Lend: Portfolio Diversification

Consider a simple (static) model of international portfolio diversification. An international investor has to decide its optimal portfolio allocation by choosing investment projects across $J + 1$ countries, indexed by j. The rate of return in the home country ($j = \mathrm{H}$) expressed in foreign currency follows an i.i.d. process with mean ρ_{H} and variance σ_{H}^2. The remaining J countries (the rest of the world) are symmetric and have rates of return r^j, which follow a random i.i.d. process with mean ρ and variance σ^2.

Assume that the international investor has a portfolio of size W, and denote by θ the share of the investor's portfolio allocated to the home country. Her or his portfolio's expected return is given by

$$W[\theta\rho_{\mathrm{H}} + (1 - \theta)\rho], \qquad \rho_{\mathrm{H}} = i_{\mathrm{H}} - \dot{s}/s, \tag{5}$$

and the variance is given by

$$W^2\left[\theta^2\sigma_{\mathrm{H}}^2 + \frac{(1 - \theta)^2}{J}\sigma^2\right], \tag{6}$$

where i_{H} is the rate of return in the home country's currency, s is the exchange rate between the home country and the rest of the world, and a dot indicates a time derivative. The variance of the rate of return, σ_{H}^2, represents the combined effect of exchange rate and domestic interest rate risk. Clearly, both ρ_{H} and σ_{H}^2 are endogenous, since they depend on the government's policy choices, but this is not made explicit here. The international investor is assumed to have constant absolute risk aversion γ; thus expected utility U is given by

$$U = W[\theta\rho_{\mathrm{H}} + (1 - \theta)\rho] - \frac{\gamma W^2}{2}\left[\theta^2\sigma_{\mathrm{H}}^2 + \frac{(1 - \theta)^2}{J}\sigma^2\right]. \tag{7}$$

Maximizing expected utility with respect to θ and denoting the foreign currency value of the home country's indebtedness θW by B_{H} we obtain

$$B_{\mathrm{H}} = \left(\sigma_{\mathrm{H}}^2 + \frac{\sigma^2}{J}\right)^{-1}\left(\frac{i_{\mathrm{H}} - \dot{s}/s - \rho}{\gamma} + W\frac{\sigma^2}{J}\right). \tag{8}$$

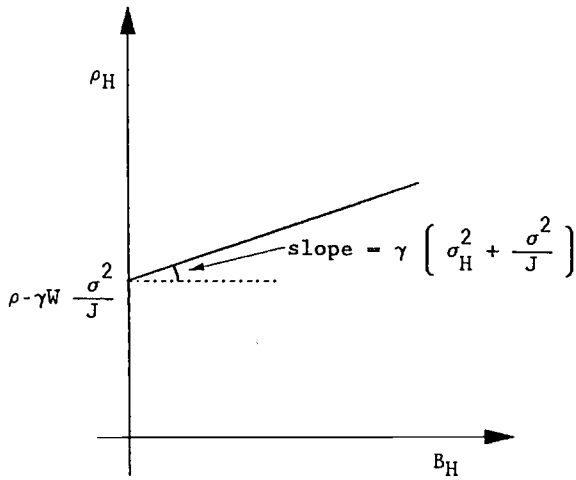

Fig. 3.1 Supply of external funds

Figure 3.1 depicts the supply of external finance B_H as a function of the mean rate of return in the home country ρ_H, which will be identified as the cost of foreign borrowing. From equations (5) and (8) one can verify that the supply schedule is upward sloping; that is, the country has to raise the rate of interest (adjusted for expected exchange rate changes) in order to elicit more capital from abroad. Furthermore, the supply schedule shifts upward as (i) the opportunities for international diversification (J) rise (as in the case of "emerging markets"), (ii) the country's credit and exchange rate risk (σ_H^2) increases, and (iii) the rate of interest in the rest of the world (ρ) increases. It shifts downward as (iv) the riskiness of the rest of the world's investment projects (σ) rises and (v) the size of the world's portfolio (W) increases.

As highlighted in figure 3.1, at the given level of external liabilities B_H, in order to elicit external funding a country must pay the rate of interest ρ_H, which is determined as the intersection between the supply-of-external-funds schedule and the vertical line originating at B_H. If a negative shock that shifts the supply schedule upward occurs, there will be an increase in the country's cost of external borrowing ρ_H. This increase may force the country to change its policy stance in order to generate the additional flow of resources necessary to service external liabilities.[8] For example, Calvo (1997) shows how small "news" about the mean return of the investment project in the home country

8. The risk premium is exogenous in this model, and the home country's share of the world portfolio adjusts so as to ensure that eq. (8) holds. A more complete model would endogenize the domestic rate of return and its variance, the rate of depreciation, and hence the risk premium. Dornbusch (1990) emphasizes the importance of the option value of waiting on the part of international investors (or domestic residents holding funds abroad) in determining the required risk premium for investing in the country.

can have a large effect on the share of world portfolio allocated to the home country when the portfolio is well diversified (J is large). In a similar setup, Calvo and Mendoza (1996b) find that in the presence of costly learning about country-specific information, multiple portfolio allocation equilibria characterized by investors' herding behavior can occur. Furthermore, the range of possible allocations widens when J increases.

How would structural and policy factors impinge on the variables that determine willingness to lend in the stylized portfolio model presented above? The domestic rate of return can be linked with the economy's productivity growth prospects and with fiscal policy (directly in the form of current tax rates and indirectly through expected future taxation needed to repay the public debt). It will also be affected by the efficiency with which domestic financial markets intermediate foreign funds. The variance of domestic returns is linked, for example, to the overall degree of macroeconomic stability and in particular to the vulnerability of the domestic economy to shocks such as fluctuations in the terms of trade. In that context, the variance is reduced when the diversification of the production and export structure increases.

3.3.2 Asymmetric Information and Composition of External Flows

In addition to risk aversion considerations, asymmetric information and enforcement problems can also play a pervasive role in international borrowing and lending, in particular for countries with less developed capital markets. The composition of the supply of external funds can have important implications for the intensity of asymmetric information problems in the context of international capital flows. Foreign investors can lack the same kind of information with respect to domestic agents and would thus require a positive spread between domestic and international rates of return. Razin, Sadka, and Yuen (1998) formalize the idea that these problems can be more severe in the case of portfolio debt and equity than in the case of foreign direct investment, insofar as the latter is a "tie-in" activity, involving an inflow of both capital and managerial inputs. This combination of inputs can give foreign investors the same kind of "home court" advantage (with respect to, say, business information) that domestic investors have, but foreign portfolio (debt and equity) investors lack.[9]

One general aspect of asymmetric information is that the rate of interest a bank charges may itself affect the riskiness of loans by affecting either (i) the action of borrowers (moral hazard or incentive effect) or (ii) their characteristics (sorting or adverse selection effect). As shown in Stiglitz and Weiss (1981) this type of asymmetric information problem can lead to credit rationing (see also Folkerts-Landau 1985 for an open economy application). The existence of implicit or explicit bailout clauses can worsen moral hazard problems, in an

9. For empirical studies of the link between foreign direct investment and macroeconomic performance, see Fry (1993) and Borensztein, De Gregorio, and Lee (1998) among others.

analogous fashion to a decline in collateral. In practice, the international financial community may be unwilling to let a country default on its debt obligations because of the trade and capital markets disruptions this could induce or for protection of foreign investors.[10] Moral hazard problems may also be exacerbated by implicit or explicit bailout clauses *within* a debtor country: for example, excessive borrowing by the banking sector can be induced by expectations of a government bailout should the sector run into financial difficulties.

In international borrowing and lending, problems of moral hazard can arise whenever the borrower can take "hidden actions" that affect output and hence its ability or willingness to meet external obligations. Gertler and Rogoff (1990) emphasize this point in a model in which the borrower cannot commit to using funds for investment, rather than for "disguised consumption" or capital flight. This argument links the intensity of moral hazard problems—and hence the level of lending—with the level of investment or (inversely) with capital flight; it also underscores how foreign direct investment may be a way for foreign investors to ensure that the final use of their funds is "appropriate."

What other macroeconomic and structural features of a borrower can affect willingness to pay and willingness to lend? In principle, variables that increase the cost of default on foreign obligations (by raising, e.g., the impact on the domestic economy of sanctions or isolation from international capital markets) strengthen willingness to pay and therefore make a sudden reversal in capital flows less likely. If default is associated with trade disruptions, its cost will be higher for more open economies. If the "punishment" for default consists in the inability to borrow and lend on international capital markets (at least for some time), its cost would be higher for countries with higher output variability, because of the inability to smooth consumption.

In sum, informational asymmetries, enforcement problems, and other forms of capital market imperfections can cause the supply of external funds to be less than perfectly elastic, and to be subject to shifts under a number of domestic and external shocks. Structural factors as well as the macroeconomic policy stance determine the vulnerability of the economy to shocks, as the theoretical discussion has highlighted.

3.4 Country Episodes

We now turn to a description of the experience of a selected group of countries with persistent current account imbalances. We attempt to characterize these different experiences in terms of macroeconomic policy stance, structural characteristics of the economy, composition of external liabilities, and balance-of-payments shocks. Figures 3.2 through 3.8 illustrate the behavior of the current account balance, the level of savings and investment, the real ex-

10. On the effect of this type of moral hazard on the behavior of commercial banks lending to developing countries, see, e.g., Dooley (1995).

change rate, the degree of openness, and the level of external liabilities. We do not discuss developments in Chile and Korea during the nineties, because in the period under examination (1990–95) these countries did not experience sustained current account imbalances.

3.4.1 Latin America and the Early Eighties

Chile, 1977–82

The first half of the seventies was a turbulent period for Chile, both politically and economically. The coup in 1973 ousted Allende's socialist government and installed a military regime with radically different economic policies. After a period during which the role of government in the economy had steadily increased, the new regime strived for a balanced budget, privatization, and financial and trade liberalization. In the aftermath of the coup the economy endured a severe recession (1974–75), resulting from a combination of external shocks (fall in the price of copper and increase in the price of oil) and domestic policy tightening. (See figs. 3.2 and 3.3.)

By 1978, yearly inflation was reduced from over 400 percent in 1973 to 30 percent, the public sector budget was in surplus (1.5 percent of GDP), and the economy was growing at 8 percent. However, the pickup in investment and the low level of private savings implied a large current account deficit (5 percent of GDP). Furthermore, the unemployment rate stood above 14 percent. After having adopted a schedule of preannounced devaluations of the nominal exchange rate (the *tablita*) for a year and a half, the government decided to use the exchange rate as a full-fledged nominal anchor in the disinflation process and fixed the rate vis-à-vis the dollar in June 1979. The following years were characterized by a continuation of strong recovery. Inflation, however, declined slowly, with full backward-looking indexation providing inertial momentum (Edwards and Cox-Edwards 1987). This inflationary process was sustained by monetary growth due to large capital inflows, reflecting private sector external borrowing to finance investment in the wake of financial liberalization.[11] Consequently, the real exchange rate appreciated rapidly and the current account balance deteriorated, with the ratio of the deficit to GDP reaching double digits in 1981.

By late 1981 wholesale prices were falling, but the magnitude of the cumulative real appreciation caused expectations of a devaluation and therefore a widening of interest rate spreads between peso- and dollar-denominated assets. Output began to decline and unemployment increased. In 1982 a sequence of external events—a sharp decline in the terms of trade, the large increase in world interest rates, and a drying up of external sources of financing following

11. As pointed out by Edwards and Cox-Edwards (1987) among others, private foreign borrowing did not carry government guarantees. A large fraction of foreign borrowing was carried out by the so-called *grupos*—large conglomerates that included industrial firms as well as banks. They had been major buyers of privatized firms, and their banks extended most of their lending to firms of the same conglomerate, circumventing lax regulations.

