Do capital controls influence the volume and composition of capital flows? Evidence from the 1990s

Reinhart, Carmen and Montiel, Peter

August 1999

First draft: July 1997
This version: November 1998
forthcoming in *Journal of International Money and Finance*

Do Capital Controls Influence the Volume and Composition of Capital Flows? Evidence from the 1990s

Peter Montiel 1/
Williams College
Williamstown, MA 01267
(413) 597-2103
FAX (413) 597-4045
Peter.J.Montiel@williams.edu

Carmen M. Reinhart
University of Maryland
College Park, MD 20742
(301) 405-7006
FAX (301) 403-8107
creinhart@puafmail.umd.edu

Abstract

In the early 1990s capital flows to the Asian economies were dominated by FDI. By contrast, Latin America was attracting little FDI and a large share of its inflows were either short-term or portfolio and viewed as "hot money." These differences gave rise to the view that Latin America was more vulnerable to a reversal of capital flows than Asia. Yet, scant attention was given to the fact that as the capital inflows persisted those regional differences were eroding–it took the crises of 1997 to reveal that Asia's exposure to the vagaries of short-term capital was vast. Here we present cross-country evidence that capital controls influence the composition of flows, if not their volume while policies of sterilized intervention influence both volume and composition, skewing flows to the short end of the maturity spectrum. We conclude that Asia's increasing reliance on short term flows was, in large part, due to the macroeconomic policy response to the initial surge in capital inflows.

1/ An earlier version of this paper was prepared for the UNU/WIDER Project on *Short-term Capital Movements and Balance of Payments Crises.*The authors wish to thank Guillermo Calvo, Stephany Griffith-Jones, Manuel Montes, Vincent Reinhart, and seminar participants at Harvard Institute for International Development, MIT, Universidad Torcuato di Tella, Buenos Aires, University of the Andes, Bogota, University of Maryland, and UNU/WIDER for helpful comments and suggestions.

I. Introduction

During most of the 1990s policymakers in many parts of the emerging world preoccupied themselves with the challenges posed by having to manage a surge in capital inflows. In 1993 alone, Malaysia's capital account surplus approached 25 percent of GDP. This uninterrupted flow of capital toward emerging market economies came to a sudden stop, particularly in several Latin American countries, in late 1994, as Mexico faced its worst currency crisis since 1982. However, a bail-out package of unprecedented size was put together, eventually confidence was restored in financial markets, and the capital inflows into these economies resumed their course. A second and more severe jolt to emerging market finances came from Thailand's fall from grace in the summer of 1997. As is well known, the Thai devaluation was the first among the eventual collapse of several other Asian currencies and placed all emerging markets under increased scrutiny. Capital inflows into emerging markets shrank dramatically and became increasingly skittish and infected with the "who is next syndrome." Indeed, market participants did not have to wait too long for the next crisis--as Russia's default in August of 1998 proved. At the time of this writing, the least of the problems facing emerging market economies is the management of capital inflows, as the upswing of the cycle has run its course and international capital is now seeking a safe haven in the low risk assets offered by the larger industrial countries. But, since in great part, today's outflows are yesteryear's inflows analyzing what factors shaped the inflows to begin with is not altogether irrelevant if emerging market economies wish to avoid in the future some of their past mistakes in capital flow management.

There is a large and growing literature on capital flows to emerging markets. Much of the earlier literature debated whether external factors, such as international interest rates, or domestic factors, such as structural reforms, were mainly responsible for the increased financial flo

ws to the emerging world.1/ Another strand of the literature focused on describing the macroe conomic "countercyclical" policy response to the rising inflows, either by considering their rel ative merits or by documenting and evaluating the broad variety of policy responses of the capi tal-importing countries.1/ Yet, very little has been done to link these two strands of analysis. Specifically, how the policy responses to the early waves of capital inflows eventually influenc ed both the level and the composition of subsequent cross-border capital movements. Hence, th ese policies played a potentially important causal role after the initial wave of inflows.

2/ See, for instance, Calvo, Leiderman, and Reinhart (1993) and (1994a), Claessens, Chuhan, and Mamingi (1993), Fernand ez-Arias (1993), and Calvo and Reinhart (1996).

3/ See Calvo, Leiderman, and Reinhart (1994b), Corbo and Hernandez (1994), and Montiel (1996).

In the early 1990s capital flows to many of the miracle Asian economies were largely dominated by foreign direct investment (FDI). By contrast, Latin America was attracting comparatively little FDI and a large share of its inflows were either of a short-term or portfolio nature. 1/ Both short-term and portfolio flows have, more often that not, been viewed as volatile "hot money."1/ These differences helped to propagate the view that the Latin American countries were more vulnerable to an abrupt reversal of capital flows than their Asian counterparts. Mexico's crisis, which left Asia unscathed, did much to re-enforce this view . Yet, scant attention was given to the fact that as the capital inflow cycle persisted those regional differences in the composition of capital inflows were eroding quickly and markedly (see Kaminsky and Reinhart (1998)). It took the devastating crises of 1997 to reveal that Asia's exposure to the vagaries of short-term capital was vast, despite the fact that the region's governments (unlike the Tesobono problem) had relatively little short-term debts. In the case of Korea is was short-term bank debt, in the case of Indonesia it was the debt of firms, and in the case of Thailand it was a combination of these. Irrespective of whose debt it was, its short-term nature, which lends itself to bunching, aggravated the crises by creating serious liquidity and debt rollover problems.

Since the regional differences in the composition of the capital account did not remain constant over time, it is unlikely that structural factors were at the root cause of the earlier differences. Hence, it would appear that a reasonable line of enquiry to follow is to investigate to what extent were the countercyclical macroeconomic policies of the capital-importing countries

4/ Portfolio flows, especially bond flows, can also considered be short-term, as bonds often have short maturities (as did the Mexican Tesobonos) and can therefore depart suddenly.

5/ While Claessens, Dooley, and Warner (1993) have argued that such differences are overstated, recent evidence from the Asian countries (see Sarno and Taylor (1998)) does indicate that short-term and portfolio flows have a much larger temporary component than FDI flows.

were responsible for shaping the volume and composition of capital inflows, particularly in the latter stages of the cycle.

This paper aims to fill some of these gaps. In particular, we assess the extent to which t wo broad types of policies--direct intervention in the capital account (such as measures to contr ol capital inflows) and the monetary-foreign exchange policy mix (such as the extent of sterilized intervention) have systematically influenced the nature and dynamics of capital flows . As a side issue, we also examine a potential "pull" factor largely ignored in the empirical lite rature. That is, the possible link between the volume and share of portfolio flows and the chara cteristics of the domestic equity market, most notably its depth. Along the way, we take stock of the answers the empirical literature has provided in affecting the volume and composition of the flows, and to a lesser extent, the existence of contagion effects in international capital mar kets. On these issues, we come to several conclusions.

