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Globalization Hazard and Delayed Reform in Emerging Markets

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GLOBALIZATION HAZARD AND DELAYED REFORM IN EMERGING MARKETS

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I. Introduction

This paper focuses on capital flow volatility in Emerging Market Economies, EMs. Capital inflows rose to unprecedented heights in the first part of the 1990s, and collapsed very rapidly in the second. Volatility could partly be explained by financial vulnerability in the EMs themselves, but the global nature of the phenomenon raises the suspicion that there are systemic problems largely independent of each individual country. The paper puts forward the conjecture that phenomena like *contagion* could stem from the way the capital market operates (e.g., crises generated by "margin calls"). These systemic phenomena require systemic instruments. Unfortunately, few are available. The IMF is more a Fire Department than a Central Bank. Liquidity is sprayed where fire is found, not on the whole system like a Central Bank does when there is a liquidity crisis.[1]

Domestic financial vulnerability plus lack of a worldwide safety net gives rise to what the paper calls *Globalization Hazard*, i.e., risk generated by the sudden large expansion of credit to EMs in the first half of the 1990s, which I will claim could be due to imperfect information and underdeveloped financial institutions. I will also claim that several recent financial crises were low-probability events that were uninsured and perhaps uninsurable in the private sector and, as will be argued, called for ex-post government intervention. Government intervention, however, represents a major roadblock in the presence of *Delayed Reform* i.e., a condition in which government delays the implementation of socially desirable reform and wealth redistribution. Thus, Delayed Reform may exacerbate the impact of low-probability events, and possibly help to

[1]However, the Contingent Credit Line, CCL, is an attempt to prevent fires. Not quite a Central Bank but at least a Fire Department that tries to increase available water supply in case of fire.

coordinate expectations on "bad" equilibria, contributing to the severity of Globalization Hazard.

Policy implications of the Globalization Hazard view are diametrically opposite to those of the Moral Hazard view recently popularized by Meltzer (2000). This makes the present discussion greatly relevant for the design of a New Financial Architecture, an issue of enormous urgency and importance.

II. Moral vs. Globalization Hazards

A salient characteristic of currency crises after the 1994 Mexican crisis (*Tequila crisis*) is their frequent recurrence. Thus, the Tequila crisis was followed by massive crises in Asia (1997), Russia (1998), Ecuador (2000), Turkey (2001), and protracted crisis in Argentina (2000-2002). Except for Argentina, crises have been relatively short-lived – nothing compared to the Debt Crisis in the 1980s. However, they followed each other in Domino-type fashion. Why?

A leading explanation is *Moral Hazard*. According to this point of view, large and timely bailout packages, orchestrated by the IMF, allowed Fixed Income investors to exit without suffering major capital losses, even though the rate of return on these assets far exceeded those of safe assets like US Treasury Bills. Thus, the expectation that future crises would be resolved in the same manner, emboldened fixed-income investors to take high risks in other EMs, increasing the probability of crisis. Plausible as it sounds, however, this view has slim empirical support. In the first place, as shown in Figure 1, net private capital flows to EMs started to subside after 1995, a trend that is even sharper for Portfolio Flows (Figure 2).[2] Second, after the Tequila

[2]Some supporters of the Moral Hazard view claim that the decline of capital flows to EMs are the result of Russia not getting a bailout package in 1998 which, as the argument goes, made investment in EM securities less attractive. However, (1) as shown in Figure 1, flows started to decline prior to that (in 1997), and (2) Brazil got a large bailout package soon after the Russian crises, only to be followed, in 2001, by equally large packages for Argentina and Turkey.

Crisis the composition of capital flows shifted in favor of Foreign Direct Investment, FDI (see Figure 3). Investors in those and related assets (stocks) have suffered major losses during crises and, thus, cannot easily be claimed to have greatly benefitted from bailout packages.

Questioning the Moral Hazard view is not tantamount to saying that policymakers and investors will not take advantage of generous giveaways, but existence of distortion-driven behavior does not prove that distortions are seriously costly. The Moral Hazard view claims that G7 bailouts are a major cause for the succession of crises, and its costliness too. Thus, to uphold this view one has to be able to argue, among other things, that Moral Hazard has led to the large output and employment losses suffered during crises. At equilibrium, this would imply that either EM policymakers *deliberately* brought their economies into painful maelstrom (in exchange, perhaps, for a brief affluence mirage) or that they exhibited a fantastic lack of judgement, bordering on the insane. However, since there is no scientific evidence that those characteristics are the monopoly of EM policymakers, and the empirical evidence reviewed above is not supportive, the Moral Hazard view must, at least momentarily, be classified as an intellectually appealing but unsubstantiated conjecture.

An alternative hypothesis is that recent crises are the result of the surge in capital flows to EMs in the early 1990s, their subsequent decline and volatility. There is no need for 20-20 vision, nor sophisticated econometrics, to realize from Figure 1 that something truly extraordinary happened since 1989. In 1996, for example, net private capital flows to EMs were about 10 times as large as their average in the period 1970-1989. Moreover, such a sharp climb took place in the span of a few years, and was followed by an equally swift reversal. This resulted in major economic disruption.

By definition, and abstracting from errors and omissions, we have the following accounting identity:

Capital Inflows = Current Account Deficit + Accumulation of International Reserves.

Thus, sharp fluctuations in capital inflows result in equally sharp fluctuations in current account deficits and reserve accumulation. Both could give rise to serious difficulties. The former because it brings about sharp, possibly unanticipated, changes in aggregate demand, and the latter because international reserves are still perceived as an indicator of financial health. A sizable fall in international reserves, for example, is commonly seen as a harbinger of serious financial trouble in the official sector. Therefore, the mere fact that capital flows exhibit large fluctuations suggests that at least part of the problem may reside in the new features of the capital market after 1989.

One can get a better sense of the importance of capital flow fluctuations by examining capital flow reversals (i.e., the drop in capital flows) during crises. This is illustrated in Table 1 where reversals are shown to be sizable. The champion in this Table is Thailand, one of the Asian Tigers, with a reversal equivalent to 26 percent of GDP. This is quite remarkable given the long growth track record displayed by its economy prior to crisis. Moreover, these magnitudes are unheard of in advanced countries. Table 2 illustrates the difference between EMs and advanced countries around crisis periods (for further details, see Calvo and Reinhart (2001)). The Table focuses on changes in the current account deficit. T denotes the year the crisis takes place, T - 1 is the year before, and T + 1 the year after. "Change" corresponds to the difference between the current account in T + 1 and T - 1. Two points are worth making:

- The change in advanced countries is insignificant compared to that in EMs. In EMs the average current account adjustment corresponds to about 3.5 percent of GDP, a sizable adjustment. In contrast, advanced countries's adjustment represents less than 1 percent.
- During crisis, i.e., time *T*, EMs' current account deficit contracts, while that of advanced countries shows a slight increase. Thus, overall flow credit to EMs declines while that of advanced countries increases during crises. This observation, incidentally, suggests that EMs' crises contain a *credit contraction* element which is, on the whole, absent in advanced countries.

