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I. Introduction

The surge in capital flows to numerous countries in Asia, Eastern Europe, Latin America and, more recently, several republics of the former Soviet Union during the early 1990s is well documented in a large and growing literature. Much of that work has debated whether external factors, such as international interest rates, or domestic factors were mainly responsible for the increased financial flows to many emerging-market economies.1/ Another recent strand of literature has focused on the macroeconomic "countercyclical" policy response to the rising inflows by documenting and evaluating the broad variety of policy responses of the capital-importing countries.2/

Relatively few studies, however, have attempted to link these two strands of analysis and by examining how the policy response to the early wave of capital flows eventually influenced both the level and the composition of subsequent cross-border capital movements--hence playing a potentially important "causal" role after the initial wave of inflows.3/ Furthermore, few papers have analyzed, either theoretically or empirically, how the behavior of domestic capital market and the financial sector has helped shape the volume and the form of the capital flows, even though the conventional wisdom has stressed important differences between short-term (or "hot money") flows and foreign direct investment (FDI).4/, 5/ The received wisdom also has stressed key regional differences in the composition of flows; specifically, associating the Asian countries with FDI while short-term flows are associated with the Latin American

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1/ See, for instance, Calvo, Leiderman, and Reinhart (1993) and (1994a), Claessens, Chuhan, and Mamingi (1993), Fernadez-Arias (1993), Calvo and Reinhart (1996).
2/ See, for example, Calvo, Leiderman and Reinhart (1994b), Corbo and Hernanadez (1994), and Montiel (1996).
3/ An exception is Reinhart and Dunaway (1995).
4/ Exceptions are Goldfajn and Valdes (1995), who present a theoretical model to analyze the role played by banks in intermediating capital flows and Rojas-Suarez and Weisbrod (1995), who examine the recent experience of a number of capital importing countries.
5/ Claessens, Dooley, and Warner (1993), however, argue such differences are overstated.

countries. Insufficient attention has been paid to the fact that those regional differences have not remained constant over time and thus cannot be regarded as structural in nature. Regional as well as cross-country patterns in the composition of flows, therefore, remain to be explained in terms of the underlying domestic "countercyclical" policies as well as some of the features of their financial and capital markets.

The aim of this paper is to fill some of those gaps. Our dual objectives are to document and explain the changing dynamics of cross-border capital movements in emerging markets in recent years. In attempting to explain these dynamics, our focus is on the role of the policy response in shaping both the volume and the composition of capital inflows. Specifically, we assess the extent to which two broad types of policies--direct intervention in the capital account (such as measures to control capital inflows) and the broad monetary-foreign exchange "policy mix" (such as the extent of sterilized intervention)--have systematically influenced the nature and dynamics of capital flows. We also examine empirically a potential "pull" factor largely ignored in the existing literature--the possible link between the volume of portfolio flows and the characteristics of the domestic equity market--most notably, its depth. The latter is a particularly relevant issue for the 1990s, in light of the growing importance of bond and equity portfolio flows. Along these dimensions we extend our earlier work (Montiel and Reinhart, 1999) by focusing on to what extent the relationship between capital flows and its push or pull determinants varies across regions. Our main focus is on emerging markets in Asia and Latin America. In the process, we take stock of the answers the empirical literature has provided to the questions of the causes of the inflows, the factors affecting the composition of the flows, and the existence of contagion effects in international capital markets.

The remainder of the paper is divided into five sections. The next section reviews the early literature on the factors driving the surge in capital flows. Section III examines the more recent pattern of capital inflows, raising the question of whether the conclusions derived from the early literature should be reexamined in light of the changing patterns of such flows. An important suggestion that emerges from both of these sections is that the volume and composition of capital flows may have become increasingly sensitive to the short-run macroeconomic policies pursued by the recipient countries in recent years. This theme is developed in Section IV and is examined empirically for a panel of 15 countries from Africa, Asia, Eastern Europe and Latin America. Section V focuses on the role of the financial sector-- specifically the development and depth of the capital market in influencing the volume and relative importance of portfolio flows--the most rapidly growing source of funds for emerging markets in the 1990s. The last section summarizes the key findings and discusses areas for future research.

II. The Capital Inflow Literature

This section takes a retrospective look at factors that are frequently cited in explaining the surge in inflows to a wide number of developing countries in the 1990s. The objective is to present a synthesis of the key findings the empirical literature on this topic and summarize where we stand.

1. Conceptual issues

The capital account is an endogenous macroeconomic variable, and as such is likely to be affected by a multitude of shocks of both domestic and foreign origin. Because the interpretation of the welfare consequences of capital inflows, as well as their likely

sustainability, are both related to the nature of the shocks that generate such flows, early research initially focused on identifying the factors that were driving the recent capital inflows. Because the direction and magnitude of such flows depend on the relative attractiveness of placing funds in emerging markets vis-a-vis industrial-country markets, as well as on the ease with which such transactions can be carried out, it may be useful to classify such factors into three categories:

i. "Pull" factors.

Factors that operate through improvements in the risk-return characteristics of assets issued by developing-country debtors have been dubbed "pull" factors in the empirical capital-inflow literature. What matters to private creditors, of course, is improvement in *private* risk-return characteristics. Such improvements can arise from two different sources. First, *social* risk-return tradeoffs may have improved in these countries as a consequence of economic reform, and this may be reflected in the characteristics of assets issued by debtors in such countries. In this case, capital inflows would reflect welfare-enhancing borrowing for the financing of new high-yield domestic investment opportunities and/or welfare-enhancing financing for consumption smoothing motivated by reform-induced increases in national wealth.

Second, the characteristics of claims acquired by private lenders may have improved as a result of either the introduction or removal of distortions creating gaps between social and private rates of return. For example, if debt-overhang problems created a gap between social and private rates of return in heavily-indebted countries, then resolution of such problems in the context of Brady Plan agreements may allow private rates of return to reflect social returns more accurately and thus create an incentive for the renewed flow of capital. Alternatively, as has been forcefully argued by Dooley (1996), the adoption of fixed exchange rates and deposit

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guarantees in the context of a liberalized but poorly supervised financial sector may create an opportunity for foreign lenders to reap high and secure private rates of return that do not reflect social returns on the resources that they transfer to the borrowing economy. Clearly, the welfare implications of capital flows depend on whether they are driven by the removal of a previously-existing distortion or the introduction of a new one. Similarly, their sustainability will also be affected, since a country's creditworthiness is likely to improve with additional external borrowing in one case and deteriorate in the other.

ii. "Push" factors.

"Push" factors are those that operate by reducing the attractiveness of lending to industrial-country debtors. Deterioration in the risk-return characteristics of assets issued by industrial-country debtors is most widely cited in this context. This happens essentially in response to cyclical factors that temporarily depress rates of return on assets in the lending country. The collapse of asset values in Japan at the onset of the current recession in that country, the decrease in interest rates in the United States as a result of stimulative monetary policy adopted in response to the 1990-91 recession, and the reduction of interest rates in the United Kingdom after the pound dropped out of the ERM in September 1992 would each have had the effect of driving capital abroad in search of higher short-run returns. From the perspective of the developing country, this represents an external financial shock, which may be welcome or not depending on the country's circumstances. For countries that had been credit-constrained and remain heavily indebted, the shock is a favorable one. However, its cyclical origin threatens to make it temporary. An important question for policy in borrowing countries raised by shocks of this type, therefore, is whether the domestic private response is likely to optimally take into account the possibility of reversal.

