

CRISES: THE PRICE OF GLOBALIZATION?

The good old days probably weren't better, but they were certainly calmer. It's true that the recovery from the international financial crisis that began in Thailand in July 1997 was faster than most observers (myself very much included) had imagined possible. The crisis, however, was terrifying while it lasted, and its aftereffects are still being felt - indeed, while South Korea and Malaysia have staged rapid recoveries, the recovery of Thailand itself has been more hesitant, and Indonesia, whose population is larger than that of all the other Asian crisis countries combined, seems to have suffered a political and economic setback whose end is not yet in sight.

Moreover, even optimists about the world economy now suffer from persistent if low-grade anxiety. Before the Mexican crisis began in late 1994, many observers viewed the post-cold-war process of globalization with unmixed optimism. Even after the plunge in the peso, it was possible to regard the tequila crisis as something uniquely Mexican, not as a warning of broader vulnerability. But now even those who regard the growing integration of world markets as very much a good thing - a group that includes the author - cannot avoid wondering whether repeated financial crises are an inevitable by-product of growing trade in goods and services.

The purpose of this paper is to shed some light on this question. The answer I will suggest is that growing integration *does* predispose the world economy toward more crises, mainly because it creates pressures on governments to relax financial restrictions that in earlier decades made

1990s-style financial crises much less likely. However, the link between integration and crisis vulnerability is not a rigid one. Policies to limit financial vulnerability, including controls on both capital inflows and capital outflows, remain an option - albeit a more costly option as trade increases. On the other side, there is a reasonable case to be made that countries can protect themselves against financial crises by dollarizing or euroizing - albeit only by paying a price in flexibility that may expose them to other difficulties, even other kinds of crisis. And there is also some hope of light at the end of the tunnel: in the long run integration may solve the problems it initially creates.

In order to reach these conclusions, however, I must first develop a conceptual framework. The paper is in four parts. The first tries to put current problems in perspective by taking the "view from 1983" - that is, the view from an earlier crisis, one in which increased integration seemed likely to help, not hurt crisis management. The second part attempts to provide a framework for understanding modern financial crises - not an easy task given the fragmentation of the crisis-modeling literature. Such models lead naturally to the question of what might be done to reduce the risk of crisis, and the reasons why no one proposed solution (other than motherhood issues like transparency) has commanded general agreement. The final part of the paper then tries to ask how growing world trade affects the tradeoffs among these possible solutions.

1. THE VIEW FROM 1983

Anyone who has followed international financial affairs over an extended period of time

knows the feeling; call it conventional wisdom *deja vu*. You are listening to or reading about some current debate in which there are certain propositions that everyone takes as given, and suddenly you get a dizzy feeling, because you remember the propositions everyone took as given 5, or 10, or 15 years previously - and they weren't the same propositions.

Many of today's most prominent international macroeconomists spent their formative years as policy analysts working on the Latin American debt crisis of 1982-89, a crisis that is sometimes seen as a forerunner of the crises of the 1990s. Like the 90s crises, the debt crisis followed a period of large-scale private capital inflows to the crisis countries. There are other parallels: regional contagion, concerns about spillovers to the financial stability of Western nations, direct and politically touchy IMF involvement in the affairs of the troubled nations. Indeed, the fall of 1997 felt to some of us weirdly similar to the fall of 1982: the same sense of embarrassment that so many supposed experts had so recently been enthusiastic about the prospects of the countries now under financial siege, the same feeling of dread as, one after another, countries that were supposed to be different and less vulnerable - Brazil in 1982, Indonesia and Korea in 1997 - fell victim to the crisis.

The major difference was, of course, that in the runup to 1982 capital flows to developing countries mainly took the form of sovereign or quasi-sovereign borrowing: even where governments or state-owned enterprises were not the borrowers, private borrowing mainly took place with government guarantees. And the case of Chile - where the borrowing was not *de jure* official, but where the government felt compelled *ex post* to take responsibility for the debts of private banks - only emphasized that this was in the main a crisis of *sovereign* debt.

Some analyses of the Asian financial crisis, notably the moral-hazard models of Dooley

(1997) and Corsetti et al (1998) - and, yes, Krugman (1998) - do argue that the debts taken on by Asian banks were implicitly guaranteed by governments. More broadly, some discussion of the Asian crisis seems to be based on concepts drawn - often without sufficient realization that private and sovereign debt pose different issues - from earlier experiences of problems with sovereign debt.

But one widely held view from the 1980s - one that was based partly on empirical evidence, but also grounded to some extent in the theory of sovereign debt - seems to have disappeared in the current debate. In the 1980s it was widely believed that *openness to trade reduced the likelihood of financial crisis*.

The empirical evidence was fairly straightforward. Suppose that one had ranked developing countries in 1982 by the share of external debt in GDP. It soon became apparent that only some of the high-debt countries were actually caught up in the debt crisis; others (for example, South Korea - which *Institutional Investor*, in its famous April 1982 risk assessment, ranked below Mexico) retained access to world capital markets. In other words, the debt/GDP ratio was a poor predictor of crisis. But then what distinguished the countries that did find themselves in crisis from those that did not? One answer is that in general Latin nations were shut out of capital markets while Asian nations were not, with the Philippines - the most Latin of Asian nations, in several respects - the exception that proves the rule. But it was also true that countries with a given debt/GDP ratio were less likely to get caught up in the crisis, the higher was the ratio of exports to GDP. Indeed, the debt/export ratio turned out to be a much better predictor of crisis vulnerability than the debt/GDP ratio.

Why was openness apparently good for crisis prevention? At the time, a widespread

interpretation was that an open economy was more credible in its promises: the more important trade was, the greater the cost of trade disruption if a country should default on its debts. The government of a country with exports equal to 7 percent of GDP might decide that the legal snarls those exports might face if it refused to pay its debts were less important than getting debt relief; and this very possibility deterred banks from lending it any more money. A country with exports equal to 35 percent of GDP would not face a comparable temptation. In effect, by opening to trade a country gave hostages to the financial markets, hostages that ensured its own credibility and therefore acted as a protection against crisis.

A secondary benefit of openness, which some of us noted at the time, was that it made the adjustment to reduced capital inflows easier. For a country with initial exports of 7 percent of GDP, switching from a current account deficit of 4 percent of GDP to a surplus of 2 percent of GDP would represent a very difficult adjustment, requiring either massive depreciation or a huge contraction in output. For a country with initial exports of 35 percent of GDP, a much smaller depreciation and/or fall in output would do the trick. And again, for prospective lenders, the belief that the country could adjust to a cutoff of funds relatively painlessly would in itself make that cutoff less likely.

The view from 1983 or so, then, suggested that in a way the Latin debt crisis was the result of an opening of capital markets that got ahead of the integration of goods markets. And it seemed possible, even probable, that if and when Latin countries adopted free-trade policies, and as a result increased the share of trade in GDP - becoming, in effect, more like Asian developing countries - crises along the lines of 1982 would become obsolete.

Instead, of course, both Latin and Asian economies have since experienced crises that were if

anything more severe, at least in their first year, than those of 1982. High ratios of exports to GDP have offered little protection, and now there is a widespread sense that trade openness actually makes it harder, not easier, to avoid crises. To see why, however, we need some framework for thinking about why and how these more recent crises happen.