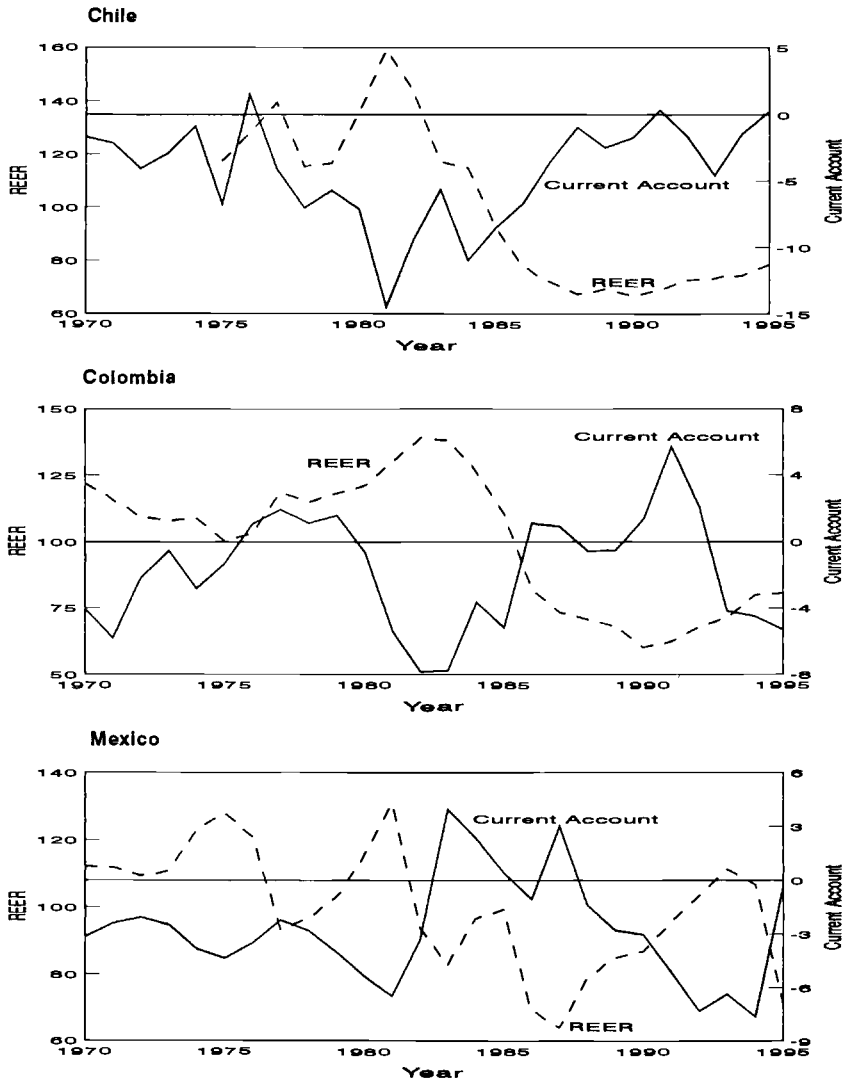

Fig. 3.2 Current account and real effective exchange rate: Chile, Colombia, and Mexico, 1970–95

Sources: IMF, *International Financial Statistics* (Washington, D.C., various issues); IMF, *World Economic Outlook* (Washington, D.C., various years).

the Mexican debt crisis—forced the government to abandon its exchange rate peg. In June 1982, the exchange rate was devalued by 18 percent and the wage indexation scheme was abandoned. This, however, was not sufficient. As in Mexico in 1994, speculation against the peso increased and reserves declined rapidly. Toward the end of 1982, in the shadow of an impending financial crisis the government imposed capital controls and import surcharges. By June 1983,

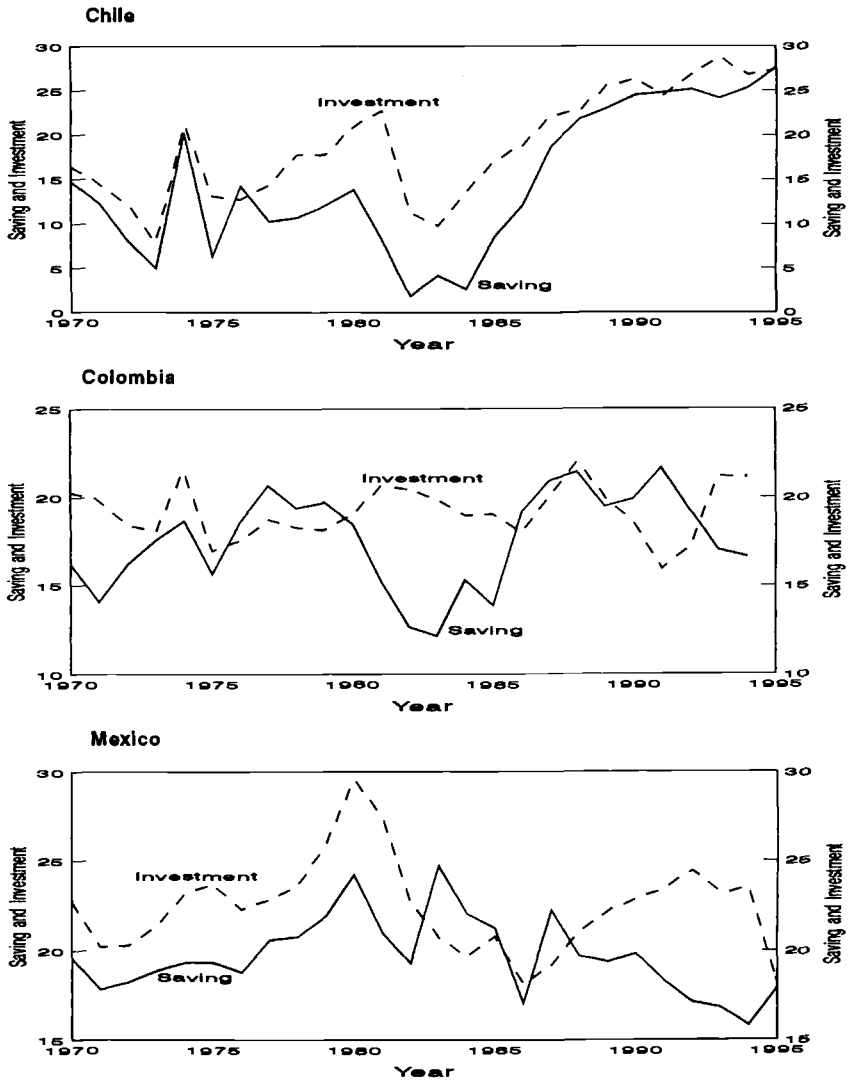

Fig. 3.3 Saving and investment: Chile, Colombia, and Mexico, 1970–95
Sources: See fig. 3.2.

the peso had been devalued in nominal terms by close to 100 percent with respect to its June 1982 level.

The crisis caused widespread bankruptcies in the private sector, and the government was forced to liquidate banks but also to bail out several other financial and nonfinancial institutions. In particular, the central bank intervened in support of the banking system, giving rise to a large quasi-fiscal deficit. The absence of government guarantees on private foreign borrowing notwithstand-

ing, the government assumed responsibility for a large fraction of the private sector's foreign liabilities. The crisis was extremely severe: output fell by 14 percent in 1983 alone and unemployment rose dramatically to close to 20 percent (Corbo and Fischer 1994). Inflation rebounded to its "historical" level of 27 percent, and the management of the crisis caused an initial policy reversal with respect to exchange rate policy, wage indexation, current and capital account openness, and privatization. Starting in 1984, however, the government resumed its policy of trade liberalization, privatization, and deregulation, and the adjustment of the Chilean economy, although painful, was relatively rapid. Growth resumed in 1984 and has averaged over 6 percent over the past 10 years.

It should be noted that not all indicators pointed to a likely crisis. The economy was experiencing fast economic growth. The fiscal balance was in surplus throughout this period; indeed, the government had been reducing its external liabilities. Investment was growing rapidly, albeit from a low base, and so were exports (until 1981). Which factors can then explain the Chilean 1982 crisis? Five factors are most commonly mentioned:

1. Size of external debt. External indebtedness was close to 50 percent of GDP in 1981, with interest payments totaling 5.5 percent of GDP.
2. Overvalued real exchange rate. Inflation failed to converge rapidly to world levels due to the effects of lagged wage indexation, as well as to increased demand for nontradables fueled by foreign borrowing. Investment was stimulated by the reduced price of imported capital goods, as well as by the possibility of getting financing on world markets at the world rate of interest, given the pegged exchange rate.
3. Low level of savings. National savings averaged only around 10 percent of GDP during the period 1978–81. Their decline was particularly significant in 1981, possibly reflecting intertemporal substitution effects.
4. Weak financial system and overborrowing. "Overborrowing" by the private sector was fueled by the availability of foreign credit (following the recycling of oil exporters' surpluses) and facilitated by weak supervision of the banking sector, which encouraged risk-taking behavior (see Diaz-Alejandro 1985; Velasco 1991). In this context, de la Cuadra and Valdes-Prieto (1992) stress the negative role played by the government's extension to the private sector of exchange rate and interest rate risk guarantees.
5. Severe external shocks. The large increase in world interest rates, the drying up of foreign financing, and a decline in the terms of trade, the intensity of which was compounded by the narrow commodity specialization of exports, dominated by copper, all contributed to precipitating the external crisis.

Colombia I, 1980–88

Colombia is one of the few Latin American economies that did not experience an external debt crisis during the early eighties, notwithstanding severe external shocks. The success of Colombia has been attributed to a conservative

macroeconomic policy stance that avoided large fiscal imbalances and swings in the real exchange rate (see, e.g., Ocampo 1989; Cline 1995; Clavijo 1995). After a period of rapid economic growth during the second half of the seventies, characterized by a "coffee boom," the economic situation deteriorated in the period 1981–84. Economic growth slowed considerably, the current account turned to a large deficit (close to 8 percent of GDP in 1982 and 1983), and net capital inflows fell, causing foreign exchange reserve losses. The deterioration in the current account reflected both weaker export performance because of the world recession and fast growth in imports. Fiscal accounts deteriorated, both because of the impact of slower growth on revenues and because of an increase in current expenditure. Investment expenditure was reduced after 1982 because of difficulties in obtaining external financing. During 1981 and 1982 the real exchange rate appreciated, leading the authorities to increase the monthly rate of depreciation. This succeeded in reversing the appreciation. Notwithstanding an improvement in the trade balance, the current account was negatively affected by higher interest payments and all external debt indicators worsened.

A fiscal adjustment plan was adopted at the end of 1984 and resulted in a rapid reduction of the fiscal deficit in the following two years (by around 7 percentage points). The fiscal adjustment plan was accompanied by a large depreciation in the real effective exchange rate and opened the door to a series of large loans from commercial banks, which allowed a refinancing of principal coming due without the need for rescheduling. Favorable terms-of-trade developments (an increase in the price of coffee), as well as coal and oil discoveries, led to a current account surplus and an acceleration of economic growth to 5 percent in 1986. The reduction in current account imbalances, reflecting an increase in both public and private sector savings, together with the increase in growth, allowed Colombia to reverse the increasing trend of the ratio of external debt to GDP.

Mexico I, 1977–82

After a short period of fiscal adjustment following a balance-of-payments crisis in 1976, the policy stance was relaxed as a result of the increase in the amount of proven oil reserves from 6.4 billion barrels in 1975 to 16 billion barrels in 1977. Constraints on foreign borrowing were lifted as foreign banks started to compete to lend to Mexico on very attractive terms. On the domestic policy front, public expenditure increased substantially from 29 percent of GDP in 1977 to 41 percent in 1981, with state-owned enterprises taking an important role in public investment. During 1978–81 public and private investment rose rapidly, and growth was above 8 percent. While private savings increased, public sector savings experienced a significant decline; this, together with the investment boom, was reflected in large current account deficits (over 6 percent of GDP in 1981). As a result, external debt almost doubled in dollar terms between 1979 and 1981.

Although domestic inflation exceeded 20 percent, the nominal exchange rate was being devalued at a slower rate, resulting in a large real appreciation. During 1981 it became clear that the earlier assumptions regarding the rate of increase of oil export revenues were unrealistic. This fueled speculation that the peso would be devalued, causing massive capital flight. To stem the drain of foreign exchange reserves, the government increased its external borrowing by over $20 billion; the terms of the debt, however, began to worsen with an increase in the spreads over the London Interbank Offer Rate (LIBOR; at a time when the LIBOR was increasing) and a shortening of maturity.

The crisis worsened in 1982, as a result of external shocks (such as the increase in world real interest rates and the world recession) and increasing fiscal imbalances. A 40 percent devaluation of the peso in February stemmed capital flight only briefly, and the government had to borrow an additional $5.7 billion in medium-term, syndicated loans. In August a dual exchange rate system was established. Shortly thereafter, dollar deposits at Mexican commercial banks were converted into pesos at an unfavorable exchange rate, and on 1 September the banking system was nationalized. During the last four months of the year, there was a de facto moratorium on foreign debt service, until a December agreement with foreign commercial banks to reschedule $23 billion of debt amortization was reached. In 1983, the new de la Madrid administration implemented a drastic adjustment plan, characterized by a fiscal contraction, a lifting of previously adopted trade restrictions, and a reduction in real wages. The turnaround in the current account was immediate—it registered a surplus, although this came at a heavy price. Output contracted by over 5 percent in 1983, with public and private investment falling drastically.

Aside from external shocks and the high level of external indebtedness, what were the key aspects of the 1982 Mexican crisis? Four factors are often mentioned in the literature:[12]

1. Real exchange rate appreciation. Between 1977 and 1981, Mexico's exchange rate appreciated by over 30 percent in real terms vis-à-vis the dollar (Buffie 1989). This appreciation stimulated a boom in imports, which increased much faster than oil exports. The perceived unsustainability of the exchange rate led to large capital flight during the years preceding the crisis, as well as in the following years.

2. Large fiscal imbalances. Unlike in Chile, in Mexico most of the debt accumulation reflected public sector external borrowing. The increase in public expenditure during the late seventies and early eighties was extremely large, and it came on top of another large increase in the early seventies. Further-

12. Some observers (Diaz-Alejandro 1984) attributed the debt crisis mainly to external factors and underlined that several distinguished commentators (and the commercial banks themselves) argued that there was nothing to worry about because the current account deficits were financing higher public and private investment. Indeed, the macroeconomic performance between 1978 and 1981 was very good, with high growth and rapid increases in public and private investment.

more, it financed not only increased public investment but also growing public consumption. Notwithstanding the large revenue increase coming from oil, total revenues failed to keep up with expenditures, causing large fiscal deficits to emerge. The government's external position was worsened by the fact that public sector external borrowing went to finance not only fiscal imbalances but also private capital flight, as foreign exchange reserves were rapidly depleted.

