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Public Policy Brief

The Asian Disease: Plausible Diagnoses, Possible Remedies

Regulation of Cross-Border Interbank Lending and Derivatives Trade

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No. 44, 1998

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Editor: Lynndee Kemmet

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The Public Policy Brief Series is produced by the Bard Publications Office.

ISSN 1063-5297
ISBN 0-941276-53-8

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Preface

The Asian financial crisis caught many investors, policymakers, and researchers by surprise. Few expected the apparently strong economies of this region to crumble so quickly. And fewer still expected that today—one year after the start of the crisis—the end would still not be in sight. In the early stages of the crisis many economists believed that its effects would be limited to the Asian region, but few believe that now. Export-oriented segments of the American economy are already experiencing slower growth as a result of reduced demand in Asia for U.S. exports. In a recent report to Congress, Federal Reserve chairman Alan Greenspan warned that the United States has probably not yet felt the full effects of the crisis.

Levy Institute scholars Wynne Godley and Jan Kregel issued a similar warning stating that although direct U.S. exports to Asia are less than 2 percent of GDP, the interdependency of the world trading system puts the United States at a greater risk than many think. If Godley and Kregel are correct, global interdependency means that no nation can afford to ignore crises such as that in Asia. It therefore becomes important to understand how such crises occur and how to prevent them.

In an analysis of the crisis, Martin Mayer, author and Brookings Institute visiting scholar, draws on the work of Hyman P. Minsky, asserting that the Asian crisis is a textbook case of Minsky's financial instability hypothesis. Minsky argued that economic booms generate a state of euphoria (or the expectation of a continuing stream of profits) that causes both lenders and borrowers to engage in risky financial behavior. In such a situation any shock to the system can push borrowers and then lenders into insolvency. Mayer sees Asia as a clear case of such financial instability. Had

investors, policymakers, and researchers paid attention to the work of Minsky, they would have seen the crisis coming.

Responsibility for the crisis rests with many parties, but Mayer places much of it with Asian governments and their central banks for creating moral hazard. Banks willingly lent to other banks both within and across borders, secure in the knowledge that no government would let its banking system fail. Thus, banks rarely bothered to assess the risk of loans to other banks. In many cases loans were arranged through brokers, and neither lenders nor borrowers knew the purpose of the loans or even the identity of the other at the time of the transaction.

As a result of the globalization of financial markets, funds are easily shifted from bank to bank and across borders. Mayer shows that there are dangers in this globalized system when it lacks proper controls. He offers several proposals for preventing crises similar to that in Asia: rein in interbank lending by creating an international system to monitor such lending; increase transparency and market discipline; eliminate the moral hazard that governments and their central banks have created through their unconditional support of banks.

In light of the fact that the United States and many other nations are likely to suffer from the Asian crisis, proposals that might prevent a similar crisis from occurring anywhere in the world in the future merit consideration. In this brief Mayer provides an insightful analysis of the short- and long-term causes and effects of the Asian crisis. I hope you find it informative and I welcome your comments.

Dimitri B. Papadimitriou
Executive Director
September 1998

The Asian Disease: Plausible Diagnoses, Possible Remedies

The Asian crisis is a textbook case of the "financial instability hypothesis" first expressed in 1966 by the late Hyman P. Minsky. It began with what Minsky called "the economics of euphoria: . . . The confident expectation of a steady stream of prosperity gross profits [produces a] willingness . . . to take what would have been considered in earlier times undesirable chances in order to finance the acquisition of additional capital goods. . . . Those that supply financial resources live in the same expectational climate as those that demand them. . . . An essential aspect of a euphoric economy is the construction of liability structures which imply payments that are closely articulated . . . to cash flows due to income production. . . . Withdrawals on the supply side of financial markets may force demanding units that were under no special strain and were not directly affected by financial stringencies to look for new financing connections. An initial disturbance can cumulate through such third-party or innocent-party bystanders. . . . Financial instability occurs whenever a large number of units resort to extraordinary sources for cash" (Minsky 1972, 110–105).

In the economics of euphoria, lenders eagerly supply funds for the acquisition of capital assets that will not yield the borrowers sufficient returns to service the loans. Thus the borrowers become dependent on the willingness of lenders to keep increasing their loans—a situation Minsky described as "Ponzi finance." Any interference with this cheerful articulation of borrower and lender will push borrowers—and then lenders—into insolvency. In Minsky's terms, the enormous capital inflows drawn by the "Asian miracle" led inevitably to financial instability. What was new in this crisis was the predominance of interbank lending as the source of trouble. Confident that governments would not permit their banking systems to default, foreign banks often failed even to seek

information about how their interbank loans would be paid back and permitted their money to be used to make up shortfalls in repayment by bankrupt borrowers. Because these interbank loans were short term and denominated in the currency of the lender rather than the currency earned by the borrower's debtor, the loss of articulation produced both a banking and a currency crisis. The Asian tragedy demonstrates the need for improved regulation of cross-border interbank lending, improved accounting for both borrowers and lenders, and some separation of the close links between governments and their banking sectors.