First, measures to explicitly curb the volume of capital inflows, or their more subtle relat ives in the form of prudential regulation, do not appear to be effective in reducing the volume o f capital inflows. Yet, the measures do appear to be effective in influencing the overall compos ition of flows. In some cases, these taxes, reserve requirements, or quantitative measures targe ted short-term inflows (Chile, Colombia, and Malaysia in 1994) in other cases the target was p ortfolio flows (Brazil). Our estimates suggest that the composition of flows following the intro duction of the measures was skewed toward FDI and away from short-term flows and portfolio flows. To the extent that debt maturity matters--this is not a trivial effect.

Second, sterilized intervention appears to be a powerful tool in influencing both the volu me and the composition of capital inflows, although hardly in the way that policymakers had or iginally intended it to. By providing a combination of an implicit exchange rate guarantee and

high domestic interest rates on short-term assets vis-a-vis comparable international interst rates , sterilization policies are a magnet in attracting short-term flows. These policies are capable o f increasing the volume of the flows and skewing their composition away from FDI to short ma turities components.

Third, capital market depth appears to be a factor in determining which countries receive portfolio capital inflows. Not surprisingly, a country needs an equity market before it can attr act equity flows. This result, however, is not robust to alternative measures of equity market de pth, with the number of listed shares as the proxy of depth which provides the strongest results.

Lastly, in the 1990-96 sample (at least) the evidence does not suggest that contagion is a global phenomenon on the wake of the Mexican crisis. This, perhaps is no surprise in light of several studies that have stressed the regional nature of most contagion episodes.1/

The remainder of the paper is divided into five sections. The next section reviews the lite rature that has investigated the potential causes of the surge in capital inflows. Because much o f this literature was focused on the early years of the inflow episode, Section II sketches the cro ss-section and time series characteristics of flows leading up to the period of the Asian crises. The theme of whether the volume and composition of capital flows is shaped by macroeconom ic policies in the recipient country is investigated using panel data from 15 capital importers fr om various regions; the role of equity markets in influencing these parameters is also analyzed. The last section offer a discussion of potential areas of future research.

II. Causes of the Inflows: A Review

This section takes a retrospective look at factors that are frequently cited in expl aining the surge in inflows to a wide number of developing countries in the 1990s. Th

6/ See Calvo and Reinhart (1996) and Frankel and Schmuckler (1996).

e objective is to present a synthesis of the key findings the empirical literature on this t opic and summarize where we stand.

1. Conceptual issues

The capital account is an endogenous macroeconomic variable, and as such is li kely to be affected by a multitude of shocks of both domestic and foreign origin. Beca use the interpretation of the welfare consequences of capital inflows, as well as their li kely sustainability, are both related to the nature of the shocks that generate such flow s, 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 rela tive attractiveness of placing funds in emerging markets vis-a-vis industrial-country ma rkets, as well as on the ease with which such transactions can be carried out, it may b e useful to classify such factors into three categories:

i. "Pull" factors.

Factors that operate through improvements in the risk-return characteristics of a ssets issued by developing-country debtors have been dubbed "pull" factors in the em pirical capital-inflow literature. What matters to private creditors, of course, is improve ment in *private* risk-return characteristics. Such improvements can arise from two diffe rent 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 reflec t welfare-enhancing borrowing for the financing of new high-yield domestic investment opportunities and/or welfare-enhancing financing for consumption smoothing motivate d 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 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, an

d the reduction of interest rates in the United Kingdom after the pound dropped out of t he E. R.M. in September 1992 would each have had the effect of driving capital abroa d in search of higher short-run returns. From the perspective of the developing countr y, this represents an external financial shock, which may be welcome or not dependin g 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 thre atens to make it temporary. An important question for policy in borrowing countries rai sed by shocks of this type, therefore, is whether the domestic private response is likel y to optimally take into account the possibility of reversal.

A different "push" factor with different implications for policy has to do with chang es in financial structure in capital-exporting countries. The increased role of institution al 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 l ending to emerging markets for portfolio diversification reasons. If so, and given the r elatively small share of emerging markets in the portfolios of institutional lenders, the s ustainability implications would be very different from those associated with cyclical fa ctors. 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, the resurgence of capital flows may reflect increased financial integration due to the removal or barriers impeding cross-border capital flows. Such barriers may arise either as the result of policy choices or of technological conditions 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 t he onset of the current capital-inflow episode. While it may seem that the removal of s uch distortions is unambiguously welfare-enhancing, this may not be so if previously e xisting restrictions reflected a second-best response to other distortions in the econom y -- e.g., the financial-market distortions mentioned above.

2. The empirical evidence: the literature

A substantial amount of research has begun to document empirically the importa nce of specific factors in driving the current capital inflow episode. However, no gener al consensus has emerged concerning the *relative* roles that various factors may have played at different times. This subsection provides an overview of the main findings of this literature.

i. Calvo, Leiderman, and Reinhart (1993)

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 origi nated in the creditor or debtor countries. In a series of papers, for example, CLR have argued that, while domestic factors were undoubtedly important in attracting inflows, s uch factors cannot explain why inflows occurred in countries that had not undertaken r eforms or why when reforms were started earlier, the inflows did not materialize till 19 90. They have thus emphasized the role of external factors. Their formal analysis tak es the following form:

a.

Principal component analysis establishes a significant degree of comovement a mong foreign reserves and real exchange rates for ten Latin American countries durin

g 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 ra te 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 indica tors of foreign rates of return.

c.

In individual countries, Granger-causality tests most frequently had reserves cau sing 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 princip al components of the U.S. financial variables, suggested that the foreign factors exerte d causal influences over the domestic variables, and both variance decompositions an d impulse response functions indicated that the foreign factors played a large role in a ccounting for reserve and real exchange rate movements.

ii. Chuhan, Claessens, and Mamingi (1993)

CCM attempted to disentangle the roles of domestic and external factors in moti vating portfolio capital inflows. Using monthly bond and equity flows from the U.S. to n ine Latin American and nine Asian countries over the period January 1988 to July 199 2, they estimated separate panel regressions explaining bond and equity flows as func tions 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 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 o ne. The project return depends inversely on the vector **F** of net flows to projects of all types (based on a diminishing marginal productivity argument), while the creditworthin ess factor is a negative function of the vector of the end-of-period stocks of liabilities of all types, denoted **S**. Voluntary capital flows (components of the vector **F**) are determ ined by the arbitrage condition:

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

where R_s is the opportunity cost of funds of type s in the creditor country, taken to dep end on creditor country financial conditions R, while c and d are shift factors associate d 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 sh ift parameters. Notice that in this framework capital flows will be determined by c, d, a nd R-- i.e., by domestic factors that operate at the project and country levels, as well a s by external financial factors. The assumptions made above imply that the compone nts of the vector **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 fr om an initial value W, c is given by:

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

where I s a long-term risk-free external interest rate. When creditworthiness is sufficie ntly low, the solution to equation (1) above may entail extremely low capital inflows or capital outflows (negative values of various components of **F**) of a magnitude that impl

y transfers of resources that the country is unwilling to undertake. In this case, volunt ary capital flows of such types would cease, and the condition would become an inequ ality no longer determining the corresponding (involuntary) capital flows. This observa tion 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 c ountries that met the creditworthiness requirement.