3. Misperceptions regarding oil wealth. Policy design in Mexico was based on an overoptimistic assessment of future oil prices; when the expected price increases failed to materialize, the government did not introduce alternative measures to limit fiscal imbalances.

4. Weakness of the financial system. The Mexican system was characterized by financial repression, with high reserve requirements that had the main purpose of facilitating the financing of public sector deficits. The sharp deterioration in macroeconomic conditions in 1982 worsened banks' and firms' balance sheets, which were further hit by the effects of the exchange rate depreciation on their dollar exposure.

3.4.2 East Asia in the Early Eighties

Korea, 1978–86

Korea experienced fast growth rates during the 1960s and the 1970s, driven by investment and exports.[13] Foreign indebtedness, after rising sharply at the time of the first oil crisis, remained stable as a fraction of GDP at around 32 percent in the latter part of the seventies, notwithstanding persistent current account deficits, thanks to the high growth rate and low or negative real interest rates. The second oil shock, however, hit the Korean economy at a particularly delicate juncture. It was preceded by a period of real exchange rate appreciation, due to high domestic inflation coupled with a fixed nominal exchange rate vis-à-vis the U.S. dollar, and coincided with a period of political instability, following the assassination of President Park in October 1979, and with a bad harvest. As a result, the economy experienced a deep recession in 1980; the current account deficit rose to over 8 percent of GDP as savings declined sharply, and the ratio of foreign debt to GDP increased to 44 percent. (See figs. 3.4 and 3.5.)

The policy response to the recession consisted of a devaluation of the exchange rate, a tightening of macroeconomic policy, and the adoption of structural reforms, such as trade and financial liberalization. Economic growth resumed in 1981, and the fiscal stance was relaxed. During this adjustment period, Korea was able to continue to borrow on international markets and finance large current account deficits: the ratio of foreign debt to GDP reached 52 percent in 1982. With strong growth under way and a recovery in external

13. For analyses of the Korean experience, see, e.g., Collins and Park (1989), SaKong (1993), Soon (1993), and Haggard et al. (1994).

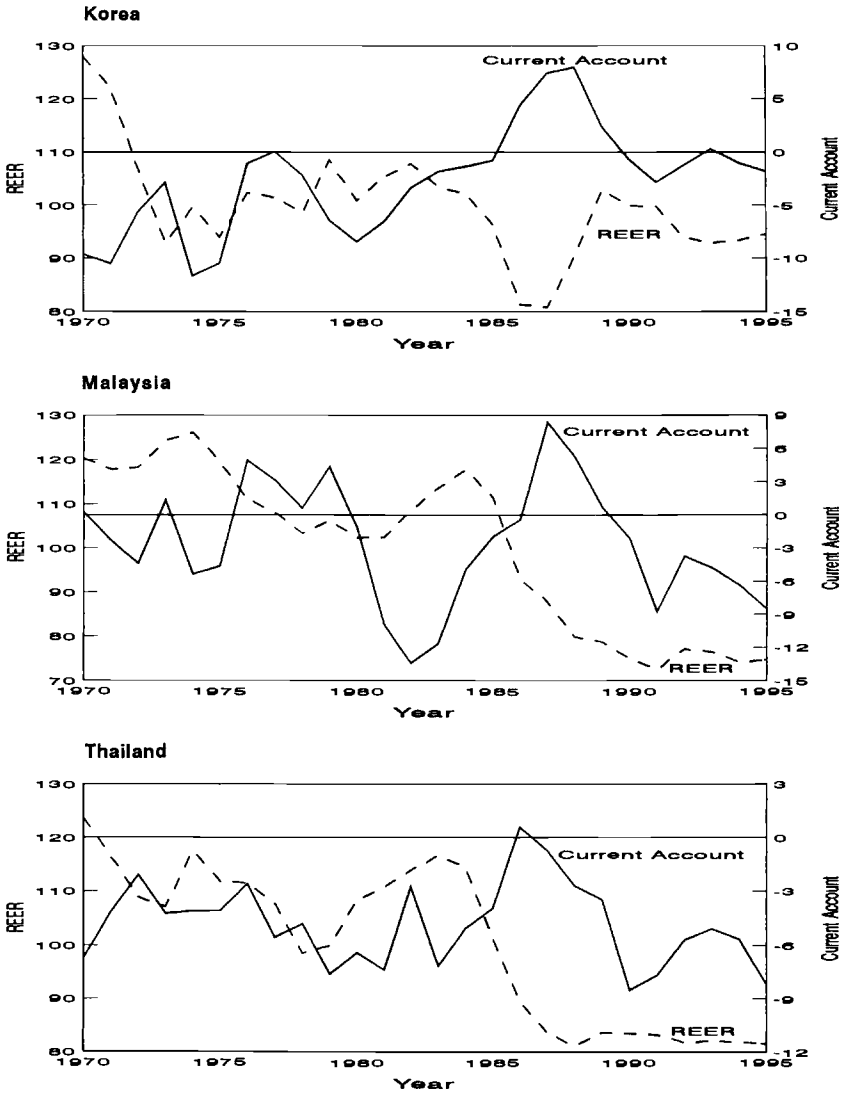

Fig. 3.4 Current account and real effective exchange rate: Korea, Malaysia, and Thailand, 1970–95
Sources: See fig. 3.2.

demand, Korea turned to the objective of reducing the ratio of foreign debt to GDP: it tightened monetary and fiscal policy in 1983–84, let the exchange rate depreciate in real terms, and accelerated the pace of structural reform. By 1984, the objectives of inflation reduction and fiscal stabilization were met, and the current account deficit was reduced to less than 2 percent of GDP.

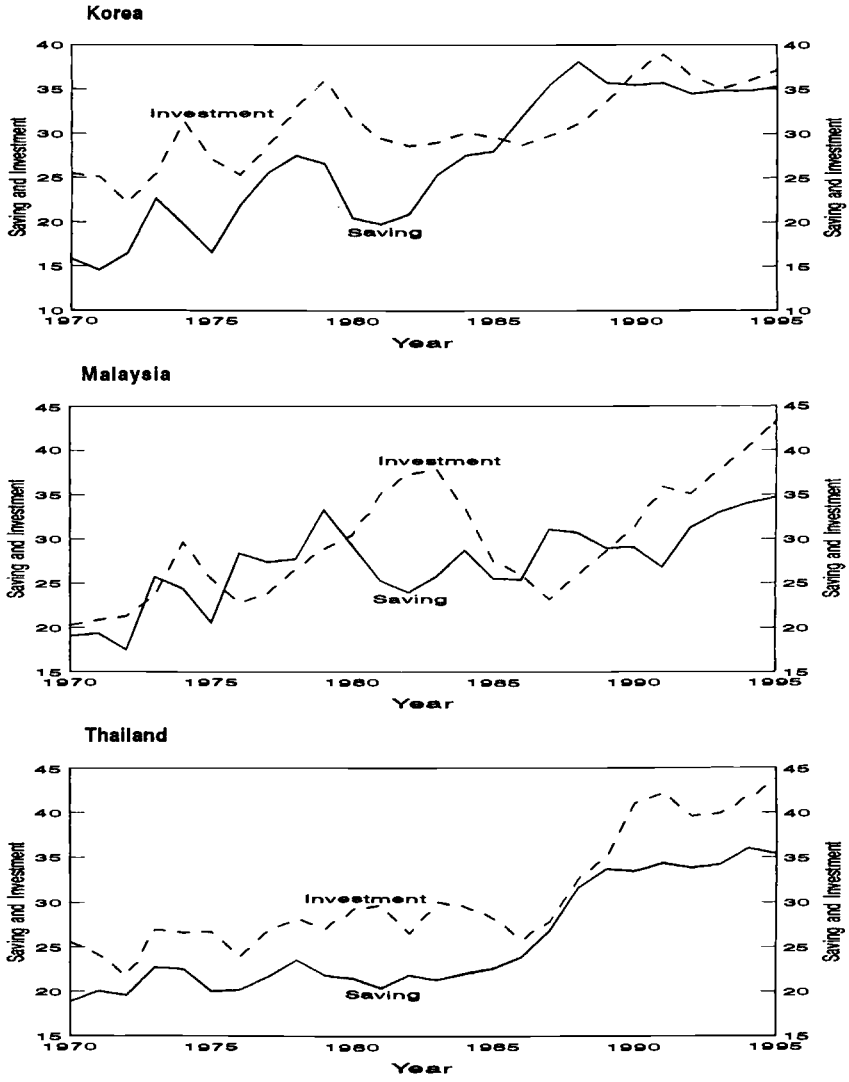

Fig. 3.5 Saving and investment: Korea, Malaysia, and Thailand, 1970–95
Sources: See fig. 3.2.

During this period, investment and economic growth remained strong, unlike in other highly indebted countries after the debt crisis, and savings increased, thanks to a rebound in household saving.

The second half of the eighties was characterized by more favorable external developments, such as the fall in the price of oil and the depreciation of the dollar, and by a more flexible exchange rate policy, characterized by a large

real depreciation until 1986. The current account turned to large surpluses, allowing the government to prepay a large portion of the external debt. By 1988, the ratio of foreign debt to GDP was only 20 percent.

What lessons can be drawn from the Korean experience? Notwithstanding rapid growth (driven by investment and exports) before the second oil shock, the situation in 1979–80 was difficult. The policies pursued in the wake of the first oil shock had led to a loosening of monetary policy and to an overvalued real exchange rate, and the second oil price shock and a bout of political turmoil posed a threat to macroeconomic stability. However, Korea experienced a rapid recovery following the recession of 1980. This was facilitated by the continuation of Korea's access to international capital markets, which allowed the country to borrow until growth was solidly under way again; indeed, the debt-GDP ratio continued to rise until 1982. With inflation under control and a more stable macroeconomic environment, a second stage of the adjustment process was undertaken, characterized by monetary and fiscal tightening and a gradual real depreciation of the exchange rate. This was very successful: external imbalances were rapidly reduced and economic growth remained strong.

Malaysia I, 1979–86

At the end of the seventies, Malaysia's macroeconomic situation was stable.[14] The country had grown at an average rate of over 6 percent during the seventies; it had low inflation, fast export growth, low external debt, and hefty current account surpluses. The country had diversified substantially its production and export structure away from primary commodities toward manufactured goods and textiles. Nevertheless, primary commodities still accounted for over 70 percent of Malaysia's total exports in 1980.

The oil shock of 1979–80 implied a sharp terms-of-trade improvement. Around the same time, there was a shift in the government's macroeconomic policy stance. Namely, the government pushed forward a heavy industry drive, similar to the one pursued by the Korean authorities a few years earlier. This drive was pursued through large investment projects undertaken both directly and through state-owned enterprises, which led to a rapid increase in the share of public investment in GDP and a widening of the federal budget deficit to over 17 percent of GDP in 1982. Around 40 percent of the deficit was financed through external borrowing. The deterioration in the fiscal accounts was mirrored in external developments: the deficit on the current account reached 13 percent of GDP in 1982, resulting in a sharp increase in external debt. This deficit also reflected unfavorable external conditions—the slowdown in the world economy, the increase in world real interest rates, and a progressive deterioration in the terms of trade, as well as a real exchange rate appreciation.

Worries about the rapid rise in domestic and external imbalances prompted

14. See, e.g., Demery and Demery (1992) for an account of the Malaysian experience during the 1979–86 period.

the Malaysian government to undertake a fiscal consolidation program, characterized by a curtailment of public sector investment—"development expenditure" was reduced in nominal terms by 30 percent in the period 1983–84. The federal deficit was reduced to 7 percent of GDP and the current account deficit to 6 percent of GDP by 1984. The macroeconomic effects of fiscal adjustment were in part cushioned by a temporary reversal in the terms-of-trade deterioration in 1984, a recovery in world demand, and a sustained expansion in the manufacturing and construction sectors; as a result, the economy continued to grow at a rapid pace.

However, economic activity experienced a sharp downturn in 1985 and 1986, reflecting a marked deterioration of external conditions (a substantial worsening in the terms of trade and weak external demand), further fiscal tightening, and a drastic slowdown in construction activity. Public investment was scaled back further; at the same time, monetary policy was loosened, interest rates were allowed to decline, and the exchange rate depreciated substantially. The slowdown was accompanied by severe problems in the financial system, triggered by the collapse in the real estate market. The combined effect of the large real exchange rate depreciation and of fiscal contraction led to a reduction in absorption and expenditure switching; imports declined substantially and export growth picked up. Although weak economic activity limited the size of the deficit adjustment, a sharp fall in private consumption and private investment implied a virtual balancing of the current account in 1986. Starting in 1987, economic activity recovered, and for the rest of the decade the current account balance recorded large surpluses, reflecting a large increase in the savings rate. This allowed Malaysia to substantially reduce its external debt.

