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Financial Liberalization and Policy Challenges

Michael P. Dooley

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Inter-American Development Bank
1300 New York Avenue, N.W.
Washington, D.C. 20577

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Liberalization is the unifying theme for policy in the developing world, but there is a growing recognition that greater reliance on market forces to coordinate economic decision making has contradictory implications for policy makers. Liberalization reduces the direct role of the government in the economy. We should remember that it is the complexity of the resource allocation problem that gives market mechanisms the decisive edge over planning. But there is no avoiding the fact that the same sharp pencils we rely on to seek out profitable opportunities will also respond to intended and unintended incentives generated by governments. Markets make the effects of policies difficult to predict. It is a universal observation that government "intentions" are often frustrated by market reactions.

In financial markets this is a particularly familiar refrain. A state owned or directed financial system did a poor job of allocating resources, and this blueprint for economic development has been decisively, and in my view rightly, rejected. But we have ample evidence that badly structured and regulated private financial markets can also misallocate resources. The message I want to emphasize in this paper is that the lasting solution to this problem will be to severely limit the government's direct participation in financial markets and at the same time to expand the government's role in supervision and prudential regulation. In the transition to a fully liberalized domestic financial system, partial controls on international capital movements may be a useful component of the government's prudential regulation.

Failure to adapt the government's policies to a liberalized financial system can be very costly in terms of economic performance. The overriding challenge facing policy makers in emerging markets is to establish policy regimes that are immune from financial crises. Crises have recently damaged the economic health of countries that have been considered models for economic development and stability. As a result we are much less confident in our understanding of the economic logic behind such events. We are also unsure why some crises are followed by long periods of economic recession while others are not.

We are confident that there is growing discontent with the conventional wisdom concerning economic policy. The unhappy fact seems to be that a stable macroeconomic environment may be necessary but not sufficient to coax the desired outcomes from liberalized financial systems. In this paper we review several promising extensions of the conventional model and discuss their policy implications.

There are at least three analytic frameworks that might help us understand why crises occur and why they are so costly. The first, what I will call the macro-fundamental model, was developed by Paul Krugman in 1979. The important message from this framework and its many descendants is that inconsistent macro policy regimes will end in predictable and anticipated crashes. The crashes do not appear to be related to fundamental macroeconomic policies but they are. The policy advice that flows from this framework is

straightforward. Get the fundamentals right and there is nothing to fear. In practice this is the model that motivates conventional policy prescriptions as embodied, for example, in IMF rescue packages. This framework emphasizes flows of incomes and expenditures and the role of relative prices in getting the flows right. While this framework is a bit battered it has persuasive proponents. Moreover, it takes a theory to beat a theory and there is no coherent alternative at the moment.

The second framework is a radical departure from this comforting and familiar advice. The unifying theoretical result on which this framework is based is that the equilibrium regime might depend on private expectations about the regime. This is a radical departure in that it implies that a consistent macro regime is vulnerable to speculative attacks and the associated welfare costs.

It should be noted, however, that this multiple equilibria framework does not suggest that the traditional approach is wrong—inconsistent macro regimes will collapse. But even consistent regimes might require additional measures to ensure stability. The policy implications are that in addition to getting the fundamentals right, the government must undertake measures to protect the regime from speculative attacks. The additional measures suggested by the multiple equilibria models include careful control of the size, maturity and currency denomination of the government's on and off balance sheet assets and liabilities.

The third framework also focuses on the government's balance sheets but for different reasons. The basic idea of the insurance model is that the microeconomics of financial intermediation and the government's role in financial intermediation are the primary sources of crises. Crises in this framework are not related to changes in private expectations or to inconsistencies in macro regimes. Instead the policy inconsistency arises from the desire of governments to accumulate financial assets in order to smooth national consumption and the desire to insure the domestic financial system.

The policy advice drawn from this framework is once again "additional." Thus, if the analyses discussed above are useful the requirements for stability derived from the insurance model must be added to those derived from conventional macro and multiple equilibria models.

