When Capital Inflows Come to a Sudden Stop: Consequences and Policy Options

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Abstract

In this paper we present evidence that capital account reversals have become more severe for emerging markets. Because policy options are limited in the midst of a capital market crisis and because so many countries have already had crises recently, we focus on some of the policies that could reduce the incidence of crises in the first place, or at least make the sudden stop problem less severe. In this regard, we consider the relative merits of capital controls and dollarization.   We conclude that, while the evidence suggests that capital controls appear to influence the composition of flows skewing flows away from short maturities, such policies are not likely to be a long-run solution to the recurring problem of sudden capital flow reversals. Yet, because fear of floating, many emerging markets are likely to turn to increased reliance on controls. Dollarization would appear to have the edge as a more market-oriented option to ameliorate, if not eliminate, the sudden stop problem.

Table V.3 Annual indicators: Banking crises

I. Introduction

The Mexican crisis of 1994-1995 was associated with a rescue package of unprecedented size. Yet bail-out package notwithstanding, Mexico suffered its largest one-year output decline in 1995, as GDP shrank by more than six percent. Since Mexico's crisis, international organizations have brokered several more rescue plans involving vast sums of funds. Yet, as in Mexico, all the recipients of this financing have had to undertake drastic adjustment, as private capital flows dried up. Furthermore, these countries have had to cope with severe recessions. Hence, if we are to assess whether the balance has tilted in recent years toward adjustment, despite the larger bail-out packages from the international community, we must begin by comparing the severity of recent crises with their earlier counterparts. In what follows, we aim to assess the burden of adjustment by considering alternative ways of measuring the severity of crises.

Currency and banking crises are not unique to emerging markets (EMs). For instance, many European countries found themselves engulfed by the currency turmoil that spread through the region in 1992-1993 during what is known as the Exchange Rate Mechanism Crises (ERM). Like Mexico, Korea, and Thailand, several of these countries, most notably the Scandinavian group, were also experiencing systemic banking sector problems. Confronted with the incompatible goals of defending the exchange rate peg (which would entail maintaining high interest rates) and acting as a lender of last resort to the banks, several countries succumbed to the speculative pressures and either allowed their currencies to float freely or adopted an arrangement that permitted their currencies to oscillate within a wide band.

Thus far, their predicament sounds very similar to that faced by many emerging market economies during the 1990s. Indeed, developed countries and EMs share many of the symptoms that are typical antecedents of currency and banking crises.[1] Figuring prominently among these common symptoms are large capital inflows, asset price and credit booms, currency overvaluation, and large current account deficits.[2] Where industrial and EM economies part company is in the developments that usually follow the onset of crises. Bail-out packages were not needed to cope with the currency and banking crises in Europe. Furthermore, output did not collapse following the ERM crisis and none of these countries lost their access to international capital markets. This benign outcome could not be further removed from the experience of EMs. Argentina's GDP fell more than 4 percentage points in 1995, following the unsuccessful speculative attacks associated with the devaluation of the

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[1] When currency and banking crises occur in close proximity, we will refer to these episodes as the "twin crises." Further details on the timing and classification of crises episodes are provided in Section II.

[2] See Kaminsky and Reinhart (1998) for a comparison.

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Mexican peso, and Hong Kong, another nondevaluer, is mired in deep recession at the time of this writing. Yet, their bleak performance pales by comparison with the output collapses in EMs that have accompanied many of the devaluations both recent and past. In 1998, output fell by 13.7 percent in Indonesia; Mexico's 6.2 percent output decline in 1995, marked the country's deepest recession.[3]

Unlike their more developed counterparts, EMs routinely lose their access to international capital markets. Furthermore, given the common reliance on short-term debt financing, the public and private sectors in these countries are often asked to repay their existing debts on short notice. Even with the recent large-scale rescue packages, official financing only makes up for part of this shortfall. Hence, the need for abrupt adjustment arises. Calvo (1998a) has argued that these large negative swings in capital inflows–hereon, Sudden Stops or SS–are harmful (this is further elaborated in Section II A). The corollary is, of course, that large current account deficits are to be feared, irrespective of how they are financed, but particularly so, if they are financed by short-term debt. The capital inflow slowdown or reversal could push the country into insolvency or drastically lower the productivity of its existing capital stock. This could be the result of large unexpected swings in relative prices and costly bankruptcy battles.

By the time the crisis erupts and a country has lost its access to international capital markets, the range of policy options available to the country to manage the situation has been severely restricted. Expansionary policies intended to offset some of the devastating effects of the capital flow reversal on economic activity and the financial system become only possible under the umbrella of capital controls, an option that has little appeal for countries not wishing to reverse the process of financial liberalization or that have a distaste for the inflationary consequences often associated with such policies.

In this paper we ask whether crises have become in EMs have become more severe and what kinds of policies and exchange rate arrangements can make an EM less vulnerable to the sudden stop problem in the first place. While avoiding crises altogether may be a goal

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[3] The evidence that devaluations are contractionary in developing countries is more than anecdotal (see Edwards, 1986 and 1989 and Morley, 1992 for empirical analyses of this issue.)

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well beyond the reach of policy makers, limiting their severity and duration clearly lies within the realm of the feasible.

In the next two sections, we provide evidence on the magnitude of the rescue packages and of the sudden stop problem and its consequences on output and other key economic indicators. We examine the nature of the recovery process, in an effort to assess to what extent the financial sector plays a role in determining the depth of the recession and the speed of recovery of the economy. In Section IV, we turn to the issue of capital controls. Specifically, we briefly present the recent experience with controls that are meant to reduce the amplitude of the capital flow cycle by altering the maturity profile of the capital inflows. We also discuss some alternatives to these measures. In Section V, we examine the relative merits of fixed versus flexible exchange rates, including the case of complete dollarization. The last section offers some concluding thoughts.

II. Sudden Stops: Evidence on Painful Adjustment

In this section we briefly sketch the simple analytics of the sudden stop, we then move on to provide some stylized evidence on the orders of magnitude of these capital account reversals and on the severity of the ensuing crises.

A. Sudden Stops: Analytics

By national accounting, and abstracting from errors and omissions, capital inflows equal current account deficit plus accumulation of international reserves. Therefore, SS has to be met by reserve losses or lower current account deficits. In practice, both take place. While a loss of international reserves increases de country's financial vulnerability, contractions in the current account deficit usually have serious effects on production and employment.