A different "push" factor with different implications for policy has to do with changes in financial structure in capital-exporting countries. The increased role of institutional lenders such as mutual and pension funds as financial intermediaries, as well as the increased importance of securitization, may represent a secular change which favors lending to emerging markets for portfolio diversification reasons. If so, and given the relatively small share of emerging markets in the portfolios of institutional lenders, the sustainability implications would be very different from those associated with cyclical factors. To the extent that recent flows have been driven by structural "push" factors of this type, flows are likely to be sustained at high levels for an extended period of time.

iii. Financial integration

Lastly, increased capital flows may reflect strengthened financial integration due to the removal of barriers to capital flows. Such barriers may arise from explicit policy choices or due to technological innovations affecting, for example, information costs. Capital-account liberalization had been widely adopted as the outcome of explicit policy decisions in both industrial and developing countries at the onset of the current capital-inflow episode. While it may seem that the removal of such distortions is unambiguously welfare-enhancing, this may not be so if previously existing restrictions reflected a second-best response to other distortions in the economy -- e.g., the financial-market distortions mentioned above.

2. The empirical evidence: the literature

Much of the systematic empirical work on the issue of causation has focused on identifying whether the changes that triggered the recent capital-inflow episodes originated in

the creditor or debtor countries. This subsection provides an overview of the main findings of this literature.

i. Calvo, Leiderman, and Reinhart (1993)

In an early paper, Calvo, Leiderman and Reinhart (CLR, 1993) tended to emphasize the role of external factors in driving capital inflows. Their formal analysis takes the following form:

a.   Principal component analysis establishes a significant degree of comovement among foreign reserves and real exchange rates for ten Latin American countries during 1990-91. The first principal component explains a larger share of the variation in the ten reserve and real exchange rate series during 1990-91 than in 1988-89. For the rate of inflation, however, the extent of comovement diminished in the more recent period.

b.   The first principal components of both the reserve and real exchange rate series display a large bivariate correlation with several U.S. financial variables used as indicators of foreign rates of return.

c.   In individual countries, Granger-causality tests most frequently had reserves causing real exchange rates than the reverse. This pattern also held for the first principal components of the two sets of series.

d.   Structural VARs involving reserves, real exchange rates, and the first two principal components of the U.S. financial variables, suggested that the foreign factors exerted causal influences over the domestic variables, and both variance decompositions and impulse response functions indicated that the foreign factors played a large role in accounting for reserve and real exchange rate movements.

ii. Chuhan, Claessens, and Mamingi (1993)

Chuhan, Claessens and Mamingi (CCM, 1993) attempted to disentangle the roles of domestic and external factors in motivating portfolio capital inflows. Using monthly bond and equity flows from the U.S. to nine Latin American and nine Asian countries over the period January 1988 to July 1992, they estimated separate panel regressions explaining bond and equity flows as functions of country-specific variables (country credit rating, price of debt on the secondary market, price earnings ratio in the domestic stock market, and the black market premium) as well as external variables (U.S. interest rates and U.S. industrial activity). They found that bond flows (but not equity flows) responded strongly to the country credit rating, while price-earning ratios were uniformly important. However, U.S. interest rates also entered significantly with the theoretically expected negative sign in all the regressions. To assess the relative importance of domestic and foreign variables, they computed the sum of standardized coefficients for the two sets of variables, finding that domestic and external variables have been about equally important in Latin America, but domestic variables had sums of standardized coefficients that were three to four times larger than those of external variables in Asia for both bond and equity flows.

iii. Fernandez-Arias (1994)

A recent paper by Fernandez-Arias (1994) addressed some of the limitations of both the original CLR study as well as that of CCM, and at the same time considered some of the less formal arguments presented by other observers in support of an important role for domestic factors. Like CCM, Fernandez-Arias relied on data that measure capital movements directly, rather than on proxies in the form of reserve and real exchange rate changes, as in CLR. However, he argued that the attribution of variation in country-specific financial variables to domestic shocks in CCM is improper, and in particular that country creditworthiness, as

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indicated by the price of debt on secondary markets, is itself heavily dependent on external factors.

Fernandez-Arias provides a useful analytical framework within which to consider the capital-inflows issue. Capital flows are assumed to potentially occur in the form of transactions in various classes of assets, indexed by s, where s = 1,..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_s, which is bounded between zero and one. The project return depends inversely on the vector $\mathbf{F}$ of net flows to projects of all types (based on a diminishing marginal productivity argument), while the creditworthiness factor is a negative function of the vector of the end-of-period stocks of liabilities of all types, denoted $\mathbf{S}$. Voluntary capital flows (components of the vector $\mathbf{F}$) are determined by the arbitrage condition:

$$D_s(d,\mathbf{F})C_s(c,\mathbf{S_{-1}} + \mathbf{F}) = R_s(R), \tag{1}$$

where R_s is the opportunity cost of funds of type s in the creditor country, taken to depend on creditor country financial conditions R, while c and d are shift factors associated with country creditworthiness and with the domestic economic climate, respectively. The convention adopted is that the functions D_s, C_s, and R_s are increasing in these shift parameters. Notice that in this framework capital flows will be determined by c, d, and R-- i.e., by domestic factors that operate at the project and country levels, as well as by external financial factors. The assumptions made above imply that the components of the vector $\mathbf{F}$ are increasing in d and c, but decreasing in R and $\mathbf{S_{-1}}$.

The country creditworthiness factor c is taken as reflecting the expected present value of resources available for external payments. If such resources grow at rate g from an initial value W, c is given by:

$$c = W/(I-g), \qquad\qquad (2)$$

where I s a long-term risk-free external interest rate. When creditworthiness is sufficiently low, the solution to equation (1) above may entail extremely low capital inflows or capital outflows (negative values of various components of $\mathbf{F}$) of a magnitude that imply transfers of resources that the country is unwilling to undertake. In this case, voluntary capital flows of such types would cease, and the condition would become an inequality no longer determining the corresponding (involuntary) capital flows. This observation is important for explaining how inflows could be externally driven, yet not uniform across developing countries. In a world in which some countries are creditworthy and others are not, a reduction in R would generate increased capital flows only for those countries that met the creditworthiness requirement.

Fernandez-Arias used this model to decompose post-1989 portfolio (bond and equity) inflows for 13 developing countries into portions attributable to changes in c, d, and R (he found that changes in $\mathbf{S_{-1}}$ made no contribution to explaining changes in flows). He did so by regressing deviations in such flows from their 1989 values on corresponding deviations in the external interest rate and in the price of debt on the secondary market (based on a simple burdensharing model that linked c to this variable), using fixed-effect panel estimates for which the intercept term was interpreted as the change in the domestic investment climate d. For the "average" developing country in the sample, changes in international interest rates proved to be the dominant force in explaining surges in capital inflows, accounting for over 60 percent of the

deviation in such flows from the 1989 level. An extra 25 percent was due to changes in creditworthiness, leaving only about 12 percent to be explained by improvements in the domestic investment climate. Moreover, when account is taken of the role of external interest rates in determining the secondary-market debt price used as the creditworthiness indicator, thereby decomposing the latter into domestic and foreign components, fully 86 percent of the surge in inflows is attributed to movements in external interest rates.

iv. Dooley, Fernandez-Arias, and Kletzer (1994)

