The Surge in Capital Inflows to Developing Countries: An Analytical Overview

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After being excluded from world capital markets during the debt crisis, many developing countries have experienced large capital inflows during the past five years. The challenges that these inflows pose for domestic policy in recipient countries have generated a substantial literature. This article presents an overview of that literature, describing the characteristics of the new inflows, analyzing the policy issues they raise, assessing their causes and likely sustainability, and evaluating potential policy responses. The desirable policy response is tied to characteristics of the flows themselves as well as to the characteristics of the recipient economy.

Flows of foreign financial capital to developing countries have been episodic in the past two decades. The period 1973–81 witnessed massive capital flows to countries in many parts of the developing world, largely in the form of private syndicated bank loans directed to the public sector. Such lending effectively dried up for many (but not all) developing countries during the period of the debt crisis, 1982–89. But in recent years several developing countries around the world have again begun to receive substantial flows of foreign capital. These flows are notable because of their magnitude and because they represent a break from the period of the debt crisis for many of the recipient countries.

Although reduced access to foreign savings was once perceived as a serious constraint to growth for many developing countries, the recent surge in capital inflows has not been taken as an unmitigated blessing. Indeed, the surge of inflows has triggered a new literature investigating the appropriate policy response of the recipient countries. The urgency of this issue increased following the Mexican financial crisis at the end of 1994. This article assesses the state of this literature. It summarizes what is currently known about the new episode of capital inflows, focusing specifically on its causes and sustainability, and evaluates suggested policy responses on the part of the recipient countries. The article does not treat policy issues that may arise either in the creditor countries or for the international financial community in association with the new patterns of capital movements (for the latter, see Bacha 1993).

I. CHARACTERISTICS OF THE NEW INFLOW EPISODE

The volume of private capital inflows received by developing countries is measured in table 1 as the net change in the liabilities of domestic agents to foreign private creditors. For developing countries as a group, a break with prior experience is suggested in 1991 but is not clearly evident until 1992–93. It is evident that, measured as a proportion of exports or national product, inflows were very large in the early 1990s compared with those in the 1982–89 debt crisis period, but somewhat smaller than in the preceding inflow episode, 1978–81. In the developing world as a whole, average capital inflows increased from their debt crisis levels by 1.5 percentage points of gross national product (GNP) to reach almost 3 percent of GNP in 1990–93. Indeed, although inflows over 1990–93 were somewhat smaller relative to GNP than those observed before the debt crisis, their magnitudes have been similar in the last two years.

The surge of inflows has been widespread, and especially strong in East Asia and Latin America. A break from prior experience is already suggested by 1990 for East Asia and by 1991 for Latin America. In both cases the pace of inflows accelerated after 1991. Table 2 suggests that the phenomenon may recently have become more pervasive, reaching South Asia as well as Sub-Saharan Africa in 1993. Impressionistic evidence suggests that the phenomenon has recently become important in India and Pakistan as well as in Kenya and Uganda.

Table 1. *Annual Private Capital Net Flows, All Developing Countries*

Net flow	1978–81	1982–89	1990	1991	1992	1993	1990–93
Long-term							
Billions of U.S. dollars	53.5	34.6	44.5	57.6	99.0	157.7	89.7
Percentage of exports	12.3	5.9	5.4	6.5	10.9	16.6	10.1
Percentage of GNP	2.7	1.2	1.1	1.4	2.4	3.7	2.2
Short-term							
Billions of U.S. dollars	22.6	5.4	13.1	23.4	28.9	33.5	24.7
Percentage of exports	5.2	0.9	1.6	2.7	3.2	3.5	2.8
Percentage of GNP	1.1	0.2	0.3	0.6	0.7	0.8	0.6
Total							
Billions of U.S. dollars	76.1	40.0	57.6	81.0	127.8	191.2	114.4
Percentage of exports	17.5	6.8	7.0	9.2	14.1	20.2	12.8
Percentage of GNP	3.8	1.4	1.4	2.0	3.1	4.5	2.8

Note: Includes all developing countries in the Debtor Reporting System of the World Bank as reported in World Bank (1994). Private long-term net flows comprise long-term debt net flows from private creditors and equity net flows, both direct and portfolio, as reported in World Bank (1994). Private short-term net flows are total short-term debt net flows as reported in World Bank (1994), which excludes the International Monetary Fund (IMF). Therefore, imputed flows due to the accumulation of interest arrears and to debt stock reduction operations are not included. Percentages of exports and gross national product (GNP) are based on accumulated flows over the entire period reported, so they may differ from the simple averages of annual percentages.

Source: World Bank (1994).

Table 2. *Annual Long-Term Private Capital Net Flows, by Region*

Flows by region	1978–81	1982–89	1990	1991	1992	1993	1990–93
Sub-Saharan Africa							
Billions of U.S. dollars	4.7	2.5	0.9	1.5	0.7	2.1	1.3
Percentage of exports	9.8	6.0	1.7	3.0	1.3	4.4	2.6
Percentage of GNP	2.7	1.5	0.6	1.0	0.4	1.3	0.8
East Asia and the Pacific							
Billions of U.S. dollars	7.9	9.6	20.5	25.6	42.5	62.8	37.8
Percentage of exports	9.0	6.5	8.2	8.9	12.9	17.2	12.3
Percentage of GNP	1.8	1.5	2.3	2.6	3.9	5.4	3.7
Latin America and the Caribbean							
Billions of U.S. dollars	28.9	10.3	10.7	22.8	27.9	57.7	29.8
Percentage of exports	27.4	8.0	6.0	12.7	14.6	28.7	15.9
Percentage of GNP	4.4	1.4	1.0	2.1	2.3	4.0	2.5
Middle East and North Africa							
Billions of U.S. dollars	4.1	3.5	0.2	–0.1	1.6	1.6	0.8
Percentage of exports	7.3	6.0	0.2	–0.2	1.9	2.2	1.0
Percentage of GNP	2.2	1.2	0.1	0.0	0.6	0.7	0.3
South Asia							
Billions of U.S. dollars	0.7	2.8	2.6	3.0	1.8	5.6	3.3
Percentage of exports	3.4	9.8	6.5	7.0	4.1	11.1	7.4
Percentage of GNP	0.4	1.0	0.7	0.9	0.5	1.7	1.0
Europe and Central Asia							
Billions of U.S. dollars	7.3	5.8	9.6	4.6	24.3	27.8	16.6
Percentage of exports	6.1	3.2	4.3	1.9	11.6	13.3	7.5
Percentage of GNP	2.3	0.8	0.7	0.4	2.3	3.0	1.4

Note: Net flows are as reported in table 1, and regions are defined as in World Bank (1994). Percentages of exports and GNP are based on accumulated flows over the entire period reported, so they may differ from the simple averages of annual percentages.

Source: World Bank (1994).

The composition of assets acquired by external creditors during the current inflow episode stands in stark contrast to what transpired during the period of debt accumulation before 1982. First, as indicated in table 3, there is a shift away from debt instruments in favor of equity instruments, both direct and portfolio. Second, within debt flows, syndicated bank loans are relatively unimportant. And third, in contrast to the entire period of 1978–89, portfolio flows have increased immensely in importance. The last two rows of table 3 suggest that there has been a drastic change in the sectoral composition of capital inflows during the recent episode, relative to the period of the debt crisis and the previous inflow episode. Recent capital inflows have been directed overwhelmingly to the private sector of recipient countries.