To see this, note that, again by national accounting, the current account deficit equals aggregate demand minus GNP. Thus, a sudden contraction in the current account deficit is likely to lead to a sharp decline in aggregate demand (the only exception being the unlikely case in which there is an offsetting increase in GNP). The decline in demand, in turn, lowers the demand for tradables and nontradables. The excess supply of tradables thus created can be shipped abroad, but the nontradables are, by definition, bottled up at home and, thus, its relative price will have to fall (resulting in a *real* depreciation of the currency). A prominent example is the real estate sector which relative prices have exhibited sharp falls in all recent crises.

How does one go from here to infer a loss of output and employment? We can identify two channels: (1) Keynesian, and (2) Fisherian (for Irving Fisher, the Yale economist). The Keynesian channel is straightforward and familiar. It is predicated on the assumption that prices/wages are downward inflexible. Under these conditions, a fall in aggregate demand brings about a fall in output and employment.

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On the other hand, the Fisherian channel is less familiar but, in our view, potentially more damaging. Financial contracts are, as a general rule, contingent on very few "states of nature," i.e., objective variables, like terms of trade, profit, demand, etc. A bank loan, for example, is typically serviced by a series of fixed installments unless the borrower goes bankrupt. To illustrate the Fisherian channel, we will assume that all loans are made at a fixed predetermined interest rate, taking into account *expected* future variables, but not conditioned to their future realizations. Consider a situation in which the exchange rate is fixed and the international price of tradables is exogenous and constant over time. A decline in aggregate demand that accompanies SS calls for a lower relative price of nontradables with respect to tradables. Since the price of tradables is stable, to achieve a lower relative price of nontradables with respect to tradables, the nominal price of nontradables must fall. Thus, since the interest rates is invariant with respect to SS, there is a surge in the *ex post* real interest rate faced by nontradables' producers, increasing the share of nonperforming loans. This problem may be less acute if the currency is devalued because under those circumstances the price of nontradables need not fall. However, there are at least two relevant complication that may offset the positive effects of devaluation. First, many EMs are heavily dollarized (see IMF (1999)) and, hence, devaluation is less effective (this is obvious if the country is fully dollarized). Moreover, in countries where asset dollarization is not significant (Chile, Indonesia), there still exists sizable *liability dollarization* (i.e., foreign-exchange denominated debts). Liability dollarization is, in fact, quite general in EMs because all of these countries exhibit external debt which, as a general rule, is denominated in terms of foreign currency. It is well known, for example, that Indonesia's private sector had a sizable external short-term debt when crisis hit, ant that this type of debt played a key role in the ensuing financial difficulties in that country. Second, even if there is no dollarization to speak of, bank loans, for instance, are of shorter maturity than the underlying productive projects. Since interest real rates are likely to be revised upwards after the SS (as a result of, for instance, higher country risk after SS), this also increases the incidence of nonperforming loans.

The Fisherian channel enhances the severity of crises because it hits the financial sector. As a result, banks become more cautious and cut their loans, especially to small- and medium-sized firms, interenterprise and trade credit dry up, all of which could contribute to a major and long-lasting recession (for further discussion, see Calvo (1998a)).

B. Capital inflow reversals

How big are these capital account reversals? To answer this question it is useful, although not necessary, to get a handle on the size of the capital inflows in the most recent inflow episode. [4]   Table 1 presents selected evidence on all the major capital importers of the

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[4] Large capital inflows usually precede these crises, but a large negative swing in the

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1990s, with the exception of China. The second column presents the dates of the heavy inflow episode, the third column provides information on the magnitude of the cumulative inflow, while the last column lists the inflow during the peak year as a percent of GDP. The higher these numbers, the higher the vulnerability to the SS problem.

Table 1. Recent Surges in Capital Inflows
(net private capital flows as a percent of GDP)

Country	Inflow episode [1]	Cumulative inflows/GDP at end of episode	Maximum annual inflow
Argentina	1991-94	9.7	3.8
Brazil	1992-94	9.4	4.8
Chile	1989-94	25.8	8.6
Colombia	1992-94	16.2	6.2
Hungary	1993-94	41.5	18.4
India	1992-94	6.4	2.7
Indonesia	1990-94	8.3	3.6
Malaysia	1989-94	45.8	23.2
Mexico	1989-94	27.1	8.5
Morocco	1990-94	18.3	5.0
Pakistan	1992-94	13.0	4.9
Peru	1991-94	30.4	10.8
Philippines	1989-94	23.1	7.9
Poland	1992-94	22.3	12.0
South Korea	1991-94	9.3	3.5

capital account can also be due to a surge in capital flight.

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Sri Lanka	1991-94	22.6	8.2
Thailand	1988-94	51.5	12.3
Tunisia	1992-94	17.6	7.1
Turkey	1992-93	5.7	4.1
Venezuela	1992-93	5.4	3.3

[1] Period during which the country experienced a surge in net private capital inflows.
Sources: World Bank, *World Debt Tables*, various issues and International Monetary Fund, International Financial Statistics, various issues.

Both cumulative inflows and peak inflows are sizable, particularly for some of the affected Asian economies, most notably Thailand and Malaysia. In the case of the latter, inflows hit a peak of 23.2 percent of GDP in 1993. Because a high share of those inflows were short term and perceived by the authorities to be "hot money," capital controls on short term flows were introduced in Malaysia in January 1994.[5] It is also noteworthy that two countries that were hard hit by the SS problem, Argentina during the Mexican *tequilazo* effect and Indonesia after the Thai baht was devalued, had relatively low capital inflows. In both cases, however, domestic capital flight severely compounded the SS.

As Table 2 shows, many of those countries listed as having experienced a surge in capital inflows in the earlier part of this decade are also listed as having suffered an abrupt capital account reversal and its accompanying need for a severe adjustment in the current account. Up until the recent Asian crises, Latin America was the region most prone to these large-scale capital inflow reversals. Until the Thai crisis, which resulted in a 26 percentage point swing in private capital flows (from inflows of about 18 percent of GDP in 1996 to outflows of over 8 percent in 1997), Argentina's crisis in the early 1980s had recorded one of the largest capital account reversals (20 percent). However, the large historic discrepancy in capital account volatility and the severity of financial crises between Asia and Latin America appears to have eroded in the 1990s. This narrowing regional gap is also evident in various measures of the severity of the crises, an issue we turn to next.

Table 2. Selected Large Reversals in Net Private Capital Flows
(as a percent of GDP)

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[5] Most of those controls were lifted in August of that year.

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Country/Episode	Reversal
Argentina, 1982-83	20
Argentina, 1994-95	4
Chile, 1981-83	7
Chile [1], 1990-91	8
Ecuador, 1995-96	19
Hungary, 1995-96	7
Indonesia, 1996-97	5
Malaysia [1], 1993-94	15
Mexico, 1981-83	12
Mexico, 1993-95	6
Philippines, 1996-97	7
Venezuela, 1992-94	9
South Korea, 1996-97	11
Thailand, 1996-97	26
Turkey, 1993-94	10

Sources: World Bank, *World Debt Tables*, various issues and Institute for International Economics, *Comparative Statistics for Emerging market Economies, 1998.*
[1] Reversal owing to the introduction of controls on capital inflows.