Fernandez-Arias used this model to decompose post-1989 portfolio (bond and e quity) inflows for 13 developing countries into portions attributable to changes in c, d, a nd R (he found that changes in $\mathbf{S}_{-1}$ made no contribution to explaining changes in flow s). He did so by regressing deviations in such flows from their 1989 values on corresp onding deviations in the external interest rate and in the price of debt on the secondar y 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 sa mple, changes in international interest rates proved to be the dominant force in explain ing surges in capital inflows, accounting for over 60 percent of the deviation in such flo ws from the 1989 level. An extra 25 percent was due to changes in creditworthiness, l eaving only about 12 percent to be explained by improvements in the domestic invest ment 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, t hereby 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-mention ed decomposition of creditworthiness into domestic and foreign components. They arg ue that the price of commercial-bank debt is a sensitive proxy for capital inflows, beca use 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, rath er than explaining capital inflows directly, they attempt to account for the behavior of s econdary-market prices on debt since 1989 which, consistent with their interpretation of the relationship between such prices and capital flows, have risen markedly. They f ind that essentially all of the increase in price can be accounted for by reductions in th e face value of debt and international interest rates, leaving almost nothing to be expla ined by improvements in the domestic environment.

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

These findings concerning the role of foreign factors have not gone unchallenge d, however. SCBK, for example, argue that, while foreign phenomena may have bee n 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 n ot coincide with that of the inflows.

b.

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

c.

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

vi. Hernandez and Rudolf (1994)

More systematic evidence supporting a role for domestic factors in attracting cap ital inflows was provided by Hernandez and Rudolf (1994). Noting that previous work t ended 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 recipie nts (HCIR) and low capital inflow recipients (LCIR). They found that the former had do mestic saving rates twice as large as the latter, invested a much larger proportion of G NP, exhibited significantly lower fiscal deficits and inflation rates, had lower stocks of d ebt as well as larger stocks of foreign exchange reserves and faster rates of export gr owth. The HCIR countries were also more stable, in the sense that they both exhibite d lower variability of inflation and real exchange rates and scored lower on a political ri sk index.

b.

Second, arranging their data into a panel of annual observations, the estimated c apital-flow equations for a broad category of long-term flows as a function of lagged d

omestic 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 t he real exchange rate, and the presence of a Brady bond deal. They found statisticall y significant (albeit not very precisely estimated) role for domestic creditworthiness indi cators, but no role for the external interest rate.

vii. World Bank (1997)

All of the evidence cited above pertains to the early years of the recent capital inf low episode-- i.e., 1989-93. More recent evidence provided by the World Bank (1997) suggests that the factors driving inflows have been changing over time, and in particul ar that domestic factors may have played a more prominent role during 1994-95. Ado pting the CLR methodology, the Bank found that quarterly portfolio flows from the Unit ed 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 c aptured by the first principal component) during 1990-93, and that the first principal co mponent of these series was highly negatively correlated with the first principal compo nent of a set of representative U.S. asset returns. Both of these findings are consisten t with the findings of CLR for this period, as described above. However, over the year s 1993-95, comovements among portfolio flows became much weaker (the contributio n 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 ro le in recent years than they did in the early years of the inflow episode.

3. An Assessment

The formal evidence strongly supports the "push" view that falling U.S. interest rates at first and later on in Japan 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 thei

7/ 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.

r results may primarily apply to FDI flows and are not necessarily applicable to other ty pes of capital flows, such as portfolio or short-term flows.1/

However, the apparent importance of "push" factors does not preclude the relev ance of "pull" phenomena. The complementarity between the two explanations is for malized in equation (1). Indeed, while "push" factors may help to explain the *timing an d magnitude* of the new capital inflows, "pull" factors are necessary to explain the *geo graphic distribution* of flows during this time. Differences in capital inflow levels across countries and within countries across time point to the importance of specific country (or period) characteristics for foreign capital absorption.

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

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.

In short, this assessment suggests that our empirical work in the process of reconsidering the forces that drive capital flows during the 1990s should feature each of the following:

a.

It should capture both the time series and the cross-section variation in flows, to allow scope for differences in the relative effectiveness of “push” and “pull” factors in influencing flows along these two dimensions.

b.

It should specifically consider the effects of measures that may affect the degree of capital market integration (such as capital controls), rather than simply relative rates of return.

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

c.

It should specify the “pull” factors more precisely. In particular, given the growin g importance of portfolio flows in recent years, the “pull” factors should also include de scriptive features of the existing structure of capital markets in the capital-importing co untries (a factor largely ignored in the recent literature).

d. It should feature domestic monetary policy prominently among the latter.

III. The Size and Composition of Capital Inflows

The conventional wisdom stresses important differences in the composition of flo ws. Specifically, associating the Asian countries with foreign direct investment while sh ort-term flows are associated with the Latin American countries. In identifying such pa tterns geographically, there is an implicit suggestion that structural characteristics of th e individual economies may be responsible. In fact, however, those regional difference s have narrowed considerably over time, suggesting that the factors underlying the str ucture of the inflows are far from permanent. The aim of this section is to reassess to what extent the conventional wisdom oversimplifies the dynamics of capital flows durin g the present decade.

1. Updating the stylized facts: cross-country comparisons

To update the record on the dynamics of capital flows to emerging markets durin g the current decade we have constructed a sample of 15 such markets in Asia (Indon esia, Malaysia, the Philippines, Sri Lanka, and Thailand), Latin America (Argentina, Br azil, Chile, Colombia, Costa Rica, and Mexico), as well as other regions (Czech Repu blic, Egypt, Kenya, and Uganda). With the exception of China, this list includes most o f the developing major capital importers in their respective regions. We have examine

d the capital-inflow experience of these countries, based on data from the IMF's *World Economic Outlook* data set, to extract a set of "stylized facts" applicable to flows durin g this decade. 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 Tabl es 1-3, the former shows net capital inflows as a percent of GDP, while the latter two s how portfolio (bonds and equity) and short-term inflows, respectively, also as a share of GDP. The key descriptive statistics are summarized in Table 4 and discussed below. Three observations stand out as regard the regional averages over the 1990-96 period:

First, the magnitude of total flows (relative to GDP) was substantially larger for A sian countries than for the Latin American countries. On average, capital inflows in th e former amounted to over 7 percent of GDP, while in the latter they fell short of 4 per cent of GDP. *Second*, and contrary to the received wisdom, the magnitude of short-te rm flows was also larger in Asia than in Latin America, 2.8 percent and 1.3 percent, re spectively. *Third,* the difference in magnitude of short-term flows was also larger than that for the overall capital account, implying Asian countries actually registered a slight ly larger share of short-term flows in total capital inflows (39 versus 32 percent). Of co urse, these observations must be tempered by the fact that other types of capital inflo ws, notably portfolio investment which is classified separately from short-term flows m ay also be of a highly short-term and volatile nature, as was the case for Mexico's exte rnal bond debt. As Table 2 highlights, portfolio flows have played a more substantial ro le in most of the Latin American countries in our sample than in other regions.