Where was the *public* sector during the financial globalization episode that started in 1989? This is shown in Figure 4. Clearly, the whole action takes place in the private sector. Official flows are essentially flat throughout the period 1971-2001.

This evidence leaves little doubt that we are dealing with an unprecedented phenomenon in recent history, and that it is associated with the globalization of finance, i.e., a large increase in the flow of savings from advanced to EMs, led by the private sector, and protected by a flimsy official safety net. Thus, a plausible conjecture is that financial globalization may bear the seeds of its own fragility, a phenomenon that I will call Globalization Hazard. The sheer size and unprecedented nature of the flows could be the simple explanation. For example, temporary flows could have been mistaken for permanent flows. As a result, investment projects initiated in the expectation that relative prices prevailing during a boom would be permanent, become unsustainable under the relative prices that prevail as capital flows subside. Thus, the term Globalization Hazard is justified. It suggests that we may be witnessing a case of market failure, not of moral failure. A case in which the market suffers from "too little" instead of "too much"

protection and harnessing. As shown in Figure 4, the public sector did little to offset the collapse of private sector flows after 1996. Thus, this approach suggests that what the world may need is a central bank of global dimensions coupled with more, not less, global financial cooperation. This conjecture will be further elaborated in what follows.

III. Globalization Hazard: A closer look

In order to establish the Globalization Hazard view as a serious alternative to the Moral Hazard view, one has to be able to give non-Moral-Hazard arguments for the surge, decline and volatility of capital flows to EMs, including the Sudden Stop phenomenon highlighted above (i.e., the sharp drops in capital flows shown in Table 1). In that respect, my conjecture is that key factors accounting for Globalization Hazard are (1) *institutional* and (2) *informational*, both in the global capital market, and the EMs.

An example of an institutional factor at the global level is the development of the market for Brady bonds which started in the early 1990s and, in my view, increased investors' incentives to collect information about EMs, and led to the development of the EMs' bond market (Calvo (2001)). On the other hand, examples of institutional factors in EMs are a weak local financial sector (e.g., weak banks initially controlled by the public sector) and *liability dollarization*, i.e., the fact that external debt is typically denominated in terms of foreign exchange (see Calvo (2001) and Hausmann et al (2000)). The latter places severe bounds on exchange rate policy and is one possible explanation for what has been termed *Fear of Floating* in EMs, FF, i.e., a reluctance to let the exchange rate fluctuate as freely as in advanced countries (see Calvo and

Reinhart (2002)).[3] FF combined with an underdeveloped local financial system gives rise to an economy highly vulnerable to shocks. The existence of limited monetary policy instruments and rigid financial institutions (e.g., limited access to state-contingent financial contracts) could be deadly. In that context, downward price/wage flexibility may prove to be the only available adjustment mechanism short of bankruptcy and financial disruption. However, price/wage flexibility could be harmful if not supported by state-contingent financial contracts. This is a point highlighted long ago by Irving Fisher (1933) (see also Keynes (1935) who appears to have anticipated Fischer's ideas on this subject). To illustrate the Fisher effect, take the case in which loans specify a constant stream of nominal interest payments. Thus, a sharp *unanticipated* fall in prices and wages would result in an equally sharp increase in the *ex post real* interest rate, and a possibly large contraction in borrowing firms' capital. A direct and obvious effect of downward price/wage flexibility would be a higher incidence of bankruptcies which, under imperfect information, could give rise to negative spillover effects (e.g., through the interenterprise credit network, see Calvo (2000 b)).

Another channel (not emphasized by Fisher (1933)) is that the resulting de-capitalization of indebted firms, associated with an unanticipated ex post rise in real interest rates, lowers those firms' collateral and may trigger a strong credit reversal (e.g., a cut in indebted firms' credit lines; this effect is studied in Kiyotaki and Moore (1997), Izquierdo (2000), Caballero and Krishnamurthy (2001), Céspedes (2001), and others). Thus, if credit to firms goes partly to finance working capital, there would be a sudden drainage of funds available to pay for labor

[3]Liability dollarization could reflect institutional factors in both global and domestic capital markets. See Caballero and Krishnamurthy (2001b), Jeanne (2001).

services and raw material. Note that the Fisher Effect (Fisher called it *Debt Deflation*) will be especially strong for highly indebted economies. Therefore, this discussion shows that EMs may have become much more vulnerable to negative shocks after the 1989-1995 capital flows.

Why should EMs be more vulnerable than advanced countries? This is a key question because all of the above consideration would, in principle, also be applicable to advanced economies. A plausible conjecture is that institutional changes around the start of the 1990s gave rise to a stock reallocation of loanable funds which, by its nature, was bound to be transitory. However, policymakers attributed the larger flows to good domestic policies, an opinion that was shared, report after report, by the Washington establishment. Several EMs were pictured as being on the road to joining the First World as a result of heeding the Washington Consensus. Consequently, it is quite possible that individuals were induced to believe that the capital inflow episode had a large *permanent* component – larger than a more balanced analysis would have led to conjecture (see Calvo, Leiderman and Reinhart (1993)). *Wall Street*, on the other hand, may have joined the bandwagon because they shared the Washington Consensus and, perhaps also, for moral hazard considerations: seeing the blind support that the EMs received from *Washington*, they may have softened their lending stance in the expectation that *Washington* would send timely rescue teams if trouble arose.[4]

Under this perspective, the Tequila episode could be seen as the tip of the iceberg. The

[4]However, I would not place a lot of weight on this conjecture, because (1) the world was extricating itself from the1980s Debt Problem for which *Washington* had taken a good number of years to find an effective cure, and (2) debt difficulties in the 1990s are significantly more complicated to negotiate, given that there are a myriad of lenders (e.g., bond holders), as opposed to the 1980s where a handful of large banks held the bulk of the loans extended to the countries in trouble.

market had made wrong investment decisions and it was bound to go through a 'correction.' Coupled with the policy and market rigidities highlighted above, the adjustment was abrupt in Mexico and Argentina (Sudden Stop), and rose suspicion that the market may have been operating under false expectations. At first, problems were confined to Argentina and Mexico, and funds emigrated to other EMs. However, the Asian crisis of 1997 started a sharp contraction for the EMs as a whole (see Figure 1).