C. The severity of crises

The preceding discussion has suggested that surges in capital inflows are often followed by these sudden stops. With the exception of two episodes, Chile in 1990-91 and Malaysia in 1993-94, in which the reversal was deliberately engineered by the introduction of restrictions on short-term capital inflows, the negative capital account swing was involuntary (from the vantage point of the capital-importing country) and associated with a currency crisis and most often with a banking crisis as well.[6]

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[6] In the case of Chile, reserve requirements on short-term offshore borrowing are introduced in mid-1990; in Malaysia strict prohibitions on domestic residents' sales of short-term domestic assets to nonresidents are introduced in January 1994.

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If we wish to assess whether the balance has tilted in recent years toward adjustment, despite larger bail-out packages from the international community, we must begin by comparing the severity of recent crises with their earlier counterparts. We consider alternative ways of measuring the severity of the crisis. We should also review the extent of financing provided by the rescue packages, not only in their dollar value, as in commonly done but relative to the size of the recipient economy. Table 3 documents some of these recent episodes.

Table 3. Recent Rescue Packages

Country	Year	Rescue Package (in US dollars)	Rescue Package (As a percent of GDP)
Brazil	1998	41.5	5.3
Indonesia	1997	40.0	18.1
Korea	1997	57.0	11.7
Mexico	1995	47.0	13.5
Russia	1998	22.6	5.8
Thailand	1997	20.1	12.1

As discussed in Calvo (1998a), one of the reasons why the sudden stop may lead to a contraction in output has to do with large and unexpected swings in relative prices. Consider the case where loans were extended to the nontraded sector, such as real estate, under the expectation that the price of nontraded goods relative to traded goods (the real exchange rate) would remain stable over the duration of the contract. Under these circumstances a large unexpected real depreciation could render many of these loans nonperforming. Hence, one measure of the severity of a crisis could include the magnitude of the real depreciation of the currency. Also, the greater the extent to which the central bank has already depleted its stock of foreign exchange reserves by the time the crisis erupts–the greater the burden of adjustment that is required to close the current account deficit on short notice.

To analyze this issue formally, we measure the severity of currency and banking crises as in Kaminsky and Reinhart (1996) and (1998). For currency crises, we construct an index that gives equal weights to reserve losses and the real exchange rate depreciation. This index is centered on the month of the currency crisis and it combines the percentage decline in foreign exchange reserves in the six months **prior** to the crisis, since reserve losses typically occur before the central bank capitulates and the real depreciation of the currency in

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the six months **following** the abandonment of the existing exchange rate arrangement, be it a peg or a band. While this is not akin to the unexpected portion of the relative price swing, it does provide a rough sense of the extent of the magnitude of the realignment. As to the severity of banking crises, we use the cost of the bail-out as a share of GDP as our proxy.

Table 4 presents these measures of severity for the 76 currency crises and 26 banking crises in the Kaminsky-Reinhart sample.[7] For the 1970-1994 sample currency and banking crises were far more severe in Latin America than elsewhere. The crises in East Asia, by contrast, were relatively mild and not that different by these metrics from the crises in the European countries that dominate the "others" group. The picture that emerges during 1995-1997 is distinctly different. The Latin American crises include those of Mexico and Argentina in late 1994 and early 1995. While the latter, did not devalue, it sustained major reserve losses associated with a series of bank runs that left the level of bank deposits by mid-March 1995 about 18-19 percent below their level prior to the devaluation of the Mexican peso.

Both in terms of this measure of the severity of the currency crisis, as well as the estimated costs of bailing out the banking sector, the severity of the Asian crises even surpasses that of their Latin American counterparts in the 1990s and it is a significant departure from its historic regional norm.[8] On the basis of these measures of severity–

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[7] Details on sample coverage, definition and the dating of the crises are provided in Appendix Tables 1 and 2.

[8] Both banking and currency crises measures are statistically significant at standard confidence levels for the Asian sample. For Latin America, there is weak evidence of a reduction in the severity of the crises, but owing to the large variance in the regional sample,

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specifically the huge burden of bailing out the banks, as well as the orders of magnitude of
the capital account reversal (Table 2) it does appear that during the course of the 1990s the
balance between financing and adjustment has shifted toward
 adjustment, despite the larger packages put together by the IMF during the recent crises in
EMs.

Table 4. The severity of crises: Then and now

	Currency crises			Banking crises		
Period	Latin America	East Asia	Others	Latin America	East Asia	Others
1970-1994	48.1	14.0	9.0	21.6	2.8	7.3
1995-1997	25.4	40.0[1]	N.A.	8.3	15.0[1]	N.A.

[1] Difference from historic mean is statistically significant at standard confidence levels.
Source: Kaminsky and Reinhart (1998).

III. Collapsing Output and Protracted Banking Crises

we cannot conclude that this difference is statistically significant.

Table V.3 Annual indicators: Banking crises

Sudden stops can lead to collapses in output and do severe damage to the financial system. Indeed, nearly all the banking crises in our sample are associated with a negative reversal in capital inflows.[9] While in most cases the banking sector problems begin before the SS–the abrupt capital flow reversal deepens the financial sector problems. Moreover, the Latin American crises and the Asian crises of the late 1990s are markedly more severe than the crises in Europe or in Asia's own past. In what follows, we examine the economic landscape in the aftermath of SSs and currency and banking crises. The emphasis is on assessing the magnitude of the output losses and the economy's speed and capacity to return to "normal." We also compare some of the recent experiences with the historical patterns. Before turning to the performance of real GDP in the post crisis period, however, we assess how various indicators often stressed in the literature on capital markets crises behave following the SS and, in particular, how many months elapse before their behavior returns to normal.

To do so, we must define what is "normal." In what follows, we define periods of "tranquility" to exclude the 24 months before and after currency crises. In the case of banking crises, the 24 months before the banking crisis beginning and 36 months following it are excluded from tranquil periods. For each indicator, we tabulate its average behavior during "tranquil" periods. We then compare the post-crisis behavior of the indicator to its average in periods of tranquility.

Table 4 summarizes the results for that exercise for currency and banking crises separately, as we have stressed that banking crises have tended to be more protracted affairs and more closely linked with SS. The number reported is the average number of months that it takes that variable to reach its norm during tranquil periods. In parentheses we note whether the level or growth rate of the variable remains above or below its norm in the post-crisis period.