Minsky's "hypothesis" was proposed to explain instability in a large, insulated, developed economy. Despite its intuitive appeal, it was not widely accepted among financial economists (Charles Kindleberger [1978] being a notable exception) because, they said, they could not find historical illustrations to fit the theory. The financial economist's machine runs smoothly in the best of all possible worlds. The capital asset pricing model developed and refined in the universities since the 1960s explains values always and everywhere, and diversification minimizes the effects of asymmetric shocks. Since all the information is already in the prices, all decisions are rational and optimize the total performance of the universe of players. The only thing that can make trouble in the financial economist's world is the exogenous shock that affects everyone (war, oil prices) or government error (fiscal imbalance, monetary policy). "Financial distress," Barry Eichengreen and Richard Portes write in their study of sovereign debt rescheduling, "normally results from a real shock or bad policies" (1995, 55).

But Asia presents a cumulation of apparently rational decisions that produced disastrous results—precisely as Minsky predicted. No clearer expression of economic euphoria can be imagined than the words "Asian miracle." Budgets were apparently balanced (ignoring quasi-fiscal deficits in the banking system and the state-owned enterprises), current account balances were favorable or explicable as the mirror image of capital inflows. Currencies were stable vis-à-vis the dollar for years, despite the divergence of local and American interest rates, and nobody cared that governments and central banks intervened in the forward markets (increasingly, with the passage of time, on a highly leveraged derivative chassis) to pay out the obvious profits to arbitrageurs who borrowed in the dollar market and lent in the local market.

"Emerging markets" were touted (incorrectly, even before 1997) to outperform the markets in developed countries. Admittedly, even by the inadequate accounting standards of the emergers, the companies behind the securities did not show particularly impressive profits (and the local banks through which most of the lending was done claimed only negligible profits). But profitability was not the point: diversification alone, like comparative advantage, justified counterintuitive decisions. Campbell R. Harvey of Duke University's Fuqua School of Business told a conference at the World Bank in 1993 that "adding emerging markets to a diversified dynamic global portfolio can double the reward-to-risk ratio—all the more so, since emerging markets equities provide little or no exposure to major world risk factors" (Claessens and Gooptu 1993, 13).

Asian economies were growing two or three or four times as fast as European or North American economies. Nobody doubted that profits would come later, from expanding shares of expanding markets. In Malaysia in 1993 the market capitalization of equities listed on the Kuala Lumpur exchange reached a total more than three times the nation's gross domestic product (Feldman and Kumar 1995, 181, 183). In 1997 Malaysian domestic bank lending in sum was more than 170 percent of GDP (McNulty 1998, 5). In the United States market cap never exceeded GDP until the 1997 stock market boom, and domestic bank lending has rarely exceeded 65 percent of GDP. But not to worry: "Stock market liquidity and banking development," Ross Levine of the World Bank and Sara Zervos of BZW Securities wrote, "are positively and robustly correlated with current and future rates of economic growth even after controlling for many other factors associated with economic growth" (1996, 4).

All these incentives to instability were heightened by the information gaps among the providers of funds—direct investors, portfolio investors, lenders, government agencies—within and across national and cultural borders. Capitalist economic development has moved roughly in steps each of which builds on a single funding source: first, the venturer risking his own and his circle's savings; next, the bank loan to be repaid (the lender hopes) by cash flows but collateralized in some form just in case; then, debt securities with a trust indenture, to be sold to a limited number of investors; finally, equity made available to anyone. Prior to the work of Miller and Modigliani (1958), who made the heroic assumption

that bankruptcy is so rare it can be neglected, mixtures of debt and equity were considered a little like mixtures of nitrates and ammonia, explosive if the debt component got too high. With the academic equating of the two, ad hoc mixtures of bank lending and portfolio investing came to be considered the norm.

But banks and portfolio investors need—and have—very different kinds of information. Since 1973 an International Accounting Standards Committee (IASC) has worked to establish rules that accounting firms in different countries can use to report the conditions and activities of the enterprises they audit, and since 1987 IASC has tried to tighten its standards to reduce the number of different procedures that can be considered acceptable. The committee wistfully hopes to complete its work in autumn 1998, but the Securities and Exchange Commission—which enforces accounting standards for publicly traded companies in the United States—still finds that bank-based European and ex-colonial reporting patterns, with their emphasis on balance sheets, do not mesh easily with Anglo-Saxon market-based financing patterns that emphasize the income statement. This problem presumably was solved in the fifteenth century by Fra Luca Pacioli, who demonstrated the necessary relationship between the profit-and-loss statement and the balance sheet. But discrepancies between these documents survive even in advanced economies where, as accounting theoretician Henry Hill wrote, "The lawyers of this world are engaged in drawing up intricate contracts to make things look like what they are not" (1987, 3). And in developing countries the information savvy investors trust is the anecdote. Financial analysis in developing countries is really a form of journalism: it's the fellow who hears the stories who knows what's going on.