What are the salient features of the Malaysian experience? The rapid buildup in domestic and external debt of the early eighties required a drastic policy shift to ensure fiscal and external sustainability. This shift involved not only fiscal consolidation but also structural measures to encourage private sector investment. The prolonged period of fiscal adjustment took its toll on economic activity in 1985–86, as domestic and external conditions deteriorated. Nevertheless, the downturn was reversed rapidly, as the sharp real exchange rate depreciation and the more favorable environment for private sector investment allowed for a resumption in growth, driven by exports and private investment.

Thailand I, 1979–90

After a period of rapid growth and persistent current account deficits in the late seventies, the second oil shock hit the economy at the same time as a decline in services receipts due to the closure of American bases. As had been the case after the first oil shock, savings declined and the current account deficit widened to over 7 percent of GDP in 1979. The following period was characterized by repeated standby arrangements with the International Monetary Fund (IMF) and Structural Adjustment Loans from the World Bank; while progress was made in the area of structural reform and in reducing the inflation

rate, external imbalances and budget deficits persisted in the following years, in part because of unfavorable external developments (the worldwide recession, the increase in real interest rates, and a further decline in the terms of trade), as well as because of a consistent pattern of revenue overestimation (see Robinson, Byeon, and Teja 1991). As a result, the ratio of external debt to GDP continued to increase.[15] The exchange rate was devalued by 9 percent at the end of 1981 but continued to appreciate in real effective terms thereafter, being pegged to the dollar in a period of dollar appreciation. The slowdown in economic activity exacerbated weaknesses in the financial system, and a crisis occurred in 1983, when the authorities had to intervene in several finance and security companies, as well as five commercial banks (Johnston 1991).

A policy shift occurred at the end of 1984. It consisted of a 15 percent nominal exchange rate depreciation, accompanied by a drastic tightening in the fiscal policy stance. This time the baht depreciated significantly in real effective terms, as domestic inflation did not erode the competitiveness gains and the dollar (which the baht continued to shadow) started to depreciate. The combined effect of the fiscal adjustment, real depreciation, and the more favorable external environment were impressive: the current account deficit was eliminated in 1986, as manufacturing exports increased rapidly, the budget was balanced in 1987, and the ratio of external debt to GDP, after peaking in 1985 at 45 percent, began to decline. Growth accelerated to over 11 percent in 1987–90, driven by exports and by a boom in private investment, while fiscal policy generated increasing budget surpluses. Export growth resulted in an increase in the share of exports in GDP to 35 percent by 1989 (against 22 percent in 1985); the share of private investment in GDP more than doubled between 1986 and 1990, with the investment boom sustained by inflows of foreign direct investment from Japan and other Asian newly industrialized economies. The increase in private investment more than compensated for the decline in public investment caused by the fiscal retrenchment, and the large increase in public savings was not accompanied by a decline in private savings. As a result, during this period both investment and savings continued to rise as a fraction of GDP.

3.4.3 Latin America in the First Half of the Nineties

Colombia II, 1992–95

At the beginning of the decade, Colombia was characterized by a depreciated level of the real exchange rate, which reflected in part unfavorable terms-of-trade developments in the period 1987–89. Tight fiscal policy and the competitiveness of the exchange rate resulted in a small current account surplus. The Colombian economy experienced a surge in capital inflows starting in

15. State-owned enterprises accounted for around 70 percent of total public investment and about two-thirds of external debt by the mideighties.

1991. These inflows were initially attracted by high domestic interest rates, reflecting the monetary authorities' tight policy stance, by the trade and financial liberalization undertaken in 1990, and by a tax amnesty to holders of domestic assets abroad granted at the end of 1990. The inflows were initially met with an aggressive sterilization policy on the part of the central bank, both directly through open market operations and indirectly through increases in reserve requirements. Capital controls, taxes on capital inflows, and a liberalization of capital outflows were also used to reduce net inflows (see Schadler et al. 1993). By the end of the year, the exchange rate had appreciated by 11 percent in real effective terms and foreign exchange reserves had risen considerably, reflecting also a large current account surplus.[16] However, quasi-fiscal losses were substantial (0.8 percent of GDP in 1991), because of the large interest differentials between domestic and foreign assets.

The sterilization policy was significantly modified in 1992; money growth accelerated and interest rates were substantially reduced. At the same time, the crawling peg exchange rate regime was replaced with a managed float within a band vis-à-vis the dollar; an immediate consequence of the increase in exchange rate flexibility was a real appreciation (see Carrasquilla 1995 for a discussion). After a slowdown in 1991, economic activity recovered and the growth rate averaged 5 percent a year over the next four years, stimulated by new oil discoveries and higher coffee prices in 1994. During this period external accounts worsened, as imports of consumption and capital goods grew rapidly, responding to the trade liberalization and the real appreciation of the peso, while private transfer receipts fell. Nontraditional exports grew rapidly as well. Capital inflows continued throughout the period, mostly in the form of foreign direct investment and long-term borrowing, and foreign exchange reserves continued to increase. To stem the inflows the Colombian authorities imposed restrictions on foreign borrowing during 1993 and 1994. The current account deficit widened in 1995 as public finances worsened, but capital inflows have continued, albeit at a slower pace than in 1994, with no significant effect of the Mexican crisis.

Mexico II, 1990–95

The Mexican economy experienced large structural changes in the late eighties and early nineties: a change in monetary and fiscal policy stance was followed by restructuring of the external debt, privatization of public enterprises and of nationalized banks, and trade liberalization. In the aftermath of the debt-restructuring agreement, Mexico regained access to international capital markets: net capital inflows increased dramatically in the period 1990–93,

16. For Colombia part of the surge in capital inflows was effectively recorded in the current account as increased transfers; therefore, the capital account balance understates the amount of inflows.

totaling over $90 billion (an average of 6 percent of GDP per year), or roughly one-fifth of all net inflows to developing countries. Net foreign direct investment during this period was about $17 billion, while inflows of over $60 billion occurred in the form of portfolio investment (IMF 1995a).

Notwithstanding a large increase in government savings, national savings fell sharply, and the current account deficit reached almost 7 percent of GDP in 1992. The capital account surplus, however, was more than sufficient to finance the deficit and allow for rapid reserve accumulation. After a slowdown in 1993, with output growth falling below 1 percent, the economy recovered the following year, with output growing at 3.5 percent, sustained by rapid export growth (over 14 percent in dollar terms). Imports, however, continued to grow even more rapidly, and the current account deficit widened to 8 percent of GDP.

Financial market developments in 1994, however, turned unfavorable. A series of domestic and external shocks (the peasant revolt in Chiapas in January, the assassination of presidential candidate Colosio in March, and the increase in U.S. interest rates in the early part of the year) as well as a change in the policy stance in the run-up to the August 1994 presidential election caused loss of confidence in international financial markets and a reversal in capital flows. The real exchange rate was allowed to depreciate within its band, and the central bank sterilized the impact of the loss of reserves on money supply. Subsequently, reserves remained fairly stable until October, as capital inflows resumed somewhat during the third quarter. Between March and October, the authorities reacted to an increase in the interest differential between peso- and dollar-denominated short-term public debt (Cetes and Tesobonos, respectively) by increasing the share of dollar-denominated Tesobonos in total government debt outstanding from 6 percent at the end of February to 50 percent at the end of November.

The crisis unfolded very quickly. At the end of November tensions resurfaced on foreign exchange markets, and the Bank of Mexico lost reserves again. The fluctuation band of the peso was widened by 15 percent on 19 December in an attempt to stem foreign exchange pressures. This was, however, insufficient. The peso reached the new edge of the bank within two days, and reserves were drained trying to maintain the exchange rate at the band's edge. On 22 December it was announced that the peso would be allowed to float against the U.S. dollar. The Mexican currency plummeted, as doubts surfaced about the ability of Mexico to service its short-term liabilities. Notwithstanding an international rescue package put together at the end of January, 1995 was a very difficult year for the Mexican economy, with widespread bankruptcies, generalized financial distress, and a sharp decline in economic activity.

There are several, to some degree complementary, explanations of the Mexican crisis (see IMF 1995b for an early assessment). Dornbusch, Goldfajn, and Valdes (1995) argue that the use of the peso as a nominal anchor in the disinflation process had led, in the presence of sticky prices, to overvaluation and

large current account deficits, which were ultimately unsustainable. According to this view, an exchange rate correction was overdue (see Dornbusch and Werner 1994 for a precrisis analysis along these lines). The domestic political shocks and the external shocks simply exposed the vulnerability of the Mexican economy.[17]

An alternative, but possibly complementary view, stresses policy inconsistencies that emerged in 1994: in particular, the monetary policy stance and the management of the public debt, as well as a shift in investors' sentiment. Once capital inflows stopped in the second quarter of 1994 because of the increase in U.S. interest rates and political events in Mexico, reserves started to drop because of the current account deficit. The sterilization of reserve losses by the Bank of Mexico, however, prevented interest rates from exerting an impact on the direction of capital flows and, through a dampening of economic activity, on the current account balance.[18] Furthermore, the large conversion of short-term peso-denominated public debt into short-term dollar-denominated public debt implied an increasing stock of short-term liabilities denominated in foreign exchange that could be "redeemed" at the central bank in exchange for reserves (see, e.g., Sachs, Tornell, and Velasco 1996; Calvo and Mendoza 1996a).

How does the Mexican experience relate to the sustainability indicators discussed in the theoretical section? The ratios of foreign debt to GDP and of debt to exports (34.7 and 184 percent, respectively) were not excessively high by historical standards and also in comparison with other heavily indebted middle-income developing countries. Fiscal policy, a clear culprit in the previous two Mexican crises, had been restrained for the past four years. Exports, although still low as a fraction of GDP,[19] were going strong in 1994. On the other side, the banking system was weak, with a large fraction of bad loans and a mismatch between the maturity structures of assets and liabilities; the national savings rate had declined to very low levels; and the real exchange rate was overvalued, at least to some degree (although there is disagreement on what would have been the appropriate way to "unwind" the overvaluation). Finally, the impending election made it more difficult to undertake policy ad-

17. Dornbusch et al. (1995) recognize that the current account deficit and the real exchange rate appreciation were, to some degree, the logical consequence of the productivity increases facilitated by the implementation of large market-oriented reforms, the access to the North American Free Trade Area, the reduction of inflation, and the size of the public sector. In this context, the increase in permanent income would lead private agents to raise their consumption level, while the increase in output would take some more time to surface because of the lags associated with investment and the intersectoral reallocation of resources induced by trade liberalization and changes in relative prices. The issue is to what degree the real appreciation reflected a misalignment.

18. The reluctance of the monetary authorities to raise domestic interest rates was allegedly driven by the fragile situation of the banking system. However, a drastic increase in interest rates was later forced on the authorities by the currency crisis.

19. The ratio of exports to GDP in Mexico differs depending on whether it is calculated using national income accounts or balance-of-payments statistics (as reported in the IMF's *International Financial Statistics*). Using the former, the ratio of exports of goods and services to GDP was 12.4 percent in 1993. Using the latter, it was 17 percent. The number reported in table 3.2 corresponds to the balance-of-payments definition.

justments in response to the series of domestic and external shocks that hit the economy during 1994.

3.4.4 East Asia in the First Half of the Nineties

Malaysia II, 1991–95

The second episode of large current account deficits in the nineties is characterized by a different macroeconomic environment than in the early eighties, with high growth driven by booming private investment and exports (helped by fast growth among East Asian trading partners) and large surpluses in the capital account. The share of investment in GDP reached 38 percent in 1994, with private investment accounting for two-thirds of the total. A rising fraction of this investment reflected inflows in the form of foreign direct investment, in particular from Japan and Asian newly industrialized countries. Exports (82 percent of GDP by 1994) grew rapidly, in particular exports of manufactures, accounting for close to 80 percent of total exports. The private investment boom encouraged fast import growth, in particular of intermediate and capital goods, causing a narrowing of the trade surplus. The economic policy stance was different from the one adopted during the early eighties: fiscal policy was much more restrained, with the ratio of public debt to GDP steadily declining, and monetary policy aimed at maintaining control over monetary aggregates in the face of substantial capital inflows while resisting a sharp appreciation of the exchange rate.

Large capital inflows began in 1990 and increased significantly in the following years—in 1993 alone the capital account surplus was over 20 percent of GDP. Long-term flows remained relatively stable during 1992–94, but the importance of short-term capital inflows (mainly changes in the net foreign asset position of financial institutions, as well as portfolio investment) increased significantly in 1992 and 1993. The monetary authorities reacted by trying to sterilize the inflows; as a result, between 1991 and 1993 their total accumulation of foreign exchange reserves was $17 billion, or 16 percent of GDP per annum. The size of the capital inflows, and in particular the large short-term component, prompted the authorities to adopt a series of measures in early 1994 directed at discouraging short-term flows. As a result, there was a large outflow of short-term capital in 1994, but long-term flows, including foreign direct investment, were basically unaffected. The real effective exchange rate depreciated slightly, after having appreciated during the period 1991–93. In 1995 a continuation of fast growth and booming investment widened current account imbalances further, to over 8 percent of GDP.