As to the variability over time in regional capital inflows, two observations stand out:

First, measured by the coefficient of variation, capital inflows have been more volatile during the 1990s in Latin America than in Asia--this greater volatility/instability is also evident in a broad variety of macroeconomic and financial variables (see Kaminsky and Reinhart (1996)). *Second*, short-term capital has been more volatile than all other types of capital flows (defined residually) in both regions.1/ While the difference in the coefficient of variation between short-term and other types of capital flows is quite small in Asia, it was substantial in Latin America, differing by a factor of three (Table 4). 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.

Thus, at least during the current decade, it does not appear to have been the case that Latin America gets differentially larger amounts of short-term capital than do Asian countries. The issues, instead, appears to be that short-term capital has tended to be more skittish in Latin America. Indeed, the latter observation may extend to portfolio flows, as evidenced by its abrupt reversal during the Mexican crisis--as Table 2 shows Mexico went from portfolio inflows of about 6 percent of GDP in 1993 to outflows

10/ This is in line with the "received wisdom" about the vulnerabilities associated with short-term flows. However, it would appear to be at odds with the conclusions in Claessens, Dooley, and Warner (1993).

of 5 percent in 1995. Latin America's comparatively poor macro policy track record and shakier credibility may, indeed, be factors that can account for this greater instability.

Regarding how regional patterns have evolved over time, in the case of Asia: Short-term flows were already important by 1990, so these are not a new phenomenon to the region. By 1993, Malaysia had replaced Indonesia as the leading importer of short-term capital among our group of countries. Not surprisingly, in January 1994 Malaysia allowed domestic short-term interest rates to fall substantially and adopted a series of capital control measures all of which were designed to curb the short-term capital inflows that were flooding the banking system. This issue will be taken up in the following section. For the Asian countries, there is little evidence of "Tequila effects" in the annual data.1/ While short-term flows have remained below their 1993 peak, this was dominated by the experience of Malaysia, where internal policy changes appear to have played a major role.

As regard the Latin American "stylized facts:" *First,* other types of flows (besides short-term), appear to have stable over time. This is not only reflected in a lower variance, but also in a more modest uptrend in recent years. *Second*, by contrast to Asia where short-term flows were comparatively important prior to 1990, these only become important in the more recent period. *Third*, capital flows to the region fall in 1994--in contrast with the experience of Asia. This could be evidence that either a stronger role for "push" factors than in Asia (U.S. interest rates are raised in February of 1994) or it could be consistent with contagion effects in the wake of the Mexican crisis of 1994.

11/ See Calvo and Reinhart (1996) and Frankel and Schmuckler (1996) on this issue reviewing a variety of higher

IV. Did the Policy Response Shape the Volume and Composition of Flows?

The two previous sections have indicated both that the factors driving capital flows have tended to change over time and that the composition of flows has evolved as well. The finding in the case of the former is that idiosyncratic, country-specific factors may have played a larger role in recent years that they did during the initial surge. Furthermore, these country-specific factors appeared to have played a role in stimulating short-term flows and skewing the composition toward shorter maturities. These two observations, together with the standard view that short-term capital flows respond to arbitrage opportunities, lead to the plausible interpretation that the volume and composition of flows became more sensitive to changes in the short-run domestic macroeconomic policy environment in capital-importing countries. Hence, the potential link between the macroeconomic policy response to the initial surge in capital inflows and the volume and composition of subsequent capital flows moves to center stage. 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?

---

frequency data.

The composition of capital flows may matter for a variety of reasons. First, certai n types of flows may be more stable than others. The conventional wisdom places FD I 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 macroec onomic adjustment may be quite different. For instance, several observers have argu ed that FDI inflows to Asia have tended to finance increases in domestic investment wi th a high imported capital content. Even if the scale of domestic investment is unaffec ted by the arrival of FDI, investment by foreign firms may be more productive than do mestic firms. Finally, different types of flows may vary in their implications for domesti c financial stability. For example, the emergence of real estate or stock market bubble s 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 fina nce 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 F DI is a more stable source of capital than short-term or portfolio flows has been challe nged by Claessens, Dooley, and Werner (1995), who showed that the time series prop erties of the two types of flows were similar. Recent work by Sarno and Taylor (1998), who analyze the time series properties of various components of the capital account f or several Asian countries, dispute these findings showing that short-term and portfolio flows have a much larger temporary and/or irregular component than FDI. The CDW view, however, has not carried the day, and the conventional wisdom retain many adh erents. The evidence in support of this view is of two types. First, there is direct evide

nce 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 E.R.M. and Mexican financial 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

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

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. This is the case, for example, when direct intervention in the capital account--in the form of restrictions on capital movements--are adopted. Several countries that have been recipients of capital inflows--Brazil, Chile, Colombia, Czech Republic, Malaysia, and more recently, Thailand--have adopted such measures. However, it remains rather controversial whether such measures have been successful in influencing either the volume or composition of such flows. Less obviously, the monetary-exchange rate policy mix adopted to restrain an expansion in aggregate demand in the presence of capital inflows under officially-determined exchange rates (or heavily managed floats) may itself feed back to influence the volume and composition of inflows. When the policy mix involves tight money in the form of sterilized intervention (particularly if fiscal policy remains loose), domestic interest rates will tend to be high--possibly encouraging additional short-term and/or portfolio flows, which respond to attractive arbitrage opportunities.1/

While these propositions are well known, they have not been subjected to formal empirical testing with cross-country data. Our objective in this subsection is to conduct some preliminary but suggestive tests of the impacts of capital account restrictions,

13/ In the next section we consider how the structure of the financial sector can also effect the composition and v

as well as the extent to which countries engaged in sterilized intervention on the volum e and composition of capital inflows. As in the earlier literature discussed in the previo us section, we also control for the effects of international interest rates.

For this purpose, we have assembled a panel data set drawn from the IMF's *Wo rld Economic Outlook* database containing annual observations on the volume and co mposition of capital inflows for 15 emerging markets over the 1990-1996 period. The countries in our sample are those discussed in the previous section and featured in Ta bles 1-3. 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 omis sions. In what follows we limit our focus to a subset of these, specifically, portfolio flo ws, short-term flows, and FDI; we also examine the capital account balance.