Prima facie, the Russian 1998 crisis appears to be the best case for the Moral Hazard conjecture. Russia was loaded with nuclear weapons making it "too dangerous to fall," perhaps leading investors to take higher risks in the expectation that they would be bailed out by the IMF. However, the IMF funds to Russia were not enough to prevent default on domestic public debt, part of which was held directly or indirectly abroad. Default took *Wall Street* by surprise and reportedly caused a serious liquidity crunch, and a consequent liquidation of EMs securities. This, it could be argued, generated *rational* confusion in the market. Informed investors sold EMs securities to uninformed investors, depressing their price below their fundamental levels. All EMs were affected, showing that, as an asset class, EMs securities were more risky than previously thought. Thus, it is plausible to conjecture that, as a result, the demand for EMs securities shrunk, putting further downward pressure on capital flows to those countries (for further discussion, see Calvo (1998 b and 2001)). Consequently, the shock could be seen as a sort of *reverse*-moral-hazard effect – the bailout was smaller than expected – which got magnified by confusion and imperfect information in the capital market.

Moreover, even if it is true that investors' mood reversals are similar across all economies, their impact on EMs is likely to be much larger, reflecting differences in information

and institutions. Let us focus on the former. As implied by Calvo (1998 a) and Calvo and Mendoza (2000 a and b), financial globalization could lead investors to invest in securities about which they have very limited information. This may be especially true for EM securities, which, by their nature, do not have a long and reliable track record. These securities are highly susceptible to rumors. A negative rumor, for example, could drive investors to chuck them out their portfolios almost entirely.[5]

Finally, in a formal model, Globalization Hazard could be pictured in terms of a multiple-equilibrium model, where the latter is the result of financial rigidities (see, e.g., Calvo (1998 a). Greater *financial* flexibility (i.e., existence of a wider array of state-contingent financial transactions) could help to eliminate "bad" equilibria and, thus, avoid major collapse. Arguably, a salient feature of *Emerging* markets is financial inflexibility. Thus, this kind of model helps to rationalize the view that EMs are more vulnerable to shocks than financially mature markets, even in the absence the perception errors referred to above.[6]

In short, the answer to the question "Why were EMs more vulnerable?" given here is: overly optimistic (not necessarily irrational) expectations during the capital inflow period, kicked off by structural change in the global capital market, and relatively poor information about EM economies, including political conditions. Informational/institutional problems, also help to explain the severity of crises.

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[5]See Calvo (1998 c) for a simple example in which a Sudden Stop caused by rumors could bring about output loss.

[6]Existence of equilibrium multiplicity is not a necessary condition to generate severe crisis. Financial "frictions" appear to be more essential. For a recent rational expectations dynamic model of this sort, see Mendoza and Smith (2001).

Why crisis recurrence? This question has implicitly been answered above. Crises themselves, including their systemic nature, increased the perception of risk on the part of investors. This resulted in a lower demand for EM securities and higher interest rate spreads, increasing the probability of crisis and, thus, its recent recurrence. Notice, incidentally, that an implication of this analysis is that crisis recurrence may slow down once investors reach their new steady state portfolio allocation.

If this was the whole story, however, then future episodes like those in the 1990s are unlikely to be repeated in the near future. One hopes that investors have learned the lesson and that their memories are not too short. However, I believe that some EMs (particularly in Latin America) suffer from a serious case of what I will call *Delayed Reform*, a condition in which government delays the implementation of socially desirable reform or wealth redistribution. I will argue that this condition may give rise to future episodes of excess borrowing and financial turmoil. This topic will be taken up in Section VI, after exploring the role of global policy in the next two sections.

IV. Global Policies after Crisis

EM financial crises have a negative impact on growth and income distribution. Therefore, there is a general consensus that "something has to be done about it." In this section, I will discuss global policies, i.e., policies that can primarily be implemented by advanced G7 countries, when crisis hits one or several EMs. The welfare justification for these kinds of policies will be taken up in the next section.

Global policies require multilateral institutions. We have the institutions but, unfortunately, their size has shrunk relative to potential global capital flows (recall Figure 4).

Thus, their effectiveness has become questionable. Recent bailout packages have required the collaboration of several of these institutions plus bilateral aid and, as in the case of Ecuador, *private sector involvement*, PSI. The sums have been large, but the procedures clumsy and far from transparent and automatic. The world has reached for policies on an ad-hoc basis – nothing predictable or systematic has been established. Actually, the popularity of the Moral Hazard view makes one suspect that multilateral institutions will in the future be slow in responding to crisis, and that PSI will rule the day. In what follows I will briefly comment on the role of PSI, and discuss the creation of the *Emerging Market Fund*, EMF, to prevent financial contagion.

1. PSI. The idea is straightforward, namely, to make the private sector (creditors, mostly) play an active role in solving financial difficulties. However, if left to its own devices, the private sector is unlikely to help to solve *solvency* problems unless creditors are compelled to cooperate among themselves (see, e.g., Krugman (1992)). Otherwise, if investors go their own way, they will. It is always optimal to claim 100 percent of what is owed to you after all the other creditors have negotiated a cut in debt obligations to prevent bankruptcy. This may be a serious problem in the present circumstances, given the large share of bonds in total EM debt.[7] However, PSI would still be effective for handling *liquidity* problems, because these could be solved by debt swaps that do not necessarily lower (and may actually increase) debt's present discounted value (e.g., Argentina's 2001 *mega* debt swap).

2. PSI plus IFIs Guarantees. Multilateral institutions' loans are senior to other credit obligations. Thus, a bond issued under that kind of guarantee is de facto senior to the other obligations.

[7]This constraint could be relaxed if a critical number of bondholders are able to modify some key clauses in the bond contract, like in the recent debt restructuring in Ecuador.