A somewhat different approach is followed by DFK based on the above-mentioned decomposition of creditworthiness into domestic and foreign components. They argue that the price of commercial-bank debt is a sensitive proxy for capital inflows, because shifts in the demand for claims on developing countries, whether emanating from changes in domestic or external factors, should be reflected in these prices. Thus, rather than explaining capital inflows directly, they attempt to account for the behavior of secondary-market prices on debt since 1989 which, consistent with their interpretation of the relationship between such prices and capital flows, have risen markedly. They find that essentially all of the increase in price can be accounted for by reductions in the face value of debt and international interest rates, leaving almost nothing to be explained by improvements in the domestic environment.

v. Schadler, Carkovic, Bennett, and Kahn (1993)

These findings concerning the role of foreign factors have not gone unchallenged, however. SCBK, for example, argue that, while foreign phenomena may have been important, such influences cannot be regarded as dominant, for several reasons:

a.   First, it maintains that the timing of the relevant changes in external factors did not coincide with that of the inflows.

b.   Second, it notes that the timing, persistence, and intensity of inflows has varied considerably across countries that have received inflows, suggesting that investors have responded to changes in country-specific factors over time.

c.   Third, it points out that surges in capital inflows have not been universal within regions of developing countries, so that external creditors have clearly exercised some cross-country discrimination in the allocation of funds.

vi. Hernandez and Rudolf (1994)

More systematic evidence supporting a role for domestic factors in attracting capital inflows was provided by Hernandez and Rudolf (1994). Noting that previous work tended not to provide a careful specification of domestic factors, Hernandez and Rudolf examined the extent to which standard creditworthiness indicators could explain long-term capital inflows for a sample of 22 developing countries over the period 1986-93. They used two methodologies:

a.   First, they split their sample of countries into groups of high capital inflow recipients (HCIR) and low capital inflow recipients (LCIR). They found that the former had domestic saving rates twice as large as the latter, invested a much larger proportion of GNP, exhibited significantly lower fiscal deficits and inflation rates, had lower stocks of debt as well as larger stocks of foreign exchange reserves and faster rates of export growth. The HCIR countries were also more stable, in the sense that they both exhibited lower variability of inflation and real exchange rates and scored lower on a political risk index.

b.   Second, arranging their data into a panel of annual observations, the estimated capital-flow equations for a broad category of long-term flows as a function of lagged domestic consumption and investment rates, external interest rates and the ratio of net external debt (gross debt minus foreign exchange reserves) to GNP, the variability of the real exchange rate,

and the presence of a Brady bond deal. They found statistically significant (albeit not very precisely estimated) role for domestic creditworthiness indicators, but no role for the external interest rate.

vii. World Bank (1997)

Recently, the World Bank (1997) has suggested that the factors driving inflows may have been changing over time, and in particular that domestic factors may have played a more prominent role during 1994-95. Adopting the CLR methodology, the Bank found that quarterly portfolio flows from the United States to 12 emerging markets in East Asia and Latin America were characterized by a susbtantial amount of comovement (measured by the proportion of the variation captured by the first principal component) during 1990-93, and that the first principal component of these series was highly negatively correlated with the first principal component of a set of representative U.S. asset returns. Both of these findings are consistent with the findings of CLR for this period, as described above. However, over the years 1993-95, comovements among portfolio flows became much weaker (the contribution of the first principal component drops to 45 percent, from 75 percent of the variance), and the correlation with U.S. asset returns reversed signs and became much weaker. The implication is that idiosyncratic country factors may have played a much larger role in recent years than they did in the early years of the inflow episode.

3. An Evaluation

The formal evidence strongly supports the "push" view that falling U.S. interest rates have played an important role in driving capital flows to developing countries. The two contrary bits of evidence in CCM (1993) and SCBK (1993) are open to question. In the case of the former, the classification of creditworthiness as a domestic factor is clearly questionable. In

that of the latter, while the timing of capital flows to some East Asian developing countries may

have preceded the easing of monetary policy in the United States, the timing of U.S. interest

rate decreases clearly does fit quite closely that of the advent of capital flows to developing

countries as a group. While the short-term interest rate in the U.S. trended downward during

1989-90, sharp decreases occurred both at the beginning of 1991 and 1992, and in both

instances coincided with increases in capital flows during the subsequent year. Moreover, while

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,

while both countries still confronted severe macroeconomic imbalances.

The strongest evidence for the "pull" view during the early years of the inflow episode is

that provided by Hernandez and Rudolf (1994). However, their evidence is not necessarily

inconsistent with the "push" view, despite the poor performance of the U.S. interest rate in their

capital-flow regressions.1/ Specifically, their focus on long-term capital flows and the weight

given to the 1990-86 period in their data suggest that their results may primarily apply to FDI

flows and are not necessarily applicable to other types of capital flows, such as portfolio or

short-term flows.2/

However, the apparent importance of "push" factors does not preclude the relevance of

"pull" phenomena. The complementarity between the two explanations is formalized in

equation (1). Indeed, while "push" factors may drive the *timing and magnitude* of the new

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1/ This evidence is also at odds with the results of Calvo and Reinhart (1996), who find that the U.S. interest rate is also
significant over longer sample periods (1970-1993 in their case) in explaining capital flows to a panel of 11 Latin American
countries.

2/ The empirical importance of domestic economic and political factors in explaining FDI has also been stressed by
Edwards (1990).

capital inflows, this is not incompatible with a role for "pull" factors in explaining the *geographic distribution* of flows during this time. Differences in capital inflow levels across countries indeed point to the importance of such country-specific factors.

More importantly, in our view the "push" story remains incomplete. Empirically, external-source shocks have been proxied by foreign rates of return. The role of structural changes in creditor-country financial markets that have eased access to such markets by developing-country borrowers has not been considered in such tests. As suggested previously, the existing literature has not drawn a sharp distinction between changes in the degree of financial integration and changes in relative *ex ante* rates of return. 1/ The "push" story based on low U.S. interest rates fails to address this issue. To the extent that the new flows are driven by "permanent" changes in the degree of world financial integration they are less likely to be reversed than if they are driven by temporarily low U.S. interest rates. These gaps in the existing literature suggest that it may be useful to revisit the issue with a more satisfactory characterization of of "pull" factors, with a specific focus on factors that affect the degree of financial integration, and with attention paid to both the time-series and cross-section aspects of the inflow phenomenon.

III. The Size and Composition of Capital Inflows: Recent Developments

In the conventional wisdom, inflows into Asian countries are perceived as dominated by foreign direct investment, while those into Latin America are more heavily oriented toward

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1/ An important exception is World Bank (1997).

short-term flows.   The aim of this section is to assess the extent to which this conventional wisdom tends to oversimplify the dynamics of capital flows during the present decade.

1. *Updating the stylized facts: cross-country comparisons*

The description of emerging-market capital inflow experience in this section is based on a sample of 15 such countries, including five in Asia (Indonesia, Malaysia, the Philippines, Sri Lanka, and Thailand), six in Latin America (Argentina, Brazil, Chile, Colombia, Costa Rica, and Mexico), and four from other regions (Czech Republic, Egypt, Kenya, and Uganda). The capital-inflow data is from the IMF's *World Economic Outlook* data set. Capital flows in this data set are classified into five categories: portfolio flows (bonds and equity), short-term flows, FDI, other long-term flows, and errors and omissions. The capital-inflow experience for each of the countries is described in Tables 1-3. The first table shows net capital inflows as a percent of GDP, while the subsequent ones show portfolio (bonds and equity) and short-term inflows, respectively, also as a share of GDP.