2. MODELING MODERN CRISES

Although the Asian financial crisis has led to a torrent of both academic and policy papers, no canonical model of that crisis has emerged. Economists are still divided over whether the crisis should be viewed as the inevitable and predictable end of a process of excessive borrowing and investment (e.g. Corsetti et al 1998), or as a temporary jump to a bad equilibrium in an inherently fragile system - and if so what features of the afflicted economies made them fragile in that sense. This lack of agreement over the nature of modern economic crises makes assessing the effects of other factors on vulnerability to crisis difficult, to say the least: if we can't agree on what happened, how can we say whether increasing trade or whatever makes it more or less likely to happen again?

Nonetheless, there has been a definite drift in the post-crisis literature away from models that emphasize excessive overall debt to those that emphasize some kind of self-fulfilling panic. The vulnerability of economies to such a panic, in turn, is increasingly ascribed to some form of mismatch - between the maturity of debts and that of real investments, or between the currency denomination of debts and that of assets, or (probably) both. Let us review briefly each approach in turn.

Maturity mismatch

The idea that financial crises can arise out of a mismatch between the maturity of investments and that of debts is the core of the classic Diamond and Dybvig (1982) model of bank runs. The best-known applications of this idea to recent international crises are the series of papers by Chang and Velasco (1998, 1999).

The basic idea is this: imagine an economy in which the rate of return on investments is considerably higher if resources are committed to projects that take a considerable length of time to mature - and which yield much less if terminated prematurely. If such projects had to be financed directly by individuals, investors could only finance them by surrendering liquidity: their funds would be tied up in the projects, and would not be available if unpredictable personal demands created a need for funds before the projects come to fruition.

Financial intermediaries can resolve this problem. Assuming that the personal emergencies that create demands for early liquidation are more or less uncorrelated, a financial intermediary can pool the funds of many individual investors, giving each of them the right to withdraw funds on demand out of a small reserve of liquid assets, allowing most of the funds to be invested in high-return illiquid projects. The perceived liquidity of individual investors is retained, yet the necessary long-term commitment of resources is also achieved.

Unfortunately, such liquidity-creating financial intermediation also creates the possibility of a self-fulfilling panic - a bank run. If a large fraction of the holders of claims on the intermediary were all to demand payment at the same time, there would not be enough liquid assets to satisfy their demands, and because the long-term investments are worth little if terminated prematurely,

they would offer little help. And this means that if, for whatever reason, many of those who hold claims come to believe that other holders of claims are about to try to cash out, they will rationally try to cash out too. So a fundamentally sound intermediary can be destroyed by a self-fulfilling run; if this happens to an economy as a whole, there can be a crisis that reflects not the unsustainability of the previous prosperity but merely the economy's fragility, its vulnerability to bank runs.

On the face of it, this general story has considerable relevance to the Asian crisis. Plain old-fashioned bank runs played an important role in some countries, notably Indonesia in November 1997. Other aspects of the crisis, while not fitting the model so literally, share some of its flavor - for example, the way that refusal of foreign banks to roll over short-term loans pushed South Korea into financial crisis late in 1997.

And yet there are some problems with this traditional maturity mismatch story. One problem is that the way the story explains the real cost of financial panics is unsatisfying. In an earlier paper (Krugman 1999a) I summarized this problem as follows:

"In the Diamond-Dybvig model the costs of premature liquidation are *physical* - a bank run literally leads to investments being cannibalized before completion, with the output cost to the economy the result of a literal destruction of physical capital. There are a few real examples of this process in Asia - half-completed structures left to disintegrate for lack of funding, or dismantled for scrap metal. There are also some more complex stories that can be viewed metaphorically as examples of physical liquidation - for example, potentially profitable export opportunities not taken because working capital has been sold to pay off bank loans. But surely

the main channels through which financial panic has turned good assets into bad involve not so much physical liquidation of unfinished projects as macroeconomic crisis: companies that looked solvent before the crisis have gone under because collapsing investment has produced a severe recession, or because capital flight has led to currency depreciation that makes their dollar debts balloon. Or to put it another way, Diamond and Dybvig used a physical metaphor for the costs of premature liquidation as a way to focus on the problem of multiple equilibria on the part of depositors; fair enough. But to make sense of the Asian crisis it is probably important to have a better metaphor, one that comes closer to matching the stylized facts of actual experience". (Krugman 1999a)

But if the nature of the costs is macroeconomic - and if, as this passage suggests, the crucial point is not just a flight *to liquidity* but a flight *from the country* - we need an approach that somehow recognizes the role of both the trade balance and the exchange rate.

These concerns led me - and, independently, a number of others, including Aghion et al (1999) and Calvo (1999, 2000) - to emphasize a different mismatch, involving not maturity but currency.

Currency mismatch

The basic idea behind currency mismatch stories is that for whatever reason (and the reason is, as we will see, important) firms in many developing countries have substantial debts in foreign currency. What this in turn means is that any currency depreciation will, other things

being the same, worsen the balance sheets of these firms. If their investment is constrained by their net wealth - which is more likely if they are also highly leveraged with domestic-currency debt - there is the potential for a self-fulfilling logic of crisis that is similar in spirit to the maturity mismatch story, but considerably different in detail.

The story runs as follows: suppose that for whatever reason there is a flight of capital from a developing country. This will depreciate the currency, producing balance-sheet problems for domestic firms; if these problems are sufficiently severe, they will outweigh any expansionary effect of depreciation on demand, creating an economic contraction that feeds further capital flight, and so on. The key linkage is not physical destruction of investment projects in process, but the transfer problem - the need to effect an outflow of capital through a real depreciation.

The end result of this process is an abrupt switch of the current account from deficit to surplus; a large real depreciation of the currency; financial devastation for the corporate sector; and presumably, though this depends on the specifics of the model, a decline in output.

(Realistically, one would also expect the crisis to be reinforced by banking panics along the lines described above.) The most striking thing about the Asian crisis is not the decline in output, though this was severe enough; it was the sheer, probably unprecedented size of the current account reversal, with the crisis countries as a group shifting from a current account *deficit* of 5 percent of GDP in 1996 to a current account *surplus* of 9 percent of GDP in 1998. This reversal which is why the transfer problem surely belongs at the center of the story; but more generally the overall picture certainly fits this balance-sheet version of the crisis.

A fully fledged model of balance-sheet driven crises is necessarily fairly complex; even the rather cumbersome analysis in Krugman (1999a) is only a partial job, and the recent effort by

Céspedes, Chang, and Velasco (2000), while much more complete, also seems to lose some of the message along the way. (I am still digesting their model. However, it appears that by assuming both rational expectations and an assured long-run return of the economy to its original steady-state, they end up ruling out the sort of self-fulfilling crisis that was the original point of the story.) However, it may be helpful to sketch out a simplified version of the story - derived from Aghion et al (1999), and originally presented in Krugman (1999b).