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[9] The link between currency crises and SS is less clear in our sample, as many of the currency crises took place in the 1970s in an environment of capital controls and highly regulated domestic financial markets. By contrast, nearly all the banking crises are in the post-liberalization period, hence, their closer link to the SS.

Table V.3 Annual indicators: Banking crises

Several features are worth noting. **First**, the analysis of the data bears out that banking crises have more lingering deleterious effects on economic activity than currency crises, this may be due to the kinds of Fisherian channels stressed in Calvo (1998a) or to a credit channel mechanism. Whatever the explanation, this difference is evident in several of the indicators. While the 12-month change in output remains below its norm in periods of tranquility for (on average) 10 months following the currency crash, it takes nearly twice that amount of time to recover following the banking crisis. This more sluggish recovery pattern is also evident in imports, which take about 2 ½ years to return to their norm. Bank deposits also remain depressed. The weakness in asset prices, captured here by equity returns, persist for 30 months on average for banking crises, more than twice the time it takes to recover from a currency crash. It is worth recalling that assets, be it equity or real estate, are a common form of collateral against loans. Hence, a collapse in asset prices may trigger margin calls and increase the incidence of nonperforming loans, worsening the problems in the banking sector.[10] Interest rates remain high after the banking crisis, while this is not the case for currency crises. This result is largely due to the fact that banking crises in our sample are clustered in the post financial liberalization period, when interest rates are market determined. By contrast, the number of currency crises are about evenly split into pre- and post liberalization sub-samples. In the case of the former, interest rate ceilings were prevalent among EMs, removing most of the information content of interest rates.

Table 5. The aftermath of financial crises
(Average number of months it takes a variable to return to "normal" behavior after the crisis)[1]

Indicator	Banking crisis	Currency crisis
Bank deposits	30 (below)	12 (above)
Domestic credit/GDP[2]	15 (above)	9 (above)
Exports	20 (below)	8 (below)
Imports	29 (below)	18 (below)
M2/reserves	15 (above)	7 (above)

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[10] See Kaminsky, Lizondo, and Reinhart (1998) for details.

Table V.3 Annual indicators: Banking crises

Output	18 (below)	10 (below)
Real interest rate[3]	15 (above)	7 (below)
Stock prices	30 (below)	13 (below)

[1] We note in parentheses whether the variable remained below or above the norm during periods of tranquility.
[2] Domestic credit/GDP remains above normal levels largely as a result of the marked decline in GDP following the crisis–it is a debt overhang.
[3] The disparity between the post-crisis behavior of real interest rates lies in the fact that a large share of the currency crises occurred in the 1970s, when interest rates were controlled and not very informative about market conditions.
Source: Based on Goldstein, Kaminsky, and Reinhart (1999).

Secondly, Table 4 highlights that there are likely to be important sectoral differences in the pace of recovery, depending also on the type of crisis it is. For instance, following the devaluations that characterize the bulk of the currency crises, exports recover relatively quickly and ahead of the rest of the economy at large. However, following banking crises exports continue to sink for nearly two years following the onset of the crisis. This may be due to a persistent overvaluation (recall in this sample banking crises typically **begin** before currency crises), high real interest rates (the Fisherian channel), or a "credit crunch" story.

Table 6. The protracted nature of banking crises:
Time elapsed from beginning of crisis to its peak

Descriptive statistics	Number of months
Mean	19
Minimum	0
Maximum	53
Standard deviation	17

Source: Based on Kaminsky and Reinhart (1996).

Table 5 highlights the protracted nature of banking crises by showing the average number of months elapsed from the beginning of the crisis to its zenith for the 26 banking crises studied in the Kaminsky and Reinhart (1996) sample. Hence, on average it takes a little over a year-and-a-half for a banking crisis to ripen; in some instances it has taken over four years. This protracted profile is, in part, due to the fact that often the financial sector problems do not begin with the major banks, but rather, with more risky finance companies. As the extent of leveraging rises, households and firms become more vulnerable to any

Table V.3 Annual indicators: Banking crises

adverse economic or political shocks that lead to higher interest rates and lower asset values. Defaults increase and the problems spread to the larger institutions. If there are banks runs, such as in Venezuela in 1994, the spread to the larger institutions may take less time.

However, the information presented in Table 6 does not fully disclose the length of time that the economy may be weighed down by banking sector problems, as it does not provide information on the time elapsed between the crisis peak and its ultimate resolution. Rojas-Suarez and Weisbrod (1996), who examine the resolution of several banking crises in Latin America, highlight the sluggishness of the resolution process in many episodes. The Japanese banking crisis, which has spanned most of the 1990s and is ongoing, is a recent example of this sluggish recognition/admission/resolution process.

We next focus on the evolution of GDP in the aftermath of crises. Tables 7-8 present the time profile of post-banking and currency crises deviations in GDP growth from the mean rate of growth during tranquil periods. We distinguish between the moderate inflation and high inflation countries; the latter encompass mostly Latin American countries. We report averages for some of the recent crises separately and examine to what extent these depart from the historical averages.

Table 7. Real GDP growth in the aftermath of banking crises:
Deviations from "tranquil" periods

Indicator	t	t+1	t+2	t+3
1970-1994 sample:				
All countries	-3.2	-2.1	-0.8	-1.1
Moderate inflation countries[1]	-1.6	-2.3	-1.6	-1.4
High-inflation countries	-4.5	-1.7	0.0	-0.5
Recent experiences	-13.3 [2]	n.a.	n.a.	n.a.

[1] Moderate inflation countries are those with inflation rates below 100 percent in all years surrounding the crisis; high inflation countries are those in which inflation exceeded 100 percent in at least one year.
[2] Includes Argentina, Indonesia, Korea, Mexico, and Thailand. Argentina is classified as a banking crisis (albeit a very mild one) owing to the widespread bank runs (see Kaminsky and Reinhart for a detailed discussion of dating banking crises.
[3] Difference from the historic mean is significant at standard confidence levels.

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Quite clearly, banking crises are contractionary and recession is protracted. Three years following the beginning of the crisis the economy still records growth rates below those posted in the two years preceding the crisis. This is consistent with the earlier evidence showing that financial sector problems continued to worsen for sometime following the onset of the difficulties. The deviations from pre-crises growth rates is even greater, because banking crises often appear following an unsustainable boom in capital inflows and economic activity. The slump appears to be more severe but less protracted in high inflation countries. As noted there are several explanations for the slump. In addition to those already discussed, the collapse in asset prices that usually accompanies the crises may give rise to significant negative wealth effects and impact consumer spending. Similarly, a credit channel story may lead to a severe contraction in investment. The credit crunch explanation is, indeed, a plausible one in light of banks' need to recapitalize and provision. The recessions following the recent crises are far more severe than the historic norm, even if Indonesia is excluded from the sample.