Table 3. *Asset and Sectoral Composition of Long-Term Private Capital Net Flows*
(percent)

Asset and sector	1978–81	1982–89	1990	1991	1992	1993	1990–93
Foreign direct investment	18.0	38.7	55.9	61.1	46.0	41.3	47.6
Portfolio equity flows	0.1	2.3	8.5	13.1	14.2	29.7	20.1
Portfolio debt flows	3.3	7.6	7.2	17.9	10.7	25.2	17.8
Other debt flows	78.7	51.4	28.5	7.8	29.1	3.8	14.5
Equity	18.1	41.0	64.3	74.3	60.2	71.0	67.7
Debt	81.9	59.0	35.7	25.7	39.8	29.0	32.3
To the private sector	38.3	40.7	85.4	89.4	81.5	82.0	83.4
To the public sector	61.7	59.3	14.6	10.6	18.5	18.0	16.6

Note: Net flows are as reported in table 1. Breakdowns follow World Bank (1994) classifications: portfolio debt flows comprise bond debt, and other debt flows are obtained as a residual; equity flows comprise direct and portfolio equity flows; debt flows comprise portfolio debt flows and other debt flows; private sector destination comprises all equity flows and private nonguaranteed debt flows; and public sector destination comprises public and publicly guaranteed debt flows.

Source: World Bank (1994).

II. THE POLICY PROBLEM

Despite the urgency with which indebted countries sought renewed access to world capital markets, the surge in capital inflows has been perceived as presenting a policy problem for the recipient countries. This section addresses why this might be so. We proceed in two steps. First, we describe the textbook conditions under which external borrowing can be welfare enhancing. Second, we examine how deviations from the ideal conditions assumed in the textbook case can cause capital inflows to be welfare reducing.

The Case for Capital Inflows

At first glance it is not obvious why an inflow of foreign savings to developing countries should arouse concern over policy. For a small economy facing perfect international capital markets, the optimal textbook policy—the policy that would be chosen by a planner maximizing the discounted utility of a representative agent—calls for investing until the marginal return from that investment equals the given cost of capital, and choosing a consumption path that distributes consumption optimally over time and satisfies the economy's intertemporal budget constraint. Such an economy would import capital to smooth consumption or to finance profitable investment opportunities if the level of domestic savings was insufficient. Note that this analysis concerns *net* capital flows. *Gross* flows also serve an important economic purpose—they enable portfolio managers to diversify, and therefore improve the risk-return tradeoff they would face under financial autarky. The paths of consumption, investment, and external borrowing that would be chosen by the planner would also be generated by decentralized, com-

petitive private economies as long as there were no distortions associated with the private allocation of foreign savings. To determine how capital inflows might have harmful consequences and to address the policy issues raised by the current capital inflow episode, it is necessary to understand how the case for free capital mobility based on the textbook analysis of optimal borrowing may fail.

Microeconomic Distortions and Macroeconomic Stability

If external borrowing is centralized in the hands of a planner who is either unwilling or unable to maximize the welfare of the representative domestic agent, then the economic outcomes associated with external borrowing may not be desirable. In the previous inflow episode, when external borrowing was primarily undertaken by the public sector, the benevolence and competence of the planner was relevant. However, this issue is much less important for the current episode, in which most external borrowing has been undertaken by private agents.

What is at issue in the context of the current episode is whether decentralized borrowing by private agents will reproduce the desirable outcomes that would be generated by a benevolent and omniscient planner. There are two broad classes of reasons why it may not—the potential incidence of domestic microeconomic distortions and the effects of inflows on macroeconomic stability. Neither of these issues are addressed in the textbook argument for the welfare-enhancing role of capital inflows. The analysis in the textbook case, based on the behavior of atomistic agents operating in perfectly competitive markets, neglects the possible role of a wide variety of distortions that could affect the efficiency with which external resources are allocated in the capital-importing countries. Allowing for such distortions qualifies the case for laissez faire. Macroeconomic instability, on the other hand, is not well captured in the representative agent models.

At the microeconomic level the presence of distortions creates the possibility that the resources absorbed in association with capital inflows will be misused, even if such resources are primarily absorbed by the private sector. Resource misallocation can arise because of distortions in the domestic financial sector or the real economy. Microeconomic distortions can also arise because of an inadequate macroeconomic policy framework. In either case domestic distortions can interact with capital inflows in two ways: the welfare consequences of existing distortions can be aggravated by capital inflows, which arise from an unrelated cause, and excessive capital inflows can be directly induced by changes in distortions. There are several potential microeconomic distortions:

- Distortions to the perceived private cost of foreign capital could arise because of externalities associated with aggregate country risk and credit rationing, resulting from limited cross-border contract enforceability. (This cause is discussed further in section V.)
- As mentioned by Calvo, Leiderman, and Reinhart (1993b), distortions in the financial sector could give rise to improper financial intermediation. Such distortions, in the form of preexisting, improperly priced (possibly

implicit) government deposit insurance or speculative bubbles in particular domestic asset markets (such as equity and real estate), could promote excessive foreign borrowing.

- Real sector distortions, such as imperfect competition, externalities, or wage rigidity, may result in inappropriate private sector adjustment (such as suboptimal adjustment of the tradable sector to fluctuating exchange rates), even if the financial system is functioning well.

- Microeconomic distortions may be created by macroeconomic policies that are not expected to endure, such as "incredible" trade liberalization or price stabilization. This is discussed in Calvo (1989) and Calvo and Vegh (1991). In both papers the result is excessive external indebtedness.[1]

The first three distortions could occur regardless of the availability of external capital, but the cost of the distortion would increase when external capital becomes more plentiful (that is, its supply schedule shifts downward). Consequently, in each of these cases the costs of domestic microeconomic distortions that arise independently of foreign capital inflows are aggravated when foreign capital becomes more plentiful for any reason. The distortions are aggravated because of increased borrowing, increased intermediation through the domestic financial system, or increased domestic aggregate demand. The fourth distortion differs from the others in that it attributes the capital inflow itself to the creation of a new domestic distortion. Because of these distortions, the resources associated with capital inflows may be devoted to consumption that has low social value or invested in projects that have low social returns, at the expense of high-value future consumption, which will have to be sacrificed to service the accumulated liabilities.

The problems that have occupied most observers, however, have concerned short-run macroeconomics. Although a reduction in foreign real interest rates is a favorable shock for countries that are net external borrowers, macroeconomic policymakers cannot ignore its implications. An analogy can be made to the case of "Dutch disease," in which a favorable terms of trade shock can complicate macroeconomic management. Although the shock is favorable, the economy's macroeconomic adjustment mechanism may generate undesirable side effects. The mitigation of such effects provides the rationale for adjusting macroeconomic policies. Specifically, surges in capital inflows have been associated with a loss of monetary control. In turn, this loss is feared to result in (see Schadler and others 1993):

- Upward pressure on asset prices, an expansion of demand for home goods, and consequent increase in economic activity, which is associated with an acceleration in domestic inflation.

1. We omit from this list the possibility that external lending would be characterized by multiple "bank-run" equilibria. Although this phenomenon would undoubtedly pose a policy problem by making capital flows extremely volatile, it does not represent a separate distortion from the perspective of the capital-importing country.

- A real exchange rate appreciation (resulting independently or because of upward pressure on asset prices) and a deterioration of the current account of the balance of payments. The real appreciation may undermine the progress of trade reforms and retard improvement in long-run external competitiveness by eroding the profitability of the traded-goods sector.
- A potential increase in macroeconomic instability, to the extent that capital inflows are themselves unstable.

If distortions lead decentralized economies far from the allocations that would be generated by a benevolent planner, or if the receipt of foreign capital disrupts the domestic macroeconomic equilibrium, a policy response may be called for. It is important to emphasize, however, that the possibility that capital inflows may be welfare reducing does not mean that they are invariably harmful. On microeconomic grounds, not only can capital inflows triggered by external events arrive in a domestic environment that is free of distortions, but such flows can also be attracted by the removal of distortions. Under these alternative scenarios the receipt of foreign capital may be welfare enhancing at a microeconomic level. On macroeconomic grounds, the stimulus to aggregate demand provided by the arrival of inflows may be welcome in economies with excess productive capacity. Moreover, if the inflow of capital is sustained, it need not be associated with increased macroeconomic instability. The upshot is that the nature of the policy problem posed by the receipt of capital inflows depends on a complex array of factors, such as the allocative efficiency of the domestic economy, the causes of the inflow, the domestic macroeconomic context, and factors that determine the sustainability of inflows.