As can be seen from Table 1, the magnitude of total flows (relative to GDP) was substantially larger for Asian countries than for the Latin American countries. On average, capital inflows in the former amounted to over 7 percent of GDP, while in the latter they fell short of 4 percent of GDP. Moreover, relative to GDP, the magnitude of short-term flows was also larger in Asia than in Latin America, at 2.8 percent and 1.3 percent of GDP, respectively. Since the difference in magnitude of short-term flows was proportionately larger than that for the overall capital account, Asian countries actually registered a slightly larger share of short-term flows in total capital inflows (39 versus 32 percent) over the period as a whole, contrary to conventional wisdom. Thus, it does not appear to have been the case that Latin America has

received differentially larger amounts of short-term capital than have Asian countries, at least during the current decade. It is also worth noting that short-term flows were already important in Asia by 1990, so these are not a new phenomenon to the region. In contrast, short-term flows only became important in Latin America in the more recent period.

On the other hand, the conventional wisdom is not totally without basis. First, as shown in Table 2, portfolio flows -- which may share many of the characteristics of short-term flows -- have indeed played a more substantial role in most of the Latin American countries in our sample than in other regions. Second, short-term capital has apparently tended to be more skittish in Latin America than in Asia. As shown in Montiel and Reinhart (1999), while short-term capital has been more volatile (as measured by the coefficient of variation) than all other types of capital flows (defined residually) in both regions, the difference in the coefficient of variation between short-term and other types of capital flows, which was quite small in Asia, was much more substantial in Latin America, differing by a factor of three. Indeed, the volatility of overall capital inflows between the two regions is entirely accounted for by the volatility of short-term capital in Latin America. The coefficients of variation of both short-term and long-term flows in Asia, as well as that of all other types of flows in Latin America are in the neighborhood of 20 percent, while that of short-term flows in Latin America approaches 70 percent.[1] Finally, for the Asian countries there is little evidence of "Tequila effects" in the annual data.[2] While short-term flows have remained below their 1993 peak through 1996, this was dominated by the experience of Malaysia, where internal policy changes appear to have

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[1] This greater volatility/instability is also evident in a broad variety of macroeconomic and financial variables (see Kaminsky and Reinhart (1995)).

[2] See Calvo and Reinhart (1996) and Frankel and Schmuckler (1996) on this issue reviewing a variety of higher frequency data.

played a major role. In contrast with this experience, capital flows to Latin America fell in 1994.

IV. The Policy Response in Shaping the Volume and Composition of Flows

Among the findings discussed in Section II was that idiosyncratic, country-specific factors may have played a larger role in driving capital inflows during recent years than they had in the early 1990s. This section examines how the domestic policy response to the surge in capital inflows--specifically the reliance on sterilized intervention (tight monetary policy) and capital controls to avoid overheating--has influenced the subsequent volume and composition of capital flows.

A relevant preliminary question is, of course, to assess whether the composition of flows matters. Thus, we first review what the literature has to say on this issue before turning to the empirical evidence.

1.   *Does the composition matter?*

The composition of capital flows may matter for a variety of reasons. First, certain types of flows may be more stable than others. The conventional wisdom places FDI at the most stable end of the spectrum, and short-term flows at the opposite extreme. Second, even if the stability characteristics are uniform, the implications for macroeconomic adjustment may be quite different. For instance, several observers have argued that FDI inflows to Asia have tended to finance increases in domestic investment with a high imported capital content. Even if the scale of domestic investment is unaffected by the arrival of FDI, investment by foreign firms may be more productive than domestic firms. Finally, different types of flows may vary in their

implications for domestic financial stability. For example, the emergence of real estate or stock market bubbles may be more likely if foreign creditors either seek to hold equity shares or real estate directly or if they seek to hold shares on domestic intermediaries that themselves finance the acquisition of stocks or real estate.

There is (weak) empirical evidence in favor of the first two of these propositions, and only impressionistic evidence regarding the third. The conventional wisdom that FDI is a more stable source of capital than short-term or portfolio flows has been challenged by Claessens, Dooley, and Werner (1995), who showed that the time series properties of the two types of flows were similar. The CDW view, however, has not carried the day, and the conventional wisdom retain many adherents. The evidence in support of this view is of two types. First, there is direct evidence on the relative volatility of FDI compared to other types of flows. Second, studies of the determinants of currency crises keep turning up evidence that incriminates short-term external liabilities in such crises.1/

Regarding the first, a comparison by the World Bank (1997) of the quarterly volatility of FDI and portfolio flows for eight major capital inflow recipient countries during the 1990s (measured by the coefficient of variation of the series) yielded higher volatility estimates for portfolio flows in six of the eight countries examined. In four of the six cases in which portfolio flows were more volatile than FDI, the coefficient of variation of the portfolio flows was more than twice as high as that of the corresponding FDI series.

With regard to the empirical studies of the determinants of financial crises, a large wave of such research was triggered by the Exchange Rate Mechanism (ERM) and Mexican financial

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1/ See Kaminsky, Lizondo, and Reinhart (1997) for a review of this literature.

crises. Several papers in this literature have found evidence that short-term capital inflows have played a role in increasing the probability of subsequent financial crises. Sachs, Tornell, and Velasco (1996), for instance, found that the change in short-term inflows over 1990-94 helped to predict changes in a composite financial crisis index which they constructed to measure the incidence of "tequila effects" in the aftermath of the Mexican financial crisis. Similarly, Frankel and Rose (1996) found that the composition of debt can help predict the likelihood of a currency crisis; they find that the countries that experienced crashes tended to have a higher share of their debt on variable rate terms and at short maturities than those that did not, as well as to exhibit a disproportionally small share of FDI in total capital flows.

2.   *Countercyclical policies and the composition of flows*

If the composition of inflows matters for macroeconomic performance, then it becomes of interest to determine whether the volume and composition of capital inflows responds endogenously to the policy stance adopted by recipient countries. More often than not during the 1990s, these policies have attempted to dampen overheating in response to external financial shocks. Theory suggests that an endogenous policy response is to be expected. In the most obvious way, domestic policy might be designed precisely to feed back to the volume and composition of inflows, as in the use of capital controls. Less obviously, the policy mix adopted to restrain an expansion in aggregate demand in response to capital inflows may itself affect the volume and composition of inflows. In this subsection we investigate these issues empirically, testing the impacts of capital account restrictions, as well as of sterilized intervention, on the volume and composition of capital inflows, while controlling for "push" factors such as the levels of international interest rates.

Our tests are based on the panel data set described in the previous section, covering 15 emerging markets over the 1990-1996 period. We extend Montiel and Reinhart (1999) by sub-dividing the sample into two groups. A Latin American group, which is comprised of Argentina, Brazil, Chile, Colombia, Costa Rica, and Mexico, while the second group is primarily, but not exclusively comprised of Asian countries, including Indonesia, Malaysia, the Philippines, Sri Lanka, and Thailand. We focus on the effects of the variables of interest on portfolio flows (bonds and equity), short-term flows, FDI, and the overall capital account balance. Our measures of sterilization and the intensity of capital controls consist of country- and time-specific indices described in Montiel and Reinhart (1999). Our domestic policy indices range from 0 to 2 in both cases, with higher values corresponding to more intensive use of capital controls and more aggressive sterilization. We estimate a set of fixed-effects panel regressions explaining the volume and composition of various types of capital inflows as a function of the intensity of sterilization, the severity of capital account restrictions, the yield on a three-month U.S. Treasury bills, a comparable Japanese interest rate, and a "tequila effect" dummy. In our estimation strategy, we employ instrumental variables, as our policy proxies are potentially endogenous variables, to the extent that these policies were adopted in response to a surge in capital inflows. The results of the panel regressions corrected for the presence of heteroskedastic disturbances are reported in Tables 4 and 5.