In this simplified model, we think of a Mundell-Fleming-type economy that produces a single good sold both domestically and on foreign markets; and we assume that arbitrage keeps the domestic interest rate equal to the foreign rate plus some fixed risk premium (ignoring expectations of future depreciation, changes in the risk premium, and so on.) With a fixed money supply, there would be a unique level of GDP at which the domestic interest rate equals the foreign rate plus the risk premium; more generally, if the monetary authority leans against exchange rate movement, we might represent asset-market clearing with a backward-leaning curve like in Figures 1 and 2.

In the goods market, a depreciation of the currency - a rise in the price of foreign exchange - will make domestic goods more competitive, increasing net exports. If this is the only effect the goods market curve GG will be upward-sloping, as in Figure 1, and there will be a unique equilibrium. If, however, there are sufficiently strong balance-sheet effects, they can outweigh this competitiveness effect, causing the goods-market curve to bend backwards over some range. In Figure 2 GG is shown as an S-shaped curve. Loosely, the idea is that when the domestic currency is sufficiently strong most firms are not wealth-constrained, and so the balance-sheet effect is weak; when the domestic currency is very weak most domestic firms with foreign-

currency debt are already bankrupt, so that things can't get any worse, and the pro-competitive effect of depreciation again dominates. So the perverse region, in which depreciation is contractionary, is for intermediate levels of the exchange rate.

In Figure 2 there are two locally stable equilibria. What might cause the country to hop from the normal equilibrium to the crisis equilibrium, via a process of self-fulfilling capital flight? The answer is anything - a political crisis, an economic crisis in a neighboring country (hence contagion), whatever causes the hyperdepreciated equilibrium with many firms bankrupt to become the new focus of expectations.

Such a hop to a bad equilibrium will certainly be a source of dismay and even outrage in the countries affected; policymakers will feel that the economy's sins do not deserve such severe punishment, and if schooled in post-Keynesian macroeconomics they will feel that there must be *something* they can do to avoid it. Yet in theory and practice the policy options once a crisis is underway seem very limited.

Policy in the crisis

Ordinarily we expect countries to be able to use monetary policy to fight recessions. What is so disturbing about the crises of recent years is that the logic of these crises seems to rule out such monetary reactions, indeed to force countries to meet an economic slump with monetary tightening. The point is fairly clear from Figure 2. If the economy is for whatever reason at risk of hopping to the crisis equilibrium, the last thing the central bank wants to do is to loosen monetary policy, which other things being the same will tend to weaken the currency, and

therefore all but ensure that the bad equilibrium does in fact materialize. Indeed, even a reasonable central bank might well try a draconian tightening instead, hoping to persuade the market that the currency will stay strong and hence shepherd it back into the normal equilibrium.

But this will be an expensive policy not only in monetary terms but in its social impact. One could argue that the cost is only a short-run setback to the economy - though as Table 2 shows, this cost, even if it is temporary, is not at all minor. But the example of Indonesia suggests, again, that a sufficiently severe short-run shock can produce lasting effects by shattering political stability. Are there other policies that could help mitigate the crisis?

One answer is for the IMF or other sources to serve as a lender of last resort. However, this term is often used much too loosely in the context of international rescue packages. In the classic lender-of-last-resort role, the central bank (or J.P. Morgan, or someone) provides funds to an *individual* debtor that cannot meet its payment demands. A country, however, is not an individual. Admittedly, in 1982, when the crisis was basically one of sovereign debt, one could to some extent think of national governments as the troubled debtors; and even in Mexico 1995 the particular problem of *tesobono* debt still fit the sovereign-debt picture. But in the Asian crisis the problem was not the inability of the government to meet its obligations, but the desire of private agents, both foreign and domestic, to pull funds out of the afflicted economy. So if the IMF is the lender of last resort, to whom is it lending?

The answer - which is not often stated clearly - is that the IMF is providing funds to the domestic government that will in turn be used to support the currency through a *sterilized intervention*. Short-term loans from abroad provide the central bank with dollars, which are then thrown into the market; but unless monetary policy is further tightened, this is ultimately only a

swap of dollars for domestic debt, not for domestic currency.

Such intervention would have the effect, other things equal, of reducing the risk premium. Schematically, we can think of intervention as shifting the goods market curve in Figure 2 to the right, while shifting the asset market curve to the left. If the effect is large enough, these shifts will *eliminate* the crisis equilibrium, and therefore prevent a crisis from occurring.

But will the intervention be that effective? The conventional wisdom for advanced countries is now that sterilized intervention is largely ineffective - that any official capital inflow in a crisis will simply generate a matching increase in the private outflow. This makes the focus of much developing-country discussion on the lender of last resort role a bit strange. The same objection applies to arguments like that of Feldstein (1998) that countries can protect themselves against crisis by maintaining very large reserves.

However, one can offer a few justifications for believing that large-scale liquidity provision might work. The easiest justification - though one you wouldn't want to count on too much - involves the multiple-equilibrium nature of the crisis. A big loan from the IMF, announced with much fanfare, might not be enough to literally rule out the crisis equilibrium; but it might nonetheless create a focal point for expectations, tipping a country threatened with crisis back into the normal, calm equilibrium. On the other hand, one has to doubt whether a policy that cannot succeed unless it somehow manages to change expectations can consistently manage to change expectations in the first place.

More concretely, it is arguable that the conditions under which sterilized intervention is ineffective do not exist in developing countries (or more to the point, do not exist *yet* - as we will see, this is one of the reasons to worry about whether increasing integration will further increase

the risk of crisis.) Sterilized intervention is ineffective when there is high private capital mobility, to the extent that domestic and foreign securities are viewed by a sufficiently large group of investors as very close substitutes. If that were the case, one might expect capital flight in a crisis to occur in a wide variety of ways; in particular, one would expect to see domestic residents buying foreign assets on a large scale, using the proceeds from sales of domestic assets. Some of that happened in 1997-8; but the bulk of capital flight took only one form, refusal by foreign banks to roll over short-term credit. This suggests that the channels of short-term capital mobility remain more limited than skeptics about sterilized intervention would have supposed.

Econometric evidence lends additional weight to this conclusion. As shown by a number of studies (e.g. Frankel and Rose 1997, Rodrik and Velasco 1999), short-term external debt - and in particular the ratio of such short-term debt to reserves - is by far the best leading indicator of recent crises. If assets were broadly fungible, this would not be the case.

Unfortunately, while the limited extent of capital mobility in developing countries probably means that the size of international loan needed to forestall a crisis is less than the most pessimistic estimates - which tend to suppose that only a loan equal in value to M2 or even M3 is really enough to forestall a crisis - that does not mean that the numbers involved are small. In practice international institutions have not been willing or able to provide enough rapid deployment of funds to prevent very severe crises. And this situation does not seem likely to improve.

If a country cannot use conventional macroeconomic policy to fight a crisis, and cannot get enough external resources to offset private capital flight, what is left? The logically obvious answer is to cut the Gordian knot directly, by simply preventing the capital flight. The

gentlemanly form of such action is a negotiated standstill with foreign banks, as was done in Korea and Brazil; the ungentlemanly form is a de jure imposition of capital controls, as in Malaysia. Needless to say, Korea and Malaysia did not escape the crisis (though Brazil's devaluation was benign - which was a great relief at the time, and also has important implications for future policy); but both have staged rapid and impressive recoveries, though as always it is very hard to establish any causal link.