III. Causes of Capital Inflows

Among the factors that determine the nature of the policy problem, the existing literature has devoted most attention to the identification of causes of inflows. In addition to the reasons given above, the assessment of causes is important for two other reasons that have to do with policy design. First, forecasting the likely evolution of the inflows requires the identification of causal factors; second, choosing instruments of response, and thus designing effective public policy, depends on the nature of the underlying causes. Here, a domestic-foreign causal dichotomy is relevant. If causes are external, they are by definition exogenous, and only indirect, compensatory policies can be considered. If causes are domestic, however, more direct measures may be feasible.

An Analytical Framework

A useful analytical framework separates potential domestic causes into those that operate at the project and country levels. Building on Fernández-Arias (1995), suppose that capital flows can occur in the form of transactions in n types of assets, indexed by s, where $s = 1, \ldots n$. The domestic return on an asset of type

s is decomposed into a project expected return D_s and a country creditworthiness adjustment factor C, which is bounded by zero and one. The project return depends inversely on the vector F of net flows to projects of all types (based on a diminishing marginal productivity argument), and the creditworthiness factor is a negative function of the vector of the end-of-period stocks of liabilities of all types, denoted $S = S_{-1} + F$.[2] Voluntary capital flows (components of the vector F) are determined by the arbitrage condition:

$$(1) \qquad D_s(d, F)C_s(c, S_{-1} + F) = W_s(w, S_{-1} + F)$$

where W_s is the opportunity cost of funds of type s in the world economy, assumed to depend on the stock of liabilities S to reflect the portfolio diversification considerations of external creditors. The shift factors d, c, and w are associated, respectively, with the domestic economic climate, country creditworthiness, and any creditor-country financial conditions relevant for developing-country investment (such as financial returns and capital market regulations). We adopt the convention that the functions D_s, C_s, and W_s are increasing in the shift parameters. Equation 1 defines the equilibrium value of F implicitly. Explicitly, it is given by

$$(2) \qquad F = F(d, c, w, S_{-1}).$$

Thus changes in capital flows can be determined by any combination of changes in d, c, or w for given values of S_{-1}—that is, by changes in domestic factors operating both at the project and country levels, as well as in factors relating to the external environment. The assumptions made above imply that the components of the vector F are increasing in d and c but decreasing in w and S_{-1}.[3] Initial stocks S_{-1} are of course dynamically endogenous. Over time, the sequence of flows F depends on the path of the underlying factors d, c, and w as well as the initial value of S. Increases in d and c or decreases in w could generate a sustained surge in inflows, like the one observed in practice.

Plausible empirical causes of the recent inflow episode can be associated with each of these variables (see Schadler and others 1993; Calvo, Leiderman, and Reinhart 1993a). Domestic factors operating at the project level (underlying d) include the following:

- Improved policies that increase the long-run expected rate of return or reduce the perceived risk on real domestic investment, such as major domestic structural and institutional reforms. Improved domestic macroeconomic policies, particularly successful inflation stabilizations accompanied by fiscal adjustment widely perceived as sustainable, would also have this effect.
- Short-run macroeconomic policies—such as tight monetary policy—that increase the expected rate of return on domestic financial instruments,

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2. The project return depends on the beginning-of-period capital stock, as well as the flow of new capital, but the former can be suppressed for our purposes.

3. Weak assumptions regarding stock effects across types of assets are also needed.

resulting in ex ante positive interest rate differentials, for given values of the structural determinants of the marginal product of capital.

* Policies that increase the openness of the domestic financial market to foreign investors, such as removal of capital controls and liberalization of restrictions on foreign direct investment.
* Structural or macroeconomic policies that, because of their lack of credibility, distort intertemporal relative prices—that is, incredible trade liberalizations and price stabilization programs. Tariff cuts under domestic price rigidities, for example, may create expectations that the relative price of imports will rise over time when tariff levels are restored (Calvo, Leiderman, and Reinhart 1993a).

We can interpret country creditworthiness C as depending on the expected present value of resources available for external payments relative to the country's liabilities. One way to conceptualize this present value measure is to express the component c in the form

$$(3) \qquad\qquad c = Y/(R - g)$$

where Y is some current measure of available resources, assumed to grow at the rate g, and the discount rate R (relevant to claimholders) reflects world financial returns available at comparable maturities. Note that the country creditworthiness parameter c depends not only on domestic factors (such as Y and g) but also on foreign returns R. This unconventional channel of foreign interest rate effects has been emphasized and quantified by Fernández-Arias (1995).

Domestic factors operating at the country level (through c) include:

* Debt-equity swaps and sustainable debt and debt service reduction agreements, as in Brady operations.
* Stabilization and structural policies that affect the aggregate efficiency of resource allocation.
* Shocks to national income in the form of changes in international terms of trade.
* Policies that affect the level of domestic absorption relative to income.

Finally, exogenous factors affecting the external opportunity cost of funds w include:

* Foreign interest rates and recessions abroad.
* Easing of regulations affecting the cost of access to capital markets in creditor countries.
* Bandwagon effects in international capital markets, either resulting from the efficient signaling of information on fundamentals or from speculative bubbles.

Equation 2 implies that any combination of these factors could operate simultaneously to influence the observed magnitude of capital inflows. Disentan-

gling the separate contributions of these factors is therefore an empirical problem. Because several of these factors changed at nearly the same time in the domestic and external environments during the current inflow episode, it has been difficult to identify the causes of the episode empirically.

The Evidence

The task of understanding the causes of the current inflow episode has not been attempted in a comprehensive fashion; most observers have favored one of two views. The "pull" view holds that inflows are attracted to the recipient countries because of an improved domestic policy environment (some combination of changes in parameters d and c in equation 1). In support of this view, case studies of individual countries that have received large capital inflows can almost invariably identify substantial changes in policy regimes immediately preceding the inflow episode (see Montiel 1995). The "push" view emphasizes the role of lower returns available in the creditor countries (decreases in R, operating through c and w). The widespread and persistent nature of the inflow phenomenon would seem to favor global, persistent factors and rule out idiosyncratic, volatile factors. Consistent with the push view, aggregate private capital inflows to all developing countries exhibit a strong negative association with U.S. interest rates (figure 1). Thus plausible cases can be made for either perspective. As equation 2 demonstrates, the two explanations are not mutually exclusive: the issue is assessing their relative empirical importance.

A survey of the formal evidence accumulated on this issue is presented in Fernández-Arias and Montiel (1995). Overall, the weight of the evidence reviewed there favors the push view—that falling U.S. interest rates have played a dominant role in driving capital flows to developing countries. The strongest arguments for pull factors rely on the observed geographic variation in the distribution of capital inflows, described in section I, suggesting that country-specific factors have played a role. But this reasoning can be problematic. Although it is true that not all countries have been recipients of the new inflows, it is also true that flows have not been restricted to countries with well-established track records of macroeconomic and structural adjustment. Both Peru and Brazil, for instance, received substantial inflows in 1992, a year in which both countries confronted severe macroeconomic imbalances.