The second and third columns of the tables report the effects of the domestic policy variables on the volume and composition of capital inflows. The next three columns examine "push" factors, in the form of external interest rates and a Mexico crisis dummy variable that takes up the issue of contagion. The top five rows report the effects of the policy action on the

volume of flows as a share of GDP, while the two bottom rows report the effects on the composition of flows.

As can be seen by inspection of the second column, an intensification in the degree of monetary sterilization is associated with an increase in the volume of aggregate capital inflows, operating primarily through inflows of short-term capital, since the effect of the sterilization proxy in the FDI and portfolio capital regressions was not statistically significant. This result is robust in both regions, with the predominantly Asian sample showing a higher degree of sensitivity to sterilization policies than their Latin American counterparts. The last two rows confirm that tight monetary policy tends to skew the composition of inflows towards short-term and portfolio flows.

However, it is less clear that the volume of inflows has been significantly affected by capital-account restrictions in either region, although there is some weak evidence presented in Table 5 that controls may have had some effect in reducing short-term flows in the Asian sample. Except for FDI flows (which have been exempt from these measures), the coefficients on the index of capital control intensity, listed in the third columns of Table 4 and 5, are predominantly negative. None of them, however, is statistically significant even at the 90 percent confidence level. On the other hand, the two bottom rows of the tables suggest that the imposition or intensification of controls on inflows may indeed be associated with a change in the *composition* of flows resulting in a significantly lower share of short-term and portfolio flows and a higher share of FDI. While the reduction in the share of short-term and portfolio flows is statistically significant at standard confidence levels, the impact on the share of FDI is not significant, although the sign is positive, consistent with prior expectations. Taken together, the preponderance of negative point estimates on inflow volume for flows targeted by

restrictions and statistically significant effects on the composition of flows in the intended direction, together suggest that explicit capital inflow restrictions may have been effective in altering the composition of capital inflows.

With regard to the control variables we find, consistent with the results of others, that declines in international interest rates significantly increase the overall volume of inflows to emerging markets. The effect both in Asia and Latin America appears to operate primarily through portfolio bond and equity flows. Somewhat surprisingly, we could not identify a significant effect of changes in international interest rates on short-term flows for either sample. While these results are common to both regions, interesting regional differences also emerge. First, flows to Latin America appear to be more sensitive to international interest rates, consistent with some of the earlier findings of Chuhan, Claessens, and Mamingi (1996), which argued that domestic factors played a more prominent role in attracting funds to Asia. Second, there appear to be stronger intra-regional financial links than inter-regional links, flows to Latin America are more influenced by U.S. interest rates, while Japanese interest rate play a more significant role for Asia. As to the composition effects, international interest rates do not appear to influence the composition of flows in a significant or clear manner, despite the fact that they do significantly impact the volume in both Asia and Latin America.

Lastly, as a byproduct of this estimation, we obtain an indication of the generalized incidence of persistent "tequila effects." Because the number of annual observations is limited, it is important to control for time-specific shocks of this type in assessing the effects of domestic policy on the variables that are primary interest. At the same time the inclusion of at least two policy dimensions of the domestic policy response in the regression controls for a subset of the domestic "fundamentals" driving capital flows, and thus allows us to get to a measure of pure

"contagion" effects than would be possible with before-after comparisons of post-Mexico changes in the level and/or composition of capital inflows. We found selective evidence of persistent contagion effects strongly suggesting, as other studies have done, that contagion tends to be more regional than global in scope.1/ For Latin America, the coefficients had the anticipated sign, with overall inflows declining significantly in 1995 because of a proportionately larger decline in decline in portfolio flows. FDI seem little affected (the coefficient is negative but not statistically significant), supporting the view that FDI is somewhat more resilient and less vulnerable to sudden reversals. For Asia, none of the coefficients on the Mexican crisis dummy variable registered statistical significance.

V. Capital Inflows and Financial Markets

The analysis in the two previous sections took the standard macroeconomic approach of implicitly assuming that a smoothly functioning financial system would appropriately intermediate capital flows, so that no additional complications arise from this source. In practice, however, the functioning of the domestic financial system may magnify the scale of short-term capital movements, as well as determine the extent of macroeconomic disruption created by a given degree of short-term capital volatility. This section examines the links between domestic financial intermediation and the role played by existing capital markets in determining the volume of short-term and portfolio capital movements. The first part takes up the analytical links among macroeconomic performance, financial-sector performance, and capital inflows associated with the advent of financial openess. The second part provides an

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1/ Less persistent contagion effects are more likely to be more easily detected in high frequency data, as following the Mexican crisis the effects on other countries were mostly confined to the first quarter of 1995.

empirical examination of the composition of capital inflows as related to the characteristics of the financial system in our sample of countries.

1. Distortions in the Domestic Financial System and Capital Flows

i. Underintermediation

The term underintermediation refers to a situation in which the volume of domestic resources channeled through the domestic financial system is *less* than optimal. The financial system may provide insufficient intermediation if it offers excessively low returns to domestic savers, thereby restricting the scale of formal domestic intermediation artificially.[1] A situation where the domestic financial system offers excessively low returns could originate inside the financial system itself, through the influence of the macroeconomic environment, or indirectly through the effects of the policies adopted toward the financial system.

For example, a situation in which a few large banks exercise monopoly power in the domestic financial system could result in large spreads between deposit and lending rates that could partly take the form of low deposit rates. This is essentially a microeconomic phenomenon, related to the industrial organization of the financial sector, but it would have macroeconomic effects through the channels described above.

Underintermediation could also arise, however, even when domestic institutions would otherwise be functioning competitively and efficiently, if the macroeconomic environment creates the expectation on the part of savers that their assets may be vulnerable to various types of explicit or implicit taxation if placed with the domestic financial system. The presence of an unresolved domestic or external public-sector debt overhang, or the existence of any other

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1/ Domestic savers may turn to informal and/or foreign intermediaries.

unsustainable macroeconomic condition that appears to call for a large fiscal adjustment creates expropriation risk attached to all domestic assets, causing depositors to curtail their recurrence to the formal domestic banking system. Similarly, an overvalued currency, if accompanied by the expectation of an exchange rate adjustment, creates the risk of a capital loss on domestic-currency denominated assets. To the extent that the domestic financial system does not (or cannot) compensate savers for bearing such risk, the system would be forced to contract in such an environment.[1]

A third mechanism through which underintermediation could arise is through policies adopted toward the financial sector that distort the returns payable to savers in a downward direction. As indicated previously, such policies often arise in response to other aspects of the domestic macroeconomic environment. Fiscal rigidity (an inadequate tax base and an inflexible expenditure structure), for example, tends to create incentives to tax the formal financial system through financial repression. High reserve/liquidity requirements and controlled interest rates hold down the government's borrowing costs by effectively taxing the financial system. The effect is to lower the return to savers, thus causing the formal financial system to contract, through the disintermediation phenomenon described above. In this case, domestic financial institutions pay excessively low returns to savers not because of the industrial organization of the sector or the inability of banks to compensate savers for macroeconomic risks, but simply because they are legally prohibited from raising interest rates or, even if legally able to, are prevented from doing so by the high costs of carrying unremunerated required reserves.

ii. Overintermediation

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[1] The system may not be able to compensate savers for such risk without becoming insolvent, if the risk emerges in a situation in which bank assets are tied up in long-term low-yielding assets. A discussion of the links between a micro model of banking and the macroeconomy is provided in Reinhart and Reinhart (1996).