Notwithstanding its large and protracted current account deficits, Malaysia has avoided a rapid accumulation of external debt, thanks to large non-debt-creating inflows; the debt burden measured by interest payments as a fraction of GDP, has steadily declined. Relatively to the previous episode, there are no large fiscal imbalances, private investment plays a more prominent role, the

real exchange rate is more competitive, and the more diversified export structure reduces the vulnerability to shifts in commodity prices. As to the end of 1995, the risks seemed to be on the side of "overheating," with bottlenecks developing in labor markets.

Thailand II, 1990–95

During the early nineties, the Thai economy continued to grow at a rate close to 9 percent, driven by rapid export growth and growth of domestic demand. Imports grew even faster than exports, and as a result the trade balance worsened and the current account deficit widened to an average of close to 7 percent of GDP during 1990–95. Thanks to a continuation of large capital inflows, however, the balance of payments remained in surplus (an average of close to 4 percent of GDP in 1990–95) and reserves accumulated.

The response to capital inflows changed during the period. At the beginning of the inflow episode (1988) the authorities relied on a tightening of fiscal policy and on sterilization operations. Furthermore, reserve requirements were extended to nonresident deposits. Toward the end of 1990 trade liberalization measures were undertaken, and in early 1991 restrictions on capital outflows were eased. During this period the process of financial liberalization continued. The monetary policy stance was relaxed by 1993, and interest rates were lowered. The composition of inflows changed as well: during 1994 there was an increase in short-term inflows, in particular to the banking sector.[20] During this period, the authorities took steps to enhance prudential supervision of banks and other financial institutions (Khan and Reinhart 1995; Koenig 1996).

After a drastic fiscal contraction in the second half of the eighties, which led to a budget surplus of over 5 percent of GDP, fiscal policy turned more expansionary during the nineties, in order to meet infrastructural bottlenecks, but the overall budget balance remained in surplus. At the beginning of 1995, the fallout from the Mexican crisis briefly affected capital markets in Thailand; equity prices slumped in January, and there was a surge in capital outflows. The episode, however, was short-lived.

At the end of 1995, the fundamentals of the Thai economy appeared mostly robust: economic growth was still rapid; the large current account deficits reflected high levels of investment; exports, a large fraction of GDP, were growing rapidly; foreign exchange reserves were high; and the exchange rate was not appreciated relative to its historical average. Given the persistently large current account deficits, sources of concern were the level of external indebtedness, the large share of short-term debt, and the weakness of the banking system, which made the Thai economy vulnerable to shifts in foreign investors' sentiment. More recently, Thailand has been mired in a banking crisis, originat-

20. There are, however, classification problems for capital inflows in Thailand. As a consequence of the establishment of an offshore banking center in 1994, an important fraction of foreign direct investment flows are now channeled through the domestic banking system and are therefore registered as short-term flows. See Koenig (1996).

ing mainly from a fall in real estate prices, and export growth has slowed down. As a result, the baht has repeatedly come under pressure.

3.5 A Comparative Analysis

Before discussing in more detail different indicators identified in the theoretical analysis, it is useful to briefly highlight some common features of the different country experiences, starting with the eighties. First, all the countries in our sample experienced a substantial worsening in external conditions during this period, with large terms-of-trade shocks, a substantial increase in world interest rates, and the demand effects of the world recession of 1981–82. Second, each country in our sample experienced a sustained real exchange rate appreciation during the period of high current account imbalances (a partial exception being Korea). As a result, the exchange rate at the time of the crisis or policy shift was appreciated with respect to historical averages. Third, in Malaysia, Thailand, Colombia, and Mexico persistent current account deficits during the late seventies or early eighties were associated with large fiscal imbalances. Therefore, the policy adjustment (preemptive or forced by an external crisis) involved both a fiscal and an external dimension and took the form of a large fiscal consolidation together with a nominal depreciation of the exchange rate. The latter resulted in a substantial real depreciation that, together with an output slowdown at the beginning of the adjustment period, temporarily raised the ratio of external debt to GDP. However, in the countries that avoided a crisis the real depreciation also spurred export growth and therefore reduced current account imbalances; as a result, the ratio of external debt to GDP after the initial increase started to decline.

The experience with protracted current account deficits during the 1990s has different characteristics, both on the external side and on the macroeconomic policy side. With regard to external conditions, short-term interest rates were low and economic activity in industrial countries weak. These conditions, together with the change in domestic conditions in a number of developing countries that implemented market-oriented reforms and undertook macroeconomic stabilization policies, played an important role in the new wave of capital inflows from industrial to developing countries, a significant fraction of which took the form of portfolio and foreign direct investment.[21] Also, the volatility of terms of trade has been less severe than in the eighties. Macroeconomic conditions were in general more stable; none of the countries we consider experienced sustained fiscal imbalances, and current account imbalances mainly

21. Calvo et al. (1993) find that external factors account for a significant fraction of the variance in real exchange rates and foreign exchange reserves in a sample of Latin American countries; Chuhan et al. (1993) find that external variables "explain" around half of bond and equity flows from the United States to Latin American countries; Fernandez-Arias (1996) finds that the decline in world interest rates in the early 1990s improved the creditworthiness of debtor countries and that "push" factors were dominant in the renewal of capital flows.

reflected a gap between private savings and private investment. Only Mexico, which used the exchange rate as a nominal anchor in a disinflation process, experienced a sustained real exchange rate appreciation comparable to those of the previous decade.

A number of features distinguish the Latin American and East Asian countries in our sample. During both the eighties and the nineties the East Asian countries had higher levels of savings, investment, and growth and a higher degree of trade openness (as measured by the ratio of exports of goods and services to GDP). Since there was no significant difference in debt levels as a fraction of GDP during the eighties, this implied that the ratio of debt to exports was considerably lower in East Asian countries. Openness increased for every country we consider between the 1980s and the 1990s; the East Asian countries and Chile stand out for their large increase of national savings and domestic investment between the two decades.

We turn now to a more detailed examination of factors related to current account sustainability, based on the theoretical analysis of sections 3.2 and 3.3. Clearly, the evaluation of indicators for the 1990s may be subject to a "peso problem"; that is, an indicator may be considered poor simply because it signals a crisis that has not yet occurred but may do so in the near future.

Table 3.1 shows the behavior of the average real interest rate on external debt.[22] It highlights the very large increases in the period 1979–82. The overall impact of these interest rate increases was compounded by the dynamics of tradable goods prices, measured in dollar terms: these implied very large increases in real interest rates, in particular for Mexico, Chile, Korea, and Thailand in 1982. The overall impact of the real interest rate increase depends on the debt-GDP ratio: among the countries in our sample, Chile, Korea, and Malaysia had a higher ratio of external debt to GDP than Colombia, Thailand, and Mexico around the time of the debt crisis (see table 3.3). In the mideighties—at the time Colombia, Malaysia, and Thailand implemented policy shifts—external conditions (in terms of interest rates) were more favorable.

Table 3.2 presents the evolution of the terms of trade. All countries experienced large shocks during the late seventies and the eighties, but with different timing. Mexico had a dramatic terms-of-trade improvement in the period 1979–81, reflecting the oil price boom, but a large subsequent deterioration, which brought its terms of trade back to their level of the late seventies. Korea was hit heavily by the oil shock, with a large terms-of-trade deterioration in 1980. Chile's terms of trade worsened considerably from 1980 onward, while Malaysia's adjustment period in 1985–86 also coincided with a large negative terms-of-trade shock. Thailand had a significant terms-of-trade deterioration between 1978 and 1982, while Colombia experienced large swings. Overall, terms-of-trade volatility was higher in the three Latin American countries dur-

22. The real interest rate is defined as the average nominal interest rate on external debt, in dollar terms, deflated by a three-year moving average index of domestic tradables prices measured in dollars. Domestic tradables prices are proxied by a weighted average of the country's export unit values and industrial countries' export prices. The methodology draws from Sachs (1985).

Table 3.1 **Real Interest Rates on External Debt**

Year	Chile	Colombia	Mexico	Korea	Malaysia	Thailand
1975	−4.6	−14.5	−5.9	−5.9	−4.3	−4.3
1976	3.1	−14.3	−8.4	−0.1	3.3	−0.3
1977	−1.3	−12.2	−9.6	−3.6	−0.4	2.4
1978	−7.1	−6.8	−9.3	−7.1	−5.6	−2.3
1979	−7.9	−0.1	−16.4	−6.2	−4.0	0.3
1980	3.3	7.3	−0.2	3.9	1.4	4.1
1981	17.6	10.2	−0.5	11.6	8.0	14.3
1982	22.3	16.3	15.5	15.2	13.1	15.2
1983	14.8	12.8	15.0	12.3	11.0	14.2
1984	16.6	7.1	13.8	11.9	10.3	11.0
1985	10.4	1.3	14.1	7.9	9.9	7.5
1986	3.3	−1.1	5.1	2.5	4.9	2.2
1987	−2.9	0.7	4.4	−2.4	2.9	−2.1
1988	−2.6	6.9	0.3	0.5	1.8	1.3
1989	3.2	6.2	4.4	3.4	4.2	2.9
1990	9.0	7.7	3.4	6.4	5.7	5.9
1991	7.5	8.2	3.7	6.4	3.5	6.4
1992	10.5	10.1	5.9	7.6	4.4	7.2
1993	5.9	6.4	3.3	6.4	2.6	6.0
1994	0.6	3.2	2.3	4.3	1.7	4.3

Sources: World Bank, *World Debt Tables* (Washington, D.C., various years); IMF, *World Economic Outlook* (Washington, D.C., various years).

Note: Table reports average dollar nominal interest rate on external debt deflated by a three-year moving average of domestic tradables price inflation. Tradables price inflation is the average of changes in domestic export unit values and of industrial countries' export prices.

ing the eighties; however, the impact of terms-of-trade shocks on the domestic economy is also a function of the degree of openness, which was much larger in the East Asian countries. During the nineties, the variability of terms of trade has been much more modest, in part because of increased export diversification toward manufactured goods.

A number of macroeconomic and structural indicators for the various country episodes are summarized in table 3.3, while table 3.4 presents external financial indicators. The first set of indicators of external sustainability relate to the level and interest burden of external debt in relation to GDP. Table 3.3 presents a gross measure of external indebtedness, and table 3.4 a net measure that subtracts foreign exchange reserves. Overall, ratios of debt to GDP tended to be higher in the eighties than in the nineties, reflecting among other things the increased importance of non-debt-creating capital flows in recent years (see discussion below). In our limited sample, this ratio does not allow us to clearly discriminate between crisis and noncrisis episodes—ratios of external debt to GDP were much higher in Korea and Malaysia I than in Mexico I and II.[23] The interest burden of external debt "singles out" the experiences of the eighties,

23. Among the countries in our sample affected by the Asian crisis, Malaysia stands out as having a low ratio of net external debt to GDP.

Table 3.2 **Terms of Trade (period average = 100)**

Year	Chile	Colombia	Mexico	Korea	Malaysia	Thailand
1970	186.7	76.7	95.8	108.3	127.0	113.4
1971	176.2	73.0	101.7	105.3	110.1	108.8
1972	173.0	74.8	102.1	105.0	99.7	108.4
1973	188.9	79.4	95.6	101.1	111.9	117.7
1974	157.2	84.0	85.2	93.4	110.9	121.7
1975	84.6	77.7	80.7	86.3	88.5	114.7
1976	92.4	102.9	93.4	98.2	95.9	95.0
1977	85.2	132.1	110.9	103.4	105.5	117.0
1978	84.2	105.1	107.4	106.9	106.9	117.6
1979	93.8	96.0	104.8	104.6	112.6	107.7
1980	92.5	95.1	153.8	92.9	108.5	100.3
1981	83.5	110.1	166.5	91.9	103.9	101.6
1982	78.3	114.8	107.0	97.7	99.5	87.2
1983	79.7	117.0	102.8	93.6	99.2	91.3
1984	74.3	117.5	100.0	95.1	105.9	93.4
1985	69.0	106.9	94.0	91.5	97.0	87.9
1986	69.0	133.4	70.6	97.0	82.2	97.3
1987	75.8	109.4	94.9	100.1	89.3	95.9
1988	86.9	104.1	85.8	101.1	91.7	94.7
1989	85.5	103.4	86.7	105.5	92.8	92.5
1990	78.1	101.1	95.8	104.0	90.9	89.4
1991	78.4	99.1	91.1	103.6	91.2	90.2
1992	78.9	93.3	92.9	103.1	93.5	88.4
1993	73.8	92.5	94.4	104.0	93.2	88.1
1994	82.0	98.7	94.8	104.5	95.2	89.8
1995	92.1	102.0	91.4	101.9	97.0	89.9

Source: IMF, *World Economic Outlook* (Washington, D.C., various years).

and in particular Chile and Korea, while for the experiences of the nineties, the interest burden is quite similar across countries. The "operational solvency condition" (eq. [4]), augmented so as to include the effects of real exchange rate changes, implies that the perpetual resource transfer needed to keep the ratio of external debt to GDP from increasing is determined by the interest burden adjusted for growth and real exchange rate appreciation or depreciation. In Chile and Mexico I all three components that had been favorable during the late 1970s turned unfavorable in the run-up to the crisis: interest rates increased, high growth came to a halt, and the real exchange rate started to depreciate. In Colombia, Korea, Thailand, and Malaysia the adjustment period also involved a large up-front depreciation; however, the growth slowdown was short-lived. In the case of Mexico II, the crisis was preceded by a relatively modest increase in interest burden but followed by a large real depreciation and a deep recession. Based on our sample, it appears therefore that the resource transfer, while clearly a measure of the cost of external adjustment, is not an unambiguous predictor ex ante. Overall, the interest burden and the