What is the difference between the Korean and the Malaysian answer (leaving aside the very different political context)? The advantage of a standstill negotiated with banks is that it is a milder policy, one that does not pose as great a risk of alienating potential future investors. Also, capital controls require an elaborate administrative mechanism that both creates red tape for current-account transactions and over time exposes officials to dangerous temptations. The disadvantage of a bank-centered policy for relief is that it takes on only one channel of potential capital flight.

In any case, many observers suspect that while the attempts by Korea and Malaysia to curb capital flight and thus end a crisis may have worked this time - or, if you think these policies did not play an important role, you can say that the countries at least got away with them - the scope for such policies will be less in the future than now. If this is true, the reason is that globalization will make such policies either ineffective or too costly.

To understand (and possibly challenge) the logic of this concern, however, we need first to look at another set of issues: not policy during crises, but policy aimed at preventing crises.

3. CRISIS PREVENTION

Suppose that we agree that the best working story we now have about crises is that they involve a self-fulfilling process of capital flight and balance-sheet collapse, one that is very difficult to stop once it starts. There are at least three key factors in this story: the vulnerability of countries to capital flight, because there is a large pool of potentially mobile funds; the vulnerability of firms to balance-sheet calamity, because they have large foreign-currency denominated debts; and the psychology of investors themselves, who can be caught up in an individually rational but collectively disastrous panic.

All serious proposals for reducing the risk of crisis involve doing something that will diminish the force of one or more of these factors. Let us consider four types of policy proposal in turn: those that involve discouraging foreign-currency debt by letting exchange rates float; those that on the contrary attempt to eliminate the risk of currency crisis by permanently fixing the exchange rate, or better yet dollarizing; those that involve some form of limits on capital *inflows*, and those that involve some form of limit on capital *outflows*.

Floating exchange rates

Can there be a consensus nobody agrees with? Most people involved in discussions of international financial architecture seem to believe that such discussions have reached a consensus about bipolarity, defined to mean that countries should have either floating exchange rates or rigidly fixed rates - currency boards or even dollarization. And it's true that there are few advocates of compromise systems these days. However, many individual analysts don't really seem to believe that the important thing is to make a choice one way or the other; on the contrary,

they seem to be firmly attached to one of the poles. In particular, reports from international financial institutions seem mainly to favor floating rates, while a considerable number of academics (such as Barry Eichengreen and Guillermo Calvo) have become increasingly strong advocates of dollarization.

The currently popular argument for floating exchange rates for developing countries, which one often hears from officials and can find in such writings as Goldstein (1999), is *not* the traditional macroeconomic one - that is, it is not the argument that floating rates give nations monetary autonomy, insulating the economy to some extent from external shocks, and allowing active policy in response to declining demand. Instead, the argument is that fixed exchange rates encourage domestic firms to borrow in foreign currency, and thereby set the stage for the kind of crisis described above.

Why should a fixed but adjustable exchange rate encourage borrowing in foreign currency? It's not all that obvious: if there is a risk of a currency crisis that will cause the domestic-currency value of foreign-currency debt to explode, forward-looking firms should take that risk into account when borrowing. And in any case, why should domestic firms - for whom adverse shocks on the exchange rate would normally be correlated with other adverse shocks - take on that risk? Wouldn't the normal logic of risk-sharing suggest that *foreigners* would take on the risk, therefore lending in *domestic* currency?

Nonetheless, as an empirical matter firms in countries with fixed rates *do* seem to be unusually willing to borrow in foreign currency. Perhaps this reflects "disaster myopia": the clear and present benefits of borrowing at a lower interest rate prevail, while insufficient weight is given to the catastrophic cost if the domestic currency is devalued. Or possibly, as Calvo (1999)

has argued, there is an element of asymmetric information: domestic firms have more information than foreign lenders about when a devaluation is likely, so that an offer on their part to borrow in domestic currency is inherently suspect.

However, if one grants that whatever the reason, fixed rates foster dollar- or euro-denominated debt, there is then a case to be made that a floating-rate regime offers some insurance against financial crises.

Eichengreen and Hausman (1999) call this the moral hazard argument regarding the exchange regime, because they regard it as part of the general - and, in their view, incorrect - argument that developing countries borrow too much because such borrowing receives implicit guarantees. It's actually a somewhat problematic use of the term: there may be a sense in which the implicit commitment to use reserves to defend the currency constitutes a form of moral hazard, but I doubt that anyone thinks that this implicit guarantee is the main reason why fixed rates encourage foreign-currency debt, if they do.

The objection that they *don't* raise is that if the problem is excessive foreign currency debt, discouraging that debt with a fluctuating exchange rate seems a strangely indirect policy. The only way it makes sense to prefer this to a more direct form of capital inflow control is if you think that there really is some form of disaster myopia, so that borrowers won't think about the risks of depreciation unless they are confronted with daily evidence that the exchange rate isn't permanently fixed.

The ultimate appeal of floating exchange rates is the hope that they can turn Brazil into Australia. The Australian example shows that it is possible for a country to attract large inflows of capital without, apparently, becoming vulnerable to Asian-type financial crises. A key

ingredient in Australia's stability seems to be the fact that its firms do not rely heavily on foreign-currency-denominated debt (indeed, as ordinary risk-sharing would suggest, they actually sell substantial amounts of *domestic* currency debt abroad). And because a currency depreciation does not wreak balance-sheet havoc with Australian firms, the country was actually able to use exchange rate flexibility as a stabilizing device, with a drop in the Australian dollar largely insulating the country from the crisis afflicting its neighbors.

The question is how important the exchange rate regime was in creating this happy flexibility. If Australia had had a fixed exchange rate since 1983, would its U.S.-dollar debts have been so large to make devaluation too dangerous? Conversely, if Brazil or Mexico maintain their floating rates for another decade, will they develop deep domestic-currency financial markets that allow firms to finance themselves without creating currency mismatch?

The basic belief of the dollarizers is that the answer to at least the last question is no - that the original sin of developing countries is too deeply embedded to be washed clean by a floating-rate regime.¹ And this is what pushes them to the opposite regime.

¹How did Australia get its domestic-currency markets? Eichengreen and Haussman (1999) essentially argue that they grew up behind protective walls - that postwar Australia's currency controls allowed a deep market in domestic securities to arise, one that remains deep now that the markets are open. This immediately suggests an Ainfant financial industry hypothesis, one that would argue against early liberalization of the capital account. But this is not a path that they are willing to go down.

Dollarization

It is a truism that one can defend any exchange rate with a sufficiently large reduction in the supply of money. So the crisis process described above, in which expectations of weaker currency cause a depreciation whose balance-sheet effects ratify those expectations, can always be short-circuited by sufficient monetary tightening. But what if you could credibly promise that this monetary tightening would in fact take place if a crisis were to try to happen? Then the tightening would not be necessary in the first place. If a central bank can credibly declare its willingness to defend an exchange rate at all costs, the actual cost of that defense would be relatively small. (Multiple equilibria are strange things.)