Moreover, cross-country variation in the magnitude of capital flows may convey little information about what has driven changes in capital flows in countries that have experienced the surge phenomenon. Differentiating equation 2, we derive equation 4,

$$(4) \qquad dF = F_1 \, dd + F_2 \, dc + F_3 \, dw$$

holding S_{-1} constant (subscripts denote partial derivatives). Because the F_i are functions of the country-specific variables d and c (as well as of the nonspecific variable w), changes in the external variables w that are uniform across countries may differ in their impacts on individual countries. Thus differences in

Figure 1. *Interest Rates and Private Capital Inflows to Developing Countries*
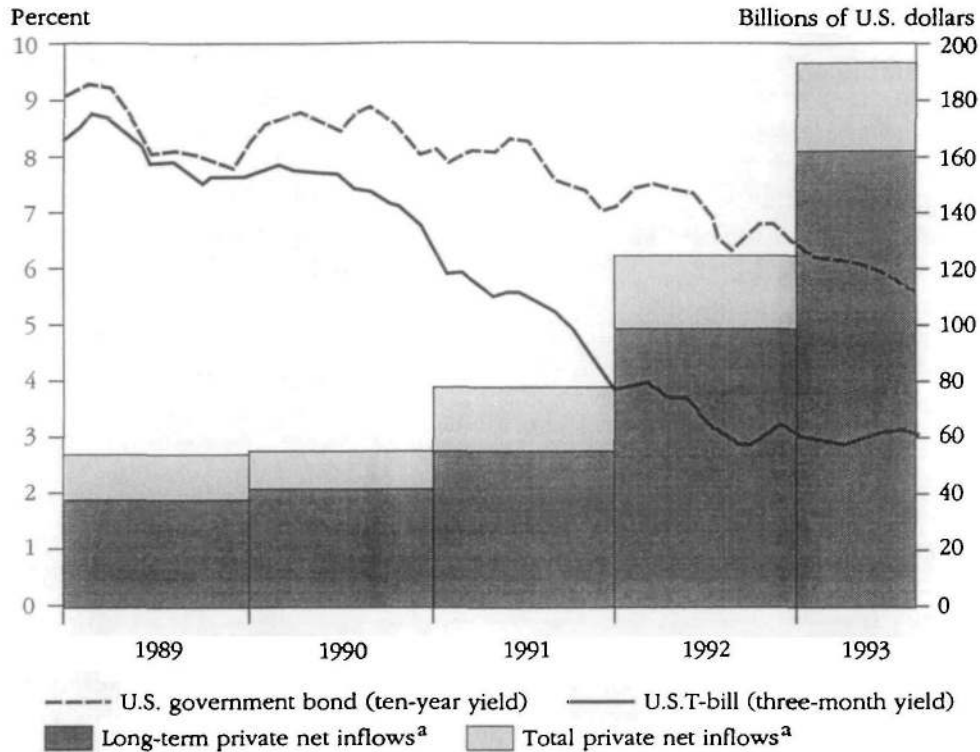
a. Includes all developing countries in the Debtor Reporting System of the World Bank as reported in World Bank (1994).

Source: IMF (various years) and World Bank (1994).

levels of capital inflows across countries confirm the relevance of country-specific characteristics, but they do not imply that *changes* in such country-specific factors caused the inflows, as implied by the pull story.[4]

Despite these arguments supporting the push view, the most reasonable conclusion to draw from existing evidence is that, although decreases in international interest rates R have undoubtedly been important in explaining the observed magnitude of increases in F for many countries, we cannot infer, for several reasons, that changes in domestic factors—or, for that matter, in external variables other than rates of return on financial assets—have not played a role as well.

4. It is important to note that even a situation in which some countries receive no new capital inflows is consistent with the push view. The solution for F from equation 1 may entail an extremely low level of capital inflows or capital outflows (negative values of various components of F), implying transfers of resources that the country is unwilling to undertake. Under such circumstances the solution for F would be subject to an inequality constraint of the form $F \geq F^*$. If this constraint is binding, such voluntary capital flows would cease, and equation 1 would become an inequality, no longer determining any observed (involuntary) capital flows. As long as fluctuations in external conditions leave this constraint binding, capital inflows would be unchanged.

The main reason is that such pull variables are hard to measure. In theory, inflows are endogenous with respect to a wide range of domestic policies, and no single indicator is likely to represent the broad thrust of such policies with the same degree of accuracy as external interest rates do for foreign financial conditions. Indeed, pull factors have been proxied in very rough ways in past studies. In Fernández-Arias (1995), for example, pull factors are proxied by a shifting intercept term. In Dooley, Fernández-Arias, and Kletzer (1996) their contribution is captured in the unexplained portion of the secondary debt price, a procedure that is sensitive to the validity of the underlying burden-sharing model. A second reason is that much of the existing literature has been restricted to explaining portfolio flows. As shown in section I, foreign direct investment has been at least as important in many cases, and this type of flow may be more sensitive to domestic factors than the more-liquid portfolio flows.

Moreover, a complete story about the factors driving the new inflows must account for changes in the composition of assets acquired by external creditors. These changes present a dramatic contrast between the current and previous inflow episodes. The push story based simply on low U.S. interest rates fails to address this issue. External shocks have been proxied by foreign rates of return in the empirical literature. As a result, the role of structural changes in creditor-country financial markets, which have eased access for developing-country borrowers, has not been considered. The existing literature is unable to distinguish between changes in the degree of financial integration (except for factors pertaining to country default risk) and changes in relative ex ante rates of return. The distinction is crucial for the central question that has motivated this literature—the question of sustainability. To the extent that the new flows represent a one-time portfolio adjustment driven by permanent changes in the degree of world financial integration, their high level is not sustainable, but they are less likely to be reversed than if they are driven by temporarily low U.S. interest rates.

Thus a consistent story about the factors driving and directing the recent surge in capital inflows should feature some combination of push and pull factors. One such story would proceed as follows. The combination of low interest rates and recession forced low rates of return on industrial-country assets (particularly in the United States), creating an incipient capital outflow as investors in these countries sought higher-yielding assets for their portfolios. The restoration of perceived creditworthiness was necessary for potential debtor countries to have access to these funds, and thus capital flowed initially to those countries whose creditworthiness was not severely impaired during the 1980s—largely the rapidly growing countries in East Asia that never suffered a debt crisis. The Brady Plan, announced in mid-1989, broadened the geographic scope for such inflows to include the heavily indebted countries in Latin America, in part by writing down the face value of debt, in part by supporting policy adjustments, and in part by providing information externalities, leading to bandwagon effects. Where none of these factors have come into play—that is, in most of Sub-Saharan Africa—capital inflows have not materialized.

Implications for Policy

Although the weighing of push and pull factors is informative for policy, it represents at best a point of departure for policy analysis because the mapping from pull or push views to policy is highly imperfect. As indicated above, policy design requires the specific identification of both causal factors and country circumstances. The implicit assumption that capital inflows attracted by improved domestic policies do not present a policy problem, but those driven by expansionary monetary policy abroad do, is unwarranted. Even a pull exerted by moving from a distorted to a completely undistorted domestic microeconomic environment could generate macroeconomic instability, calling for a macroeconomic policy response. On the other hand, a pull generated by either a partial removal of domestic distortions or the introduction of new distortions could be welfare reducing on microeconomic grounds as well. Similarly, the implications for policy of an inflow generated by a foreign push are ambiguous in general, depending crucially on the characteristics of the domestic economy.

IV. SUSTAINABILITY

The concern that inflows may threaten macroeconomic stability arises in part from a fear that the flows may be transitory. Although even permanent inflows can create adjustment problems, inflows that are not sustained can potentially destabilize the domestic economy when they arrive and when they depart. The issue of sustainability can be decomposed into two parts. First, what is the expected time path of the factors driving the inflow episode (for example, how long are the conditions likely to persist)? Second, what are the corresponding implications for capital inflows? Specifically, is the alternative to the current level of inflows a continuation of inflows at a reduced rate (soft landing), a cessation of inflows (hard landing), or pressure for the reversal of capital flows and a balance of payments crisis (crash)? Unfortunately, the literature to date has shed little light on these questions, apart from the identification of causes. In this section we address the issue in a preliminary way.

The first of the two questions is of interest to policymakers in the recipient country to the extent that the factors driving inflows are exogenous to their actions. As indicated in the previous section, evidence suggests that a substantial external shock in the form of lower interest rates in the United States has been a key driving factor determining the magnitude of capital flows to creditworthy developing countries. Empirically, therefore, the current inflow episode contains an important exogenous component. This being the case, it is meaningful to ask how long the favorable external shock is expected to last and what the likely consequences would be of a reversal of these external circumstances or of domestic policies.