The objective for the following pages is to explore the issues raised by these alternative ways of understanding crises. Although we will not settle these issues, important policy implications nevertheless emerge. One conclusion is that we have probably focused too much on countries' or governments' income statements and not enough on their balance sheets. Sustainable flows of government expenditures and receipts and sustainable flows of international trade in goods and services do not insure financial stability. Governments can and do take large leveraged financial positions--that is, they sell assets to buy liabilities. Equally important, governments intentionally and unintentionally create incentives for private investors to take

positions that can lead to capital losses that the government has to cover. Financial liberalization frees market participants to exploit such incentives and thereby magnify government losses. Such losses can bankrupt a regime quickly and without warning. It follows that debt management policy broadly defined might hold the key for managing a market-oriented domestic and international financial system.

II. Macro Fundamentals

The apparent randomness of speculative attacks has long been cited as evidence that attacks were caused by random and therefore irrational changes in private expectations. A disdain for the herd mentality of financial markets is particularly common in those who write books about the subject. This view was challenged by formal models of speculative attacks that seemed to explain attacks in terms of fundamentals (Krugman (1979), Flood and Garber (1984)). The important contribution of what have since become known as first generation models is that they provide a simple explanation for the fact that nothing special happens to the fundamentals on the day of an attack and yet the attack involves a discrete reduction in the central bank's foreign exchange reserves.

In Krugman's model the driving force is a conflict between the government's exchange rate commitment and its fiscal policy. As long as the fixed exchange rate regime survives, a fiscal deficit is financed by gradual reductions in the central bank's reserves. On the day the attack occurs the government's reserves fall discretely to zero and the exchange rate is allowed to float. There is nothing apparently special about that day in terms of the fiscal deficit but there is something special about yields on assets, in this case on money balances.

Because the exchange rate regime ends when reserves go to zero, subsequent deficits are financed by money creation. The associated increase in expected inflation and nominal interest rates reduces the real return on, and demand for, real money balances and this is accommodated by the discrete sale of international reserves (the foreign part of the monetary base) to the private sector. This model teaches the important lesson that rational economic behavior driven by fundamentals that evolve smoothly over time can involve dramatic attacks (asset exchanges between the government and the private sector) and changes in regimes that seem to be unrelated to contemporaneous changes in the fundamentals.

In searching for empirical verification of traditional balance of payments attack models, a recurrent theme is that regularities are difficult to find. Frankel and Rose (1996) review the evidence for developing countries. They find that crises, defined by dramatic increases in the rate of change in nominal exchange rates, are associated with the composition of capital flows, reserve levels, domestic credit growth, international

interest rates, and real exchange rates. They also find that the fundamentals emphasized in Krugman's model, current account deficits and fiscal deficits, seem not to be associated with crises.

This evidence is widely interpreted as favoring multiple equilibria models of speculative attacks. Sachs et al. (1996), for example, argue that the attack against the Mexican Peso could not have been anticipated because interest differentials in favor of the peso were much too small to compensate investors that expected peso depreciation.

Krugman (1996) addresses this literature and argues that first generation models remain useful in understanding recent crises. He emphasizes the fact that a range of fundamental policy conflicts can trigger an attack. For example, an extended period of high unemployment can conflict with the government's commitment to a fixed exchange rate and the associated constraint on monetary policy. The fundamentals behind the attack may be difficult to identify but this does not mean that arbitrary shifts in expectations are a preferred alternative.

Dornbusch (1997), in evaluating the outlook for Brazil, also remains within the traditional framework. He emphasizes the real exchange rate as the fundamental determinant of stability for the regime, a view consistent with first generation models. Dornbusch warns, moreover, that events that might trigger an attack should not be confused with the determinants of the attack: "a political reversal could break a pattern of continuity and credibility and lead to a sell off; a bout of easy money would hasten a crisis, a fragile banking system with currency exposure would magnify the collapse, and a liquid debt structure would accelerate and magnify the collapse. Financial considerations are all important in interpreting specific events, but must not be misconstrued as the primary or sole source of a collapse (pp. 383-84)."