At first look, the problem would seem to be that banks, because of their access to the inner workings of their borrowers, enjoy information advantages over portfolio investors. But the institutional structure of cross-border bank lending and the general acceptance of mathematical approaches to risk have created moral hazards not only for banks but also for banking regulators. "Despite its importance for distributing savings to their most valued use," Federal Reserve chairman Alan Greenspan said somewhat wistfully, "short-term interbank funding, especially cross border, may turn out to be the Achilles' heel of an international financial system that is subject to wide variations in financial confidence" (1998).

As Ricardo Hausman of the Inter-American Development Bank put it, "[W]hat you don't want is for your banking system to get involved with highly unstable flows because the banking system is both a financial intermediary and a monetary system—the central bank and the government have the responsibility to maintain the system" (Claessens and Gooptu 1993, 31).

The result of that responsibility, Andrew Sheng, deputy chief executive of the Hong Kong Monetary Authority, wrote in 1996, is that "irrespective of public or private ownership of banks, commercial bank losses in excess of capital have become de facto quasi-fiscal deficits. . . . As long as the state provides implicit or explicit deposit insurance for the banking system, bank losses greater than available bank capital are equivalent to an internal debt of the government that is being financed with short-term bank deposits" (Sheng 1996, 9). Even in the United States—very reluctantly—the losses of the savings and loan associations were accounted for in the federal budget, because they had to be financed by additions to the national debt. Because bank liabilities not backed by assets are the functional equivalent of additional fiat currency printed by the government, such banking system losses are the functional equivalent of an increase in the domestic money supply. These increases in money supply endanger the exchange value of the currency. A working paper from the International Monetary Fund, starting with an examination of the Mexican crisis of 1995, argues that increases in nonperforming loans are a reliable early warning of currency crises (Gonzales-Hermosillo, Payarbasioglu, and Bilkins 1996).

Banking regulators, for historical and practical reasons, are interested in the safety of the loans their wards make, not in their wisdom. If a cross-border interbank loan is de facto guaranteed by the central bank of the borrower, there is no default risk, though a regulator in the lender's country may require a capital allocation against the risk of a loan to a borrowing bank located in a country where the central bank is weak. ("A central bank can become insolvent," Sheng noted, "if it acquires liabilities of greater market value than the capacity of its seignorage to service" [1996, 11].) In general, risk weightings for categories of loans are set by agreement of the central banks through the Basle Committee on Banking Supervision. Under those guidelines, a loan to a bank supervised by an

OECD member country (a category that includes Korea) carries a risk weighting of only 20 percent; that is, for the allocation of capital required to make an ordinary commercial loan, a bank can make a loan five times as large to another bank. An interbank loan *specifically guaranteed* by the government of an OECD member country carries no risk weighting at all. One notes in passing that the deal cut by the international banks with the Korean government in January 1998 relieved the banks from all allocation of capital against the rescheduled loans, mitigating the losses from the interest-rate reductions that were part of the deal.

Whenever they can, banks seek guarantees—from their own government (in the United States, from the official Export-Import Bank or the Overseas Private Investment Corporation), from the government of the country where the borrower is domiciled, from any group owner or affiliate of the borrowing entity (be it a major international corporation or a Korean *chaebol*), or from some other co-signer. Such guarantees can replace credit analysis by the bank extending the loan. Moreover, traders have developed derivatives—financial instruments that draw their value not from their claim on real resources or income flows but from the relative values of other financial devices, some of which mix interest rate risk, credit risk, and foreign exchange risk into an amorphous swap of "total returns." Where one side of the swap involves government debt issued by major developed countries, total return derivatives have enabled banks to convert what would otherwise be seen as suspect credits into high-rated instruments. The menace of the swap is concealed by its apparent collateralization with U.S. Treasury paper. Because no asset is acquired in a derivative, the transaction can be accounted for off the balance sheet. To the extent that these derivatives are arranged as aspects of syndicated loans, a number of banks can be participants in a credit risk that has not been recognized in anyone's published accounts.