Duration of the External Shock

One way to gauge the likely duration of the foreign interest rate shock is by examining the implicit predictions of future interest rates captured in the term

structure. Interest rates steadily declined in the period 1989–93 and started to increase in 1994. As of the third quarter of 1994, when this article was prepared, the term structure of interest rates for the United States suggested that interest rates were expected to rise during the subsequent five years, approaching their 1989 levels. Thus markets did not expect the favorable external interest rate shock to persist.

Increases in interest rates in creditor countries would, of course, reduce the incentives for reallocating portfolios to developing countries. Equations 1 and 3 suggest that such incentives would be reduced through increases in the opportunity cost of funds and increases in country risk. Thus, both mechanisms have a bearing on the sustainability of inflows.

Consider first country risk, which has been the key to extreme forms of unsustainability, such as the debt crisis. Equation 3 shows that this mechanism operates through the market valuation of the present and future resources available to the country to service its external liabilities. Beyond a threshold point, country risk may be too high to sustain voluntary inflows. In this case equation 1 would yield inflow levels less than what the domestic economy could feasibly generate. If so, capital rationing and financial crisis are the likely consequences. Below we construct a simple creditworthiness index to measure the pressure on repayment capacity exerted by the service of foreign liabilities, which can be used to shed light on the likelihood of a crisis.

An Index of Creditworthiness

Because in the current inflow episode foreign liabilities have primarily been incurred by the private sector (see table 3) and to a large extent denominated in domestic currency, country risk is likely to be associated with balance of payments crises, the attendant likelihood of devaluation, and the imposition of capital controls rather than with fiscal problems. This was illustrated by the recent Mexican crisis. (For the role of fiscal problems in the previous inflow episode, see Montiel 1993.) Under these circumstances the country's repayment capacity can be taken to depend on its ability to generate a trade surplus—that is, to expand exports and contract imports—which depends on its potential to produce traded goods. From the perspective of external creditors, the operational significance of the quality of the domestic policy environment is reflected in this variable. Because the present and future values of maximum trade surpluses are unobservable, for the purpose of constructing a sustainability index, capacity to pay can be proxied by a fraction f of total production of traded goods, T.

The present value of this capacity to pay can be compared with an accumulated stock of foreign liabilities S to assess whether the country's resources can support the accumulation of additional liabilities. Such a comparison forms the basis for our operational measure of creditworthiness. The present value of resources is given by an expression similar to equation 3 with Y equaling fT and g the long-run growth rate of traded goods production. Let S be the accumulated stock of foreign liabilities and suppose that RS is a reasonable estimate of their

future average service.[5] Under these assumptions a solvency-based creditworthiness index can be constructed:

$$(5) \qquad\qquad C = a(R - g)S/T$$

where a is an arbitrary constant to base the index.[6] The index C_t represents the ratio of the stock of external liabilities outstanding at date t to the projected present value of the resources available to service those liabilities from that date forward, expressed relative to the same ratio during the base period. Thus C measures creditworthiness in relative terms. An increase in this index has adverse implications for creditworthiness, and thus for the sustainability of external finance.

A simple, alternative index could be based on the extent to which current capacity to pay meets short-term obligations, gauged by a liquidity-based ratio such as $C^L = a\,\mathcal{R}'S/T$, where R' is a short-term interest rate. Although this index lacks the theoretical foundations underlying C, it provides an interesting benchmark. An even simpler alternative can be constructed by expanding the conventional debt-export ratio to include all external liabilities and all traded-goods production. In this case the index could be written as $C^D = a''S/T$. The three indexes are plotted in figure 2a for an aggregate of capital-inflow recipient countries.

For predicting the level of the indexes in future years, projections of the production of traded goods and interest rates are needed. In figures 2a and 2b, the level of traded goods, T, is projected to grow at the rate g observed in the period 1989–93. The long- and short-term interest rates, R and R', respectively, are obtained from the implied forward rates of the maturity structure referred to above.

We note four main points in comparing C to C^L and C^D (figure 2a). First, the relative evolution of the creditworthiness indexes is very sensitive to the evolution of interest rates. The path of C tracks fairly closely that of market interest rates, both in the historical period, between 1983 and 1993, and in the projection period. Second, creditworthiness improved according to our preferred measure, even as capital flowed into developing countries, until end-1993, contrary to what the traditional index would suggest. In that sense this more refined index can better explain the surge in inflows. Third, creditworthiness declined in 1994 and continues to do so in the projection period. Fourth, in spite of this decline, the index remains below its 1989 value throughout the projection period. This result reflects the fact that growth in T offsets projected increases in interest rates. We interpret this evidence as indicating that if the output of traded goods

5. This coincidence with the discount rate requires that returns on foreign investments adjust quickly to market conditions, as in the case of equity investments, floating-rate debt, or rolled-over short-term debt.

6. Note that we are assuming that the growth rate of T is unaffected by changes in interest rates. This is a strong assumption, and to the extent that it fails to hold the conclusions may be excessively optimistic. Moreover, the index C is based on fundamentals. If the fundamentals are themselves vulnerable to perceptions of noncreditworthiness, creating scope for self-fulfilling runs, our optimistic conclusions would need to be qualified.

Figure 2a. *Creditworthiness Indexes with Constant Stocks of Liabilities*
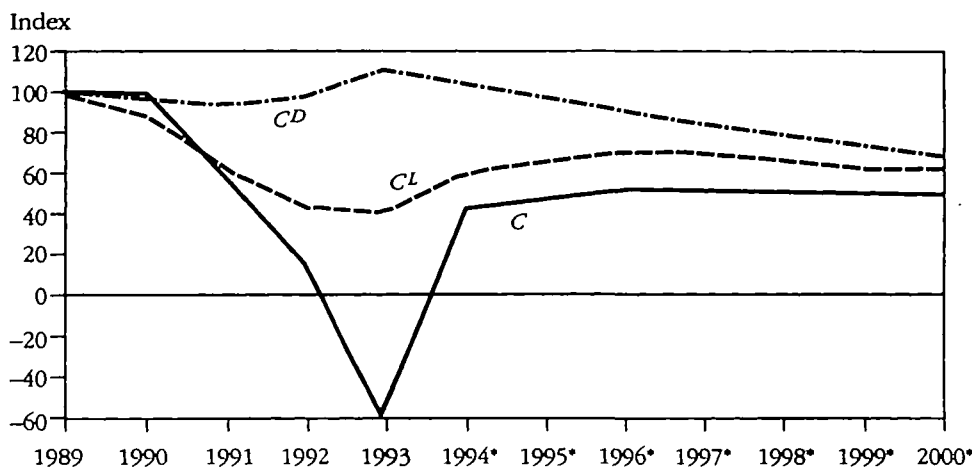
Index

Figure 2b. *Creditworthiness Indexes with Growing Stocks of Liabilities*

Index
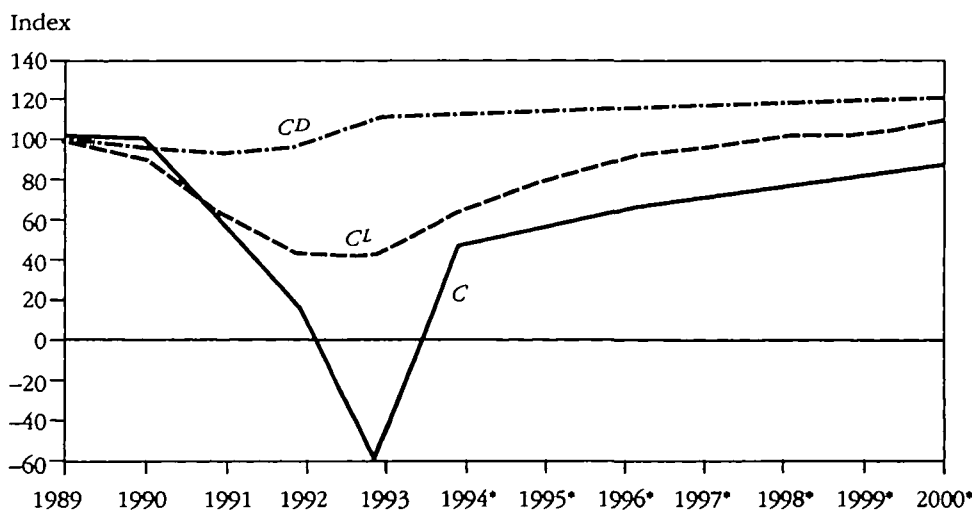
*Projected rates.