Devaluations are perceived to be expansionary in industrial countries. This view is reflected in the assumed policy trade-off in many second generation models of currency crises, which stress the policymakers conflict between the credibility losses incurred if the peg is abandoned and the economic gains from devaluation. While this proposition may be an adequate representation for industrial countries, the evidence presented here bears out the results of the earlier studies by Edwards and others. As Table 7 highlights, currency crises do not appear to have a salutary effect on the economy, as growth remains below that observed during tranquil periods in the three years following the crisis. Some of the most recent SS episodes, which have included both successful and unsuccessful speculative attacks, highlight the staggering output losses associated with the SS problem. The last row of the table reports the averages for six recent episodes. It includes two successful defenses, Argentina and Hong Kong and four successful attacks Indonesia, Korea, Mexico, and Thailand. As shown, the output collapse in the year following the SS is dramatically higher than the comparable historic norm. For all the devaluers in that recent sample these currency crises were also accompanied by deep and costly banking crises. As with banking crises, the recent output losses are a significant departure from the historic pattern.

The results for the full sample reveal that the recessions are somewhat milder than those following a banking crisis. Hence, reenforcing the results shown in Table 4, the moderate inflation economies appear to recover more quickly from a currency crisis than from a banking crisis–unless the currency collapse is accompanied by a banking crisis as well.[11]

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[11] Kaminsky and Reinhart (1996) present evidence that the twin crises are more

Table V.3 Annual indicators: Banking crises

Table 8. Real GDP growth in the aftermath of currency crises:
Deviations from tranquil periods

Indicator	t	t+1	t+2	t+3
1970-1994:				
All countries	-2.7	-1.9	-0.6	-0.8
Moderate inflation countries [1]	-1.9	-1.6	-0.7	0.0
High-inflation countries	-3.8	-2.2	-0.1	-1.5
Recent experiences	-12.3 [2]	n.a.	n.a.	n.a.

[1] Moderate inflation countries are those with inflation rates below 100 percent in all years surrounding the crisis; high inflation countries are those in which inflation exceeded 100 percent in at least one year.
[2] Includes two successful defenses, Argentina and Hong Kong and four successful attacks Indonesia, Korea, Mexico, and Thailand. The successful defenses do not register as crises, but as turbulence–owing to the substantial reserve losses.
[3] Difference from the historic mean is significant at standard confidence levels.

IV. Ameliorating the Sudden Stop Problem:
Is There a Role for Capital Controls?

In principle, we would expect the volume and composition of capital inflows to respond to the policy stance that the recipient countries adopt. In some instances, domestic policies were explicitly designed precisely to shape the volume and/or composition of inflows (capital controls). In others the effects the policies were largely unintended (sterilized intervention). In

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severe and the recovery more sluggish than episodes when currency crises are not associated with banking sector problems.

Table V.3 Annual indicators: Banking crises

this section, we briefly review the evidence on the effects of these policies. The discussion draws heavily on Montiel and Reinhart (1999), hence, its scope is limited to assessing the effectiveness of controls of various types on capital inflows. Controls on capital outflows, which are often introduced during or after crises (as Malaysia did after the 1997 Asian crisis) are not considered here. We also discuss the relative merits of some variants to the types of policies adopted by Brazil, Chile, Colombia, the Czech Republic, and Malaysia, which primarily targeted either short-term or portfolio inflows.

A. *Empirical evidence on controls*

It remains controversial whether the intent to influence the volume or composition of flows has been successful during these experiences in the 1990s. Here we provide a brief summary of the key findings of Montiel and Reinhart (1999) on the basis of panel data containing annual observations on the volume and composition of capital inflows for 15 emerging markets over the 1990-1996 period. The countries in our sample are listed at the bottom of Table 9. The analysis disaggregates among three types of capital flows: portfolio flows, short-term flows, and FDI. The results for the capital account balance are also reported. Further details on the data, the measures that proxy for capital controls and sterilization, and the methodology employed are available from the original paper.

<div align="center">

Table 9. Fixed Effects Estimates, Instrumental Variables: 1990-1996
15-Country Panel

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Dependent variable	Sterilization index	Capital control proxy	U.S. interest rate	Japanese interest rate	Number of listed stocks
Capital account as a % of GDP	1.762 (2.927)	-0.716 (-1.092)	-0.224 (-1.931)	-0.425 (-2.311)	0.006 (2.653)
Portfolio flows as a % of GDP	0.374 (1.064)	-0.238 (-0.976)	-0.313 (-3.046)	-0.161 (-1.025)	0.017 (2.826)
Short-term flows as a % of GDP	0.902 (2.335)	-0.451 (-1.081)	-0.048 (-0.518)	-0.136 (0.883)	0.001 (0.612)
Portfolio plus short-term flows as a % of GDP	0.870 (2.344)	-0.642 (-1.302)	-0.210 (-1.116)	-0.070 (-0.822)	0.009 (2.184)
FDI flows as a % of GDP	0.913 (1.145)	1.785 (0.792)	-0.149 (-1.032)	-0.122 (-1.116)	-0.001 (-0.024)
Portfolio plus short-term flows	34.709 (1.986)	-32.856 (-2.233)	-30.913 (-1.321)	13.051 (1.225)	n.a.

Table V.3 Annual indicators: Banking crises

as a% of total flows					
FDI flows as a share of total flows	-18.900 (-1.936)	43.753 (1.894)	32.776 (1.672)	-9.976 (-1.018)	n.a.

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

The key findings that can be gleaned from Table 8 can be summarized as follows:

1.   Sterilized intervention increases the volume of total capital flows, through short-term capital. Portfolio flows and FDI do not appear to be responsive to the intensity of sterilization. By widening and preserving domestic-foreign interest rate differentials, sterilized intervention significantly alters the composition of capital flows, increasing the share of short-term and portfolio flows. This may be taken as an argument against "a soft peg," as the capacity for sterilized intervention is limited or non-existent in a currency board arrangement. An issue we will take up later.

2.   Although the signs of the estimates are negative, capital controls appear to have no statistically significant effect on reducing the overall volume of flows. Capital controls, however, do appear to alter the composition of capital flows in the direction usually intended by these measures, reducing the share of short-term and portfolio flows while increasing that of FDI.

3.   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. and Japanese 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.