Table 3.3 **Macroeconomic Indicators**

Indicator	Chile 1979–81 (1982–83)	Colombia I 1980–84 (1985–88)	Mexico I 1977–81 (1982–83)	Colombia II 1992–95	Mexico II 1991–94 (1995)	Korea 1977–82 (1983–88)	Malaysia I 1979–84 (1985–86)	Thailand I 1979–84 (1985–86)	Malaysia II 1991–95	Thailand II 1991–95
Current account balance[a]	−9.1 (−7.6)	−5.1 (0.5)	−5.0 (0.3)	−3.4	−6.7 (−0.3)	−5.4 (2.6)	−8.2 (−1.1)	−6.1 (−1.7)	−6.4	−6.8
Savings[a]	11.4 (3.0)	14.6 (20.5)	18.7 (22.0)	16.4	15.7 (17.9)	25.6 (31.6)	26.6 (25.7)	22.5 (26.9)	32.1	33.9
Investment[a]	20.5 (10.6)	19.7 (20.0)	23.7 (21.8)	19.8	22.4 (18.2)	31.0 (29.0)	34.8 (26.8)	28.7 (28.6)	38.5	40.6
Exports[a]	19.7 (21.3)	12.6 (18.1)	10.6 (17.2)	18.3	12.7 (24.0)	32.5 (36.9)	53.2 (55.6)	23.0 (27.8)	85.0	36.6
Real effective exchange rate[b]	124.1 (118.5)	135.5 (80.2)	126.4 (103.5)	77.6	113.9 (76.0)	103.6 (92.2)	117.9 (111.8)	115.5 (95.0)	83.5	88.5
Fiscal balance[a]	2.1 (−3.3)	−3.5 (−1.0)	−8.0 (−11.2)	−0.8	0.4 (0.0)	−2.8 (0.0)	−14.5 (−8.9)	−4.3 (−2.8)	−1.5	3.2
Growth[b]	7.2 (−7.4)	2.6 (5.1)	7.5 (−2.4)	5.0	2.6 (−6.9)	5.8 (10.7)	6.9 (0.0)	5.4 (8.2)	8.4	8.9
Interest payments[c]	5.5 (8.6)	3.5 (3.5)	3.9 (6.7)	1.8	2.4 (4.5)	5.6 (1.7)	4.4 (5.4)	2.9 (2.5)	1.8	2.6
External debt[c]	48.2 (89.5)	40.8 (43.3)	31.4 (62.7)	28.9	35.5 (65.1)	50.0 (19.6)	55.2 (78.9)	37.1 (66.3)	39.3	50.8

Sources: IMF, *International Financial Statistics* (Washington, D.C., various issues); World Bank, *World Debt Tables* (Washington, D.C., various years); national sources.

[a]Current account balance, savings, investment, exports, and fiscal balance are average ratios to GDP during the period.

[b]Real effective exchange rate and growth rate are period averages (real effective exchange rate: average 1970–95 = 100).

[c]Interest payments and gross external debt are ratios to GDP and refer to the last year of the period.

Table 3.4 **Financial Indicators**

Indicator	Chile 1979–81 (1982–83)	Colombia I 1980–84 (1985–88)	Mexico I 1977–81 (1982–83)	Colombia II 1992–95	Mexico II 1991–94 (1995)	Korea 1977–82 (1983–88)	Malaysia I 1979–84 (1985–86)	Thailand I 1979–84 (1985–88)	Malaysia II 1991–95	Thailand II 1990–95
Net external debt[a,b]	36.2 (88.8)	34.5 (33.9)	29.5 (59.5)	15.5	35.4 (59.5)	44.5 (12.8)	42.1 (53.8)	29.5 (23.6)	11.1	28.6
Cumulative current account deficits[a,c]	44.2 (83.7)	38.0 (32.6)	26.0 (42.3)	23.0	41.5 (62.9)	33.9 (0.5)	31.3 (43.5)	39.2 (31.9)	33.3	43.7
Short-term debt[d]	19.3 (14.5)	21.8 (9.5)	32.0 (11.0)	25.4	28.1 (22.5)	33.2 (30.0)	13.5 (13.2)	23.7 (22.1)	21.2	49.5
Foreign exchange reserves[d]	24.8 (14.6)	15.4 (21.8)	6.4 (5.2)	39.5	4.6 (10.3)	7.9 (34.9)	23.7 (31.7)	17.9 (32.8)	71.9	43.7
Net FDI flows[e]	0.9 (1.3)	1.2 (1.0)	0.9 (0.7)	2.0	1.8 (2.8)	0.1 (0.3)	4.1 (2.1)	0.7 (0.8)	7.5	1.5
Net portfolio flows[e]	0.0 (0.0)	−0.0 (0.1)	0.0 (0.0)	0.6	4.9 (−4.3)	0.0 (0.1)	0.0 (0.0)	0.3 (0.9)	2.2	1.4

Sources: IMF, *International Financial Statistics* (Washington, D.C., various issues); IMF, *World Economic Outlook* (Washington, D.C., various years); World Bank, *World Debt Tables* (Washington, D.C., various years).

[a]Net external debt and cumulative current account deficits are ratios to GDP for last year of the period.

[b]External debt minus nongold foreign exchange reserves.

[c]Initial net external debt plus cumulative value of current account deficits, as a ratio to last period's GDP.

[d]Short-term debt and foreign exchange reserves are ratios to total debt for last year of the period.

[e]Net FDI flows and net portfolio flows are average ratios to GDP during the period.

level of external debt appear to be better indicators of sustainability when expressed as ratios to exports, rather than to GDP.

A second set of indicators comprises the real exchange rate and exports (see figs. 3.2, 3.4, and 3.6). A persistent real exchange rate appreciation can be driven by "fundamental" factors, such as high productivity growth in the traded goods sector, or favorable terms-of-trade shocks. However, in the context of a fixed or managed exchange rate system, it could also reflect a fundamental inconsistency between the monetary policy stance and exchange rate policy or the effects of inflation inertia or imperfect credibility in the context of an exchange-rate-based inflation stabilization plan (see Calvo 1986). An "overvaluation" would encourage a decline in savings as domestic residents intertemporally substitute present for future consumption, thus contributing to a widening of current account imbalances and loss of foreign exchange reserves, reinforced by expectations of a future devaluation.

It is difficult to make the definition of real exchange rate overvaluation operational in the absence of a well-established theoretical framework explaining real exchange rate behavior (see Edwards 1989). In developing countries that have undertaken structural reforms, large capital inflows and a real exchange rate appreciation may reflect an increase in productivity and in the return to capital; if current account deficits also emerge because of the underlying increase in permanent income, they would not be an indicator of unsustainability. The difficulty lies in evaluating to what degree a real appreciation reflects improved fundamentals.

Table 3.3 also reports the level of the real effective exchange rate (measured in terms of relative consumer price indexes) relative to historical averages. The three crisis episodes we consider—Mexico I and II and Chile—are all characterized by a sustained real exchange rate appreciation in the period preceding the crisis, leading to an appreciated level of the real exchange rate. Colombia, Malaysia, and Thailand also experienced a sustained real appreciation during the late seventies and early eighties, and an exchange rate devaluation was a key component of their adjustment process. In the crisis episodes, an exchange rate depreciation was indeed undertaken before the full onset of the crisis but failed to prevent it. Our sample evidence thus suggests that large current account imbalances are more likely to result in a crisis when they are accompanied by a relatively appreciated level of the exchange rate.[24]

In order to service and reduce external indebtedness, a country needs to rely on traded goods production as a source of foreign exchange. Clearly, countries with large export sectors can service external debts more easily, because debt service will absorb a lower fraction of their total export proceeds. In order to generate the foreign exchange necessary to service external debt in case of

24. The real effective exchange rate appreciated in Thailand and Malaysia between the end of our sample period (1995) and the onset of the Asian crisis, following the appreciation of the U.S. dollar, to which these currencies were de facto pegged. The magnitude of the appreciation (around 10 percent) was, however, modest and the real exchange rate was still depreciated relative to historical averages.

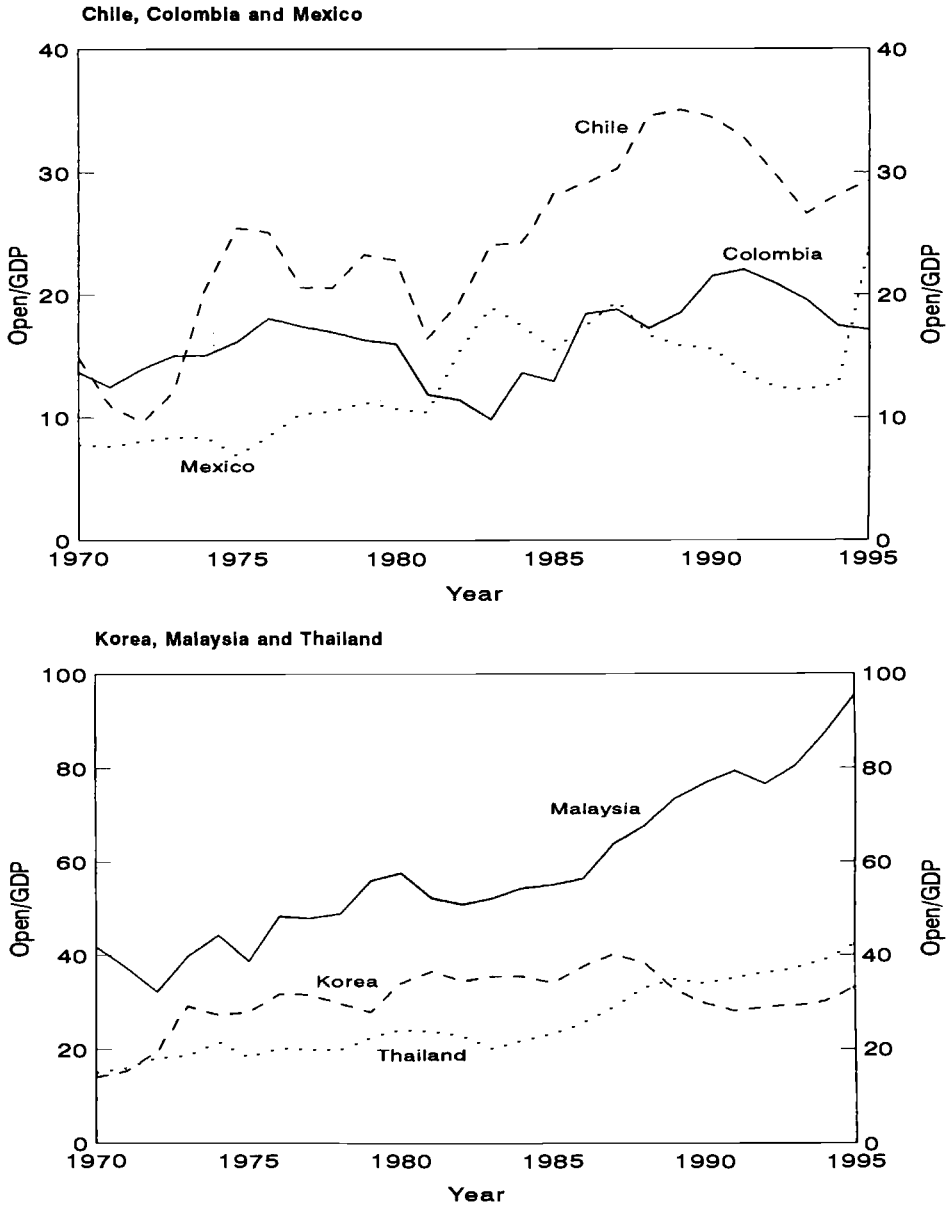

Fig. 3.6 Degree of openness, 1970–95
Sources: See fig. 3.2.

an interruption in capital flows, a country needs to engineer a resource shift toward the export sector. Since this shift cannot occur instantly, sharp import compression may become necessary, with adverse consequences on domestic industries relying on imported inputs (Sachs 1985; Sachs and Warner 1995). This import compression may be more costly in a relatively closed economy, because it is more likely to entail cuts of "essential" imported inputs (Williamson 1985). The size of the export sector can also be related to willingness-to-lend and willingness-to-pay considerations. Insofar as debt default is associated with trade disruptions (such as difficulties in obtaining export credits) it may be more costly for an open economy. Furthermore, the constituency against actions that would entail trade disruptions is also likely to be stronger, the larger the size of the export sector. According to the theory of international borrowing sketched in section 3.3, higher costs of default would reduce the likelihood of sudden reversals of capital inflows, because foreign investors will perceive the country—ceteris paribus—as less risky.