Note: $C = a(R-g)S/T$; $C^L = a'R'S/T$; $C^D = a''S/T$. The constants a, a', and a" were determined such that $C = C^L = C^D = 100$ at the start of 1990. T is the level of traded goods projected to grow at the rate g observed in the period 1989–93. R and R' are, respectively, the long- and short-term interest rates. S is the stock of total foreign liabilities comprising debt and foreign equity (obtained by accumulating equity net flows since 1970). In the projection period in figure 2a, S is held constant at its end-1993 level. In the projection period in figure 2b, S grows at the rate observed in the period 1989–93. Data are for all developing countries as reported in World Bank (1994).

Source: Authors' calculations based on data from World Bank (1994).

grows at its estimated historic rate and market interest rates move as projected, the sustainability of the existing level of external liabilities will not be impaired by creditworthiness considerations, in that the creditworthiness index does not surpass values that were compatible with substantial capital inflows in the past. This interpretation suggests that creditworthiness considerations need not associate rising market interest rates with pressures for a reversal of capital flows and crisis.

But can the inflow continue under such circumstances at rates comparable to those recently observed? To answer this question, an alternative measure of the index that incorporates growth in the stock of external liabilities S at the average rate observed during the recent surge episode is used (figure 2b). These indexes assess whether creditworthiness would be impaired if inflow levels were to be sustained at levels on the order of those observed in recent years. Under these circumstances our preferred index C deteriorates over the projection period, but remains below its 1989 level by 2000. The implication is that considerations of country creditworthiness are unlikely to evolve in a way that will constrain inflows in the near term. This does not imply, however, that portfolio considerations operating through the opportunity cost term W_s in equation 1 will not restrain such flows.

Stocks and Flows

Even if, as these results indicate, rising market interest rates do not necessarily portend a deterioration in C to critical levels, they do imply an increase in w in equation 1, which itself has implications for the vector of flows F. These implications depend on how existing stocks S enter equation 1. We refer to a situation in which S enters equation 1 through the function C or W as one of stock adjustment, and refer to the alternative, in which all adjustment occurs through flows, as flow adjustment.

To the extent that S enters C or W, even if the new inflows were purely a function of permanently improved domestic policies, it is unlikely that the magnitude of the initial flows would be sustained. The reason is that initial inflows would cause cumulative changes in stocks that would diminish the incentives for new inflows (by reducing C or increasing W, or both), and make the inflows a one-time event to some extent (see Fernández-Arias 1995 for a formal analysis of the relative importance of flow-stock adjustment and the dynamics involved under expansion and contraction). For example, in the extreme case in which stocks are important for portfolio balancing reasons and domestic returns adjusted for country risks are constant (F enters equation 1 only on the right-hand side), after the initial stock adjustment of foreign investors' portfolios is completed, subsequent inflows would represent only the share of new saving devoted to the acquisition of developing-country assets—that is, their magnitude would be limited by the rate of growth of foreign investors' overall portfolios.

If stocks are important, the question of sustainability becomes one of how inflows can be expected to decrease under plausible scenarios, not whether in-

flows will continue at their current levels. The answer depends on the permanence of the changes in the variables driving the inflows as well as on how much of the observed inflow in each country reflects an initial stock adjustment. Given the projected increase in international interest rates, capital inflows should fall for developing countries as a group, all other things being equal, continuing their estimated reduction during 1994. Nonetheless, in countries in which inflows have primarily resulted from an improved domestic economic environment that is expected to be maintained, there is no reason for the bulk of the stock adjustment to be reversed, even when external conditions change. Thus, although flows may taper off in such a case, reflecting both the completion of the initial stock adjustment and the change in external circumstances, a crisis is not likely to develop. If, instead, the contribution of domestic factors has been relatively minor, or even negative, and inflows have thus reflected primarily lower foreign interest rates, the stock adjustment can be expected to be reversed if and when foreign assets become more attractive.

So far, the only evidence on the empirical role of stock adjustment in the current inflow episode has been provided by Fernández-Arias (1995), who found no evidence that flows responded to accumulated stocks. The importance of this issue for the prospective magnitude of postsurge inflows and the likelihood of crisis warrants more research.

Speed of Adjustment

The third and final component of the sustainability issue concerns the speed with which a desired stock reversal can be effected by external creditors. In equation 1, adjustments are assumed to be costless and therefore instantaneous. But in practice the speed of adjustment depends on the ease with which such creditors can liquidate their positions. In this regard the current inflow episode differs from the previous one. On the one hand, the bonds and equities acquired by external creditors in the current episode are more easily liquidated than syndicated bank loans. Even FDI can be liquidated effectively by borrowing domestically and transferring the funds abroad, particularly if outflows have been liberalized, as has been common in debtor countries during recent years. On the other hand, the assets acquired by external creditors in the present example are denominated in domestic currency in many cases. This characteristic enhances liquidity while rendering the foreign-currency value of such assets susceptible to capital taxation through their exposure to devaluation. With assets that are relatively liquid and denominated in domestic currency, portfolio adjustments are likely to be effected rapidly in response to new information.

V. POLICY RESPONSES

The question of an appropriate policy response has received substantial attention, and the menu of policies considered has been extensive (see, for example, Calvo, Leiderman, and Reinhart 1993a; Schadler and others 1993). The

desire to counteract the pressures for exchange rate appreciation in the face of substantial net capital inflows has typically led to very active Central Bank intervention and rapid increases in international reserves. Policies motivated by the desire to ameliorate this impact of capital inflows on the external component of high-powered money include:

- Direct intervention to reduce gross inflows, by imposing controls or taxes on capital imports.
- The removal of restrictions on capital outflows to reduce net inflows.
- Trade liberalization, intended to switch spending from domestic to foreign goods and thus increase the trade deficit.
- Increased exchange rate flexibility.

In the last case the central bank fails to satisfy all of the demand for high-powered money created by capital inflows, allowing some of that demand to be reflected in an appreciation of the domestic currency. This could be accomplished, for example, by allowing the currency to move within a band.

An alternative approach is to accept some increase in the external component of the monetary base, but to counteract the potential effects of such an increase on domestic aggregate demand by using the conventional tools of macroeconomic policy, including tight fiscal policy and restrictive monetary policy, in the form of sterilized intervention or increases in marginal reserve requirements.[7]

The first set of policies is aimed at reducing net inflows. If inflows have an external cause, these policies can be seen as general-purpose policies that attempt to reduce the size of the shock disturbing the economy. The other policies are likely to have feedback effects on the level of net inflows, however. Tight fiscal policy would reduce inflows by easing pressures on domestic interest rates and the trade deficit, while restrictive monetary policy would tend to increase inflows.

The rest of this section examines how the nature of the appropriate policy response is affected both by the causes of the inflows and by the economic characteristics of the recipient country.

Microeconomic Distortions Worsened by Exogenous Changes in Capital Inflows

Consider first the case in which new capital inflows triggered by exogenous events aggravate the negative welfare consequences of a preexisting domestic distortion. A first-best policy response is to remove the distortion and absorb the capital inflow. Consider, for example, the case of improperly priced government deposit insurance. It may be impossible for the government to credibly eliminate such insurance. If this is the case, the insurance should be priced properly to avoid subsidizing excessive risk taking (financed by both foreign and domestic deposits) on the part of depository institutions. Removal of the distortion would

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7. Unsterilized intervention is not included as a policy response because it represents the status quo, and thus reflects a passive policy stance.

have been the prescribed policy even without the inflow. But if the first-best policy is infeasible, then direct intervention in the form of capital controls or taxation to reduce the inflow emerges as a possible second-best policy response.