Suppose the debtor country declares a cessation of payments. This triggers the loan guarantee, automatically making the country a debtor of the corresponding multilateral institution for the full amount of the guarantee. Therefore, these types of guarantees are a roundabout way of endowing debt instruments with seniority. Senior instruments could be very effective in coordinating creditors in case of insolvency. To illustrate, let the stock of debt obligations be 100 (units of output, say), and the maximum amount that the country can, and is willing to, repay is 50. Consider the case in which the country offers to swap the entire outstanding debt for a new **senior** bond paying 50. Thus, each unit of the senior debt would be swapped for 2 units of the old debt, a discount of 50 percent over the old debt. In addition, the government announces that if less than 50 units of the new senior bond are issued in the swap (which would happen if some creditors do not want to participate in the swap), the remainder will be offered in the open market. Thus, the government will issue 50 units of the new senior debt under all circumstances – be it as a result of the swap, or as a result of selling it to new investors. Clearly, the market value of the new senior debt is 1, because the government can repay 50 with full certainty. Moreover, the market value of the old debt falls automatically to zero, since the debtor country would have no funds left over for repayment after serving the new senior debt. Thus, investors will have no incentives to keep the old debt, the swap will be successful, and solvency fully restored by means of *market-friendly* mechanisms.[8]

3. EMF. In each crisis episode, crisis has spread to other EMs. As noted above, a dominant

[8]A market-friendly mechanism does not break *explicit* contracts. However, *implicit* contracts might be trampled over. This is likely to be the case in debt restructuring during crisis, as when some clauses in the bond contract are modified following strictly legal procedures. However, breaching implicit contracts could seriously impair the resumption of credit flows.

conjecture for this phenomenon is based on imperfect information. One way to attack this problem is to try to stabilize an EMs index like the J.P. Morgan EMBI+. The idea is to stop contagion resulting from a financial crisis in an individual country by making a credible announcement that some global institution will stand ready to buy bonds from the *other* EMs in other to prevent a collapse in bond prices. This could be done by setting up an EM Fund, EMF, endowed with G3 debt instruments (e.g., G3 Treasury Bills). To illustrate, EM bonds listed in J.P. Morgan EMBI+ (around US$ 160 billion in 2001) are equivalent to about 3 percent of G3 public debt (around US$ 5 trillion in 2001).[9] Thus, if the EMF is endowed with 1 percent of G3 public debt (around USD50 billion), the EMF capital would represent around 30 percent of EM bonds (listed in the EMBI+). This significant backing of EMs bonds involves a small risk for the G3. Moreover, G3 exposure is smaller than these numbers might suggest because the EMF is intended only to forestall a meltdown in EMs bond prices, not to prevent run-of-the-mill fluctuations. Thus, the EMF need only intervene in special circumstances, like a price meltdown. It is not supposed to fight trends. For example, a meltdown could be defined as situation in which the bond price index falls by more than x percent relative to a moving average. Thus, if prices do not recover from the initial x percent drop, the moving average will decline over time and the EMF will start selling EM bonds and reverse its portfolio back to G3 bonds. Therefore, in case the initial price drop reflected fundamental deterioration of EMs' fundamentals, the EMF would eventually sell all its stock of EMs bonds even though prices would have exhibited a substantial decline. On the other hand, if the EMF intervention is successful and prices recover, the EMF will quickly undo the initial intervention. Thus, in all cases the EMF will converge to a

[9]See Morgan (2001).

situation in which its holdings of EMs' bonds would be negligible. If large swings in EMs' bond prices are due to liquidity considerations, the EMF is likely to make profits. There is, however, a risk of making losses: buying high and selling low. This occurs when the initial sell-off signals a permanent deterioration in EMs' fundamentals. Thus, the EMF may have to decide on a case-by-case basis when it is appropriate to intervene.[10]

The EMF is a relative of the CCL (Contingent Credit Line) recently created by the IMF. Both pump in liquidity to prevent that a liquidity crisis gives rise to a deterioration of fundamentals and, possibly, insolvency. However, the CCL goes to the epicenter of the crisis, while the EMF aims at preventing contagion. Moreover, the EMF is less subject to the Moral Hazard criticism because it supports the asset class, not the bonds from an individual country. Finally, contrary to the CCL the EMF does not stigmatize EMs. A key reason why the CCL has yet not gotten off the ground is that countries that would qualify for a CCL feel that by applying for such a facility they would be giving a clear signal to the market that policymakers are worried about a possible Sudden Stop, for example.

Another close relative to the EMF is the Lerrick-Meltzer (2001) proposal that the IMF stands ready to buy all of a country's debt at a large discount. Unlike the EMF, this proposal does not prevent liquidity-based contagion, and is aimed at stopping a meltdown at the epicenter of the crisis.

V. A Rationale for Public Sector Involvement

The Moral Hazard view cautions against public sector involvement (recall the discussion

[10]Technical details are yet to be worked out. It is clear, however, that countries protected by the EMF should submit to new rules in order to prevent Moral Hazard, among other things.

in Section II). Although empirical evidence does not support this view in the context of recent international financial crises, it would be hard to dismiss the argument that an indiscriminate and systematic bail out of loss-making investment projects will eventually induce undue risk taking by the private sector – contributing to the recurrence of crisis episodes. However, this argument does not imply that *any kind* of bailout is bound to have negative consequences.

The issue that I will discuss in this section is more general than the one at hand. It has to do with the advisability of public sector intervention *ex post*, i.e., after the state of nature is revealed. In an ideal Arrow-Debreu complete-markets setup, there is no Pareto improving ex post government intervention. This proposition is no longer true under incomplete markets, since government intervention could help to substitute for missing markets. For example, in an economy with two risk-averse farmers with uncorrelated outputs, it would be optimal for these farmers to write an ex ante insurance contract that, for each state of nature, redistributes output from the winner to the loser. This contract may not be feasible for a variety of reasons, in which case it would be ex ante optimal if the government could implement the corresponding transfers ex post. Winners will oppose it ex post, so these types of transfers will have to be cloaked in politically acceptable garment (like a Solidarity Program). At any rate, under these circumstances the optimal arrangement involves systematic bailouts and need not give rise to Moral Hazard.

The relevance of this example could be criticized by noting that the same reasons that prevent the emergence of markets or institutions to implement the optimal insurance arrangement are also likely to impair the effectiveness of government intervention. For example, the state of

nature may be hard to observe or verify.[11] Thus, our farmers might prefer to live in isolation and suffer the vagaries of the weather instead of writing a contract that would be very difficult to verify. The government would face the same difficulties and, thus, the net benefits of government intervention are no longer apparent. This type of consideration has led many modern policymakers to take the command "You Shall Not Intervene" as a guiding principle.