In fact, then, the unique information that supposedly buttresses bank lending may not have been gathered at all. According to Jan Kregel of the Levy Institute and the University of Bologna,

> The role of the active global bank is no longer to maximize its profits by seeking the lowest cost funds and lending them for the highest risk-adjusted return, but rather in maximizing the

> amount of funds intermediated in order to maximize fees and commissions, thereby maximizing the return on bank capital. Banks thus play a declining role in the process of the efficient international allocation of investment funds. Rather, they seek to facilitate this process by primary lenders, which means that the efficiency of the allocation of funds to the highest risk-adjusted rate of return depends increasingly on investment assessment by the lender [i.e., the lender to the bank]. However, it is precisely the role of most derivative packages to mask the actual risk involved in investment and to increase the difficulty of assessing the final return on funds provided. In this sense, certain types of derivatives may increase the difficulties faced by private capital markets in effectuating the efficient allocation of resources. (1998, 3–4)

One element in the volatility of lending is unchanged from earlier years: at the first sign of trouble, banks react by shortening maturities. (William Spencer, then president of Citicorp, explained more than twenty years ago that a banker is a man who thinks that if he makes a railroad a loan to buy a locomotive but makes the railroad roll it over every six months, he has a short-term loan.) And then they flee. For the five hardest-hit Asian economies, the Institute of International Finance reports, the external flow of funds from commercial banks went from a positive $55.5 billion in 1996 to a negative $21.3 billion in 1997 (Institute of International Finance 1998, 2)

The last time an entire area suffered a reversal of flow of these dimensions was in 1982 and 1983 in Latin America, and then the approved explanation of the disaster was the drastic rise in dollar interest rates orchestrated by the Federal Reserve under Chairman Paul Volcker. In the words of the Amex Bank Review (1984, 11), "*High interest rates effectively shorten the life of loans*. Thus even before principal stops being replaced (or is rundown) there may be a net flow to banks as interest costs exceed the rise in total loans" (italics in original). But there was no significant increase in dollar interest rates in 1997; other reasons were clearly more important. Kregel (1998) notes that under certain circumstances the need to do dynamic hedging of derivatives positions can mean that both sides of the transaction will be selling the local currency to buy dollars at a time when the currency is under severe pressure.

Different Instruments, Different Risks

In 1995 less than 27 percent of bank loans to Korean borrowers had an original maturity longer than one year (Kamin, Turner, and Van't Dack 1998, 32). Other Asian countries had better profiles: in Hong Kong more than 40 percent of bank loans had original maturities longer than one year and in Thailand the proportion was 53.7 percent. An obvious path to lengthening repayment schedules was the sale of long-term bonds. Developing countries' new international bond issues, which totaled less than $10 billion a year in 1990–91, got up to $38.7 billion in the third quarter of 1997 alone, and rose for that calendar year to $108 billion, despite the collapse of instruments from the Asian markets after Labor Day (Institute of International Finance 1998, 5).

Bonds offered borrowers longer maturities and fixed interest rates. The popularity of bond issues derived also from the existence of finely honed Eurobond markets in London and (thanks to the domestic offshore International Banking Facility) in New York, in which the paper could be sold and traded, and from the experience of market lenders in 1982, when Mexico had to suspend its corporate borrowers' repayments on bank loans but first carefully paid off those borrowers' commercial paper and what little bonded long-term debt was then in the market. In the second quarter of 1997 there were 187 "emerging market debt funds" with net assets of $15 billion, and secondary market turnover in emerging markets bonds in 1996 was $658 billion, up 210 percent from the year before (Cline and Barnes 1997, 15).

The Mexican example proved a bad guide to what would happen when an emerging market with heavy bonded debt got in trouble. As early as 1993 John Williamson of the Institute of International Economics warned that bonds

> lack any mechanism for achieving an agreed rescheduling. Ironically, it was precisely this difficulty that made bonds popular with lenders during the 1980s. While it was possible for distressed debtors to maintain service on bonds when these were a minute fraction of their total obligation, it will be impossible to do the same if difficulties arise in a country with a large

> proportion of its debt in the form of bonds. These creditors are living in something of a fool's paradise. (1993, 13)

Certainly, holders of bonds issued by developing countries or their commercial entities own an asset that fluctuates wildly in price. The Institute of International Finance points out that Brazilian "Brady bonds" (issued to clean up the debt crisis of the 1980s) traded in early 1997 to yield 390 basis points (3.9 percentage points) more than an AA-rated Eurobond and went to a spread of 690 basis points when the Asian crisis broke. Korean Electric Power Company bonds of 2003 went from a spread of 30 basis points over Eurobond rates in the spring of 1997 to a spread of 700 basis points in January 1998 (Institute of International Finance 1998, 7).

And bonds by their nature, of course, are option-laden instruments that can be broken out into derivatives supposedly protecting their purchaser against credit risk, interest rate risk, market risk, and currency risk. Each of these risks can be packaged separately in a bespoke garment and sold or redeemed according to prices calculated in accordance with models known only to the participants (sometimes only to one of the participants) in the transaction. The real price of the instrument, in terms of the pressures it may place on interest rates or exchange values, is thus a matter of continuing uncertainty.