B. Some thoughts on alternative measures
Some caveats about the previous results, however, are in order. While these results clearly show that taxes or reserve requirements targeting short-term inflows had a significant effect on the maturity profile of the flows, we do not know whether this is, to some extent, an artifact of reclassification. We also do not know to what degree these measures simply encouraged a substitution of foreign short-term for domestic short-term debt.[12] To the extent

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[12] In fact, the insignificant effect of controls on the volume of capital inflows, even though there is a noticeable lengthening of the maturity structure of those flows, strongly suggests that the system as a whole must have ways to effectively bypass and neutralize those controls.

Table V.3 Annual indicators: Banking crises

that domestic short-term debt is also an implicit claim on the reserves of the central bank, then such a substitution would not ameliorate the liquidity problems during a SS. An exception would be the case where through "moral suasion" the government and the central bank have greater leverage in "persuading" the local residents to roll over those debts. This has been, to some degree, the case of Brazil, where the debt is largely from the public sector. Such leverage would be less likely if the domestic debt that needs to be rolled over is private.

If part of the general problem of the SS is short-term debt (irrespective of whether it is domestic or external) then, obviously, EM governments should adopt more conservative debt management strategies and lengthen the maturity of their debt. However, while a prudent public debt management strategy is necessary to ameliorate the SS problem, it is doubtful that it is sufficient. In Korea it was the banks which were borrowing short. It is worth noting that the balance sheet problems of the banks in all these recent crises involved both currency and maturity mismatches. Furthermore, the problem is not limited to the banks--in Indonesia it was the corporate sector. In this regard, a tax on all short-term borrowing may be a preferable strategy to just taxing foreign short-term borrowing. In this case of banks, this could be through high reserve requirements for shorter maturity deposits, irrespective of the currency of denomination of the deposit. Thus, governments that pursues capital controls will likely be driven to cast a wide net which covers all financial intermediaries, and even nonfinancial corporations, since the latter participate in the sizable interenterprise credit market (see Ramey (1992)) This is an enormous task. Moreover, countries that succeed in this task may find themselves deeply immersed in central planning. Therefore, capital controls can at best be a short-term response to capital inflows or outflows.

Sterilized intervention policies during the capital inflow period should be discouraged, since typically these open market operations place more short-term debt in the hands of the private sector. In several episodes (see Reinhart and Reinhart, 1998), the objective to sterilize led central banks to complement the stock of public sector debt with debt of their own, adding an important quasi-fiscal dimension to short-term debt problem. This would be no major problem if central banks held in stock sterilized reserves as a backup for the associated central bank short-term obligations. In practice, however, there is strong temptation to utilize those reserves for other purposes (prominently bailing out the financial sector, as in Mexico and Thailand).

V. Fixed versus flexible exchange rates: Revisiting an old debate

Previous sections have established the extreme severity of recent EM crises. In addition, we have argued that the SS episodes are associated with a previous surge of capital inflows, and that the size of SS is enhanced by the presence of short-term maturity debt (both domestic and external). Unfortunately, what may appear as a natural line of defense, namely, imposing controls on international capital mobility is fraught with serious implementation

Table V.3 Annual indicators: Banking crises

problems and, if maintained over the medium term, it may imply a gradual reversion to central planning.

A. *Fixed versus flexible exchange rates*

In this section we will discuss the role of the foreign exchange system. All crisis episodes took place against a background of soft-pegged exchange rates. This has led many analysts to conclude that "the peg did it." At some level, the statement is right because if the exchange rate was allowed to float freely, some of the international reserve loss would have been prevented. However, even at this level of abstraction, the analysis is seriously incomplete. It misses a key point, namely, that in many crisis episodes, either the government or the private sector, or both, had relatively large *foreign-exchange* denominated short-term debt obligations, which exceeded by far the stock of international reserves. Therefore, the balance-of-payments crises are likely to have taken place under more flexible exchange rate arrangements as well. In effect, Korea, Malaysia, and the Philippines were classified as managed floats, while both Mexico and Indonesia had exchange rate bands.

However, at a deeper level it could be argued that liability dollarization is partly a result of pegging, magnified by the overconfidence and moral hazard problems that pegging may bring about. As the argument usually goes, if the exchange rate was free to float, domestic investors, especially those in the nontradable sector, would shy away from foreign-exchange denominated loans. This is so because they will now face a larger *currency* risk than under fix. This sounds convincing, but it misses two important points: (1) most EMs start from a situation of partial dollarization (at the very least, liability dollarization), and (2) it is really very hard to find instances in which an EM completely ignores exchange rate volatility. These points reinforce each other. Partial dollarization increases the cost of exchange rate volatility (through the Fisherian channel, for example) which, in turn, induces the central bank to intervene in the foreign exchange markets to prevent fluctuations in the nominal exchange rate. In fact, as the cases of El Salvador, the Philippines and Venezuela attest, this "fear of floating" may be so severe that the exchange rate spends long stretches of time at a fixed level, making it observationally equivalent to a soft peg.[13] On the other hand, fear of floating induces more liability dollarization, creating a vicious circle from which it is very hard to exit. In addition, fear of floating arises whenever domestic firms utilize foreign raw materials. In this case, floating is less destructive than in the previous example but it can still cause financial difficulties in the medium term. Fear of floating and lack of the discipline that underlies fixed exchange rates may drive authorities to adopt additional control measures, like dual exchange rates and controls on capital mobility. Even when fear of floating does not lead to capital controls and countries adopt "market-friendly" ways of stabilizing the exchange rate through open market operations, such policies have significant costs both in

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[13] This was also the case for Mexico prior to the Colosio assassination, despite an announces ever-widening band.

Table V.3 Annual indicators: Banking crises

terms of the interest rate volatility associated with them as well as their procyclical nature.[14] Thus, contrary to the view that floating provides authorities with an extra degree of freedom to guarantee a market-friendly environment, the opposite may happen.

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[14] There are plenty of examples of interest rate hikes during "bad states of nature" (i.e. terms-of-trade declines, recessions, etc.).

Table V.3 Annual indicators: Banking crises

Traditional theory teaches that the choice of a foreign exchange regime ought to be a function of the nature of shocks. The basic lesson is: If the shocks are mostly real, float; otherwise, fix (for a simple presentation of this theory that incorporates some key aspects of the current policy debate, see Calvo (1999b)). Recent crisis episodes, though, show that shocks come prominently through the capital account and, as a result, they contain *both* real and nominal components, so the choice of the exchange rate system on that basis becomes more difficult.[15] In addition, a major deficiency of received theory is that it takes shocks as fully exogenous, when all available evidence points in the direction that credibility and reputation are critical in determining how hard is an EM hit by financial turmoil, i.e., how big are the shocks. In fact, Argentina's dollarization proposal is an attempt to make policymaking more credible and, thus, lower country risk differentials (see Calvo,1999a for further discussion).