Underintermediation has been the problem that most concerned observers of developing-country financial markets until recently. Of late, however, become evident that overintermediation is possible in liberalized financial systems. Overintermediation arises when savers receive "*excessively high*" returns on their placements in the domestic financial system. "Excessively high" in this context means that the returns offered to savers by the domestic financial system exceed the social rates of return that financial institutions can generate from their portfolios. Overintermediation arises from a combination of micro and macroeconomic phenomena. One possibility is that banks, which have low net worth relative to the value of their deposits, can issue deposits that are either explicitly or implicitly insured by the government on terms that do not adequately reflect the risk structure of bank assets, and supervisory as well as regulatory capacities are weak. This situation creates well-known moral hazard problems for bank managers, causing them to attract deposits by offering high interest rates and using the proceeds to fund high-risk investments.

2. Links to capital flows and macroeconomic performance

Shocks which originate in the financial sector can have macroeconomic effects through a variety of mechanisms. Two such mechanisms have been of importance recently: the emergence of lending booms and the existence of unresolved financial-sector insolvency. The first is an example of overintermediation while the latter would result in underintermediation. In each case, the banking system may itself have been the originator of the shock, or it may have originated elsewhere and taken on macroeconomic importance primarily because of its financial-sector implications.   It may be worth emphasizing that what is generated in each case is macroeconomic instability, but this can take on a variety of forms. We argue below that lending

booms tend to be associated with boom-bust cycles while unresolved financial-sector solvency problems are likely to be associated with macroeconomic stagnation.

As noted earlier, improperly-priced explicit or implicit deposit guarantees create moral hazard problems for bank managers acting on behalf of bank shareholders. Under these circumstances, bank managers have an incentive to attract resources away from the rest of the economy and from abroad by offering high deposit interest rates, and to use these resources to fund high-risk projects and/or consumption booms. This problem is more acute the lower is the net worth of bank shareholders (the lower the banks' capital-asset ratio), and it calls for pricing deposit insurance according to the risk characteristics as a first-best policy, or for active bank supervision as a second-best measure. This situation will usually be associated with a surge in short-term capital inflows and adverse effects on macroeconomic stability. Such overintermediation has the potential to cause a rapid expansion of the domestic financial system, setting off asset-price bubbles through lending for real estate and stock speculation, and triggering consumption booms that may potentially destabilize aggregate demand. The likely short-run macroeconomic consequences include rising inflation, large current account deficits, and real exchange rate appreciation.

The emergence of lending booms may have other macroeconomic effects beyond their tendency to stimulate booms in economic activity. Gavin and Hausman (1995) note that financial crises are typically preceded by lending booms. They argue that these phenomena are related through the effects of rapid growth of banks' portfolios on the quality of those portfolios. Essentially, rapid expansion makes it harder for banks to get information about the quality of assets, in part because liquidity-based solvency tests are easily met by borrowers when times are good and overall bank credit is expanding. Thus, rapid growth in lending causes the

average quality of banks' portfolios to deteriorate. From the perspective of short-run stability, what is important is that this may lay the seeds of a future reversal of the cycle by saddling banks with assets of poor quality. Thus, a boom-bust cycle is implied, rather than merely a transitory boom.

The severity of this boom cycle is likely to depend on the openness of the capital account and will also be a function of the exchange rate regime. When the capital account is open, the scope for bank expansion is increased by the ability of banks to attract external funds, particularly if deposit guarantees are perceived to apply to foreign depositors. The effect of deposit insurance in the context of an open capital account is to safeguard the domestic-currency value of the claims acquired by foreign depositors on domestic banks. If this is coupled with an exchange-rate guarantee in the form of a fixed exchange rate, the foreign-currency value of these claims is safeguarded as well, and the cost of attracting external funds will be lowered for banks as long as the exchange rate is credible.

In contrast with the boom-bust cycle implied by lending booms, the macroeconomic effects of a domestic debt overhang problem arising from financial-sector insolvency would be similar to those that are familiar from the literature on the overhang of external debt. In particular, this situation would tend to deter private investment. If real capital investment is largely irreversible, the potential of large future tax liabilities is likely to cause private agents to exercise their option to wait before committing capital to the domestic economy--the implications being slow growth of productive capacity and deficient aggregate demand.

If the economy is opened up financially in the midst of a "debt overhang" problem of this type, the likely effect is to trigger capital outflows, just as any other large unfunded government liability would tend to do. From the perspective of macroeconomic stability, the effect is that a

banking crisis could directly trigger a balance of payments crisis under such circumstances. If the exchange rate is flexible, the likely outcome instead is a collapse of the value of the domestic currency.

3.   *The financial sector and capital flows: the empirical evidence*

The previous two subsections have raised several conceptual issues regarding how the structure, practices, and health of the banking sector and the capital market may shape the volume and types of capital a country attracts. It was argued that countries which have unresolved debt problems, underintermediation and capital outflows (or, at best, limited inflows) are likely to follow. By contrast, overintermediation is likely to be associated with credit booms, asset price bubbles, and surges in capital inflows--particularly short-term and portfolio flows. Furthermore, it was noted that overintermediation may be more likely in countries with more developed capital markets--that is, there is some minimum infrastructure in bond and equity markets required to promote portfolio flows, which in turn, could add fuel to asset price bubbles. In other words, to invest in bonds and stocks you need to have a stock and bond market in the first place.

In this subsection we investigate some of these propositions empirically. To examine whether there is a systematic link between capital flows and the structure of the capital market, we introduce a variety of possible proxies for the size and depth of the domestic capital market. The three variables we consider are: the market capitalization of the equity market (in U.S. dollars), the number of listed companies in the stock exchange, and the trading value (in U.S. dollars). All the data comes from the International Finance Corporation. While these variables directly describe the equity market, they are also likely to proxy indirectly for the size of the

banking sector, as typically countries with undeveloped capital markets also tend to have a

smaller financial sector.1/

We include these equity market indicators one at a time. The remaining explanatory

variables are the sterilized intervention index, the capital control index, and the foreign interest

rates. The "post-Mexico" dummy was dropped for the predominantly Asian sample, as it was

not statistically significant in any of the previous regressions. Because it has sometimes been

argued that capital inflows may themselves lead to an expansion in the domestic banking sector

and/or a deepening of the capital market, we treat these equity market indicators as endogenous

and use an instrumental variables estimator. As before, we use a fixed effects estimator and

correct for the presence of heteroskedastic disturbances.

For both regions we report the results for each equity market depth measure in Tables 6-

8. Since portfolio flows, not surprisingly, appear to have the closest link to the stock market

variables, these are the results we focus on in this section. For the Latin American sample, both

market capitalization and number of listed stocks are statistically significant with the anticipated

positive sign. Indeed, these variables were also significant in explaining total flows to the Latin

American sample–but had little explanatory power in accounting for short-term flows.