Based on the country-specific information in Montiel (1996), Reinhart and Dunaw ay (1996), as well as Reinhart and Smith (1997), we have also constructed indices to measure the incidence and intensity of capital account restrictions as well as sterilized intervention. The latter provides a measure of the efforts to maintain a tight monetary policy in the presence of the capital inflows. Our policy indices range from 0 to 2 in b oth cases. In the case of capital account restrictions, countries are assigned a value o f 0 in a given year if for most of that year no restrictions or taxes were imposed on capi tal inflows, and no restrictions on the domestic indebtedness of domestic financial insti tutions were in place that appeared to be in excess of commonly-used prudential mea sures. A value of 1 was assigned if restrictions took the form of overzealous prudentia l regulations (such as strict limits on the foreign exchange exposure of banks). A valu

---

olume of capital flows.

e of 2 indicated the existence of explicit measures, such as prohibitions, deposit requir ements, or financial transactions taxes, designed to limit capital flows. For sterilization , a value of 0 implied limited contraction in domestic credit (typically associated with li mited sales of either public sector or central bank securities) during the course of the y ear, while a value of 1 was assigned to more strenuous efforts to sterilize foreign exch ange purchases through open market sales of government paper. If the open market operations were very large in scale or these were accompanied by increases in banks' reserve requirements or the transfer of government deposits from commercial banks t o the central bank, the index was assigned a value of 2. These indices are reported in an appendix.

Our approach was to estimate a set of fixed-effects panel regressions explaining the volume and composition of various types of capital inflows as a function of the inte nsity of sterilization, the severity of capital account restrictions and international interes t rates--here measured as the yield on a three-month U.S. Treasury bills. It may be w orth emphasizing that testing the effectiveness of capital account restrictions requires controlling for the changes in the degree of sterilization, because a loosening of monet ary policy accompanying an intensification of capital account restrictions (the cases of Chile and Malaysia) could mistakenly attribute any changes in the volume and compos ition of capital flows to the change in restrictions, rather than to the change in monetar y policy. Conversely, a tightening in monetary policy at the time when the taxes or con trols are introduced (Brazil) could undermine the effectiveness of the controls by raisin g domestic interest rates to levels where either domestic assets remain attractive even on an after-tax basis or by providing an incentive to circumvent the new controls.

The results of the panel regressions corrected for the presence of heteroskedasti c disturbances are reported in Table 5.1/ Since the policy response to the inflows, is p otentially and endogenous variable, as Cardoso and Goldfajn (1998) argued for the ca se of Brazil we also report estimates in Table 6 obtained from instrumental variables e stimation.1/

14/ The presence of heteroskedasticy was anticipated in Table 4, which shows that the magnitude of the underlyi ng shocks are not uniform across our sample countries, with Latin American countries registering a higher degree o f volatility in capital flows.

15/ The results from the Hausman simultaneity test did not show a potential endogeneity problem. However, we feel that this may be due to the rather poor quality of the instruments. For that reason, we nonetheless report both s ets of estimates.

Consider first the effects of sterilized intervention. The second column reports th e coefficients of the sterilization proxy in each of the regressions (*t*-statistics are report ed in parentheses below the coefficients). The top rows report the effects of the policy action on the composition of flows while the bottom rows report the effects on the volu me of flows as a share of GDP. The evidence suggests that an intensification in the d egree of monetary sterilization is associated with an increase in the volume of aggrega te capital flows, irrespectively of the estimation technique employed. Interestingly, this increased volume of capital flows is in short-term capital, as the sterilization proxy wa s not statistically significant in either the FDI or the portfolio regressions. Episodic evid ence also confirms these patterns. During periods of aggressive sterilization efforts, s uch as that of Malaysia during 1993, interest rates on short-term bank deposits were d riven up substantially, attracting a large volume of nonresident short-term bank deposit s.1/ These flows turn up in our short-term classification, which exhibits the most syste matic sensitivity to out sterilization index. As the bottom rows highlight, the tight-mone y policy is associated with a substantial change in the composition of inflows away fro m FDI and toward short-term flows. Thus, there is indeed evidence consistent with th e theoretical prediction that the macroeconomic policy mix matters in shaping the volu me and composition of capital inflows.

Based on this evidence, however, we can be relatively less confident that the vol ume of capital flows can be altered by the types of capital account restrictions employ ed in our sample. The coefficients on the capital control proxy, listed in the third colum n of the table, are consistently the right sign--all but FDI flows (which have been exem

16/ See Reinhart and Dunaway (1995) for a description of several of these episodes.

pt from these measures) are negative. However, all the coefficients are measured wit h a relatively low level of precision. As to how capital controls potentially alter the com position of flows, the bottom rows of Table 5 and Table 6 suggest that the controls are associated with a significantly (albeit at the 90 percent confidence level when instrum ental variables are not used) lower share of short-term flows and portfolio flows--the tw o components of the capital account targeted by the measures in our sample countries --and a higher share of FDI. Hence, we conclude that explicit capital inflow restrictions , and "prudential measures" (usually limiting banks' foreign exchange transactions or f oreign exchange exposure) seem to be more effective in altering the composition of ca pital inflows rather than reducing their overall magnitude.

U.S. interest rates significantly influenced the overall volume of flows. The estim ated coefficient is negative, as expected, and its magnitude is in line with several other studies. Foreign interest rates have the most significant effect on bond and equity po rtfolio flows--an increasingly important component of capital flows in the 1990s and on e associated with Wall Street investors. While the lack of statistical significance of the interest rate coefficient in the FDI equations is not surprising, in light of the importance "pull" factors are thought to play (see Hernandez and Rudolph (1994) and Edwards (1 990)), their lack of significance in explaining short-term (non-portfolio) flows is somewh at puzzling. However, this result is somewhat tempered by the significant role played by foreign interest rates in explaining errors and omissions, which are thought to inclu de a large short-term flow component.1/ Foreign interest rate would also appear to ha ve a significant effect on the composition of flows (see bottom rows), as rising U.S. int

17/ These results are not reported, but are available from the authors.

erest rates would tend to skew the composition of flows away from portfolio and short-term flows toward FDI flows.

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. However, we found very limited evidence of persistent contagion effects.1/ The coefficients had the anticipated sign, with overall inflows declining because of a proportionately larger decline in decline in short-term flows, but these were not significant at standard confidence levels.

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 s

18/ Less persistent contagion effects are more likely to be more easily detected in high frequency data, as followi

ection examines the links between domestic financial intermediation and the role playe d by existing capital markets in determining the volume of short-term and portfolio capi tal movements. The first part takes up the analytical links among macroeconomic perf ormance, financial-sector performance, and capital inflows associated with the advent of financial oneness. The second part provides an empirical examination of the comp osition 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

ng the Mexican crisis the effects on other countries were mostly confined to the first quarter of 1995.

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.[19] 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.

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

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 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.[20]

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

20/ 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).

savers, thus causing the formal financial system to contract, through the disintermedia tion phenomenon described above. In this case, domestic financial institutions pay ex cessively 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 be cause they are legally prohibited from raising interest rates or, even if legally able to, a re prevented from doing so by the high costs of carrying unremunerated required rese rves.

ii. Overintermediation

Underintermediation has been the problem that most concerned observers of de veloping-country financial markets until recently. Of late, however, become evident th at overintermediation is possible in liberalized financial systems. Overintermediation ar ises when savers receive "*excessively high"* returns on their placements in the domest ic 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 financia l institutions can generate from their portfolios. Overintermediation arises from a combi nation 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 ei ther explicitly or implicitly insured by the government on terms that do not adequately r eflect the risk structure of bank assets, and supervisory as well as regulatory capacitie s are weak. This situation creates well-known moral hazard problems for bank manag ers, causing them to attract deposits by offering high interest rates and using the proc eeds to fund high-risk investments.