"Portfolio investment" has been considered a far more stable source of foreign funds for economies in process of development, and stock markets have sprung up in far and fabled places—Ulan Bator, Ljubljana, Lima, Abidjan. Williamson argued that

> Foreign equity investment . . . has the virtue of stimulating the development of the domestic equity market, which until recently was one of the most underdeveloped parts of the financial system of most developing countries. Bonds and money market instruments, on the other hand, are placed offshore, and hence—like syndicated [bank] credits—reduce the incentive for the development of the local financial market. (1993, 15)

Moreover, Williamson wrote, such investment does not endanger the currency as loans and bonds may. Kregel stated the theory:

> [Portfolio investment] would separate foreign exchange instability from asset market instability. While syndicated lending was denominated in the currency of the lending bank, so that the exchange rate risk was borne by the borrower, for equity investors this would not be the case since they would be purchasing domestic financial assets denominated in domestic currency. Thus in a crisis the foreign investor would suffer a fall in asset prices in domestic currency which would discourage him from liquidating his position and thus reduce selling pressure in foreign exchange markets. (1998, 1–2)

But when push came to shove, Kregel added, the theory failed: "the linkage between the collapse in exchange rates and equity markets appears to have been even closer in Asia than in other experiences of financial crisis." Though capital flight is usually by locals rather than by outsiders, stock prices in emerging markets may be controlled by the activity of foreigners. The World Bank (1997, 104) reports that 80 percent of trading in the Indonesian market in 1996 was by foreigners. David Hale, chief economist of the Zurich-Kemper group of mutual funds, which includes several that invest overseas, has estimated losses of nearly $50 billion from Asian equity holdings to "the millions of Americans and Europeans who save for retirement through mutual funds and unit trusts" (Hale 1998, 2).

The losses to portfolio investors have been due more to devastated exchange rates than to depressed market prices expressed in the local currencies. What is not generally realized is that the same analysis can be made of losses in real estate lending. A Philadelphia banker explained that his bank had protected itself against the depreciation of the Thai baht by making all its loans to Thai developers in dollars to be repaid in dollars—with a further proviso in the loan that all leasing of space in the building shall be for a dollar-denominated rent. When the baht collapsed, the bank was left with claims on vacant properties. These properties were indeed worth less in baht than they had been before the Thai government gave up the mugs' game of defending its currency, but on the balance sheet of the American bank the decline in the number of baht for which the building might be mortgaged or sold was less severe than the decline in the dollar value of each baht. Only the foreign banks that had loaned dollars to Thai *banks* for repayment in dollars were able

to avoid major haircuts from devaluation. Others found that their borrowers had to negotiate some sort of escape from a deal where their contracted expenses had overwhelmed their revenues.

The one endpoint of financial flows that suffered relatively little harm from the currency collapse was direct investment. Depending on their accounting regime, investors might have to report in their balance sheet (and might therefore have to take a substantial charge in their income statement) a reduction in the dollar value of the foreign asset. And to the extent that the profits from this asset were denominated in the vanquished currency, they would of course be reduced. Where the overseas investment had produced a stream of orders for domestic product to feed a foreign manufacturing or retailing process, direct investors might have to cut back, like everyone else in the afflicted country. Japanese automobile manufacturers in Thailand were especially harmed by the drastic decline in the local market. But within a matter of months Toyota was shifting production from elsewhere to Thailand to take advantage of reduced costs. The Institute of International Finance reports that while both bank lending and portfolio investment moved into negative territory for the five troubled Asian economies in 1997, direct investment rose slightly from $7 billion to $7.2 billion—and was projected to reach $9.8 billion in 1998.

Devaluation, after all, does make an economy more competitive in the short term. The European currency crises of 1992, which drove down the exchange value of the British pound, the Italian lira and the Swedish kroner, made the economies of those countries the fastest-growing in Europe over the next half dozen years. Natives do the great bulk of the direct investment in any economy, and if there is slack in that economy they are beneficiaries of devaluation. Indeed, the International Monetary Fund came into existence in large part to prevent a repetition of the competitive devaluations that made the Great Depression so intractable.

Integrated Economies and Exchange Rate Regimes

Chairman Greenspan marveled at the speed with which the East Asian currencies came apart: “At one point the economic system appears

stable, the next it behaves as though a dam has reached a breaking point, and water (read confidence) evacuates its reservoir." His list of likely explanations is excellent, comprehensive, and only occasionally doctrinaire. But all commentators have paid too little attention to the *means* that had to be employed by the authorities in the borrowing countries to maintain their violation of one of the most fundamental rules of the market, what George Kaufman calls "the law of one price."

Given the "deep integration" that the trade pacts have sought and the virtually complete elimination of currency controls for trade-related purposes, an efficient international money market cannot sustain for long periods a situation where the interest rates in one currency are much higher than those in another, but the relative price of the two currencies is the same now and six months from now. Take a man who borrows dollars at an annualized 6 percent for 90 days and converts them to Thai baht to be lent for 90 days at an annualized 12 percent. His first need is to hedge his currency exposure. So he goes to the forward market and agrees to swap this quantity of baht for dollars in 90 days. If the exchange rate in the forward market is the same as it is today in the spot market, he can lock in a profit of 1-1/2 percent (6 percent annualized) less the cost of the transactions. Little if any capital must be allocated to this transaction. As long as the cost of executing the hedge is lower than the interest rate difference (and the baht-denominated loan is considered as safe as dollar-denominated loans), this arbitrage will be carried out even if the market believes that the Thai government and central bank are prepared to take the pain of higher interest rates looking well into the future. The volume of such transactions will drive down the forward value of the baht to compensate for the interest rate difference, barring major intervention to support the Thai currency in the forward markets.