How could a country make such an ironclad (gold-plated?) commitment to defend the currency credible? The obvious answer is to institutionalize the commitment in some way. And hence one has the case for currency boards, or better yet dollarization (which we should now think of as a generic term that implies adoption of any major-country currency, although either the dollar or the euro are the only current candidates.)

Some readers may notice that even if such an institutionalized commitment to a fixed exchange rate succeeds in eliminating the risk of crisis due to currency mismatch, it does not eliminate the risk due to maturity mismatch - and by limiting the ability of the national government to serve as lender of last resort, arguably increases that risk. Advocates of dollarization respond by saying that a dollarized market will involve longer-term lending, and will therefore in fact be less at risk even of maturity crises. I will return to this debate briefly in the next section of the paper.

The new advocates of dollarization for developing countries, such as Guillermo Calvo and Barry Eichengreen, differ in important ways from more traditional advocates of currency boards and currency unions. The traditional case was essentially based on faith in markets: give people a stable currency and the free market will take care of the rest. In particular, the traditional arguments for hard pegs dismissed concerns about inflexible prices and wages. By contrast, the new dollarization advocates are motivated mainly by *distrust* of markets. When Eichengreen and Hausman make the case that reliance on foreign currency debt is dangerous but deeply rooted in the failures of developing-country financial markets, and unlikely to be reduced by a floating exchange rate, they call this the doctrine of Aoriginal sin: it's the imperfection of markets, not their reliability, that motivates these economists to advocate a permanent commitment to a foreign currency.

Like the advocates of floating rates for developing countries, advocates of dollarization believe that by selecting the appropriate exchange rate regime countries can greatly reduce the risk of crisis. So in that sense they are saying that crises are *not* an inevitable byproduct of the changed nature of the world economy. But they are nonetheless saying that a price must be paid to avert the threat of crises, because the old sticky-price logic still obtains. In permanently fixing its exchange rate, a country obliges itself to adjust to real shocks via deflation or inflation. And all evidence suggests that this is as difficult as ever - that the old arguments in favor of exchange rate flexibility remain relevant.

Consider, in particular, the case of Argentina. The country's currency board has been widely praised, and retains immense popularity within the country. And it probably has given Argentina some immunity to speculative attack. On the other hand, it is a straitjacket for macroeconomic

policy. The current situation in Argentina bears a clear family resemblance to that of Britain following the return to gold, with financial credibility strong but the real economy persistently weak.

Notice that I am not calling for an abandonment of the Argentine peg. Given the extensive dollarization that has already taken place, with not only external debt but also much internal debt denominated in dollars, there is every reason to believe that a devaluation would be contractionary - not to mention the severe loss of credibility that would be entailed.

On the other hand, when neighboring Brazil devalued in early 1999, the results were clearly expansionary - even though the failure to defend the *real* was humiliating for the government, the effects were benign, more like what happened to the UK in 1992 than what happened to Thailand or Indonesia in 1997. The most likely explanation is that Brazilian firms did not have large dollar-denominated debt, so the self-reinforcing balance-sheet effects that were so devastating in other developing countries did not materialize.

But why is Argentine private debt largely dollar-denominated, while Brazilian debt is not? One answer surely is the exchange rate regime, bringing us back to the bipolarity issue. Because Argentina's fixed rate has led to large dollar-denominated debt, abandoning the peg would probably be catastrophic; so one might as well go all the way to dollarization.

But there is also the issue of regulation: governments can actively discourage foreign-currency borrowing. (My understanding is that Brazilian regulations have in fact had the effect of discouraging such borrowing, though I am happy to be further enlightened.)

Capital inflow controls

As already pointed out, there are two lines of evidence that put short-term foreign-currency debt at the core of modern crises: econometric evidence that says that such debt is the best predictor of crisis risk, and the raw fact that failure to roll over this kind of debt was the main component of the capital-account reversal in Asia from 1996 to 1998. When one adds to these empirical concerns the growing belief among theorists that foreign-currency debt (although not necessarily *short-term* foreign-currency debt) plays a key role in the mechanics of crisis, it would seem to be a natural conclusion that prudential limits on such debt would be a key part of any package of measures to limit the risk of future crises. And indeed proposals to emulate Chilean controls were a very active topic of discussion a year or two ago.

More recently, however, the popularity of such measures has evidently faded away. Aside from the general decline in interest in reform now that the crisis is past, there seem to be three main reasons for this loss of momentum.

The first is that those who worry about short-term external debt have started to emphasize the exchange rate regime rather than direct controls or taxes. It seems a bit peculiar, again, to rely on currency volatility to provide an implicit tax on foreign-currency borrowing; but the other doubts about limits on borrowing seem to have created a preference for such indirect measures.

Second, there have long been questions about whether limits on borrowing are really enforceable - whether, in particular, domestic borrowers can evade Chilean-type taxes by making more complicated transactions. I would argue that the evidence suggests that such skepticism is excessive: there will be some evasion, but perfection is not required in this case. More fundamentally, the very imperfections in developing country financial markets that are so much

emphasized in recent writing - their original sin, as Eichengreen and Hausman put it - will limit the ability of domestic firms to make the other side arrangements that replicate short-term dollar debt through untaxed or uncontrolled transactions. To caricature this argument slightly: you can't assert that firms must borrow abroad in dollars because they lack the credibility or institutional means either to borrow in local currency or to hedge their dollar debts, and then at the same time assert that if dollar borrowing is discouraged those firms will borrow in domestic currency and hedge it back to a de facto dollar debt.

Finally, with the crisis past most analysts have returned to a general concern that any form of regulatory intervention that imposes considerable red tape on firms will damage the ability of countries to participate in the broader gains from globalization. This brings us, finally, to the central topic of this paper; but before moving on we need to turn briefly to the question of capital *outflow* controls.

Capital outflow controls

Another initiative that has rapidly fallen out of favor as the crisis has receded is the proposal for "private sector involvement" - basically, some set of ground rules or understandings that would regularize standstill agreements on short-term debt when a crisis strikes. Again, both the logic and empirical evidence behind such proposals is clear. If crises are self-fulfilling panics, investors are in a prisoners dilemma, in which it is not only in the country's interest but their own to impose a sort of curfew that gives the market a chance to calm down. And in 1997-8 it was overwhelmingly a reversal in the direction of short-term bank flows that made up the reversal in

the overall capital account of the crisis countries.

Nonetheless, the vociferous objections of banks have largely shut down discussion of private sector involvement. The main objection, as I understand it, is the belief that in future crises there will be many other channels of capital flight; so singling out the banks will be ineffective, and will simply penalize them. Furthermore, the prospect that they will be so singled out if another crisis should materialize will deter banks from lending in the first place.

Even if these objections are right, one answer would be not to give up on private sector involvement but to widen it - to propose that broad capital export controls be imposed as a crisis measure. Needless to say, this idea - however directly it may follow from the theory of the case - is anathema to almost all respectable commentators. The main reason seems to be both belief that such controls will be ineffective, and fears that the threat of such controls will undermine the broader gains from globalization - again bringing us to the main point of this paper.