In what follows, I will argue that although I would not quarrel with the guiding principle for regular situations, the principle may break down for states of nature that have ex ante low probability, or Low Probability Events, LPEs. Since observability is not at stake, I will assume, for the sake of the argument, that LPEs are perfectly observable. Consider, once again, the case of our two farmers, and suppose information about output is costless to obtain under catastrophic circumstances. Otherwise, information costs are prohibitive. Moreover, I assume that "catastrophic circumstances" are LPEs. Let $k > 0$ denote the output cost of writing a clause in the insurance contract that specifies the transfer received by the victim in a LPE. Clearly, if k is high enough or, more interestingly, if the probability of the event is low enough, it may not be optimal to include that type of clause in the insurance contract between the two farmers. Suppose the government is subject to the same cost k if the transfer is executed ex post. It is clear that ex post government intervention has a smaller ex ante cost, because it will be incurred only if conditions are catastrophic. To make this point even more obvious, notice that if the farmers write the clause into the insurance contract, the expected cost is k, whereas if the transfer is implemented by the government ex post, the expected cost would be pk, where p is the probability of the LPE:

[11]Under asymmetric information, this situation gives rise to the classical Moral Hazard problem discussed in the insurance literature (see Kreps (1990)).

pk could be substantially smaller than *k*.[12]

A possible objection to the relevance of the example is that ex post transfers could be much more expensive than a mere clause in an insurance contract. The objection is well taken. Let the cost of ex post intervention be denoted by *K* and let us assume that *K* is significantly larger than *k*. First, in expected value the comparison is now between *k* and *pK*. Thus, if *p* is small enough, ex post intervention could still dominate the writing of an ex ante clause. In addition, in reality there are many LPEs. Let the cost of each clause be the same and equal to *k*, and let *N* be the number of mutually exclusive LPEs. Then, if written as ex ante clauses, the social cost is *Nk*, while if the government makes the optimal ex post transfer the cost is just *pK*, which reinforces the case for ex post intervention.[13]

I will now retake the central thread of the discussion. Several recent crises could be claimed to be LPEs, at least from the perspective of 1994. I would even be prepared to argue that the spread of the Russian 1998 crisis across EMs was also a LPE from the standpoint of July 1998 (see Calvo (1998 b) and (1999 a)). The attack on the Twin Towers and resulting increase in air-travel aversion is undoubtedly another LPE.[14] Writing contracts contingent on these events would hardly be justified ex ante. The events, however, are quite clear and their consequences

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[12]I will conduct the discussion in terms of expected values although, of course, the rigorous way to do this would be on the basis of utility functions. However, as can be easily verified, the substantive implications in the text carry over to the more general case of risk aversion.

[13]The cost of writing clauses encompassing LPEs need not be proportional to *N*. In the farmers' example, one clause could specify the transfers in terms of output corresponding to each LPE, which could arguably be claimed to be less costly than writing separate clauses.

[14]As a result, just to give an example, tourists' cancellations in Jamaica right after the attack exceeded 80 percent!

too. This gives a basis for the kinds of interventions after crisis outlined in previous section.

An open economy faces us with new and challenging issues. The two farmers of the story are now residents of different countries. Thus, ex post transfers cannot be implemented by a single authority. Transfers become an international issue where (at least) two sovereign nations are involved. To complicate matters even further authorities in country A, say, are elected by residents of country A. Thus, policymakers in the country that got lucky ex post may be highly reluctant to carry out the corresponding international transfers.

Thus far, this discussion has not dwelled on the Debt issue. Consider the point-input-point-output Ricardian case in which labor is employed one period in advance, and the labor cost is financed by loans. In this context, it is also possible to show instances in which it may be individually optimal *not* to make loan repayment contingent upon some LPEs – even though both parties would benefit from writing a contingency clause to that effect if transaction costs were nil. Employing the above arguments, one can also show cases in which ex post government intervention generates ex ante Pareto improvement. Such intervention, for example, could take the form of Debt Forgiveness in catastrophic LPEs. These transfers, as noted above, could be difficult to implement when international loans are involved. Negotiations are time-consuming. In the meantime, output losses occur as a result of bankruptcy procedures – a situation which is particularly damaging if *key* sectors are involved, like banking and airlines, which failure would be detrimental to many other sectors in the economy. Thus, there are circumstances in which it would be socially beneficial for the government to *socialize* private debts by, for instance, extending low-interest loans to the affected sectors, and financing the operation through new

public debt obligations.[15] This policy implies a transfer from the domestic economy as a whole to the damaged sector which is, in principle, inferior to a transfer from the creditor to the damaged sector. But the policy could be justified if externalities are large enough. Moreover, debt socialization may help to implement Pareto improving international transfers. This is so, because governments have direct access to IFIs, and are in a better position (than the private sector) to obtain bilateral official aid or credit.

VI. Delayed Reform

LPE transfers are a common feature in a large country like the US where catastrophic shocks occur every year. Floods, hurricanes and tornados are recurring events which trigger immediate Federal transfers. In this fashion, the government becomes Transferrer of Last Resort, TLR. However, to be able to perform this task effectively, the government should be capable of generating the necessary resources through higher taxes, donors' contributions, or lower expenditure on other items. In this context, I will define Delayed Reform as a situation in which the government is unable or unwilling to articulate clear-cut policies to fund its activities as TLR. Thus, when a LPE takes place that would call for a TLR, people are uncertain as to the way TLR operations will be funded, or if they will be funded at all.[16] Here I will take Delayed Reform as an assumption and will not attempt to dwell on the underlying political economy considerations. It is worth pointing out, however, that the concept is akin to the literature on the Political

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[15]Diaz-Alejandro (1985) discusses socialization of private debts in Chile during the 1982-1983 crisis.

[16]I do not imply that Delayed Reform afflicts only EMs. As pointed out to me by Allan Meltzer, there are clear episodes in recent U.S. economic history reflecting that characteristic. However, Delayed Reform could be devastating when the body politic is hit by sufficiently large undiversifiable shocks, as the previous discussion suggests may have been the case in crisis EMs.

Economy of Delayed Reform (see, e.g., Sturzenegger and Tommasi (1998), Part I).

A typical case is a country that suffers a large low-probability deterioration of its terms of trade, a LPE (e.g., Nicaragua after the recent collapse of coffee prices caused by Vietnam's large crops). As a result, the equilibrium relative price of nontradables with respect to tradables falls (i.e., a depreciation of the equilibrium *real* exchange rate) and, if interest rates are not indexed to nontradables prices, massive bankruptcies likely follow (especially if the country comes from a large Capital Inflow episode) – unless the government comes to the rescue as a TLR.[17] The immediate fiscal effect of the terms-of-trade deterioration is lower fiscal revenue. Moreover, if the country is highly specialized, there will be few sectors from which rescue funds could be collected. This situation will likely drive the government to issue new debt without making it explicit how repayment will be engineered. Thus, since default would be in the cards, investors will charge a possibly hefty country risk premium.