If the original conversion into baht had been kept in the local currency for local expenditure, the upward pressure on exchange rates from the intrusion of capital would provide resources for such intervention in the forward market. Capital controls in countries like Chile, which require the deposit of foreign funds in special accounts for specified periods of time before interest can be paid on them, can be seen as protection against the impact of arbitrage as well as avoidance of the appreciation effects of capital inflows. But countries that have a negative current

account, which is the usual precursor to currency crisis, find that forward intervention requires the sacrifice of reserves.

In Thailand this intervention appears to have been done behind the mask of the Bangkok International Banking Facility, an "offshore" Thai financial center that had almost three times the total deposits of the domestically domiciled banking system. In Korea the central bank made the national reserves available to its own offshore commercial banks to support the won and connived at the issuance of "nondeliverable forwards," swaps that did not involve the actual transfer of principal. In Indonesia there apparently was no intermediation between the suppliers of dollars and the corporate borrowers, who undertook dollar-denominated liabilities with plans to service them through rupiah-denominated income streams. As Greenspan explains, "pegged exchange rates were presumed to continue, if not indefinitely, at least beyond the term of the loan."

The water that built up behind the dam, then, had been accumulated deliberately as the risk borne to earn the rewards of another country's lower interest rates and a stable exchange rate. Virtually every government wants both and asks its central bank to achieve both. As these are incompatible objectives, the persisting attempt to gain both at once eventually provokes a collapse of confidence. At some point, confidence must be earned. What empties the reservoir is the sudden dam-breaking realization in the market that these fellows do not know what they are doing.

The difference in the 1990s, which exacerbated the market break in Asia, was the introduction of sophisticated, highly leveraged, custom-made derivative instruments—financial devices that were valued according to the market prices of other financial devices. These instruments—created, dealt, and held by banks—were designed by mathematicians and supposedly minimized the risks of the banks' transactions. The mathematical models by which the derivative instruments' prices were calculated operated through the assignment of probabilities to various possible market prices. These probabilities were first calculated by standard deviations from the mean, measured along the normal curve, and were then corrected by historical records of covariance, the extent to which the different assets or abstractions priced in the derivative moved in similar or contrary directions. *The model looks only at financial data,*

without reference to the real economy. In the words of Barry Bosworth, a senior fellow at The Brookings Institution, "diversification devalues knowledge." One notes also the difference between *risk-sharing*, which is the insurance principle, and *risk-shifting*, which creates moral hazard. The impact of derivatives creation in the Asian crisis demonstrates the validity of Mayer's Third Law: "Risk-shifting instruments ultimately shift risk onto those less able to bear them" (Mayer 1997, 324).

The normative expectation is that banks will know more than portfolio investors about the businesses to which they both supply money. Portfolio investors are at the mercy of securities analysts, who must scramble for information, and of ratings services, which tend to be lagging indicators (Larrain, Reisen, and von Maltzan 1997, 24). Banks at least in theory are information-intensive lenders, and they have access to the inner secrets of the enterprises they fund.

Currency crises in the 1960s and 1970s were intensified by "leads and lags," the tendency of traders who were owed hard currencies to seek more rapid payment, while those who owed hard currencies would seek to postpone their settlements. As part of leads and lags, those who owed hard currencies would often keep what dollars or marks or Swiss francs they had, financing their payments by borrowing in their own currency and converting to the strong moneys. The tradition of defending a currency by rocketing up short-term interest rates derives not from a desire to draw new money to the country—which everybody knows won't happen in time of panic—and not even from a desire to make speculation expensive, but simply as a way to persuade importers and exporters that they should use their own hard currency to pay their bills.

Banks are in a position to sniff out incipient changes in customer patterns of payment. They are at the center of a foreign exchange market in which $900 billion a day passes through the CHIPS (Clearing House Interbank Payments System) computer at the New York Clearing House, and probably half again as much moves in direct interbank settlement. The banks' computers flag changes in the volume, price, and source of transactions in a currency. Historically, these changes were exploited less for their information content than for the opportunity they offered to charge an extra eighth of a percent when providing funds to interbank borrowers, but eventually even bank treasuries restructured to act as

profit centers will deny credit to the most needy.[1] Today the prominence of derivatives in the mix of trading instruments means that the information that could be gained from changes in leads and lags is masked by the overwhelming noise of the system. But given the greatly increased share of foreign trade in most economies, the force exerted by changes in payments patterns must be more significant than ever before.