Also, and again in parallel with the discussion of capital import controls, some of the doubts about private sector involvement appear to be inconsistent with the doctrine of original sin that is supposed to explain why countries are vulnerable in the first place. If domestic financial markets are so underdeveloped that firms must borrow in foreign currency, the ability of capital flight to do an end run around a standstill on the resulting foreign-currency debt will presumably be limited. And if foreign-currency debt is a source of vulnerability, having the prospect of private sector involvement later deter foreign lending now might not be such a bad thing.

But leaving such skepticism aside, what one finds in this case as in the case of capital inflow controls is that the ultimate source of unwillingness to take measures that might reduce the risk of crisis is concern that doing so might undermine the benefits of globalization.

4. GLOBALIZATION AND CRISES

Consider a typical middle-income developing country 25 years ago. (Which country are we talking about? Never mind.) It would have had many problems, but it would not have been at any risk of a 1990s-style crisis. For one thing, the currency would not have been fully convertible: one would have needed a license to buy foreign exchange, and while this would not have prevented all capital flight, it would have prevented *rapid* flight in a crisis.² There would have been relatively little external debt, mainly sovereign, and mainly long-term. Balance-of-payments problems could and would occur; indeed, adverse shocks to the current account would be all the harder to deal with because offsetting capital inflows would not be easy to obtain. But devaluation would be a very much available option, indeed probably a required part of any IMF package.

Now consider the corresponding country today. It has liberalized its exchange market along with many other parts of the economy, and has achieved encouraging success in raising productivity, developing non-traditional exports, and so on. This success has attracted

²A personal anecdote: the author was a consultant to the Bank of Portugal in 1976, a time when Portugal had exchange controls - and was also losing reserves rapidly. Many theories were spun about how the money was evading the controls. It turned out, however, that domestic banks were simply hoarding foreign exchange receipts, failing to turn them over to the central bank. The problem of capital flight was solved with a few phone calls. What made this particularly funny was that those domestic banks were state-owned at the time.

considerable foreign investment. Some of this investment is direct, but there have also been large financial inflows, mainly dollar, euro, or yen-denominated loans to domestic firms. There may also be considerable internal lending denominated in foreign currency.

The result is an economy that is doing much better in good times, but is also far more vulnerable to sudden crises. When bad news, or even a rumor of bad news, arrives, rapid capital flight is now all too possible. And devaluation is now risky at best, disastrous at worst, because of that foreign-currency debt.

Why did countries make themselves vulnerable in this way? Can they reduce that vulnerability while retaining the good things about their transformation?

Why countries have become vulnerable

Why couldn't countries have retained the controls that limited both foreign-currency debt and potential capital flight? The answer is that some have - indeed, the biggest developing countries, China and India, still operate under extensive capital controls, and do not have large private-sector foreign-currency debt. And surely it is because the two Asian giants had not yet liberalized their capital account to the same extent as other Asian nations that both (thank God) rode out the world financial crisis with little turbulence.

But neither is, to say the least, an economy without troubles. And at least some of these troubles are connected to the very aspects of the economic system that protected them against financial crisis. Exchange controls probably make it more difficult to export: they necessarily require exporters to turn in their foreign exchange receipts (even when they are given the right to

retain some portion), they require approval for imported inputs, and so on. Such controls also presumably deter direct investment, because potential investors cannot be sure about what the rules will be for importing inputs, repatriating earnings, etc.. And last but not least, a pervasive system of controls creates incentives for corruption - something that has become partly quantifiable in China, as the deficit in errors and omissions has become startlingly large.

These costs are not new. However, concern over the costs of a controlled system is much greater now than it was 25 years ago, not because the old system works worse now than it did then, but because the opportunity cost of that system seems larger. Export opportunities for developing countries are much more diversified than they were in the 1970s; potential foreign direct investment, especially investment that uses countries as export platforms, appears to be much larger; and there is now a widespread belief (which I share) that growth led by exports and a general opening to the world is the last best hope of developing countries for real development. So the cost of a regime that crimps globalization appears much higher now than it did a generation ago.

This, then, is the main sense in which the growing integration of the world economy has increased the risk of financial crises. Basically, growing potential gains from trade and foreign investment make it increasingly expensive for countries to maintain controls that might interfere with flows of goods and services or deter multinational enterprise. But removing these controls makes it more likely that countries will develop the financial vulnerabilities that make financial crises possible.

We might note that even the now-preferred method of limiting financial vulnerability - a floating exchange rate, which deters domestic firms from taking on large foreign-currency debt -

is certain to come under increasing pressure as globalization proceeds. There has been a gradual drift in the academic literature toward the proposition that floating rates do in fact diminish trade (see, for example, Rose (2000)). Anyone who has followed the bitter debates over UK entry into the euro also knows that many private-sector participants claim that floating rates are a deterrent to direct investment. In a way it does not matter whether these arguments are true, as long as they remain widely believed. They will add to the pressure to keep the exchange rate stable. Again, the prospect of gains from integration will push countries away from policies that might have made crises less probable.

Is dollarization the answer?

The growing support for dollarization among serious economists not usually associated with doctrinaire free-market views is a new and surprising development. The movement has a powerful case: it argues in effect that private-sector dollarization, in the form of large-scale foreign-currency-denominated debts, can only be prevented with measures that will undermine the gains from participating in a global economy. And if there is extensive private-sector dollarization, retaining a distinct national currency becomes a liability rather than an advantage. So the best thing is to go all the way.

Leaving aside for a moment the question of whether this strong view is truly correct, one then needs to ask whether dollarization will itself eliminate the risk of crisis.

This is usually posed as a question about the ability of the central bank to serve as lender of last resort in domestic financial difficulties. That is, will the risk of crisis driven by currency

mismatch simply be traded for an equal risk of crisis driven by maturity mismatch? Opinions remain sharply divided about whether this is a real problem. Clearly once there is no longer a national currency, one cannot print money to rush to troubled institutions; and it does not seem politically realistic to suppose that the Fed or the ECB will be willing to grant an unconditional guarantee to provide such funds. On the other hand, if the national government remains able to borrow, or maintains large reserves of liquid assets, there will still be ready funds. An unsatisfying answer is that if it is cautious, the government of a dollarizing country ought to be able to prepare itself to deal with many potential financial crises, but not all.

The greater risk seems to me to be that dollarization will set the stage for *non-financial* crises. Consider, again, the current difficulties of Argentina. It is an economy that is depressed by inadequate demand, facing sustained deflationary pressure, and also facing budget deficits largely because of that depressed economy. The picture is worsened by growing social unrest. Yet there seems to be little if anything that the government can do - monetary policy does not exist, expansionary fiscal policy is ruled out (indeed, fiscal moves have been contractionary, in order to calm creditors). I would not predict that this will turn into a sustained political and economic downward spiral - but others, including former President Menem, have made just such a prediction.

Of course, Argentina is not yet officially dollarized - it only has a currency board. And the answer of dollarization advocates is therefore that it should finish the job. But why, exactly, would that help? (It would probably lower interest rates, but that would be a one-shot gain, and probably not enough of one to generate an economic recovery.) And even a fully dollarized economy would clearly be vulnerable to the sort of overvaluation/budget difficulties now facing

Argentina.