Who will eventually foot the bill? That is precisely the question. Thus, the moment individuals realize that a LPE of macro dimensions has taken place, everyone runs for cover. Investment decisions are postponed waiting for the dust to settle, implying lower growth rates and an even weaker fiscal stance. Thus, the deleterious impact of Delayed Reform becomes stronger by the day once the economy is hit by a large LPE which calls for government intervention. The private sector is seriously tarnished too. Fiscal uncertainty increases the

[17]As noted above, bankruptcies following a sharp change in relative prices was deemed a key factor in explaining the depth of the Great Deflation by Irving Fisher (1933). He focused on the case in which loans specify a fixed nominal interest rates, and the nominal price level suffers a sharp unexpected drop. However, this kind of financial shock would hold whenever a debtor is faced with a sharp unexpected deterioration of his product price, on which the loan's interest rate is not being indexed. Recently, I picked up this topic in connection with the Dollarization Debate in Calvo (2001).

uncertainty of the *net* (after tax) return on private sector projects. Moreover, running for cover in an open economy implies, among other things, Capital Flight and a run against the domestic banking system – requiring even bigger government transfers. What will governments do under those circumstances? Plan B, as Krugman recently called it in connection with the crisis in Malaysia, namely, Controls on Capital Outflows, is a likely candidate. Plan B is typically carried out by resorting to Foreign Currency Controls. Floating exchange rates are no solution in those circumstances because what is involved is a Debt problem and, typically, EM debt is either of very short run maturity or indexed to a foreign currency (see Hausmann et al (2000)).

The successful IMF program in connection with the Tequila crisis shows that rapid action on the part of multilaterals could be highly effective. True, Mexico's economy suffered a contraction in output exceeding 6 percent in 1995, but recovery was fast, strong and lasting.[18] The medicine? A US$ 50 billion package that helped to refinance short-term debts at below-market rates.[19] Thus, under this optic, there is nothing wrong about large bailout packages in the context of LPEs.[20] Moreover, if it is well understood that packages are predicated upon the existence of verifiable LPEs, then they would trigger no Moral Hazard problems.

What is the role of tight fiscal policy during crises? As argued above, low-probability

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[18]Admittedly, part of that fast recovery could well be due to NAFTA.

[19]The package was never fully used and was wholly repaid before schedule. Moreover, as shown in a G.A.O. report, the US, a key donor, made a substantial profit from its US$ 25 billion loan – no doubt benefitting many US "carpenters and plumbers."

[20]Was the Tequila crisis a LPE? Evidence is strongly in favor. Mexico was the Poster Boy of multilateral institution in 1994, and the risk premium on Mexico's debt was very low just weeks before the crisis. Moreover, even though some analysts warned about current account sustainability problems well before the crisis, few if any imagined that it would spread so wildly across EMs.

accidents which unduly increase the burden of external debt should trigger fiscal laxity. As noted, the problem under Delayed Reform is that fiscal laxity increases fiscal uncertainty, with nefarious consequences. But tighter fiscal policy is not likely to solve the problem either, unless it helps to *reverse the initial negative shock*. This is not likely to happen if it is a Trade Account shock, like a deterioration of the terms of trade. However, fiscal tightening could help if the LPE involves a Credibility shock provoked by, for instance, a crisis in another EM, even though the economies are not linked by fundamental factors (trade, financial flows, etc.). In that context, tighter fiscal discipline could send a strong signal that the country in question is different, keeping interest rates from skyrocketing. In practice, it is very hard to know what is the appropriate way of action. In this respect, large G7 support for countries suffering from Delayed Reform may be crucial. Under that umbrella, the IMF doctor can operate with confidence. He would have a large supply of blood and oxygen for offsetting policy errors (some of them of his own, no doubt) without killing the patient.[21]

Governments suffering from Delayed Reform could themselves take measures that help to prevent LPEs, especially those events that would involve other sovereign countries. One strategy is to make sure that there is *no bunching of debt service obligations*. This helps to eliminate self-fulfilling expectations equilibria of the type discussed in Calvo (1998 a) and Cole and Kehoe (1996).[22] Another is imposing *controls on capital inflows*, especially during Capital Inflow episodes. This policy has been implemented in Chile and Colombia, for example. It has

[21]Important caveat: systemic external aid could contribute to the persistence of the Delayed Reform syndrome. Assessing this, however, requires models that flesh out the political economy of Delayed Reform (see Sturzenegger and Tommasi (1998)).

[22]The Greenspan-Guidotti proposal runs along these lines. See Guidotti (2000).

been shown to lengthen debt maturity, thus helping to prevent maturity bunching (see Calvo and Reinhart (2000)).

VII. Exchange Rate Policy: Delayed Reform in a Global Environment

The financial globalization episode that started in 1989 may be coming to an end. The end may be unpleasant as the stock of EMs Fixed Income assets held in advanced countries' portfolios starts to unravel. However, although this is possible, it is far from inevitable (I want to believe). The sun may rise again on EMs. International cooperation may get a strong boost propelled by the New War's security concerns, and the EMs may again become an attractive destination for FDI and other types of capital flows. What have we learned about macroeconomic policy in EMs that will help to cope with a future wave of capital inflows and to prevent, or at least ameliorate, future crises? I started to discuss this issue at the end of previous section. In this section I will focus on the exchange rate.

As one examines the monumental problems that arise in connection with deep financial crisis, the exchange rate looks like a minor distraction. And it actually is, during a crisis. However, the exchange rate could play a key destabilizing role under the Delayed Reform syndrome. Changes in the exchange rate have a direct effect on relative prices. This can be due to, for example, *signaling* considerations, coupled with wage/price stickiness. Governments are constantly under suspicion of creating new sources of fiscal uncertainty. Thus, a devaluation could be read as a signal that the government is relying more heavily on the inflation tax, fueling devaluation/inflation expectations. Expected higher future devaluation could have an impact on today's relative prices (see Calvo (1983)), possibly causing financial difficulties (more on this below). If large swings in the exchange rate are common, then individuals will incorporate them

in their contracts, and the associated transfers might be handled by the market. However, as shown in Calvo (2000 a), complete markets could be suboptimal when the government's credibility is at stake. The simple intuition is that credibility problems involve intertemporal distortions, which are magnified by market completeness. On the other hand, if large exchange rate fluctuations are not common and become LPEs, then they would prompt government intervention and – under the Delayed Reform assumption – cause fiscal uncertainty. This is just one of several reasons why EMs show a marked preference for stable exchange rates or Fear of Floating.[23]

Recently, some EMs appear to have relaxed their anchoring to a foreign currency by instead adopting an Inflation Targeting, IT, regime. It is still too soon to know if the new anchor will prove effective. Brazil, one recent convert, already seems to be reeling back to the old Dollar anchor, for example. But, in any case, it is important to realize that a strict IT regime is not that different from Exchange Rate Targeting. Actually, the two regimes would be identical if the only item in the basket on which the Inflation Index is constructed was only the exchange rate. Moreover, both regimes are orthogonal to Pure Floating, a regime in which the monetary authority sets money supply and there is no feedback from the exchange rate to money supply.