The system is very profitable, leading banking supervisors, concerned about the franchise value of their banks, to look askance at any proposals that might diminish it. The system is also mathematically quite abstruse, and those not certified as rocket scientists are loath to comment on it—thus the decision of the Basle Committee to permit banks to value their own derivative positions without kibbitzing by examiners once a senior group has decided that these bankers know what they are doing.

But in fact the banks are not well-informed. Because their loans are denominated in dollars, foreign bank credit departments have no stake in careful examination of a country's exchange rate policy. Moreover, to the extent that its loans are made to or guaranteed by a bank in the borrowing country, a foreign bank can feel secure that the losses of its counterparty will be socialized by its government to avoid possible disruption of the payments system. Thus portfolio investors who count on the banks and the central banks to monitor exchange rate problems are left hanging in the wind. Because the data are masked by the noise, the discovery that the dam is leaking has become a matter of insight rather than analysis, and the flood appears to come suddenly. The reward is to the first man out.

In Asia, one can make a long list of the policy errors of the governments punished by the economic crisis that began in1997. It is not true that nobody saw the flood coming. Moody's had downgraded Thai ratings in May 1996. ("Given a fixed-rate exchange system," its Asian analyst Vincent Truglia said, "there was no way a speculator against the baht could lose.") Perceptive comments about the overextension of credit in Malaysia can be found even in cautious official documents by those who look for them, and *Grant's Interest Rate Observer* and its sibling *Grant's Asia* printed negative indicators about Korea for a year prior to the collapse. Robin Monro-Davis of the Fitch-IBCA ratings service in London told a conference of the Institute of International Bankers in March

1998 that "Everybody knew the Korean banking system was a weak banking system, it had been a weak banking system for fifteen years, but nobody knew when to get out." At a conference at the Bank for International Settlements in January 1997, Achjar Iljas, director of the Division of Economic and Policy Research at the Bank of Indonesia, sounded like a man tied to the railroad tracks who has heard the whistle of the approaching train: "Poorly implemented monetary policy," he wrote, "may disrupt macroeconomic stability which, in turn, will undermine the soundness of the banking system. Conversely, a weak, vulnerable and badly managed banking system may undermine the effectiveness of monetary policy and put the entire economy at risk" (Bank for International Settlements 1998, 113.)

Barry Eichengreen of the University of California and the International Monetary Fund has argued that there is a systemic weakness in a world of pegged exchange rates, pointing out that an economy deeply integrated into the world trading system may not be able to withstand an attack on its currency peg even if its macroeconomic policy has been appropriate, especially if it has a high level of public debt.

> If domestic and foreign government bonds are close substitutes, as tends to be the case when financial markets are integrated, expectations of an impending devaluation will cause a wholesale shift out of domestic bonds unless investors are compensated by a commensurate increase in domestic interest rates. . . . The increase in taxation needed to finance the extra debt service may be so costly and distortionary that the government will be unable to undertake it. . . . Even if, in the absence of an attack, monetary and fiscal policies are consistent with indefinite maintenance of the exchange peg, a speculative crisis that forces an increase in the level of interest rates may prove self-fulfilling.
>
> Another circumstance in which interest rate increases can be so costly as to prompt a government confronted with a speculative crisis to abandon its currency peg is when the condition of the banking system is weak. Increases in central bank interest rates are passed through into interbank rates, raising costs for banks requiring overnight funding of their balance sheets. These increases tend to aggravate the problem of nonperforming assets

> on bank balance sheets. . . . Investors may have good reason to anticipate that high interest rates that provoke loan defaults will so weaken the banks that the government will hesitate to defend its currency peg at the expense of destabilizing the banking system. . . . In the absence of an attack, the banking system may have only modest problems, monetary and fiscal policies may be in balance, and the exchange rate peg may be sustainable indefinitely. But if an attack occurs, the induced instability of the banking system may raise the costs of defending the exchange rate peg to unsustainable heights, forcing its abandonment.[2] (Eichengreen 1994, 69–70)

And, as noted above, the costs of maintaining pegs and higher interest rates will include intervention in the forward market to control the effects of arbitrage.

The process has a kind of inevitability about it. Sheng wrote: "[S]o long as domestic banks are willing to absorb credit risks by lending (either by acting as the counterparty to a derivative trade involving domestic currency or through direct loans in domestic currency), the foreign exchange reserve–domestic currency ratio can always be diluted to erode the credibility of the external value of the currency" (1996, 179).