The point is not that Argentina is lost - the country is very far from being at that point. It is, rather, that there were reasons why countries went off the gold standard in the first place, and those reasons are just as relevant today. To steal a line the *Economist* once used about Britain and the EMS: If developing countries were to dollarize they would not have their current problems - they would have other problems instead.

Partial measures?

It is probably true that given the potential gains from integration the opportunity cost of old-fashioned currency control regimes, which were both extensive and permanent, is simply too high. But can more limited measures still have a role?

At this point I know that I am very much out of step with the way the discussion has gone over the past year. However, let me argue that the major arguments against limited measures have not held up well in the light of recent events.

First, the main argument against regulations designed to limit short-term foreign-currency debt is that such regulations cannot be made effective - that capital flight can still take place through other channels, and that firms can roll their own foreign-currency debt in indirect ways. Such views are sometimes linked to Friedman-like (that's Tom, not Milton) depictions of the electronic herd, of capital movements that have become unstoppable thanks to modern technology. But the capital flight in this last crisis was remarkably prosaic: it really was mainly a matter of short-term foreign-currency debt.

It is probably also worth pointing out that everyone is in favor of prudential regulation in other areas - limits on bank exposure, requirements for transparency and reform of corporate governance, and so on. There does not seem to be any good reason why prudential regulation of foreign-currency exposure should be regarded as either less legitimate or less feasible than any other regulation.

Second, the same prosaic nature of the capital flight in the recent crisis suggests that private-sector involvement is not as infeasible as its opponents have made it seem. The time may come when such measures will address so small a part of the problem that they are completely ineffective; but that time does not appear to be yet.

Finally, it is interesting to go back and read the early pronouncements of financial officials and the investment community about the prospects for Malaysia's capital controls - pronouncements that explicitly warned that such controls were entirely unworkable, that the result would be a severe economic contraction. Even if you are skeptical about the role of the controls in Malaysia's recovery - the evidence is indeed far from decisive - at least one can say that such measures are not as disastrous or impossible to implement as many people claimed, even in an economy with both a high share of trade in GDP and large foreign direct investment. As a last resort, in times of very severe crisis, emergency capital outflow controls remain an option.

In short, it would be wrong to paint the picture too starkly. The enhanced gains from trade and investment mean that countries cannot now justify the extensive controls that once made them immune to financial crises of the kind now common. But more limited protective measures, both as protection against crisis and as ways to contain crises when they happen, remain live options.

Will globalization solve its own problems?

Despite the possibility that the link from globalization to risk of crisis can be weakened, it's still a more shadowed picture than we would like to see. I believe that these shadows are real: despite our best efforts, the closer integration of the world economy is also likely to mean an increased risk of crisis in the years ahead. But is this only a transition problem? Can we expect that in the long run a more integrated world will again become one relatively free from financial crises? There are two channels through which this might happen.

The first is that growing integration of markets for goods and services could make financial crises less likely. I am not talking about the argument, commonly offered in the context of European monetary union, that growing integration will eliminate asymmetric shocks to national economies; this argument seems to me wrong both in theory and practice. (Growing trade leads to growing specialization, which if anything makes shocks less symmetric than before.) Instead, it's a question of macroeconomic response.

Going back to the loose model of financial crisis illustrated by Figure 2, the key element in that figure is the perversely sloped region of the goods market curve - corresponding to the possibility that contractionary balance-sheet effects of currency depreciation will outweigh the expansionary pro-competitive effects of such a depreciation. But suppose that the traded share of output increases. This will mean that the pro-competitive effect of depreciation operates on a larger share of the economy (and also that the adverse balance-sheet effects of depreciation on spending fall more on imports, less on domestic goods). In the limit, a country that exported everything it produced could not have that backward-sloping curve: depreciation would be

unambiguously expansionary. No country is at that limit, or likely to get anywhere close, but growing integration of goods markets will nonetheless help reduce the possibility of perverse effects of depreciation.

The second channel through which globalization might reduce the risk of crisis is via direct investment. Local subsidiaries of multinational firms will not be subject to the same adverse balance-sheet effects of depreciation as domestic firms. Indeed, it is very difficult to see how an economy consisting mainly of local operations of international firms could manage to have a financial crisis of any kind, except as part of a global crisis. Again, there is no economy - not even Singapore - that has reached this limiting case, or is likely to any time soon; even regional economies within the United States have local firms that can get into mutually reinforcing financial difficulties. But movement in that direction will again make crises a bit harder to create.

The effect of increasing economic integration on the risk of crisis, then, will arguably be an inverted U: after some decades of growing risk, things will start to get calmer again. But remember that China and India haven't yet opened up to the extent that they can have modern financial crises - and yet the pressure for them to do so is steadily growing. A best guess is surely that the ride will continue to be very bumpy for many years to come.