It is, therefore, quite misleading to say that the post-Tequila world bifurcates into pure floating and pure fixed foreign exchange regimes. While it is true that Hong Kong exhibits a Currency Board regime pegged to the US dollar, and Bulgaria to the Euro, I could not point to

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[23]The Fear of Floating literature is in its infancy. Back in the paper I mentioned Liability Dollarization as a possible cause. For early starts on this line of research, see Hausmann et al (2000), Calvo and Reinhart (2000 and 2001), Lahiri and Vegh (2001), and Caballero and Krishnamurthy (2001 c).

any EM that has adopted Pure Floating. In practice, the choice is not between Fix or Float but, rather, *what basket to target one's currency to.* Why is that so?

Interestingly, highly dollarized economies like Argentina and Uruguay peg to the US Dollar.[24] Bolivia and Peru, also highly dollarized, have most of the time followed a system that would be difficult to tell apart from pegging (see Calvo and Reinhart (2001 b), Morón (1999)).[25] On the other hand, in Latin America IT was first adopted by Chile, followed by Brazil and Colombia, economies where dollarization is not an issue. Thus, it appears that exchange rate pegging is the favorite of dollarized economies. What about the others? Chile is a highly indexed economy. All financial transactions are expressed in UFs (*Unidades de Fomento*), where UF is a price index involving tradable and nontradable goods. Thus, IT would be in line with the type of indexation that prevails in the financial system. This observation leads one to conjecture that the optimal basket might be somewhat linked to the type of indexation prevailing in the corresponding financial system. Can we make sense of this?

The theory of the optimal exchange rate system ranks systems according to a Loss Function, which in many papers is given by output variance.[26] According to this welfare criterion, fixed exchange rates come out ahead when money supply and money demand shocks

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[24]I will say that a country is highly dollarized if is shows high incidence of foreign-exchange denominated deposits and bank loans. As argued by Hausmann et al (2000), most EMs exhibit dollarized external debt.

[25]Starting in the second half of 1998, Peru let its currency devalue quite sharply. At the same time, however, the share of nonperforming loans doubled, a phenomenon that appears to have made policymakers more cautious about the use of this instrument. One leading conjecture is that borrowers take dollar loans to finance projects in the nontradable sector. Thus, large devaluation could contribute to the spreading of bankruptcy in that sector.

[26]For a recent discussion focusing on EMs, see Calvo (2001), and Hausmann et al (2000).

are dominant, while floating exchange rates win the contest when the dominant shocks are *real*, i.e., lie in output demand and supply considerations. Standard theory ignores *balance sheet* shocks, like those earlier discussed. If those shocks are taken into account in a highly financially dollarized economy, for example, the case for fixed rates becomes stronger. On the other hand, if dollarization is not an issue and, say, the financial system is indexed *a la* Chile, balance sheets are much more insulated from fluctuations in the nominal exchange rate. To the extent that not all prices and wages are fully indexed, abrupt changes in the rate of inflation would cause balance-sheet trouble in the excluded sectors. Thus, Inflation Targeting becomes an attractive system.

Balance-sheet shocks are important under Delayed Reform because those shocks are precisely the ones that trigger uncertainty-generating government intervention discussed in previous section. As noted, a highly dollarized financial system increases the appeal of fixed exchange rates. But dollarization is not the only relevant consideration. For example, all countries are linked to the rest of the world through trade. Thus, abrupt changes in the exchange rate may bring about other, more subtle, balance-sheet problems that stem from the impact that fluctuations in the nominal exchange rate have on earnings. This is most apparent for firms that produce nontradables by means of imported raw materials. If the associated fluctuations in the *real exchange rate* have some degree of persistence, shocks to the nominal exchange rate will also have balance-sheet effects. Moreover, as noted above, credibility problems could also provoke changes in the real exchange rate which, under flexible exchange rates could be quite sharp (recall the literature on exchange rate overshooting, e.g., Dornbusch (1976) and Calvo and Rodriguez (1977)). Consequently, the above discussion shows that balance-sheet considerations

may strongly bias governments subject to Delayed Reform towards fixed exchange rates.

VIII. Policy: General Considerations

Previous sections have shown the limited scope of policy in economies that are afflicted by Delayed Reform, and the desirability of lowering the number, and potential intensity of balance-sheet shocks. This becomes even more so given the present lack of systemic instruments to deal with global crises. EMs are visited by highly disruptive phenomena like Sudden Stops which can wreak havoc on an otherwise well-run economy.

A safe strategy seems to be the adoption of policies that help to offset the effects of Delayed Reform. For example, trade agreements with large developed economies, which may assist in the adoption of advanced-economy type institutions. Another example is full Dollarization (see Calvo (2001) for further discussion). If crisis has already hit, however, debt restructuring may be called for. This is, as indicated above, a serious complication for governments subject to Delayed Reform. Exclusively relying on domestic solutions is likely to be costly and lead to situations in which social objectives are held back, while husky lobbyists take the driver's seat. Multilateral institutions could play a useful role by helping to de-politicize the decision process. No new institutions are necessary for that purpose, but more funding and innovative financial products (e.g., guarantees) may be called for. One can only hope that prejudice and sheer intellectual inertia will not fetter the imagination necessary to deal with these important issues.

A final note. Empirical knowledge in macroeconomics derives mostly from the experience of developed economies. However, the little we know about EMs suggests that they are financially more fragile and vulnerable. Their relatively short track records, smallness, and

political instability seem to militate against the existence of institutions and informational bases comparable to developed economies. Thus, policies that work for developed economies may not transport well into EM territory. This is an important insight. Unfortunately, the scant available empirical work leaves the field open to prima-facie valid, but wildly different points of view. This could, in turn, provoke the policymakers' paralysis that I warned about above. Thus, as a parting shot, I would like to convey a sense of urgency about the need for serious, convincing, empirical work in this field.