For policy makers these are important reminders. Even if one or a few speculative attacks are difficult to relate to macro fundamentals, there is no reason to believe that inconsistent policies will not generate crises in the future.

III. Multiple Equilibria

The apparent lack of correspondence between the fundamentals and attacks has inspired a second generation of models that rely on shifts in private speculative expectations to trigger an attack. It has long been recognized that changes in the policy regime that are expected to prevail following a successful attack can generate a successful speculative attack even if the government follows fully consistent policies preceding the attack (Krugman (1996), Garber (1996)). But this is not the story behind this new literature.

A much more stringent condition for a self-fulfilling attack is that a shift in private expectations about government behavior generates a change in the *optimal* policy regime. Calvo (1988) summarizes the implications of the argument as follows: "The implications for policy could be staggering: for our results suggest that postponing taxes (i.e., falling into debt) may generate the seeds of indeterminacy; it may, in other words, generate a situation in which the effects of policy are at the mercy of people's expectations--gone would be the hopes of leading the economy along an optimal path." Flood and Garber (1984) and Obstfeld (1986) show that if governments are expected to follow more expansionary monetary policies following a successful speculative attack on the fixed exchange rate regime, policy regimes that are otherwise viable can be forced to collapse by self-fulfilling private expectations.

Obstfeld (1994) refines the argument by specifying the political economy that might account for the government's behavior before and after an attack. The analysis sets out a rational government that seeks to maximize a plausible objective function. Since the government's objectives are the same in any exchange rate regime it follows that policy setting under different regimes must reflect changes in the economic environment rather than arbitrary assumptions concerning the government's behavior.

Eichengreen and Wyplosz (1993) argue that self-fulfilling models offer a better interpretation of the ERM crises in 1992 as compared to first generation models. Their general point is that the ERM members that were forced to abandon their exchange rate commitments played by the rules of the game for a viable system as long as entry into the European Monetary Union was a feasible objective.

To buttress this interpretation, Eichengreen et al. (1996b) offer empirical evidence that the fundamentals behaved differently in the months leading up to the ERM crisis as compared to a sample of crises in other fixed exchange rate regimes. In particular, they argue that the ERM crisis was not preceded by excessive money growth, growth in domestic assets, fiscal deficits, or a number of other variables usually associated with inconsistent policies.

More recently several papers have examined crises in emerging markets and concluded that shifts in private expectations are important elements in an attack sequence. Calvo and Mendoza (1995) argue that the crisis in Mexico in 1994 is consistent with the idea that the government's short-term debt and the anticipation of a bailout for a weak banking system made it vulnerable to a shift in private expectations. Cole and Kehoe (1996) also argue that events in Mexico are consistent with a self fulfilling crisis. Sachs et al. (1996) examine characteristics of 20 countries that seem to contribute to their vulnerability to speculative attacks following the Mexican crisis in 1994. They find that prior lending booms, overvalued exchange rates and low levels of reserves relative to M2 explain a large part of this experience. They also find that fiscal and current account

deficits seem to be unrelated to a country's vulnerability to attack.

IV. Insurance Attacks

An important objection to first generation models is that attacks on Mexico and more recently on Thailand and other Asian countries were preceded by very large private capital inflows. Moreover, yields on domestic currency assets in the weeks leading up to devaluations do not carry large yield premia that would be consistent with an expected devaluation. This seems to suggest that investors are at first too bullish and then, in herd-like behavior, change their minds and rush out of a country. This is an appealing story to officials that want to blame speculators for their trouble. But before we embrace this argument it is important to recall that the failure of a specific first generation model does not imply in any way that multiple equilibria are at work.