price of foreign exchange

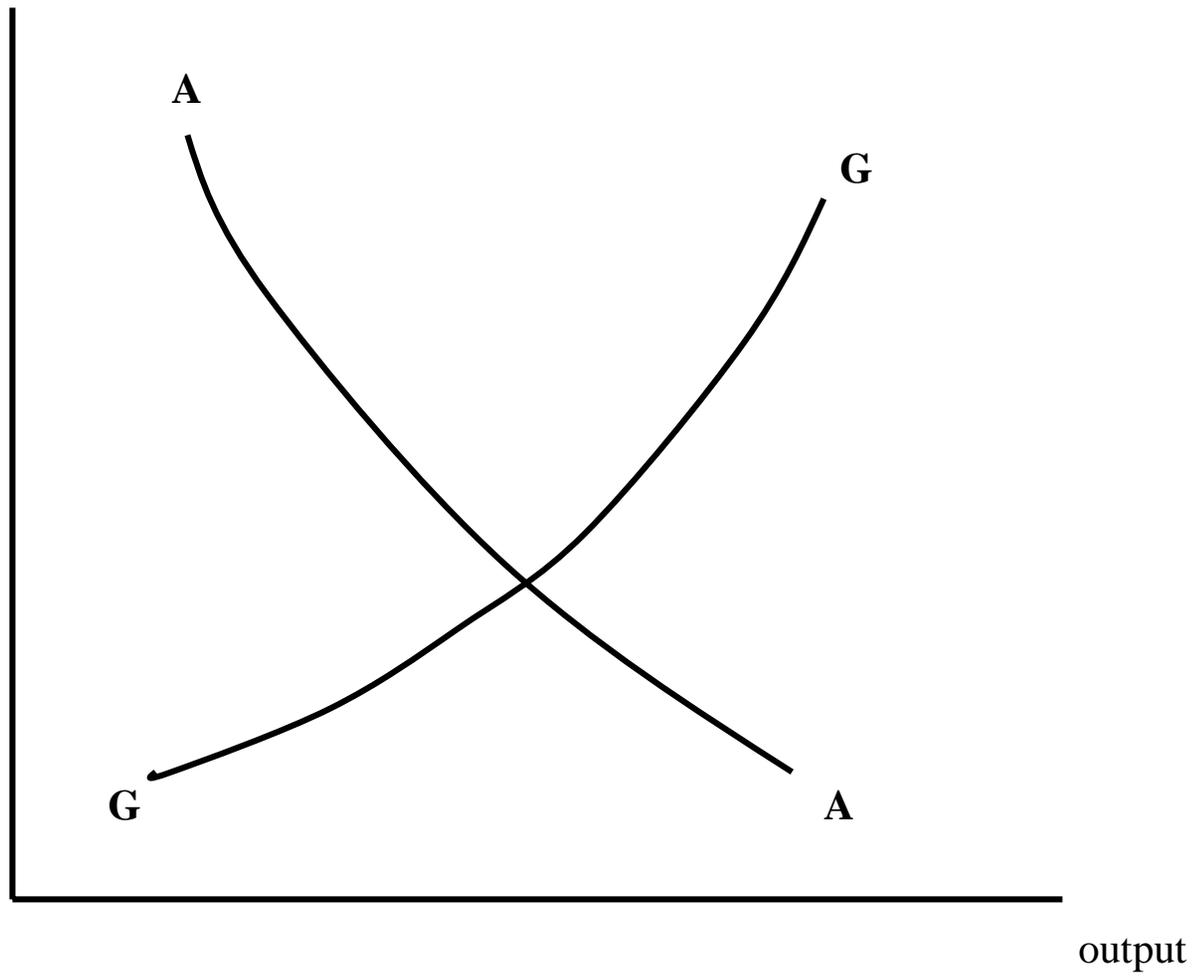


Figure 1

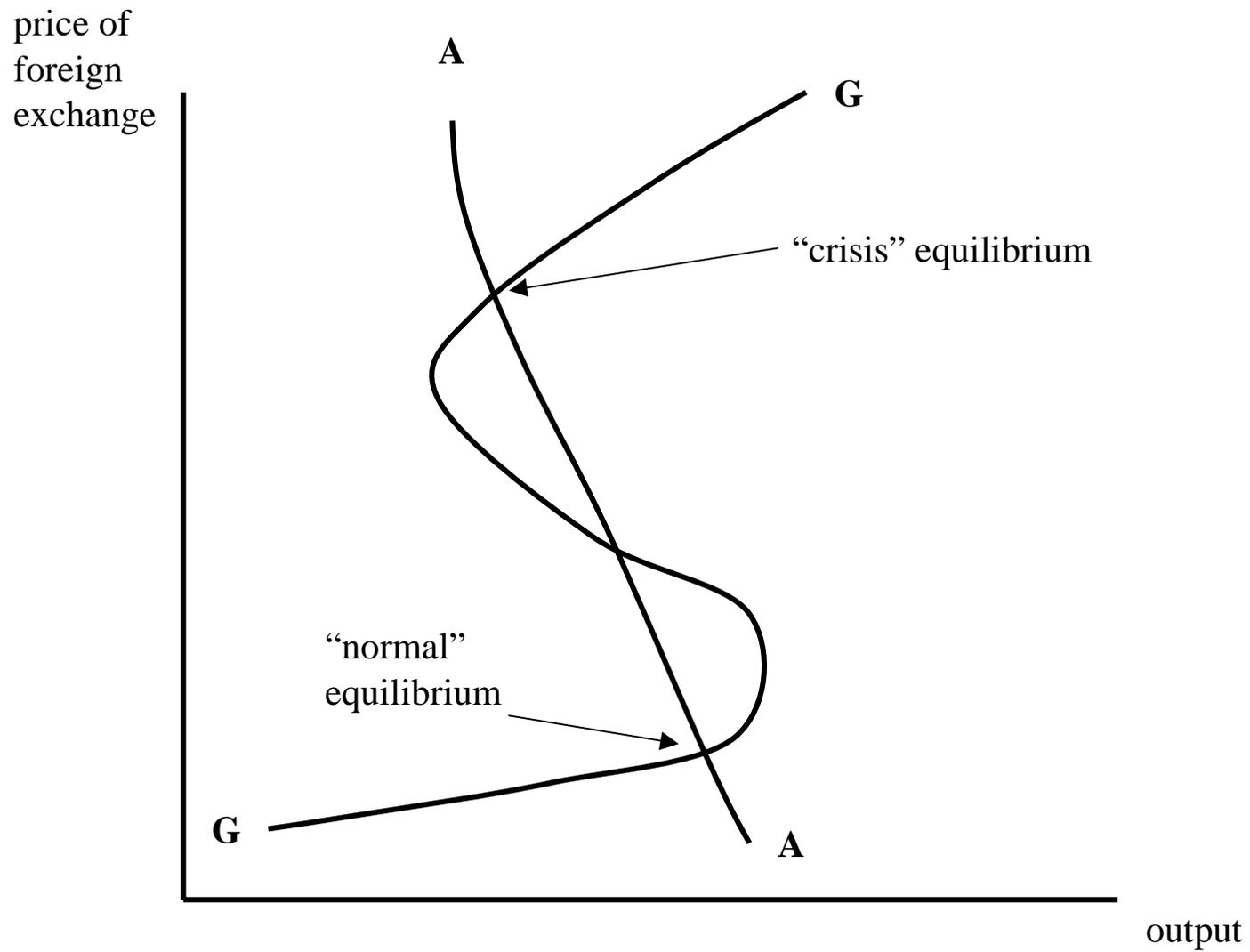


Figure 2

REFERENCES

- Aghion, P., Bacchetta, P., and Banerjee, A. (1999), A simple model of monetary policy and currency crises, mimeo
- Calvo, G. (1999) Fixed versus flexible exchange rates: preliminaries of a turn-of-millennium rematch, mimeo
- Calvo, G. (2000) Capital markets and the exchange rate (with special reference to the dollarization debate in Latin America), mimeo
- Céspedes, L., Chang, R. and Velasco, A. (2000), Balance sheets and exchange rate policy, NBER working paper 7840
- Chang, R. and Velasco, A. (1999) Liquidity crises in emerging markets: theory and policy, NBER working paper 7272
- Corsetti, G., Pesenti, P. and Roubini, N. (1998) What caused the Asian currency and financial crisis? NBER working paper 6843
- Diamond, Douglas and Dybvig, Philip (1983), Bank runs, deposit insurance, and liquidity, *Journal of Political Economy* 91: 401-19.
- Dooley, M. (1997), A model of crises in emerging markets, NBER working paper 6300.
- Eichengreen, B. and Hausman, R. (1999), Exchange rates and financial fragility, presented at 1999 Jackson Hole conference
- Feldstein, M. (1999), A self-help guide for emerging markets, *Foreign Affairs*, March-April
- Frankel, J. and Rose, A. (1997), Currency crashes in emerging markets: an empirical treatment, *Journal of International Economics* 41, 351-366
- Goldstein, M. (1999), *Safeguarding prosperity in a global financial system* (Report of Council on Foreign Relations task force)
- Krugman, P. (1998), What happened to Asia?, mimeo
- Krugman, P. (1999a), Balance sheets, the transfer problem, and financial crises , in P. Isard, A. Razin, and A. Rose, eds., *International Finance and Financial Crises*, Kluwer.
- Krugman, P. (1999b), Analytical afterthoughts on the Asian crisis, mimeo

Rodrik, D. and Velasco, A. (1999), Short-term capital flows, NBER working paper 7364