2. Links to capital flows and macroeconomic performance

Shocks which originate in the financial sector can have macroeconomic effects t hrough a variety of mechanisms. Two such mechanisms have been of importance rec ently: the emergence of lending booms and the existence of unresolved financial-sect or insolvency. The first is an example of overintermediation while the latter would resu lt 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 macroecono mic 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 associ ated with boom-bust cycles while unresolved financial-sector solvency problems are li kely 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. Un der 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, a nd 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 b anks' 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 infl ows and adverse effects on macroeconomic stability. Such overintermediation has th e potential to cause a rapid expansion of the domestic financial system, setting off ass et-price bubbles through lending for real estate and stock speculation, and triggering c

onsumption booms that may potentially destabilize aggregate demand. The likely sho rt-run macroeconomic consequences include rising inflation, large current account defi cits, and real exchange rate appreciation.

The emergence of lending booms may have other macroeconomic effects beyon d 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 th ese 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 t o get information about the quality of assets, in part because liquidity-based solvency t ests are easily met by borrowers when times are good and overall bank credit is expa nding. 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 po or 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 ac count is open, the scope for bank expansion is increased by the ability of banks to attr act external funds, particularly if deposit guarantees are perceived to apply to foreign d epositors. 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 exch ange rate is credible.

In contrast with the boom-bust cycle implied by lending booms, the macroecono mic effects of a domestic debt overhang problem arising from financial-sector insolven cy would be similar to those that are familiar from the literature on the overhang of ext ernal debt. In particular, this situation would tend to deter private investment. If real c apital investment is largely irreversible, the potential of large future tax liabilities is likel y to cause private agents to exercise their option to wait before committing capital to th e domestic economy--the implications being slow growth of productive capacity and d eficient aggregate demand.

If the economy is opened up financially in the midst of a “debt overhang” proble m of this type, the likely effect is to trigger capital outflows, just as any other large unfu nded government liability would tend to do. From the perspective of macroeconomic s tability, the effect is that a banking crisis could directly trigger a balance of payments c risis under such circumstances. If the exchange rate is flexible, the likely outcome inst ead is a collapse of the value of the domestic currency.

3. Capital market structure and capital flows

Unlike the surge in capital inflows to developing countries in the late 1970s and e arly 1980s, which was dominated by commercial bank lending, the capital inflows of th e 1990s have been associated with a sharp rise in bond and equity portfolio flows. Ho wever, much of those portfolio flows have gravitated to the larger emerging equity mar kets bypassing many countries altogether. A frequent argument has been that to attra ct portfolio flows, domestic capital markets must possess some *minimum* set of requir

ements, regarding market size, trading practices, such as accounting standards and di sclosure requirements, and liquidity (see World Bank (1997)).

4. The financial sector and capital flows: the empirical evidence

The previous two subsections have raised several conceptual issues regarding h ow the structure, practices, and health of the banking sector and the capital market m ay shape the volume and types of capital a country attracts. It was argued that countri es 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--p articularly short-term and portfolio flows. Furthermore, it was noted that overintermedi ation may be more likely in countries with more developed capital markets--that is, the re is some minimum infrastructure in bond and equity markets required to promote por tfolio flows, which in turn, could add fuel to asset price bubbles. In other words, to inv est in bonds and stocks you need to have a stock and bond market in the first place.

In this subsection we investigate empirically some of these propositions. To exa mine whether there is a systematic link between capital flows and the structure of the capital market, we extend the analysis of the previous section by introducing a variety of possible proxies for the size and depth of the domestic capital market. The three va riables 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 v ariables directly describe the equity market, they are also likely to proxy indirectly for t

he 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 U.S. interest rate. The "post-Mexico" dummy was dropped, 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 instrumental variables estimator. As before, we use a fixed effects estimator and correct for the presence of heteroskedastic disturbances.

For each dependent variable we report the results for each equity market measure in Table 6. For total capital flows, neither market capitalization nor trading value are significant. However, the number of listed stocks is significant at all standard confidence levels and has the anticipated sign--the larger the number of listings the higher the capital inflow. The sign and magnitudes of the coefficients and statistical significance of remaining explanatory variables in the regression are in line with those reported in the previous section. Portfolio flows, not surprisingly, appear to have the closest link to the stock market variables; both market capitalization and number of listed stocks are statistically significant with the anticipated positive sign. By contrast, none of the variables were statistically significant in the regressions explaining short-term portfolio flows.

21/ 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)).

VI. Concluding Observations

We have argued that there were sound theoretical reasons why one would should expect capital flows to respond endogenously to the countercyclical policies adopted by countries faced with surges in capital inflows. In this paper we have focused on two such policies, sterilized intervention--which was the most common policy response in the countries considered in this study--and capital controls (or related "prudential" measures)--which, most often, targeted short-term or portfolio flows. 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. We find that:

Sterilized intervention increases the volume of total capital flows. In particular, short-term capital, as portfolio flows and FDI do not appear to be responsive to the degree of sterilization efforts. Sterilized intervention significantly alters the composition of capital flows, reducing the share of FDI in total flows and increasing the share of short-term and portfolio flows.

Although the signs of the estimates are in the right direction, capital controls appear to have no statistically significant effect on reducing the overall volume of flows. The volume of short-term and portfolio flows does not appear to have been systematically reduced by these measures. Capital controls, however, do appear to alter significantly the composition of capital flows in the direction usually intended by these measures, reducing the share of short-term and portfolio flows while increasing the share of FDI.

As in most of the earlier literature on this subject, foreign interest rates appear to have a significant effect on both the volume and composition of flows. Specifically, total capital flows, and especially portfolio flows, respond systematically to changes in U.S. interest rates in the direction suggested by theory--even after controlling for some of the domestic policy fundamentals and some of the characteristics of the capital market. Surprisingly, short-term flows do not seem to respond to changes in international interest rates. Furthermore, international interest also appear to significantly alter the composition of capital flows--rising U.S. interest rates would tend to reduce the share of short-term and portfolio flows.

As to the role that capital market structure has played in determining the volume and the types of capital that a country imports, the principal conclusions are that: 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 developed markets. While total flows are also positively linked with some of the indicators of capital market breadth, short-term flows do not appear to be influenced.