Dooley (1997) develops an alternative first generation model that seems to be consistent both with private capital inflows preceding a crisis and the absence of devaluation expectations. The policy conflict in the background in the model is between the desire of a credit-constrained government to hold reserve assets as a form of self-insurance and the government's desire to insure financial liabilities of residents. The first objective is met by the accumulation of foreign exchange reserves. The second objective generates incentives for investors to acquire the government's reserves when yield differentials make this optimal.

The insurance model predicts that three fundamentals must be present in order to generate a private capital inflow followed by a speculative attack. The first is that the government must have positive-net international reserves. Net reserves in this model are defined to include contingent assets and liabilities. Second, the government's commitment to exhaust these net reserves to pay off an implicit or explicit insurance contract must be credible That is, it must be consistent with the government's incentives and ability to mobilize and exhaust its net worth *after* the attack begins. Third, private investors must have access to transactions that produce insured losses. As long as one ingredient is missing there will be no capital inflow and no crisis. Crisis episodes are associated with the relaxation of a *binding* constraint.

These ingredients provide a plausible capital inflow/crisis sequence. The availability of free insurance raises the market yield on a set of liabilities issued by residents for a predictable time period. This yield differential generates a private gross capital inflow (a sale of domestic liabilities to nonresidents) that continues until the day of attack. The private inflow is necessarily associated with some combination of an increase in the government's international reserve assets, a current account deficit and a gross private capital outflow. But

the distribution among these offsetting transactions is unimportant.

As long as the "foreign" investors earn above market yields there is a disincentive for an attack on the government's assets. Investors will prefer to hold the growing stock of high yield insured liabilities of residents and allow the government to hold reserves that earn the risk free-rate. Private profits are realized before the attack.

The attack itself is generated by competition to avoid losses. When the contingent liabilities of the government are just equal to the government's assets, competition among investors will insure that all will call the insurance option. The incentive to do so is that from that date forward their share of the insurance pool will begin to shrink and expected yields will fall below market rates. Recall that resident borrowers will continue to appropriate a part of the loans and this will force expected yields below alternatives.

Following an attack the regime returns to its initial equilibrium in which the government's net international reserves have returned to zero. The loss of reserves might force the government to abandon its commitment to manage the exchange rate. An observer determined to apply a currency attack model will have to appeal to multiple equilibria. In fact, there is no shift in expectations.

The empirical association between banking and currency crises is well established. Gavin and Hausmann (1995) document the relationship between lending booms and financial crises in Latin America. Kaminsky and Reinhart (1996) show, in a sample of 76 balance of payments crises and 26 banking crises in 20 developing countries from 1970 to 1995, that about one-quarter of the banking crises occur within one year of a balance of payments crisis. Their interpretation of the evidence is that balance of payments crises were unrelated to banking crises during the 1970s when financial markets within these countries were highly regulated. Following liberalization of domestic financial markets in the 1980s, banking and balance of payments crises were closely linked and banking crises preceded balance of payments crises.

Goldfajn and Valdes (1997) examine four recent examples of banking/balance of payments crises in Finland, Mexico, Sweden and Chile. In each case capital inflows preceded the crises by three to six years and lending booms occurred in domestic banking markets over the same intervals. The crises were followed, except in the case of Sweden, by substantial capital outflows and in all cases by a sharp reduction in bank credit. Their model suggests that intermediation involving maturity transformation is likely to increase capital inflows relative to equilibria in which there is no intermediation but at the cost of increasing the probability of a run on the banking system. Since the run on the banking system depletes reserves it also increases the chances that a fixed exchange rate regime is abandoned.

This literature has clarified two important points. First, the government's net reserves support two

policy regimes: the banking/financial system and the exchange rate regime. An attack on either regime that exhausts reserves will necessarily have important implications for the other regime. This will make identification of the causes of a crisis difficult.[1] Second, rapid growth in the stock of bank credit may be an early warning that potential losses in the financial system and the associated contingent government insurance liability are approaching a crisis level.

V. Solutions: Debt Management Policy

Simple accounting and common sense suggest that even the most conservative fiscal and monetary policy regime places no restrictions on the financial risks a government might choose to undertake or undertake inadvertently. Governments can and do issue liabilities in order to acquire assets. That is they engage in financial intermediation. Moreover, governments' activities in financial markets are related to a wide range of policy objectives.