Another important distortion emanates from the imperfect enforceability of cross-border contracts underlying country risk. An increase in foreign liabilities makes capital rationing and debt crises more likely. The increase in the probability of such events represents a cost that is external to domestic borrowers to the extent that other domestic agents share such costs, either through the actions of external creditors or through the socialization of losses through the domestic political system. Such a borrower would thus have an incentive to attract too much foreign capital. This situation appears particularly relevant in countries that are close to their foreign capital carrying capacity. In this case the distortion cannot be removed to any substantial extent, which again leads to a second-best approach to the problem. If an excessive level of foreign indebtedness is directly caused by this distortion, a Pigouvian tax on capital inflows or equivalent capital control may yield the required lower level of capital inflows and achieve the first-best outcome (since in this case the policy acts directly on the source of the distortion).

Inflows Induced by Changes in Microeconomic Distortions

Excessive capital inflows can be induced by introducing new microeconomic distortions or removing old ones, for example, removing constraints on inflows. When inflows are triggered by the introduction of new distortions, the first-best policy response is to remove the distortions. (This point is made by Corbo and Hernández 1993.) The domestic distortions most frequently mentioned in the role of attracting capital inflows are incredible trade liberalizations and price stabilizations. The solution to this type of distortion depends on the reason credibility is absent. If it is absent because of the failure to set policy fundamentals (typically the fiscal deficit) on a sustainable path, the solution is to adjust the fundamentals to attain credibility. If, however, such adjustments have been undertaken and credibility remains elusive, then direct intervention in the form of capital controls may again represent a second-best alternative. There is an obvious analogy here to the use of wage and price controls in heterodox stabilization programs, in which adjustment in the fundamentals is complete, but lack of credibility or inherent wage-price inertia threatens to derail the stabilization program.

Capital inflows can also arise because of the removal of distortions or constraints. Microeconomic examples include the lifting of capital controls, the removal of barriers to direct foreign investment, and measures to enhance access to creditor-country financial markets. In addition, the adoption of a comprehensive package of credible stabilization policies accompanied by liberalizing policy reforms can be thought of as the comprehensive removal of widespread distortions. To the extent that such policies restore a country's creditworthiness, for example, they have the effect of removing a prospective tax on its creditors.

In the absence of additional distortions, the removal of distortions constraining capital inflows would move the economy to a nondistorted Pareto optimum, and thus improve welfare. In general, a capital inflow associated with the welfare-enhancing removal of distortions, whether in specific markets or as part of a generalized package of policy reforms, does not call for countervailing policies on microeconomic grounds. If other distortions are present, however, the outcome may be ambiguous, as second-best theory would predict. A preexisting distortion may be part of a second-best policy package, and removing it may result in a reduction in welfare when capital flows in. For example, as noted above, capital controls or taxes on external borrowing may be optimal in the presence of borrowing externalities arising from country risk considerations. Removing the policy "distortion" would induce capital inflows associated with overborrowing and thus produce an inferior welfare outcome. In such cases the correct policy stance is to retain controls.

Capital Inflows and Macroeconomic Equilibrium

We are left with the issue of macroeconomic instability—the question of how to use policy to preserve the macroeconomic equilibrium in the face of a foreign real interest rate shock. The first point to make with respect to macroeconomic policy goals is that it may prove optimal to leave policy unchanged. The shock will typically be expansionary. This may not be true if the recipient country operates a freely flexible exchange rate regime, as discussed below, but few of the countries that have been the recipients of the recent surge in capital inflows fit this description. Difficulty arises in the case of an economy operating at full capacity that seeks to preserve price stability. What are the policy options in this case?

First, note that in the absence of any policy response the magnitude of the effect of a given fall in foreign real interest rates on domestic aggregate demand is likely to depend on whether the reduction is widely perceived to be temporary or permanent—that is, whether a fall in short-term rates is matched by a fall in long-term rates. The reason is that the capitalization of future income streams will depend primarily on whether long-term rates fall. A temporary reduction in foreign short-term rates may be associated with a capital inflow, but such an inflow is likely to be short-lived and perceived as such. Because it has little effect on domestic demand conditions, it creates no need for a stabilizing policy response.

If the change is perceived as permanent, the full panoply of policy options described at the beginning of this section is potentially relevant. The most direct option is to attempt to limit the size of net inflows arising from portfolio reallocations. To this end, controls on gross inflows could be introduced, in the form of ceilings or taxes, explicit or implicit, on foreign borrowing or on foreign direct investment. But it has been argued that this policy is not feasible because these limitations are always circumvented. Although it can be argued that even then the policy may be effective as long as tax avoidance is costly because it

reduces the return to investors, the social cost resulting from the attendant inefficient financial intermediation may disqualify this policy.

More important, however, although capital controls could conceivably be a first-best solution if they respond to the microeconomic distortion directly inducing the capital inflows, or a second-best solution in circumstances such as those described above, capital controls are hard to justify in other cases. If the problem is macroeconomic in nature, the imposition of effective capital controls means introducing a microeconomic distortion. Macroeconomic stability may be preserved, but the costs of the distortion would remain. It would clearly be preferable to maintain stability without introducing a distortion by relying on more traditional tools of stabilization policy. As in the case of microeconomic distortions described above, justification for capital controls would require a second-best argument based on the ineffectiveness of such tools (and relative effectiveness of controls) or on the high costs of employing them relative to the costs of the distortions introduced by controls.

Alternatively, gross outflows could be promoted by liberalizing capital outflows. Assuming no other distortions, liberalization would be desirable even in the absence of a foreign financial shock. Moreover, the argument that it is not feasible to impose controls applies to this case, too, and implies that outflows are already de facto liberalized. Even if effective, outflow liberalization could be counterproductive. Because limitations to capital repatriation are a concern to foreign investors, their removal is equivalent to the removal of a tax on foreign investment. Consequently, outflow liberalization will lead to increased gross inflows, which may more than offset the direct effect on increased gross outflows.

Current account liberalization, by contrast, may not cause the balance of payments to deteriorate, since under plausible circumstances liberalization may cause domestic saving to increase and (less plausibly) investment to decline (see Ostry 1991). Consequently, liberalization—of either the capital or the current accounts—may not relieve the upward pressure on the monetary base emanating from capital inflows.

If the net inflow is not prevented from materializing through these means, a case can be made for undertaking a stabilizing macroeconomic policy response. However, the way in which the foreign financial shock is transmitted to domestic aggregate demand—and thus the nature of the macroeconomic problem created by the shock—as well as the set of feasible macroeconomic policy responses is likely to differ from country to country.

A key factor determining this response is the exchange rate regime. Under fixed exchange rates an autonomous capital inflow driven by a reduction in foreign interest rates leads to inflation and lower real domestic interest rates if monetary policy is passive and limited to unsterilized intervention. To avoid this outcome, the authorities could switch to sterilized intervention. This policy has the appeal of supplying foreigners with the domestic interest-bearing assets that they demand while still adhering to a domestic money supply target for stabili-

zation purposes. (Reisen 1993 has been a forceful advocate of this policy.) Contrary to what is sometimes asserted, sterilization does not necessarily imply that the inflow will be perpetuated, since the inflow will end once portfolio composition has adjusted to accommodate rate-of-return differentials.[8]

Sterilization, however, is not a panacea. It may not imply the infinite perpetuation of the inflows, but it will tend to magnify the size of the cumulative inflow. Moreover, it may not insulate the domestic economy. If domestic financial assets are regarded as imperfect substitutes by foreign investors and if the instrument used to sterilize is not demanded by foreign investors, then domestic portfolio equilibrium will require an adjustment in relative rates of return among domestic assets. Even if it insulates successfully, sterilization cannot be a permanent solution—as long as the inflow persists, the central bank will be exchanging high-yielding domestic assets for low-yielding foreign ones, and this policy may have important fiscal implications. Financing the quasi-fiscal deficit that arises from such asset swaps would require a permanent transfer from the government to the central bank that is passed on to foreigners in the form of returns that are elevated relative to what they could earn at home. Even if fiscally feasible, such a policy is unlikely to prove palatable for very long. Finally, sterilization may turn out to be infeasible even in the short run if capital mobility is sufficiently high.