Moreover, traditional theory can be criticized even on its own grounds.   Traditional theory ranks foreign exchange regimes by their associated output volatility. Financial and Fisherian considerations, however, lead one also to worry about relative-price volatility and, in particular, volatility of the real exchange rate. As shown in Calvo (1999 b), focusing on real exchange rate volatility drastically changes traditional ranking. With sticky prices, for example, fixed would obviously dominate floating exchange rates.

Another weakness of traditional theory is oversimplification. Defenders of floating exchange rates on these grounds point to the fact that flexible exchange rates make the adjustment of relative prices less costly, because equilibrium changes can be accommodated by a higher or a lower exchange rate with little effect on output and employment.   This point is well taken in the context of a Mickey Mouse textbook model with homogeneous tradables and nontradables. However, in a realistic economy there are several distinct goods, each with *distinct* labor market: gauchos cannot be quickly retrained as nuclear physicists, and viceversa. Thus, given wages, a 20 percent fall in the international price of meat, for instance, may call for an equiproportional currency devaluation to ensure gauchos' full employment. But a 20 percent devaluation might generate excess demand and inflation in physics. More generally, the problem is that the exchange is only one instrument, and price/wage stickiness is a multidimensional issue. Devaluation is not a silver bullet. Devaluation in practice is an exercise in political compromise. Gauchos want 20 percent, physicists less than that (assuming that they dislike inflation). As a result, devaluation makes no group totally happy. Finally, devaluation can be substituted by fiscal policy. If the real exchange rate is

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overappreciated, for example, labor subsidies can be put in place to replicate, in a more controlled way, the desired real depreciation.

Let us now turn to dollarization. Dollarization has been criticized on the following grounds: (1) it leaves the country without a lender of last resort, and (2) use of a foreign money may entail loss of seigniorage.[16] Both of these criticisms have easy answers. Starting with (2), the two countries involved (i.e., the dollarized EM and the country which currency is utilized by the EM) could share the seigniorage (as proposed by Argentina, see Calvo (1999a)). Moreover, (1) would hold true to the extent that the lender of last resort has no genuine resources of its own and has to rely on money issuance. As shown in Calvo (1999a), however, under dollarization and a seigniorage-sharing arrangement, a large portion of international reserves could be used to provide lender-of-last-resort services. This would, of course, require the holding of a large enough stock of reserves, or the creation of a "stabilization fund" by foreign donors.

In summary, much of the glitter of flexible exchange rates disappears upon closer examination. The extra degrees of freedom provided by exchange rate flexibility are fallacious or can be substituted by fiscal policy. Finally, strong pegs like dollarization can help to reduce the incidence of external shocks, especially those that filter through the capital account. Granted, not every EM needs to go that far, and not every EM could go that far, but dollarization is not the silly idea that conventional thinkers would have us believe.

C. Dollarization from the United States perspective

We have presented arguments to suggest that dollarization may an attractive option for EMs to deal the problems of recurring and all-too-frequent SSs. While, full dollarization will not eliminate banking sector problems, it may ameliorate them if it reduces the problems that stem from currency and maturity mismatches, and it will do away with speculative attacks on the currency. After all, speculators cannot attack the peso if a peso does not exist. We next address the benefits or costs does full dollarization carry for the United States.

The issue that monetary policy for fully dollarized EMs will be set by the Federal Open Market Committee in the United States is not novel. As shown in Calvo, Leiderman, and Reinhart (1993) and other studies, U.S. interest rates have long influenced capital flows to EMs, particularly in Latin America. From the U.S. vantage point, the only difference is that under full dollarization the exportation of U.S. policies is made more transparent. Nor is the seigniorage issue new. As noted earlier, many EMs are already heavily dollarized. Incremental seigniorage is likely to be a marginal consideration. One concern, frequently voiced by those who suggest that the U.S. should not encourage dollarization, is that the U.S. will be heavily involved in large bailout packages for EMs. Yet, this issue is also not new.

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[16] In addition, it has been criticized for making costly relative price changes. But this issue has been discussed above.

Table V.3 Annual indicators: Banking crises

Direct and indirect involvement (via influencing IMF lending) by the U.S. has already skyrocketed in the 1990s, as witnessed by the unprecedented size of the bailouts. As to the potential effects of full dollarization by EMs on the U.S. real economy, we next consider three possible effects.

First, the constituency opposing trade agreements between the U.S. and EMs on the grounds that a reduction in trade barriers places U.S. labor at a disadvantage should welcome dollarization. After all, if a country is fully dollarized it cannot gain a trade advantage by frequently devaluing its currency and making its goods and labor relatively cheap. For example, the massive realignment between Mexican and U.S. wages in dollar terms that occurred in late 1994-1995 could not have taken place. Other things equal, this inability to devalue bodes well for narrowing the persistent U.S. current account deficit. We can refer to this channel as a relative price effect.

Second, if full dollarization ameliorates the SS problem, for the reasons discussed earlier, the U.S. stands to gain from the more stable and sustained income gains of its trading partners. We have seen U.S. exports adversely affected by the output collapses in Asia and by Mexico's 1995 recession. In that regard, if U.S. exports are to benefit from greater income stability and growth in any region of the world, it would be from Latin America. Table 9 reports the share of U.S. imports in the total imports of selected trading partners in the Americas, Europe and Asia. It is fairly evident that the Latin American countries have the highest propensity to import from the U.S. Seventy five percent of Mexico's imports come from the U.S., more than nine times the share in European imports. Hence, if EMs in Latin America were to dollarize, the U.S. current account deficit would also benefit from this income effect.

Lastly, and related to the previous points, U.S. financial institutions that operate overseas are likely to benefit from dollarization in EMs. U.S. financial institutions would enjoy a comparative edge stemming from the fact that such institutions have expertise in intermediating dollar funds that could be applied to EMs. As opposed to local financial institutions, U.S. ones benefit more from scale economies. Moreover, they would have ready access to a lender of last resort of U.S. dollars, whereas the financial institutions in EMs would have a more limited security blanket.