The most carefully monitored debt management policy is the decision to defer taxation, or what is the same thing, the decision to increase net debt (sell liabilities or assets). But financing fiscal imbalances is only a part of debt management policy. Governments of developing countries have also been very active financial intermediaries. Like private intermediaries they have levered their net debt (asset) position by issuing financial assets in order to acquire liabilities. Like private intermediaries they have also assumed very large "off balance sheet" contingent liabilities. Finally, they have recently been active participants in derivative markets.

These activities are related to a number of policy objectives and economic shocks. Banking crises have forced the government to purchase their banks' nonperforming loans and sometimes the banks themselves. Governments have issued debt to finance these purchases. Sterilized exchange market intervention has generated very large changes in governments' assets and liabilities. For example, in the face of private capital inflows governments have chosen to acquire foreign exchange reserves in order to resist the appreciation of their currencies and declines in domestic interest rates. These purchases are typically financed by the issue of domestic currency debt. Private capital outflows reverse these transactions. Devaluation has forced governments to assume guaranteed private external debt. Buy-backs of sovereign debt have reduced the market value of private external debt and increased debt to official lenders. Privatization has reduced domestic and foreign debt at the cost of reducing the government's nonfinancial assets. Finally, social safety nets have been

[1]The two objective/one policy tool problem is well known. Wigmore (1987), for example, argues that the choice of the new Federal Reserve system to protect its gold reserves in order to maintain the fixed exchange rate forced them to accept the bank failures that may have triggered the 1930s' depression. For a discussion of the conflict in the context of currency boards see Caprio et al. (1996).

expanded in some cases and in others reduced through privatization.

Each of these policy decisions alters the government's balance sheet and, in turn, alters the exposure of the government to changes in the relative values of assets and liabilities. As domestic capital markets have become more integrated with international markets the distinction between the governments' domestic and international balance sheets has become less obvious. The key issue for debt and asset management policy is whether or not the uncoordinated sum of these policies is likely to be nearly optimal. Is there a good reason to impose some overall discipline on the governments participation in financial markets?

If so it will be necessary to add a careful analysis of the government's balance sheet to the traditional income expenditure framework. This is no small step. Most governments do not compile a useful balance sheet and, in almost all cases, no one decision maker has the responsibility for protecting the value of that balance sheet. The result is a balkanization of financial management that generates unintended and costly errors. In my view the international organizations have a heavy responsibility to guide the statistical and analytical efforts necessary to compile and interpret national balance sheets.

One place to start such an analysis is to review how governments of industrial countries have dealt with these issues. The perhaps surprising answer is that orthodox debt and asset management policy consists largely of limiting the government's participation in financial intermediation. Industrial country governments have learned the hard way that capital gains and losses inevitably follow from leveraged financial positions. Governments are given little political credit for gains but swift electoral retribution for losses.

Since governments cannot avoid some net asset or liability position unless they always match expenditure with taxation there is always some financial position to be managed. In general, this debt or asset management follows a simple and predictable rule. Debt is comprised of a single class of domestic currency denominated nonindexed bonds with a "long" maturity.

Debt management policy in developing countries must also be concerned with financial crises. Recent papers by Calvo and Mendoza (1995), for example, emphasize debt management in the context of multiple equilibria models. The important insight is that if private expectations are volatile and, if that volatility can generate self-fulfilling crises, it is important that the government insulate its financial position from changes in expectations. An obvious implication of these models is that the stock of government liabilities that matures on a given day is a useful measure of the vulnerability of that government to a shift in private expectations. For example, the shortening of the maturity of government debt leading up to the Mexican crisis is cited as an unwise contribution to the governments' vulnerability.