Alternatively, a tighter monetary policy could be pursued by increasing minimum reserve requirements on banks' short-term foreign liabilities. These amount to a tax on foreign borrowing, which, like other taxes on capital inflows, may be difficult to implement. A specific problem with this approach is that it is likely to redirect capital inflows to domestic borrowers through channels other than the domestic banking system—such as through markets for equity and real estate. If this disintermediation is effective, the macroeconomic stabilization problem would remain. The scope for circumventing the domestic banking system depends on the menu of domestic assets available to foreigners and thus on the degree of sophistication of the domestic financial system.

Under flexible exchange rates the foreign interest rate shock will result in an appreciation of the domestic currency and possibly a small decrease in domestic interest rates, which would result, with a fixed money supply, from the price-level effects of a nominal appreciation. The external interest rate shock may prove to be contractionary, as expenditure switching adversely affects the demand for home goods. Stability in this case would require a monetary expansion, resulting in a combination of domestic interest rates that are lower than they would have been without the shock, but higher than under fixed exchange rates and a passive monetary policy. In addition, the exchange rate would appreciate relative to what it would have been without the shock, but depreciate relative to what it would have been without monetary expansion.

This outcome is the basis for the policy advice proffered by both by Calvo, Leiderman, and Reinhart (1993b) and Schadler and others (1993), advocating a

8. This result can be derived from simple portfolio models.

role for exchange rate appreciation in adjusting to the external interest rate shock. Again, however, this advice may not be universally applicable. Countries that rely on the exchange rate as a nominal anchor will be reluctant to move the rate for fear of eroding the credibility of the peg. In addition, the degree of real appreciation may exceed that which would occur with a fixed peg, and thus this policy may hurt competitiveness. If these constraints are binding, the monetary policy options available are those outlined previously.

These considerations suggest that policy may need to be prepared to accommodate a reduction in domestic interest rates with an unchanged nominal peg. If so, the set of remaining policy options is narrow indeed. To preserve macroeconomic stability under such circumstances, the induced increase in private absorption would have to be offset through tighter fiscal policy.

VI. SUMMARY AND CONCLUSIONS

The current capital inflow episode represents a sharp break from the experience of the debt crisis of the 1980s. The magnitude of flows nearly matches that which preceded the debt crisis. Although this surge constitutes a welcome relief from the constraints of credit rationing for many countries, it also poses structural and macroeconomic policy challenges. The structural challenge is to ensure that the resource inflow is efficiently used in order to avoid a repetition of the debt crisis. Although certain characteristics of the current inflows are reassuring in this regard, potential disruption from several distortions implies that a laissez-faire stance is not necessarily warranted. Moreover, though capital inflows may represent the outcome of a favorable external shock from the perspective of indebted developing countries, their effect on macroeconomic stability may call for a policy response on these grounds as well.

Why have capital flows to developing countries resumed on a large scale? In the aggregate the role of foreign interest rates as a push factor driving capital inflows and determining their magnitude is well established by the systematic empirical work undertaken on this issue. At the same time, theoretical considerations suggest that the creditworthiness of the recipient country must have played an important role in determining both the timing and geographic destination of the new capital flows. We know little about the relative weights to assign to domestic and foreign factors in attracting capital to individual countries and consequently even less about the role of specific types of domestic shocks. The existing evidence also sheds little light on the roles of domestic or external structural factors. Our analysis suggests that this type of information is crucial for designing policies. Specifically, more country-specific information is required about the possible role of domestic microeconomic distortions in motivating these inflows and channeling them to the final borrowing sector.

This discussion makes clear that sustainability has an important endogenous component. The loss of creditworthiness due to a deterioration of the domestic policy stance is sufficient to stop inflows quickly, and given the nature of stock

adjustment, the liquidity of the assets acquired by external creditors, and their vulnerability to exchange rate changes, inflows are likely to be replaced by substantial outflows or an outright balance of payments crisis. Recent events in Mexico provide strong support for this assertion. Even if creditworthiness is retained, however, the early level of inflows is unlikely to be sustained. The nature of shock adjustment would make the level of inflow diminish over time, even with stable external financial conditions, and, more so, the favorable foreign financial shock that triggered the episode may not persist. Whether the outcome is a gradual reduction in flows since the early 1990s or an actual reversal depends on the path followed by foreign interest rates as well as on the role of stock adjustment. The key gap in knowledge concerns how large the temporary stock adjustment component of the recent inflows has been relative to the permanent flow component.

What are the implications for policy in the recipient countries? Establishing the feasibility of controls that would prevent the arrival of capital inflows is problematic and likely to prove country-specific. A case for direct intervention as a first-best policy can be made only when the negative welfare consequences of a distortion that cannot be removed arise from induced external borrowing. This circumstance is likely to apply in the context of country-risk externalities and may also apply in the presence of "incredible" reforms. In both situations, however, the appropriate intervention is a Pigouvian tax (or equivalent control) rather than a ban on capital inflows. Beyond this case, direct intervention would have to be based on second-best considerations, either on microeconomic or macroeconomic grounds. On the other hand, the receipt of capital inflows may strengthen the case for the removal of certain microeconomic distortions, either because they aggravate the costs of such distortions or because they ease the perceived constraints (typically balance of payments constraints) that originally motivated their adoption.

To the extent that capital inflows are permitted to materialize, the desirability of foreign exchange intervention depends on the requirements for macroeconomic stability. Either competitiveness considerations or use of the exchange rate as a nominal anchor in the context of a stabilization program may preclude nominal appreciation. If not, then permitting a (temporary) appreciation of the nominal exchange rate by restricting the scale of foreign exchange intervention—perhaps in the context of an exchange rate band—will dampen, and may reverse, the expansionary effect of the foreign interest rate shock on domestic aggregate demand by appreciating the real exchange rate and possibly raising the domestic interest rate. This outcome will be desirable if domestic macroeconomic conditions are such that policymakers seek to avoid stimulating aggregate demand. Alternatively the authorities can avoid aggregate demand stimulus with a fixed exchange rate through sterilized foreign exchange intervention. But this policy is feasible only if capital mobility is imperfect. The higher the degree of capital mobility, the larger will be the accumulation of reserves associated with a policy of sterilization. This policy has associated

quasi-fiscal costs, since the central bank exchanges high-yielding domestic assets for low-yielding reserves, and the magnitude of these costs will be greater the higher the degree of capital mobility and the larger the gap between domestic and foreign rates of return. Moreover, even if successful, this policy may not insulate the economy from the expansionary effect of the foreign shock if substitution among domestic assets is imperfect and the asset demanded by external creditors is not that used in intervention.

If sterilization is incomplete, the implication of the inflow is an expansion in the monetary base. Monetary expansion can still be avoided by a commensurate reduction in the money multiplier achieved through an increase in reserve requirements. In this case quasi-fiscal costs are avoided through implicit taxation of the banking system. The economic implications of this tax will depend on how the tax burden is ultimately shared among the banks, their depositors, and their loan customers. Whether such measures can avoid an increase in aggregate demand depends on the structure of the domestic financial system, which determines the scope for disintermediation. Finally, if domestic monetary expansion is not avoided, or if an expansionary financial stimulus is transmitted outside the banking system, the stabilization of aggregate demand will require a fiscal contraction.

The key message is that choices confront macroeconomic policymakers at each step in this progression. Not only the intended effect on aggregate demand, but also the feasibility and relative desirability of alternative macroeconomic policy packages to achieve that effect will be functions of country circumstances. Relevant considerations include the economy's level of capacity utilization, the identity of its nominal anchor, the sterilization tools available to the central bank, the degree of capital mobility, the financial health of domestic banks, the sophistication of the financial system, and the flexibility of fiscal policy, among others. In view of the multiplicity of factors that should in principle influence the response of macroeconomic policies, no single combination of policies is likely to be optimal in all cases.

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