No single explanation can adequately account for the fact that the nature of capital flows into emerging Asia changed markedly in the later stages of the inflow episode, leaving countries increasingly exposed to market jitters, volatility, and sudden stops, the evidence presented here does suggest that the combination of little exchange rate flexibility, heavy sterilized intervention, and relatively few impediments to short term capital movements acted as a lure to short-term capital inflows. While capital may not re

turn in substantial force to emerging markets over the near term, history also shows u s that the ebb and surge of the capital flow cycle does repeat itself. In such an event, policymakers may extract some valuable policy lessons from the management of thes e flows in the 1990s. Future work perhaps should undertake, a more comprehensive consideration of other potential “pull” factors, such as the role played by fiscal policy, c apital account liberalization, and a richer modeling of the financial sector would all serv e to extend this analysis in a number of important directions.

References

Calvo, Guillermo, Leonardo Leiderman, and Carmen M. Reinhart (1993), "Capital Inflows to Latin America: the Role of External Factors," International Monetary Fund *Staff Papers* 40 (March), 108-151.

Calvo, Guillermo, Leonardo Leiderman, and Carmen M. Reinhart, "Capital Inflows to Latin America: the 1970s and 1990s," in Bacha, ed. Development Trade and the Environment, Vol. 4 of Economics in a Changing World (London: MacMillan Press, 1994a).

Calvo, Guillermo, Leonardo Leiderman, and Carmen M. Reinhart (1994b), "The Capital Inflows Problem: Concepts and Issues," *Contemporary Economic Policy* 12 (July), 55-66.

Calvo, Sara, and Carmen M. Reinhart, "Capital Flows to Latin America: Is There Evidence of Contagion Effects?," in G. Calvo and M. Goldstein, eds. Private Capital Flows to Emerging Markets After the Mexican Crisis, (Washington: Institute for International Economics, 1996).

Chuhan, Punam, Stijn Claessens, and Nlandu Mamingi (1993), "Equity and Bond Flows to Latin America and Asia: The Role Global and Country Factors," World Bank, IECIF Policy Research Working Paper 1160 (July).

Claessens, Stijn, Michael Dooley, and Andrew Warner, "Capital Inflows: Hot or Cold?" in S. Claessens and S. Gooptu, eds. Portfolio Investment in Developing Countries, (Washington: World Bank, 1993).

Corbo, Vittorio, and Leonardo Hernandez (1994), "Macroeconomic Adjustment to Capital Inflows; Latin American Style versus East Asian Style," IEFCIF Policy Research Working Paper 1377.

Dooley, Michael, Eduardo Fernandez-Arias, and Kenneth Kletzer (1994), "Is the Debt Crisis History? Recent Private Capital Inflows to Developing Countries," NBER Working Paper 4792 (July).

Frankel, Jeffrey, and Segio Schmukler, "Crisis, Contagion, and Country Funds: Effects on East Asia and Latin America," in Glick, ed., Managing Capital Flows and Exchange Rates: Perspectives from the Pacific Basin, (Cambridge: Cambridge University Press, 1998).

Edwards, Sebastian, "Capital Flows, Foreign Direct Investment, and Debt-Equity Swaps in Developing Countries," in Siebert, ed., Capital Flows in the World Economy, (Tübingen: J.C.B. Mohr, 1991).

Fernandez-Arias, Eduardo (1994), "The New Wave of Private Capital Inflows: Push or Pull?" World Bank, IECIF Policy Research Working Paper 1312 (June).

Fernandez-Arias, Eduardo, and Peter J. Montiel (1996), "The Surge in Capital Inflows to Developing Countries: An Overview," *The World Bank Economic Review* (January).

Gavin, Michael, and Ricardo Hausman, "The Roots of Banking Crises: The macroeconomic Context," OCE Working Paper, 1995.

Goldfajn, Ilan, and Rodrigo O.Valdés (1996), "Balance of Payments Crises and Capital Flows: The Role of Liquidity," Department of Economics, Brandeis University, Waltham, Massachusetts.

Hernandez, Leonardo, and Heinz Rudolph, "Domestic Factors, Sustainability, and Soft Landing in the New Wave of Private Capital Inflows, World Bank (mimeo, November 1994).

International Finance Corporation, Emerging Stock Markets Factbook 1997, (Washington: International Finance Corporation, 1997).

Kaminsky, Graciela, and Carmen M. Reinhart, "The Twin Crises: The Causes of Banking and Balance of Payments Problems," International Finance Discussion Paper Number 544, Board of Governors of the Federal Reserve System, March 1996, forthcoming in *American Economic Review*.

Montiel, Peter J. (1996), "Managing Economic Policy in the Face of Large Capital Inflows: What Have We Learned?" in G. Calvo and M. Goldstein, eds., Private Capital Flows to Emerging Markets After the Mexican Crisis, (Washington: Institute for International Economics, 1996).

Reinhart, Carmen M., and Steven Dunaway (1996), "Dealing with Capital Inflows: Are There Any Lessons?" WIDER Research for Action # 28 (August).

Reinhart, Carmen M., and Vincent R. Reinhart (1996), "On the Use of Reserve Requirements to Deal with the Capital Flow Problem," Working Papers in International Economics No. 16, Center for International Economics, University of Maryland at College Park. Forthcoming in the *International Journal of Finance and Economics.*

Reinhart, Carmen M., and R. Todd Smith, "Too Much of a Good Thing: The Macroeconomic Effects of Taxing Capital Inflows," in Glick, ed., Managing Capital Flows and Exchange Rates: Perspectives from the Pacific Basin, (Cambridge: Cambridge University Press, 1998).

Rojas-Suárez, Liliana, and Stephen R. Weisbrod (1994), “Financial Market Fragilities i n Latin America: From Banking Crisis Resolution to Current Policy Challenges,” I MF Working Paper 94/117, Washington, D.C.

Sachs, Jeffrey, Aaron Tornell, and Andrés Velasco, “Financial Crises in Emerging Mar kets: The Lessons from 1995,”NBER Working Paper 5576, Cambridge, Mass.

Sarno, Lucio and Mark P. Taylor, “The Persistence of Capital Inflows and the Behavior of Stock Prices in East Asian Emerging Markets: Some Empirical Evidence,” fort hcoming in *Journal of International Money and Finance.*

Schadler, Susan, Maria Carkovic, Adam Bennett, and Robert Kahn (1993), Recent Ex periences with Surges in Capital Inflows, Occasional Paper 108, (Washington: In ternational Monetary Fund, 1993).

World Bank, Private Capital Flows to Developing Countries: the Role to Financial Integ ration, (Oxford: Oxford University Press, 1997)

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	2.8	2.0	1.0	2.3	-0.5
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. Capital Flows, 1990-1996: Descriptive Statistics

	Asia	Latin America
Volume as a percent of GDP of:		
Total inflows	7.1	3.9
Short term inflows	2.8	1.3
Share of short-term inflows in total inflows	0.39	0.32
Coefficient of Variation of:		
Total inflows	0.24	0.66
Short-term inflows	0.21	0.22

Note: The Asian countries include Indonesia, Malaysia, the Philippines, Sri Lanka, and Thailand; the Latin American group consists of Argentina, Brazil, Chile, Colombia, Co sta Rica, and Mexico.