The interesting policy issue here is that, even if it appears to be expensive in terms of debt service costs to borrow long, it is important to do so to avoid crises. Another important insight is that governments' liabilities include insured deposits in the domestic banking system. Since these are typically short-term assets

the governments' contingent liabilities can be the source of vulnerability.

Another important theme in this literature is that rapid growth of domestic credit is a good indicator that a reversal of expectations could be imminent. Sachs et al. (1996) provide a clear analysis of how domestic financial liberalization and weak regulatory systems have generated lending booms in emerging markets. "Financial liberalization typically is accompanied by aggressive behavior on the part of banks. In order to raise deposits, banks increase interest rates and fund more risky projects. Given the existence of deposit insurance (implicit or explicit) depositors find it profitable to move to these banks. Although the purpose of prudential regulation is to impede this tendency, during the early years of liberalization the capacity for oversight is usually poor. Consequently when significant capital inflows take place in early stages of financial liberalization, the lending boom that follows is likely to be associated with an increase in the riskiness and vulnerability of bank portfolios...The weaknesses of the banking system do not surface until capital inflows reverse (p. 191)." Clearly prudential regulation of the domestic banking system and, more generally the domestic financial system, is an integral and important part of the government's debt management policy.

VI. Debt Management and the Cost of Crises

Even careful government will experience difficulties in the face of a very large shock to the world economy. Complete safety would require very little interaction with international capital markets. Dooley (1996) focuses on the idea that if trouble comes, debt structures might have an important bearing on the real costs of the crisis. A major failure of models of crises is their failure to explain the prolonged slump in economic activity that follows some crises. Compare, for example, the relative boom in the UK following the 1992 ERM crisis with the prolonged slump in Mexico and Argentina following the 1994 crises. Which experience will Thailand and other Asian countries share? We don't know.

One way to think about this issue is to assume that a country is unable to effectively utilize its capital stock until the financial crisis is resolved. Since different debt structures incorporate different participants in a restructuring, it is important that the government look ahead to minimize the costs associated with alternative debt structures.

Why might the debtor care about the structure of debt following a default? If there is a single debtor and full information it is reasonable to guess that there will be an immediate agreement to restructure the debt regardless of its characteristics. In fact, there is no compelling need to renegotiate the formal debt contracts since payments to a single class of creditors are probably unrelated to the existing contracts.

If there are many creditors, however, this simple equilibrium breaks down. In particular, creditors now

have the opportunity to bargain with other creditors in order to minimize their share of the loss. This can be modeled in a variety of ways but one appealing idea is that different creditors have different opportunity costs but imperfect information about each other. In some circumstances this will generate a war of attrition among the creditors as each delays settlement even though the prize, in this case the country's ability to pay, melts away.

While the negotiations are ongoing the debtor government cannot enter into credible contracts with third parties. We might think of this as the inability to obtain trade credit making it difficult to use the capital stock that was acquire by issuing debt initially.

Once this conflict begins the only rule is that there are no rules. Where default is sometimes unavoidable, the structure of the government's financial debt determines the participants in the conflict over rescheduling the debt and their relative bargaining strength. This aspect of debt management policy becomes more important as the probability of unavoidable default rises. In some cases it will be optimal to limit self-interested bargaining by issuing only one type of debt that by conventional measures appears to be very costly to the government.

Market yields before the crisis on alternative types if debt are not a useful measure of the cost of alternative credits to debtors. A creditor group that will impose significant costs on the debtor following a default will offer credits on what seem to be relatively attractive terms. But that same group might impose relatively large dead weight losses on all the participants in the rescheduling that follows an unavoidable default. Since there is no reason for the "tough" creditor to internalize the dead weight loss imposed on others following a default, the terms offered the creditor are not a useful guide to debt management policy. This is a particularly interesting result because results drawn from familiar models of debt management for industrial countries imply that debt offerings that are welfare improving also minimize the government's debt service cost. The task for the debt manager is to identify a set of efficient debt structures and then choose the best structure given the probability that an unavoidable recontracting will occur.