Interestingly, the inclusion of these proxies for capital market depth increases the precision with

which the capital control dummy is estimated. In two of the three specifications, the coefficient

on the capital control proxy is now statistically significant. The results are regards the

importance of U.S. interest rates remains robust across specifications.

1/ Of course, in developing countries the bulk of the financing is done through the banking sector rather than the equity or bond market, hence the former tends to be large relative large (see Rojas Suarez and Weisbrod (1994)).

By contrast, none of the variables that proxy for capital market depth were statistically significant in the regressions explaining portfolio flows to Asia and other regions. Indeed, as regards the importance of Japanese interest rates and the domestic policy variables, the results summarized in Tables 6-8 mimic those of the previous section in nearly every aspect.

VI. Concluding Observations

This paper has attempted to fill some of the holes in the existing literature on the causes and determinants of capital flows by explicitly considering the role played by countercyclical policies and by financial sector development. We have focused on two types of countercyclical policies: sterilized intervention, which was the most common policy response to the arrival of capital inflows among the countries considered in this study, and restrictions on capital inflows designed to discourage short-term and/or portfolio flows. Our empirical methodology exploited both the time-series and cross-section dimensions of the data, and incorporated control variables intended to capture "push" factors, including possible contagion effects associated with the 1994 Mexican currency crisis. We examined the extent to whether there were regional similarities–or differences–in the determinants of capital flows to Asia and Latin America.

Based on the experiences of the 15 countries in our sample, we find broad evidence that capital flows, some types more than others, do indeed respond to the short-run macroeconomic policies of the capital-importing country. Our findings can be summarized as follows:

!   Sterilized intervention has tended to increase the volume of total capital inflows. This effect has operated, in particular, through short-term capital, as portfolio flows and FDI do not appear to be responsive to the degree of sterilization efforts. This result is

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common to both groups of countries, but sterilization seems to have acted as a greater "pull" factor in Asia than in Latin America.

! Sterilized intervention significantly alters the composition of capital flows, increasing the share of short-term and portfolio flows.

! We could find no statistically significant effect of restrictions on capital inflows on the overall volume of flows. Though our coefficient estimates were negative, indicating that an intensification of such restrictions tended to discourage inflows, these effects were estimated with poor statistical precision. There is some weak evidence that the controls may have been more effective in curbing short term flows in the Asian sample and portfolio flows in the Latin American sample.

! We found stronger evidence, however, that such restrictions are capable of altering the composition of capital flows in the intended direction of reducing the relative weight of short-maturity debt instruments.

We also considered the roles of domestic "pull" factors of a more structural kind -- specifically, capital market development. Our principal conclusion in this regard is the following:

! Of the types of capital flows we considered, portfolio flows appear to be the most responsive to the size and depth of the equity market. Both the number of listed companies in the stock exchange and market valuation are positively linked to portfolio flows-- suggesting that bond and equity flows gravitate to those countries which have the more emergent markets. However, this result, although intuitively appealing, is not robust across samples, with the capital market indicators only playing a significant role in Latin America.

Our results were consistent with the previous literature in confirming the importance of "push" factors (in the form of U.S. and Japanese interest rates). While responsiveness to foreign interest rates is a shared characteristic of both regions, there are also some interesting regional differences both as regards the choice of the relevant "push" factors, as well as their relative importance.

! Flows to Latin America, particularly portfolio flows, appear to be more sensitive to international interest rates.

! Second, the evidence presented here suggests that there are stronger intra-regional financial links than inter-regional links, flows to Latin America are more influenced by U.S. interest rates, while Japanese interest rate play a more significant role for Asia.

! Contagion appears to be more regional than global in scope, as there were significant reduction in the volume of capital inflows (particularly portfolio) to Latin America in the wake of the Mexican crisis. There was little evidence of any adverse consequences for capital inflows into Asia from this episode.

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Table 1. Capital Flows as a percent of GDP

	1990	1991	1992	1993	1994	1995	1996
Asia							
average	**6.2**	**8.1**	**6.5**	**8.9**	**5.8**	**7.3**	**6.6**
Indonesia	4.7	0.8	1.3	2.4	0.8	2.5	2.8
Malaysia	4.2	11.7	14.9	16.8	1.8	8.5	6.4
Phillippines	4.0	4.9	1.2	3.7	6.4	5.5	9.2
Sri Lanka	6.9	10.4	6.2	11.5	11.1	6.6	5.0
Thailand	11.4	12.7	8.9	10.0	8.8	13.5	9.3
Latin America							
average	**3.1**	**2.1**	**4.6**	**5.4**	**4.2**	**3.5**	**4.5**
Argentina	-0.8	1.3	4.6	4.7	3.8	1.4	3.4
Brazil	1.0	0.0	2.6	1.9	1.3	4.3	4.4
Chile	10.0	2.4	0.7	8.0	8.8	1.7	6.7
Colombia	-0.1	2.1	0.0	4.8	4.4	6.2	7.1
Costa Rica	3.8	4.1	6.3	8.0	4.3	3.6	4.5
Mexico	4.5	7.1	7.1	7.3	2.4	4.0	1.2
Other regions							
average	**-4.0**	**-0.7**	**2.5**	**4.8**	**5.0**	**6.5**	**3.6**
Czech							
Republic	1.1	1.2	3.5	9.7	9.2	17.9	4.6
Egypt	-27.7	-10.1	-0.1	3.8	4.4	1.8	2.8
Kenya	4.7	0.8	1.3	2.4	0.8	2.5	2.8
Uganda	-4.0	-0.7	2.5	4.8	5.0	6.5	3.6

Source: International Monetary Fund, *World Economic Outlook*

Table 2. Portfolio Flows as a percent of GDP

	1990	1991	1992	1993	1994	1995	1996
Asia average	**0.6**	**0.2**	**0.7**	**1.8**	**0.6**	**1.2**	**1.0**
Indonesia	0.0	0.0	0.7	1.1	0.6	0.8	0.7
Malaysia	0.0	0.0	2.0	2.5	0.8	1.5	1.3
Phillippines	-0.1	0.3	0.1	- 0.1	0.4	1.6	1.3
Sri Lanka	0.1	0.4	0.3	0.7	0.2	0.0	0.5
Thailand	0.6	0.1	0.5	3.8	0.9	2.0	1.3
Latin America average	**0.2**	**0.8**	**1.5**	**3.5**	**2.1**	**-0.5**	**1.5**
Argentina	-0.9	0.3	-0.2	9.5	1.3	1.5	3.7
Brazil	0.1	1.0	3.8	2.8	9.1	0.3	0.8
Chile	1.2	0.1	0.8	1.6	1.7	0.3	1.5
Colombia	0.0	0.2	0.3	1.0	0.5	-0.1	1.7
Costa Rica	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mexico	0.5	3.1	4.3	5.8	0.8	-5.0	1.2
Other regions average	**0.0**	**0.0**	**0.0**	**1.3**	**0.6**	**0.8**	**0.7**
Czech Republic	0.0	0.0	0.0	5.1	2.4	3.0	1.9
Egypt	0.0	0.1	0.0	0.0	0.0	0.1	1.0
Kenya	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uganda	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: International Monetary Fund, *World Economic Outlook*