Table 5. Fixed Effects Estimates: 1990-1996
15-country panel

Dependent Variable	Explanatory variables: Sterilization proxy	Capital control proxy	U.S. interest rate	1995 dummy
Capital account as a percent of GDP	1.308 (2.373)	-0.524 (-0.600)	-0.606 (-2.059)	-1.593 (-1.492)
Portfolio flows (bonds and equity) as a percent of GDP	0.156 (0.706)	-0.245 (-0.693)	-0.337 (-2.847)	-0.224 (-0.522)
Short-term flows as a percent of GDP	0.657 (2.010)	-0.307 (-0.681)	0.135 (0.754)	-0.361 (-0.599)
Portfolio plus short-term flows as a percent of GDP	0.723 (1.997)	-0.618 (-1.072)	-0.212 (-1.100)	-0.136 (-0.194)
FDI flows as a percent of GDP	0.585 (1.052)	1.141 (1.290)	-0.393 (-1.325)	1.457 (1.353)
Portfolio plus short-term flows as a share of total flows	3.109 (1.094)	-7.763 (-1.771)	-3.776 (-2.491)	-0.684 (-0.124)
FDI flows as a share of total flows	-9.178 (-2.967)	7.297 (1.842)	-1.422 (-0.861)	3.561 (0.594)

Notes: The countries in the sample are Argentina, Brazil, Chile, Colombia, Costa Rica, Czech Republic, Egypt, Indonesia, Kenya, Malaysia, Mexico, Philippines, Sri Lanka, Th ailand, and Uganda. *t*-statistics are reported in parentheses. Standard errors have be en corrected for general forms of heteroskedasticity.

Table 6. Fixed Effects Estimates, Instrumental Variables: 1990-1996
15-country panel

Dependent Variable	Explanatory variables: Sterilization proxy	Capital control proxy	U.S. interest rate	1995 dummy
Capital account as a percent of GDP	1.508 (2.764)	-0.874 (-0.890)	-0.761 (-2.789)	-1.093 (-1.798)
Portfolio flows (bonds and equity) as a percent of GDP	0.056 (0.465)	-0.765 (-0.943)	-0.677 (-2.954)	-0.987 (-0.967)
Short-term flows as a percent of GDP	0.866 (2.320)	-0.957 (-0.581)	0.245 (1.454)	-0.366 (-0.876)
Portfolio plus short-term flows as a percent of GDP	0.723 (1.997)	-0.618 (-1.072)	-0.212 (-1.100)	-0.136 (-0.194)
FDI flows as a percent of GDP	0.344 (1.012)	1.541 (1.099)	-0.093 (-1.115)	1.433 (1.003)
Portfolio plus short-term flows as a share of total flows	3.544 (1.809)	-7.763 (-2.001)	-4.772 (-2.554)	-0.884 (-0.986)
FDI flows as a share of total flows	-8.118 (-2.907)	8.237 (1.991)	-0.822 (-0.993)	4.568 (0.664)

Notes: The countries in the sample are Argentina, Brazil, Chile, Colombia, Costa Rica, Czech Republic, Egypt, Indonesia, Kenya, Malaysia, Mexico, Philippines, Sri Lanka, Th ailand, and Uganda. *t*-statistics are reported in parentheses. Standard errors have be en corrected for general forms of heteroskedasticity.

Table 7. Fixed Effects Estimates: 1990-1996
15-country panel

Dependent Variable	Explanatory variables: Sterilization proxy	Capital control proxy	U.S. interest rate	Market capitalization	Number of listed stocks	Trading value
Capital account balance as a percent of GDP						
(1)	1.251	-0.794	-0.531	-0.001		
	(2.244)	(-0.882)	(-1.752)	(-0.015)		
(2)	1.328	-3.800	-0.548		0.006	
	(2.481)	(-0.406)	(-1.959)		(2.713)	
(3)	1.234	-0.950	-0.586			-0.014
	(2.221)	(-1.066)	(-1.943)			(-0.769)
Portfolio flows as a percent of GDP						
(1)	0.188	-0.529	-0.270	0.012		
	(0.881)	(-1.548)	(-2.338)	(2.755)		
(2)	0.184	-0.575	-0.353		0.015	
	(0.841)	(-1.500)	(-3.066)		(1.957)	
(3)	0.176	-0.388	-0.311			0.010
	(0.880)	(-1.099)	(-2.602)			(1.281)
Short-term flows as a percent of GDP						
(1)	0.546	-0.251	0.122	0.003		
	(1.954)	(-0.498)	(0.723)	(0.472)		
(2)	0.569	-0.567	0.138		0.013	
	(1.834)	(-1.041)	(0.844)		(1.019)	
(3)	0.547	-0.263	0.124			-0.004
	(1.955)	(-0.526)	(0.735)			(-0.422)

Notes: The countries in the sample are Argentina, Brazil, Chile, Colombia, Costa Rica, Czech Republic, Egypt, Indonesia, Kenya, Malaysia, Mexico, Philippines, Sri Lanka, Th ailand, and Uganda. *t*-statistics are reported in parentheses. Standard errors have be en corrected for general forms of heteroskedasticity.

Table 8. Fixed Effects Estimates, Instrumental Variables: 1990-1996
15-country panel

Dependent Variable	Explanatory variables: Sterilization proxy	Capital control	U.S. interest proxy	Market capitalization rate	Number of listed stocks	Trading value
Capital account balance as a percent of GDP						
(1)	1.651	-0.998	-0.631	-0.001		
	(2.764)	(-1.482)	(-1.899)	(-0.005)		
(2)	1.228	-2.804	-0.899		0.006	
	(2.351)	(-1.646)	(-1.954)		(2.983)	
(3)	2.004	-1.950	-0.786			-0.014
	(2.100)	(-1.054)	(-2.141)			(-1.069)
Portfolio flows as a percent of GDP						
(1)	0.178	-0.629	-0.203	0.019		
	(1.281)	(-1.048)	(-2.637)	(2.655)		
(2)	0.184	-0.575	-0.353		0.013	
	(0.841)	(-1.500)	(-3.066)		(1.957)	
(3)	0.476	-0.888	-0.518			0.016
	(0.087)	(-1.299)	(-2.809)			(1.881)
Short-term flows as a percent of GDP						
(1)	0.946	-0.652	0.522	0.000		
	(2.114)	(-1.498)	(0.929)	(0.002)		
(2)	0.860	-0.777	0.338		0.010	
	(2.234)	(-1.543)	(0.654)		(1.313)	
(3)	0.947	-0.698	0.101			-0.001
	(2.235)	(-1.225)	(0.345)			(-0.002)

Notes: The countries in the sample are Argentina, Brazil, Chile, Colombia, Costa Rica, Czech Republic, Egypt, Indonesia, Kenya, Malaysia, Mexico, Philippines, Sri Lanka, Th ailand, and Uganda. *t*-statistics are reported in parentheses. Standard errors have be en corrected for general forms of heteroskedasticity.