The basic argument can be reduced to a series of simple conjectures. First, for emerging markets the welfare costs of financial crises are far more important than the costs of other distortions usually cited as a justification for an active debt management policy. This conjecture is supported by the observation that financial crises in developing countries are followed by depressed economic activity for extended time periods. Second, the government can best reduce the exposure of the regime to crises by limiting its net debt position and by avoiding variability to its net worth associated with financial intermediation. The balance sheet relevant for this calculation goes well beyond the set of assets and liabilities that are actively managed. Finally, in cases where crises are unavoidable in some states of the world the government should design its financial balance sheet to minimize the welfare losses associated with crises.

The policy implications of this argument are striking and are quite similar to those that are suggested by multiple equilibria models. The most important is that the apparent cost of issuing a debt instrument is not an appropriate guide for debt management in emerging markets. To the contrary, minimizing debt service costs in normal times becomes an increasingly misleading guide for policy as the probability of crisis rises.

Moreover, since the probability that a crisis will occur depends on the variability of the government's net worth, leverage should be avoided. For example, sterilized exchange market intervention, lender of last resort commitments, and government loan guarantees may be inconsistent with optimal debt management policy.

VII. Are Capital Controls the Answer?

One important lesson that can be drawn from first generation models is that capital control programs are very unlikely to prevent this type of attack. The obvious problem here is that a current account deficit and private capital outflows weaken the government's position over time. When a discrete parity change is expected, yield differentials generated by control programs are too small as compared to the capital gains available to private investors that correctly anticipate a parity change. There is some chance that controls will prolong the life of the regime and "buy time" while the government comes to grips with its policy conflicts but, in the end, the regime will collapse.

The role of capital controls in preventing self-fulfilling speculative attacks seems obvious. It is plausible that effective controls would delay the end of a regime that suffered a spontaneous change in private expectations. Nevertheless, the contrary argument is equally plausible. If the private sector knows that the system is protected by controls, they would be less impressed by observed stability. Lane and Rojas-Suarez (1992), for example, argue that the use of controls has ambiguous implications for credibility of a monetary policy regime.

The role of capital controls is also problematic because self-fulfilling attacks can go in the opposite direction. It is perhaps informative that there seem to be few examples of changes in private expectations generating self-fulfilling virtuous responses by governments. Countries that start from a bad equilibrium should shun capital controls since they would delay adjustment to the new more optimistic private expectations.

In summary the first two analytical frameworks offer little hope for controls as a means for avoiding crises. The insurance model, however, is more friendly to the view that controls are a useful policy option. The simple argument is that regulation of capital inflows might be an effective way to starve an insurance crisis of the fuel that sustains it. Dooley (1996) summarizes arguments that suggest that a Tobin, or transactions, tax on capital flows is very unlikely to be welfare improving because holding periods have not been

convincingly related to speculative behavior. But the insurance model does provide a clear rationale for this type of tax. The key is that the insurance model provides a good reason to believe that holding periods of investors exploiting insurance are different, and probably shorter, as compared to normal (honest) investors. The capital inflow-attack sequence has an expected duration. If this is relatively short a transactions tax might fall disproportionately on this type of capital flow. The right tax would eliminate the incentive to exploit the insurance. Moreover the usual finding that controls effect the structure of the capital account but not total private flows is exactly the result that might reduce the probability of an insurance inflow/attack sequence.

To summarize there is an interesting relationship between domestic liberalization and the liberalization of international capital flows. The first offers obvious advantages in terms of resource allocation. But domestic financial liberalization also means that "good policies" include a number of additional and stringent constraints on governments' behavior. In the short-run it may prove difficult to get all of these conditions right particularly since they involve stocks of asset and liabilities. In these circumstances international capital flows might feed the growth of welfare reducing financial intermediation. In fact, a good summary of the historical record is that any very rapid growth in financial intermediation is likely to turn out badly. In a fully liberalized economy prudential controls will sort this out but in the early phase of domestic liberalization some residual control on international capital mobility might be a useful component of the governments array of prudential controls.

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