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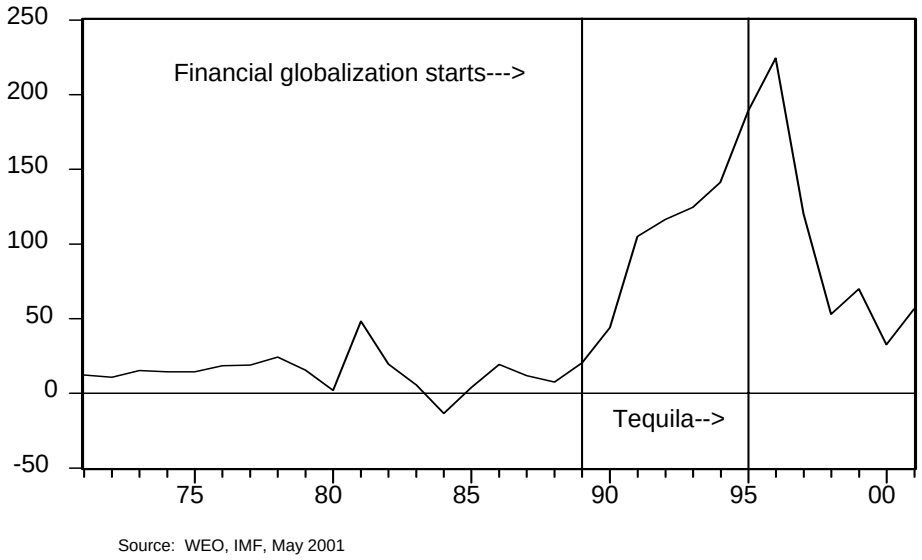


Figure 1. Net Private Capital Flows to EMs.

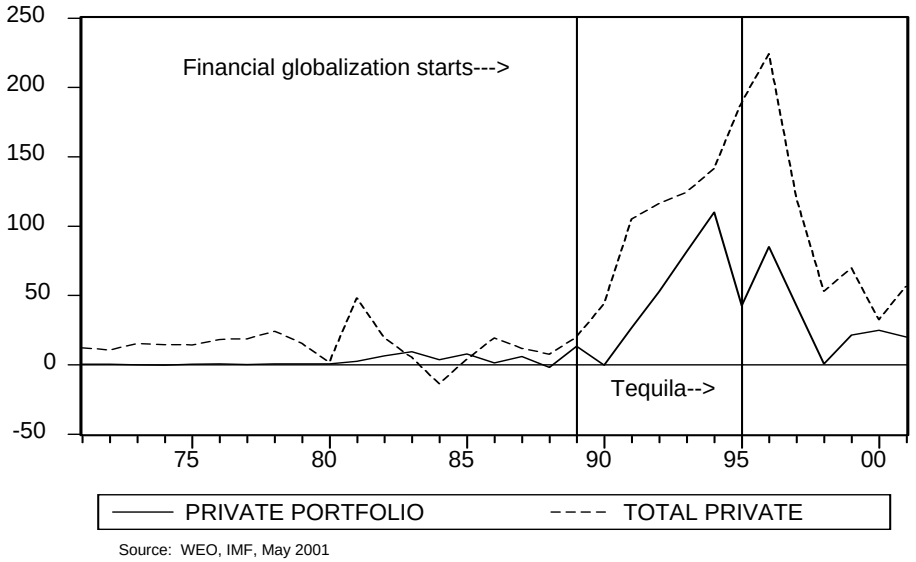


Figure 2. Net Private Portfolio and Total Capital Flows to EMs.

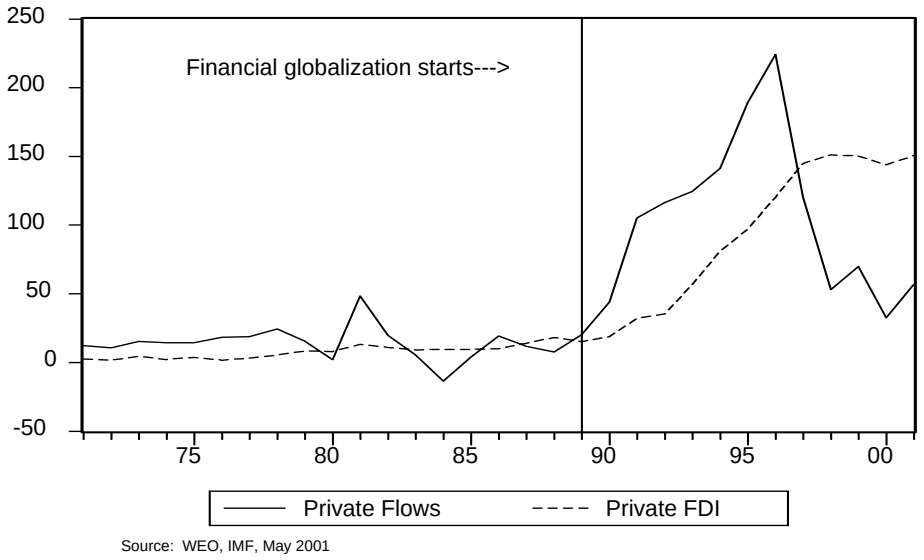


Figure 3. Private Foreign Direct Investment and Total Capital Flows to EMs

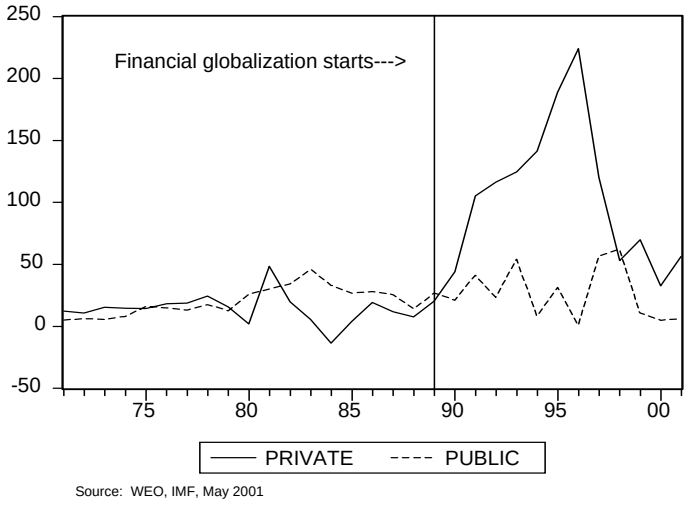
Country/Episode	*Reversal of Capital Inflows (% of GDP)*
Argentina 1982-83	20
Ecuador 1995-96	19
Mexico, 1981-83	12
Korea 1996-97	11
Thailand 1996-97	26
Turkey 1993-94	10

Table 1. Sudden Stop of Capital Inflows.
Source: Calvo and Reinhart (2001)

Country Group	T-1	T crisis	T+1	Change
EMs	-4.86	-3.97	-1.39	3.47
Advanced	-2.84	-3.06	-2.10	0.74
Difference	-1.62	-0.91	0.71	2.73**

Note: ** denotes significance at the five percent level.
Source: The World Bank and Calvo-Reinhart "Fixing for your Life," April 2000.

Table 2. Change in Current Account (as a share of GDP).



Source: WEO, IMF, May 2001

Figure 4. Net Private and Public Capital Flows to EMs.