On the other side, a more open economy is, ceteris paribus, more vulnerable to external shocks such as fluctuations in the terms of trade or foreign demand shocks. In this regard, vulnerability is reduced by a well-diversified commodity composition of trade. Fluctuations in commodity prices have a larger impact on the terms of trade for countries with narrow export bases, and those particularly dependent on raw materials for their imports, thus weakening their ability to sustain current account deficits.[25] In addition, open economies with strong trade ties within a region may be more vulnerable to common regional shocks and contagion effects through the effects of exchange rate devaluation in neighboring countries on competitiveness.

Among the countries in our sample, the East Asian ones that successfully adjusted after experiencing large current account imbalances during the eighties (Korea, Malaysia, and Thailand) had large export shares and managed to increase exports significantly during the adjustment period. By contrast, the export-GDP ratio was lower in Mexico (especially in 1982) and in Chile, although it should be pointed out that exports were rising rapidly prior to all three crisis episodes considered (Mexico I and II and Chile). In Colombia, which had a low export share in the early eighties, both the export share and the degree of export diversification increased substantially. These findings are in line with results presented by Sachs (1985), who compared East Asian and Latin American countries at the time of the debt crisis. The episodes we considered thus suggest that large current account imbalances are less likely to lead to external crises when the economy has a large export base.[26]

25. Ghosh and Ostry (1994) found support for the view that large current account deficits are more likely to be unsustainable in countries with less diversified export bases in the context of a model based on precautionary savings. Mendoza (1997) presents evidence that the *volatility* of terms of trade is associated with lower economic growth in a wide sample of countries.

26. Export growth declined significantly in East Asian countries in 1996, after the end of our sample period. E.g., export growth in U.S. dollars turned slightly negative in Thailand in 1996, after close to 20 percent growth over the previous period.

A third set of factors comprises national savings and investment (figs. 3.3 and 3.5). For a given current account balance, the levels of savings and investment can have implications for the sustainability of the external position. To the extent that investment is allocated efficiently to high-return activities, high levels of investment imply—ceteris paribus—higher future growth through the buildup of a larger productive capacity and therefore enhance intertemporal solvency (see eq. [3]). High savings and investment ratios can also act as a signal of creditworthiness to international investors, because they act as a form of commitment to higher future output and thus raise the perceived ability to service and reduce external debt. However, investment projects may be chosen inefficiently, because of financial market distortions or because they are driven by political priorities. For example, relative price distortions may skew investment toward the nontraded goods sector, therefore failing to enhance a country's ability to generate future trade surpluses. Under these circumstances, high levels of investment may not enhance sustainability.[27] Among the episodes we consider, savings were extremely low in Chile in the run-up to the crisis. At the other extreme, Korea, Malaysia, and Thailand had high savings and investment rates. Savings were also low in Mexico in the early nineties. It is interesting to observe that in both Chile and Mexico II, the low savings rates were not attributable to public sector imbalances, but rather to low private savings. In summary, all three crisis episodes are characterized by low savings, especially by middle-income developing country standards.[28]

A fourth factor is the fiscal balance. In a pure debt neutrality case (Barro 1974) the current account is independent of the time profile of taxation, and therefore of the public sector deficit. Imperfect substitutability between private and public savings caused by, for example, distortionary taxes and liquidity constraints, implies a positive correlation between budget deficits and current account deficits. The strength of this correlation may depend on the degree of development of domestic financial markets; in countries with underdeveloped or highly regulated financial markets we would expect to find stronger links between the fiscal stance and the current account balance, and therefore between government budget solvency and current account sustainability.[29]

27. The Asian crisis has brought to the fore the importance of the mechanisms allocating savings to investment through financial intermediaries. See Krugman (1998) for a model in which moral hazard generated by implicit or explicit government guarantees lead to overinvestment and to a crisis.

28. In Colombia the level of national savings was low until 1984 but was raised considerably over the following period, thanks in particular to a large increase in public savings. In recent years savings have declined following financial liberalization, but current account imbalances are not as large as, say, in the case of Mexico. For recent cross-sectional studies of determinants of savings, see Masson, Bayoumi, and Samiei (1995) and Edwards (1995).

29. The degree of private sector saving offset by a given increase in public sector saving may also depend on the level of public debt (Sutherland 1995). With low public debt the current generation could view a future debt stabilization policy (via fiscal surpluses) as remote; thus the future tax liabilities are perceived to be small, and fiscal adjustments affect aggregate demand and savings. In contrast, with high public debt the future debt stabilization looks imminent and debt neutrality

The evidence provided by our sample suggests that the absence of large fiscal imbalances ex ante does not imply that current account deficits will prove sustainable, as exemplified by the cases of Chile and Mexico II. Implicit or explicit government guarantees can lead to excessive external exposure on the part of the private sector, and eventually to a crisis. Ex post, the government is faced with large fiscal costs in the form of bailouts of banks and firms, as well as the shouldering by the budget of private external debt.[30] Clearly, large fiscal imbalances, which were present in Mexico I, Malaysia I, Colombia I, and Thailand I, raise fiscal sustainability issues and did therefore require a policy shift. Indeed, the main element of the policy reversal in the latter three cases consisted in a substantial reduction of the fiscal deficit; for all these countries, the increase in public savings raised the overall savings rate and contributed to the reduction of external imbalances.

Drastic changes in the composition of capital flows took place between the late seventies to early eighties and the early nineties. During the late seventies and early eighties all the countries in our sample relied heavily on commercial bank borrowing in the form of syndicated loans, as well as on borrowing from official creditors. In contrast, the experience of the nineties is characterized by large private capital inflows, a sizable fraction of which took the form of foreign direct investment and portfolio investment. Economic theory suggests that the degree of risk sharing, as well as the intensity of asymmetric information and enforcement problems are related to the composition of external liabilities (see the discussion in section 3.3). Table 3.4 reports some summary statistics on the level and composition of external liabilities and capital flows (see also figs. 3.7 and 3.8).

Among these statistics, the cumulative value of current account imbalances as a fraction of GDP can be taken as an approximate measure of net external liabilities. This measure shows that the lower level of net external indebtedness during the nineties with respect to the eighties is mostly due to the relative importance of non-debt-creating capital inflows, such as foreign direct investment, in recent years. This is particularly striking in the case of Malaysia, but is also evident from the cases of Mexico, Thailand, and (to a lesser degree) Colombia during the nineties.[31] A corollary of these developments is that interest payments on external debt constitute a declining fraction of net resource transfers associated with existing external liabilities, while profit repatriation takes a more important role.

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is at full force. The link between the twin deficits may therefore be stronger, the lower the level of public debt. Another implication of this line of reasoning is that the effects of fiscal stabilization on aggregate demand are weaker, the higher the public debt burden.

30. The Asian crisis provides further evidence on this issue; the effective level of government debt increased substantially because of the high cost of restructuring a financial system saddled with bad loans, and the fiscal deficit is increased by the amount of the debt service, as well as by the output effects of the crisis.

31. For Mexico I the net external liabilities measure is well below external debt (especially after 1981), signaling the presence of capital flight.

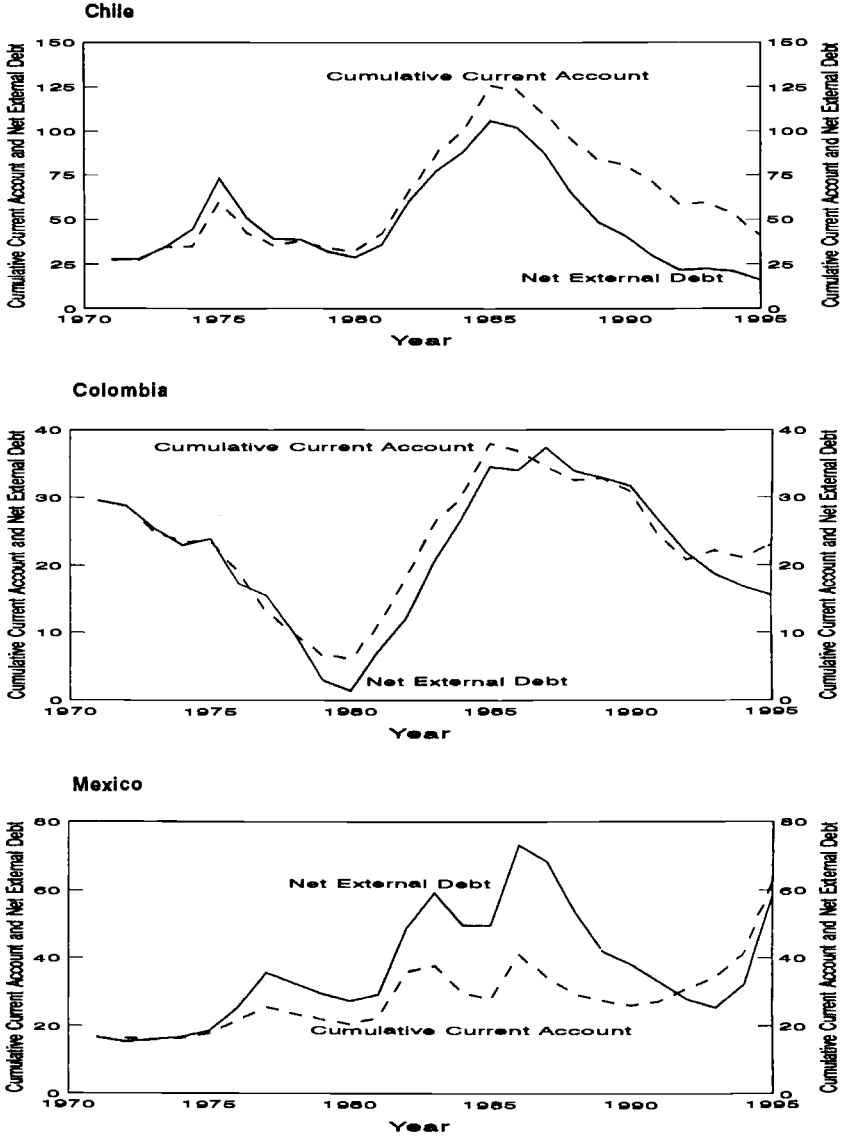

Fig. 3.7 Cumulative current account and net external debt: Chile, Colombia, and Mexico, 1970–95

Sources: IMF, *International Financial Statistics* (Washington, D.C., various issues); IMF, *World Economic Outlook* (Washington, D.C., various years); World Bank, *World Debt Tables* (Washington, D.C., various years).

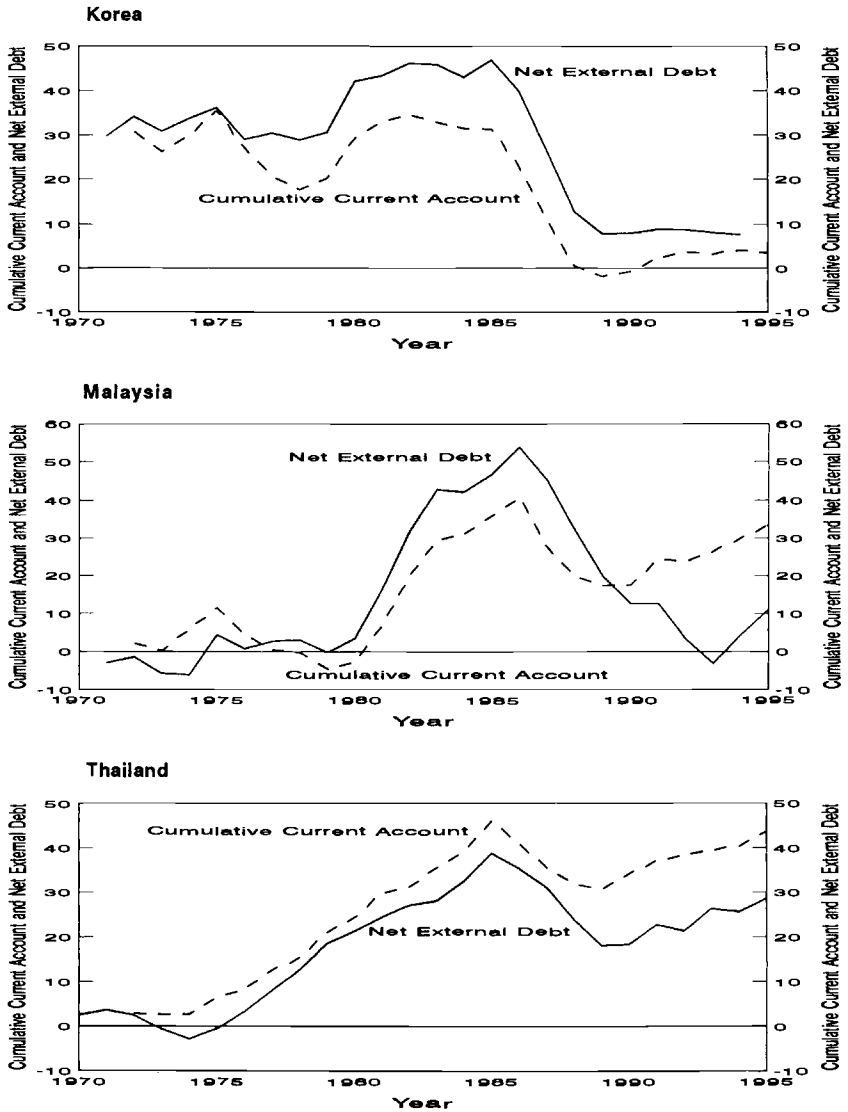

Fig. 3.8 Cumulative current account and net external debt: Korea, Malaysia, and Thailand, 1970–95

Sources: See fig. 3.7.