Table 3. Short-term Capital Flows as a percent of GDP

	1990	1991	1992	1993	1994	1995	1996
Asia							
average	**3.0**	**3.4**	**3.6**	**3.0**	**1.4**	**2.6**	**2.6**
Indonesia	5.5	3.7	1.5	0.7	1.9	3.9	2.9
Malaysia	1.2	3.9	8.0	8.4	-4.5	1.1	1.5
Phillippines	0.9	0.4	2.0	1.0	2.3	-0.5	2.8
Sri Lanka	-0.1	1.7	1.4	1.9	1.6	1.6	1.0
Thailand	7.6	7.5	5.0	3.0	5.5	7.7	5.6
Latin America							
average	**0.6**	**0.2**	**2.6**	**2.0**	**1.3**	**1.1**	**1.0**
Argentina	-2.7	-0.7	3.7	0.5	0.2	-1.2	-0.6
Brazil	1.0	0.0	2.6	1.9	1.3	4.0	4.0
Chile	4.8	1.4	4.6	2.4	2.6	1.4	0.1
Colombia	-0.4	-1.0	1.2	2.0	1.2	1.4	0.1
Costa Rica	0.9	1.1	3.2	5.0	1.7	1.6	2.7
Mexico	0.2	0.2	0.5	0.3	0.5	0.2	-1.1
Other regions							
average	**1.9**	**0.7**	**-1.8**	**-0.3**	**0.4**	**1.6**	**-0.7**
Czech Republic	0.0	-1.1	0.7	-3.3	1.8	2.1	-1.9
Egypt	2.9	2.2	-1.0	0.6	2.4	0.4	0.5
Kenya	2.2	-0.7	4.1	2.5	-2.8	3.7	2.3
Uganda	2.4	2.5	-10.9	-0.8	0.1	0.0	-3.9

Source: International Monetary Fund, *World Economic Outlook*

Table 4. Fixed Effects Estimates, Instrumental Variables: 1990-96
Latin America

Dependent variable	Sterilization index	Capital control proxy	U.S. interest rate	Japanese interest rate	Mexican crisis dummy
Capital account as a % of GDP	0.814 (1.947)	-0.058 (-0.129)	-0.393 (-2.273)	-0.321 (-1.468)	-0.921 (-1.993)
Portfolio flows as a % of GDP	0.792 (1.753)	-0.533 (-1.122)	-0.628 (-2.439)	-0.012 (-0.066)	-0.754 (-2.321)
Short-term flows as a % of GDP	0.281 (2.216)	-0.121 (-0.232)	-0.251 (-1.041)	-0.075 (-0.458)	-0.342 (-1.799)
Portfolio plus short-term flows as a % of GDP	0.708 (1.975)	-0.720 (-1.209)	-0.953 (-2.880)	-0.095 (-0.436)	-0.636 (-2.034)
FDI flows as a % of GDP	-0.015 (-0.017)	-0.545 (-0.392)	-0.431 (-0.932)	-0.054 (-0.766)	-0.136 (-0.663)
Portfolio plus short-term flows as a% of total flows	35.544 (2.462)	-14.894 (-1.984)	-154.457 (-1.021)	84.203 (1.118)	n.a.
FDI flows as a share of total flows	-24.444 (-1.236)	61.658 (0.758)	43.274 (1.442)	57.756 (1.071)	n.a.

Notes: The countries in the sample are Argentina, Brazil, Chile, Colombia, Costa Rica, and Mexico. The *t*-statistics are reported in parentheses. Standard errors have been corrected for general forms of heteroskedasticity. An n.a. denotes not applicable.

Table 5. Fixed Effects Estimates, Instrumental Variables: 1990-1996
Asia and other regions

Dependent variable	Sterilization index	Capital control proxy	U.S. interest rate	Japanese interest rate	Mexican crisis dummy
Capital account as a % of GDP	1.290 (1.514)	-0.356 (-0.217)	-0.263 (-0.499)	-0.488 (-1.972)	0.031 (0.423)
Portfolio flows as a % of GDP	0.193 (1.433)	0.287 (0.701)	-0.026 (-0.317)	-0.112 (-2.499)	-0.024 (-0.522)
Short-term flows as a % of GDP	1.144 (2.316)	-1.402 (-1.533)	-0.566 (-1.057)	-0.109 (-0.632)	0.012 (0.210)
Portfolio plus short-term flows as a % of GDP	1.117 (2.396)	-0.720 (-1.209)	-0.451 (-1.156)	-0.132 (-0.671)	0.136 (0.831)
FDI flows as a % of GDP	0.415 (1.012)	1.542 (1.092)	0.023 (0.632)	-0.102 (-0.564)	0.112 (0.462)
Portfolio plus short-term flows as a% of total flows	25.776 (1.992)	-49.528 (-2.060)	11.523 (0.731)	2.660 (0.332)	n.a.
FDI flows as a share of total flows	-36.097 (-1.766)	51.905 (1.335)	2.493 (0.185)	1.554 (1.215)	n.a.

Notes: The countries in the sample are Czech Republic, Egypt, Indonesia, Kenya, Malaysia, Philippines, Sri Lanka, Thailand, and Uganda. t-statistics are reported in parentheses. Standard errors have been corrected for general forms of heteroskedasticity. An n.a. denotes not applicable.

Table 6. Fixed Effects Estimates, Instrumental Variables
The Role of Market Capitalization on Portfolio flows

Dependent variable	Sterilization index	Capital control proxy	U.S. interest rate	Japanese interest rate	Mexican crisis dummy	Market capitalization
Latin America: Portfolio flows as a % of GDP	0.174 (0.293)	-1.558 (-2.352)	-0.628 (-2.494)	0.089 (0.537)	-0.659 (-2.124)	0.029 (2.379)
Asia and others: Portfolio flows as a % of GDP	0.193 (1.382)	-0.188 (-0.704)	-0.024 (-0.288)	-0.107 (-2.039)	n.a.	0.001 (0.350)

Notes: The *t*-statistics are reported in parentheses. Standard errors have been corrected for general forms of heteroskedasticity. An n.a. denotes not applicable.

Table 7. Fixed Effects Estimates, Instrumental Variables
The Number of Listed Stocks n Portfolio flows

Dependent variable	Sterilization index	Capital control proxy	U.S. interest rate	Japanese interest rate	Mexican crisis dummy	Number of listed stocks
Latin America: Portfolio flows as a % of GDP	0.794 (1.749)	-0.867 (-2.051)	-0.715 (-3.112)	-0.029 (-0.220)	-0.794 (-2.021)	0.033 (1.881)
Asia and others: Portfolio flows as a % of GDP	0.160 (1.153)	-0.602 (-0.779)	-0.043 (-0.510)	-0.093 (-1.926)	n.a.	0.005 (1.025)

Notes: The *t*-statistics are reported in parentheses. Standard errors have been corrected for general forms of heteroskedasticity. An n.a. denotes not applicable.

Table 8 Fixed Effects Estimates, Instrumental Variables
The Role of Turnover on Portfolio flows

Dependent variable	Sterilization index	Capital control proxy	U.S. interest rate	Japanese interest rate	Mexican crisis dummy	Turnover ratio
Latin America: Portfolio flows as a % of GDP	0.596 (0.911)	-1.329 (-1.868)	-0.693 (-2.607)	-0.019 (-0.109)	-0.719 (-1.974)	0.023 (1.032)
Asia and others: Portfolio flows as a % of GDP	0.183 (1.312)	-0.191 (-0.707)	-0.953 (-2.880)	-0.026 (-0.311)	n.a.	-0.007 (-0.015)

Notes: The *t*-statistics are reported in parentheses. Standard errors have been corrected for general forms of heteroskedasticity. An n.a. denotes not applicable.