Table 10. IMPORTS FROM THE US AS A PERCENT OF TOTAL IMPORTS
FOR SELECTED COUNTRIES

Country	1991	1992	1993	1994	1995	1996	1997
The Americas							
Canada	62.29%	63.52%	65.05%	65.75%	66.75%	67.41%	67.51%
Argentina	18.1%	21.71%	23.01%	22.13%	19.02%	19.91%	20.04%
Brazil	23.25%	24.53%	23.5%	20.57%	21.15%	22.10%	23.34%
Chile	20.58%	20.14%	22.58%	22.69%	24.50%	23.57%	22.94%

Table V.3 Annual indicators: Banking crises

Colombia	37.15%	38.47%	35.57%	32.13%	39.09%	36.19%	35.13%
Mexico	73.93%	71.27%	71.2%	71.85%	74.53%	75.59%	74.84%
Asia							
China	12.54%	10.88%	10.27%	12.09%	12.21%	11.64%	11.46%
Japan	22.67%	22.63%	23.15%	23.01%	22.59%	22.86%	22.43%
Korea	23.19%	22.36%	21.39%	21.08%	22.49%	22.14%	20.73%
Indonesia	13.10%	14.01%	11.49%	11.32%	11.38%	11.78%	12.72%
Malaysia	15.31%	15.86%	16.93%	16.62%	16.31%	15.48%	16.55%
Thailand	10.52%	11.74%	11.68%	11.86%	11.54%	12.6%	13.79%
Europe							
France	9.53%	8.39%	8.72%	8.46%	7.59%	7.73%	8.66%
Germany	6.64%	6.72%	7.35%	7.39%	7.07%	7.32%	7.75%
Spain	7.67%	7.37%	6.87%	7.30%	6.42%	6.33%	6.33%

Source: IMF, Direction of Trade Statistics, Yearbook 1998, and various 97 and 98 issues.

VI. Concluding Thoughts

In this paper we have presented evidence that SS problems have become more severe for EMs, particularly for Asian economies that historically had a comparatively more placid economic cycle than their Latin American counterparts. Because policy options are relatively limited in the midst of a capital market crisis and because so many EMs have already had crises recently, we have focused on some of the kinds of policies that could reduce the incidence of crises in the first place, or at least make the SS problem less severe. In this regard, we considered the relative merits of capital controls and dollarization. Floating is, of course, another option but, for the reasons discussed, earlier we are doubtful that many EMs will be ready to embrace floatation along the lines practiced in only a handful of industrial countries. We conclude that, while the evidence suggests that capital controls appear to influence the composition of flows skewing flows away from short maturities, such policies are not likely to be a long-run solution to the recurring problem of sudden capital flow reversals. Yet, because fear of floating, many EMs are likely to turn to increased reliance on controls. Dollarization would appear to have the edge as a more market-oriented option to ameliorate, if not eliminate, the SS problem.

Table V.3 Annual indicators: Banking crises

Appendix Table 1. Crises Definitions

Currency Crisis	Most often, currency crises are resolved through a devaluation of the domestic currency or the floatation of the exchange rate. But central banks often resort to an interest rate defense and foreign exchange market intervention to fight the speculative attack. In these latter cases, currency market turbulence will be reflected in steep increases in domestic interest rates and massive losses of foreign exchange reserves. Hence, an index of currency crises should capture these different manifestations of speculative attacks. We constructed an index of currency market turbulence as a weighted average of exchange rate changes and reserve changes. Interest rates were excluded as many emerging markets in our sample had interest rate controls through much of the sample. The index, I, is a weighted average of the rate of change of the exchange rate, Δ_e/e, and of reserves, Δ_R/R, with weights such that the two components of the index have equal sample volatilities $$I = (\Delta_e/e) - (\sigma_e/\sigma_R)*(\Delta_R/R)$$ where σ_e is the standard deviation of the rate of change of the exchange rate and σ_R is the standard deviation of the rate of change of reserves. Since changes in the exchange rate enter with a positive weight and changes in reserves have a negative weight attached, readings of this index that were three standard deviations or more above the mean were cataloged as crises. For countries in the sample that had hyperinflation, the construction of the index was modified. While a 100 percent devaluation may be traumatic for a country with low-to-moderate inflation, a devaluation of that magnitude is commonplace during hyperinflation. A single index for the countries that had hyperinflation episodes would miss sizable devaluations and reserve losses in the moderate inflation periods, since the historic mean is distorted by the high-inflation episode. To avoid this, we divided the sample according to whether inflation in the previous six months was higher than 150% and then constructed an index for each subsample. Our cataloging of crises for the countries coincides fairly highly with our chronology of currency market disruptions.
Banking crisis	With regard to banking crises, our analysis stresses events. The main reason for following this approach has to do with the lack of high frequency data that capture when a financial crisis is underway. If the beginning of a banking crisis is marked by a bank runs and withdrawals, then changes in bank deposits could be used to date the crises. Often, the banking problems do not arise from the liability side, but from a protracted deterioration in asset quality, be it from a collapse in real estate prices or increased bankruptcies in the nonfinancial sector. In this case, changes in asset prices or a large increase in bankruptcies or nonperforming loans could be used to mark the onset of the crisis. For some of the earlier crises in emerging markets, however, stock market data is not available.[4] Indicators of business failures and nonperforming loans are also usually available only at low frequencies, if at all; the latter are also made less informative by banks' desire to hide their problems for as long as possible.

Table V.3 Annual indicators: Banking crises

Appendix Table 2. Crisis Dates

Country	Currency crisis	Beginning of Banking Crisis
Argentina	June 1975 February 1981* July 1982 September 1986* April 1989 February 1990	March 1980 May 1985 December 1994
Bolivia	November 1982 November 1983 September 1985	October 1987
Brazil	February 1983 November 1986* July 1989 November 1990 October 1991	November 1985 December 1994
Chile	December 1971 August 1972 October 1973 December 1974 January 1976 August 1982* September 1984	September 1981
Colombia	March 1983* February 1985*	July 1982
Denmark	May 1971 June 1973 November 1979 August 1993	March 1987
Finland	June 1973 October 1982 November 1991* September 1992*	September 1991
Indonesia	November 1978 April 1983 September 1986 August 1997	November 1992
Israel	November 1974 November 1977 October 1983* July 1984	October 1983

Table V.3 Annual indicators: Banking crises

Country	Currency crisis	Beginning of Banking Crisis
Malaysia	July 1975 August 1997*	July 1985 September 1997
Mexico	September 1976 February 1982* December 1982* December 1994*	September 1982 October 1992
Norway	June 1973 February 1978 May 1986* December 1992	November 1988
Peru	June 1976 October 1987	March 1983
Philippines	February 1970 October 1983* June 1984 July 1997*	January 1981 July 1997
Spain	February 1976 July 1977* December 1982 February 1986 September 1992 May 1993	November 1978
Sweden	August 1977 September 1981 October 1982 November 1992*	November 1991
Thailand	November 1978* July 1981 November 1984 July 1997*	March 1979 May 1996
Turkey	August 1970 January 1980 March 1994*	January 1991
Uruguay	December 1971* October 1982*	March 1971 March 1981
Venezuela	February 1984 December 1986 March 1989 May 1994* December 1995	October 1993

* Twin crises episode.

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