Table 3.4 also reports other debt composition factors, such as the fraction of short-term debt in total debt and the size of portfolio flows, which potentially play a role in determining the sustainability of external imbalances. There is a notion that vulnerability to external shocks and capital flow reversals is enhanced when portfolio investment and short-term inflows account for most of capital inflows, as these are perceived to be potentially more volatile than long-term flows or foreign direct investment.[32] The ability of a country to withstand a reversal in short-term flows is in principle linked to the size of foreign exchange reserves. In our limited sample, reserves were low with respect to short-term debt in both of Mexico's episodes, as well as in Korea in the eighties. In the nineties, short-term debt is particularly high in Thailand, although reserves are high as well.[33] In a study of currency collapses, Frankel and Rose (1996) find a weak correlation between debt composition variables and the probability of exchange rate crashes, but a significant negative correlation between the proportion of external liabilities accounted for by foreign direct investment and crash incidence.

The lesson we draw from the individual country studies and from existing empirical evidence is that the composition of external liabilities may affect the vulnerability of a country to an external crisis but more data is needed to establish a clear link between sources of external financing and current account sustainability. For this purpose, the composition of external liabilities should not be considered in isolation, but rather together with the other macroeconomic, structural, and external factors highlighted in this section.

3.6 Conclusions and Extensions

Our interpretation of the evidence presented in this limited sample of country episodes is that the likelihood of external crises has to be related to a composite set of macroeconomic and structural factors, rather than relying on the robustness of individual indicators (such as exchange rate overvaluation). Specifically, the degree of openness, the level and flexibility of the exchange rate, and the intensity of external shocks interact with the servicing burden of external obligations and the composition of external liabilities in determining whether protracted current account balances are likely to result in external crises. Clearly, the case study approach we adopted has limitations, such as poten-

32. For theoretical arguments about the effects of short-term debt on the likelihood of balance-of-payments crises, see, e.g., Calvo (1997) and Cole and Kehoe (1996). With regard to capital flow volatility, however, Claessens, Dooley, and Warner (1995) find that in a sample of industrial and developing countries the statistical labels "short term" and "long term" in most cases do not provide information regarding the persistence and volatility of flows.

33. After the end of our sample period short-term debt in Thailand increased further in relation to foreign exchange reserves. The refusal of foreign banks to roll over large short-term debt exposures has been a defining feature of the Asian crisis.

tial selectivity bias and collinearity between indicators, that formal statistical analysis on a larger sample of countries could address. The fact that we focus on current episodes also adds inference problems because of the potential for "peso problems" in the evaluation of indicators.

In the analysis of section 3.5 we did not explicitly discuss two related capital market factors that are more difficult to quantify: the degree of capital account openness and the health of the financial system. For all countries we have considered, the capital account is more open in the nineties than it was a decade earlier, although the degree of liberalization differs across countries. Remaining controls on international capital movements are mainly designed to limit the size of capital inflows, as opposed to controls on capital outflows that were preponderant during the seventies and eighties (see Grilli and Milesi-Ferretti 1995 for an empirical analysis of determinants and effects of capital controls during this earlier period). In part, the more limited reliance on capital controls can be explained by the increased difficulty of enforcing effective limitations on international capital mobility. Furthermore, there is increased awareness of the distortions that capital controls cause by imposing a wedge between rates of return on capital in the domestic economy and abroad.[34] An open capital account should improve resource allocation and can also provide a disciplining device, since a policy inconsistency between, say, an expansionary monetary policy and a pegged exchange rate would result in the collapse of the peg. Furthermore, an open capital account could serve as a signal of a country's commitment to the pursuit of "sustainable" policies and thereby raise foreign investors' perception of the country's creditworthiness (see, e.g., Bartolini and Drazen 1997). On the other side, when the capital account is very open, de jure or de facto, a country is more vulnerable to sudden reversals in the direction of capital flows. This reversal may concern not only foreign capital but also domestic capital.[35] Furthermore, economic research and practical experience have also highlighted the potential dangers associated with poor financial supervision and a weak banking system when the capital account is open (see, e.g., Diaz-Alejandro 1985). Indeed, considerations pertaining to the health of the financial system play an even more important role during the nineties because a larger fraction of external funds are intermediated by the domestic financial system with respect to the previous decade, when a large fraction of external borrowing was undertaken by the public sector.

34. The degree of de facto opening of the capital account is endogenous and depends in particular on the strength of the incentives to export capital (risk-adjusted rate of return differentials due to domestic policy misalignments, political instability, etc.).

35. This is exemplified by the experience of several Latin American countries (such as Argentina, Mexico, Peru, and Venezuela) in the run-up to the debt crisis (see, e.g., Diaz-Alejandro 1985; Sachs 1985). For those countries, the level of "official" foreign debt at the time of the debt crisis was much higher than the cumulative value of past current account imbalances, indicating that the accumulation of debt had financed not only excess of imports over exports but also private capital outflows.

The degree of fragility of the financial system has played an important role in all the crises we have considered.[36] Weaknesses in banking system supervision, distortions in the incentive structure of banks, the practice of directed bank lending, and lack of competition within the banking sector and from nonbank financial institutions can imply inefficiencies in the intermediation of external funds associated with large current account deficits. For a given size of current account imbalance, these inefficiencies make the economy more vulnerable to changes in foreign investors' sentiment or other shocks. As underscored by Goldstein (1996), a weak banking system is more vulnerable to a sudden reversal in capital flows when the exchange rate regime is not flexible.[37] Under these circumstances, monetary policy is "tied to the mast" because of the need to defend the exchange rate peg, thus limiting the ability of the central bank to exercise its role as a lender of last resort. The stability of the financial system remains an essential prerequisite for ensuring an appropriate macroeconomic response to potentially volatile capital flows.

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36. For a recent attempt to relate balance-of-payments and banking crises, see Kaminsky and Reinhart (1996). Goldstein (1996) provides a discussion of potential indicators of financial crises that shares many features with ours.

37. The importance of this point is further underscored by the nature of the recent Asian crisis. As in Mexico, the weakness of financial intermediaries and their external exposure affected the authorities' willingness to adjust the exchange rate in response to the initial reversal in capital flows.

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Comment

Koichi Hamada

This ambitious paper by Milesi-Ferretti and Razin addresses questions that are important from the standpoints of both theory and policy. How can a country continue to sustain its current account? What are the criteria for a sustainable growth path with international indebtedness? The paper devotes a substantial number of pages to these questions, but because these issues are intrinsically so difficult the authors solve only part of the problem.

The authors discuss the basic tools for answering these questions: the permanent income approach, the portfolio selection approach, and the asymmetric information approach. All of them are well explained. What I would like to ask for, in addition to the careful explanation given for each component, is a perspective that integrates all three approaches. Since the economic universe is the same, all of the approaches should be mutually consistent in an integrated model and could be adapted to each other. I am probably setting the authors a difficult task, a task that can hardly be achieved in one conference

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paper. But I ask for it because an integrated perspective would give a clear understanding of each partial approach.

The authors update the somewhat old-fashioned indicators of sustainability in terms of simple ratios, such as the debt service ratios and debt-income ratios used frequently in the practice of the Bretton Woods institutions. In my view, the optimal dynamic pattern of borrowing and lending of a nation can be analyzed in an open growth model. Usually a country starts as a debtor, becomes a creditor, and then finally evolves into a mature creditor that runs a trade deficit but a current account *surplus* because of sufficient investment income from abroad. The process generates various changes in indicators of external viability.

The difficulty of finding a proper indicator of interest payments ahead lies in the difficulty of finding a proper indicator of external viability, because we know the past and the present but do not know the future except for scheduled interest payments ahead. The test of the equality of the marginal rate of intertemporal substitution between home and abroad is easily done, but the test of transversality conditions assuring the non-Ponzi condition is difficult. This kind of global condition can now only be tested by a unit root test, which gives only a weak sufficient condition for a non-Ponzi path.

For more practical purposes, we have ratios of debt service to GNP, debt to exports, debt to GDP, and so forth. But most of the indexes are static because they are related to levels. We should get to the changes-of-indebtedness indexes developed by Obstfeld and Rogoff and Cohen. Cohen's index captures the speed with which the debt-export (GDP) ratio is changing and gives at least a cinematographic picture of the debt situation.

As for the country section, I welcome the authors' efforts to obtain and sort out relevant figures for Latin American and Asian countries. They are all instructive. Since it is often difficult to obtain homogenous standardized data across countries, we should appreciate the authors' efforts even more. My only criticism is that the explanations of these tables are hardly accompanied by direct reference to the theoretical framework or by explanations of economic mechanisms (rather than chronological explanations).

I do not agree with the authors' statement that indicators that use exports as the denominator are better than those that use GDP as the denominator. If the government could stop imports and the nation could still export the same way, then the export-denominated indexes would be meaningful. This is unrealistic. The same argument applies as well to indicators with government revenue in the denominator. Could the government immediately stop making public expenditures and repay the debt? Even the trade-related model developed by Razin would indicate that national indebtedness relative to income or GNP is a more appropriate index for external viability than what is defined relative to exports. Comparing Côte d'Ivoire, which is very open, with Uganda, which is less open, will illustrate my point. Uganda would appear very precarious for

external viability and Côte d'Ivoire would appear—contrary to reality. I quite agree that the financial health of a country is an important characteristic used to assess the sustainability of debt.[1]

Comment

Andrew K. Rose

Gian Maria Milesi-Ferretti and Assaf Razin have provided us with a valuable and illuminating paper. Not only have they provided a reasonable theoretical framework with which to understand current account swings; but they have gone the extra step to interpret the actual data. In particular, they survey a number of countries in Latin America and Southeast Asia in two different time periods. Their particular focus is the macroeconomic and financial characteristics that could account for the actual swings in current accounts. They are to be commended for tackling an ambitious topic in a comprehensive fashion.

Though Milesi-Ferretti and Razin have blazed the trail, much work remains to be done (as the authors readily acknowledge). I see a number of ways forward.

First, it would be useful to establish closer ties between the theoretical framework set forth by the authors and the data. For instance, it would be nice to assess the importance of asymmetric information in a *quantitative* way. Of course this is likely to be very difficult to do in practice, not least because market participants have incentives to try to minimize such problems. This may be one reason why foreign direct investment is used to such a high degree in Southeast Asia, and perhaps also why Asian countries tend to have been more open historically (since openness raises the importance of trade sanctions). How important are the issues associated with portfolio diversification? Is there any reason to be concerned that global capital market flows might diminish as the well-known "home market bias" disappears?

Next, I feel it would be extremely useful for the literature to establish the value (or lack thereof) of *accessible* measures of current account solvency and sustainability that can actually be implemented. These concepts are extremely useful theoretically, but it would be nice to be able to assess their empirical merit (even in the context of the case study approach).

The case study methodology employed by Milesi-Ferretti and Razin has a number of merits, primarily in terms of flexibility. The case study approach allows the authors to look at many indicators and aspects without a narrow

1. As an afterthought, this point has become especially valid with the recent financial fiascos among the Asian countries, including some of those studied by the authors.

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scope. It is easy to focus on interesting events and issues. Here we focus on 10 cases, eight macroeconomic variables, and extra financial variables. Nevertheless, this flexibility does not come without a price. I think of statistical work as being more restrictive but more disciplined than case studies. It is often difficult for the reader to absorb all the material in the case studies. As a result, we tend to look for common themes or threads (as do the authors). But testing the importance of common themes across observations is exactly what statistical analysis does, although the latter is more formal. Further, the case study methodology allows one to ignore cases and variables that do not fit, resulting potentially in selection bias, collinearity, and specification error. Also, I sometimes find it hard to think about raw data without a comparison set of benchmark countries. For instance, is a 6 percent current account deficit "large"? Large compared to what?

In the final analysis, I think of the case study empirics such as those in the paper as being useful as a first step toward more disciplined statistical and theoretical analysis guided by empirics. Since that is precisely what the authors have in mind, I applaud their choice of technique, while urging future authors to be more cautious.

A number of questions are raised by this work. Among them, I would include the following.

1. What is the role played by capital controls in current account determination? Should they be used if they work? Do they work?
2. Is there a bottom line on the role of the exchange rate regime for countries with potential current account difficulties? Do fixed rates allow for the appreciation needed to draw in capital during development more easily than floating rates?
3. Is there a consensus on the (ir)relevance of the "Lawson thesis," namely, that current account deficits are irrelevant and sustainable if accompanied by fiscal balance?
4. Is there a special "Asia effect"? Is the typical precariousness of large Latin current accounts simply because they are usually associated with inflation stabilization? Or is it a thing of the past?
5. Why are large current account deficits in developing countries different from those in the OECD? Many industrialized countries experience persistent large current account deficits; but crises do not appear. Is it good luck? Good policy? Or good capital markets? If the latter, why does financial liberalization often lead to trouble?

I look forward to the views of the authors (and others) on these topics in the future.

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