Another reason so much water piled up behind the dam was the prolonged rain of liquidity in the 1990s, first from the Federal Reserve System early in the decade, which increased Federal Reserve credit at a faster pace than at any time since World War II, and later by the Bank of Japan. In conditions of virtually complete and inexpensive currency convertibility, this money could be used to prop up exchange rates while reducing interest rates. Cline and Barnes note that in 1997 the spread between yields on bonds issued by high-rated corporations in industrialized nations and bonds issued in 14 emerging market economies was "an unweighted average of 130 basis points, whereas the average would have been about 245 basis points if the 1992–1996 statistical relationship between spreads and economic performance . . . had remained unchanged. By this test, more than half of the decline of spreads had to be attributable to rising global capital supply rather than improved borrowing country fundamentals" (1997, 2).

The proximate cause of the Asian weakness was the decision by the Japanese banks not to increase their exposure in these countries. Unwilling and in many cases unable to recognize the losses in their portfolios from the collapse of their domestic bubble early in the decade, the Japanese banks were being forced both by their own government and by the interbank market to reduce their assets and liabilities so that their weakened capital accounts might meet the Basle minimum standards for capital adequacy. As the Japanese banks dropped out, European banks moved in, but the "displacement," to use Minsky's term, was enough to break what was already a fragile structure. There is plenty of blame go round.

Bank Failures and the Allocation of Losses

Erwin Wasey, one of the pioneers of American advertising, once said that when people tell you they have a problem in communications, it always means they have a problem, all right, but the problem rarely has much to do with communications. The words "liquidity crisis" are like the words "communications problem": they usually mask something much more serious. The real problem is most often a banking crisis. The shortage of liquidity means that private suppliers of funds are no longer willing to support the banks' extensions of credit. Government now steps in: "Widespread bank failures," Sheng wrote, "simply cannot occur in most countries. Allowing banks to fail during a period of capital outflows encourages domestic and foreign capital flight." And, he adds ironically, markets do not have "the confidence in the economy or banking system that policymakers have" (1996, 179, 181). Decapitalized banks are reluctant to lend the funds the government supplies to them for fear that depositors and creditors are about to demand payment. Banks are thus no longer able to grease the wheels of commerce, and economic activity freezes up. This is a market failure, and markets do not cure their own failures. "When bad news prompts capital flight," Sheng wrote, "the only counterparty willing to absorb the other side of the hedge may be the authorities. . . . If the authorities are unwilling or unable to intervene, then prices may freefall, creating a major price shift that could devastate the economy" (1996, 179, 181).

Much business is done in many countries without a great deal of help from banks. In 1959 the Radcliffe Commission in England took a look at

trade credit and found it "so large in relation to bank credit that a comparatively small lengthening of trade credit would normally offset quite a large proportionate reduction in bank credit" (Committee on the Working of the Monetary System 1959, 102). Merchandise trade between the United States and Canada is financed mostly without the intervention of banks: a supplier books an order and ships it across the border with an invoice in his own currency, offering a discount for prompt payment, and banks are involved only in the routine sale of foreign exchange. Especially in Africa, where repudiation of trade debts has been a common debilitating factor in the revival of commerce, legal changes enforcing a high priority for trade credits, both domestic and international, might make a contribution to the revival of commerce after debt crises. But such systems are rare in Asia. In both Japan and Korea the standard means of payment by an industrial purchaser is the issuance of a promissory note, which the supplier discounts at a bank to secure working capital.

The eleventh edition of the *Encyclopaedia Britannica* (s.v. "Korea") discusses Korean promissory notes from the viewpoint of 1910: "They took the form of a piece of paper about an inch broad and five to eight inches long, on which was written the sum, the date of payment and the name of the payer and payee, with their seals; the paper was then torn down its length, and one half given to each party. The debtor was obliged to pay the amount of the debt to any person who presented the missing half of the bill. The readiness with which they were accepted led to over-issue, and, consequently, financial crises."

In both Japan and Korea in 1998 the refusal of banks to discount such promissory notes or write letters of credit, even for long-established customers, worsened the economic impact of the financial disorders. Truglia of Moody's says that in East Asia only the largest companies had access to banks, while midsize businesses borrowed from finance companies and "little guys had an informal system. There's no liquidity in the system because the informal sector disappeared." Western governments have been attempting to establish alternative import-credit systems to maintain their own exports to these countries and to facilitate production of what the Asian countries export. Dun & Bradstreet reports a sizable increase in requests for credit ratings of Japanese and Korean enterprises from trading partners that wish to maintain relationships and need

reassurance that in the absence of letters of credit and in the turbulence of foreign exchange markets they can safely continue to do business. One of the few hopeful signs in Indonesia is that a better developed informal sector may have survived the plunge of the rupiah. The state-owned Bank Rakyat Indonesia is both a conventional bank and a self-funding village-based lending operation with almost 20 million borrowers, and the village lender seems still to be in operation. But most micro-lenders are subject to the overall liquidity of the banking system above them.

Destruction comes from the inability or refusal of the governmental apparatus to allocate the losses that have in fact been incurred. "In a world of free capital flows," Sheng wrote grimly of losses in the banking system, "this burden tends to fall on those who are unable to escape. Loss distribution is a political matter" (1996, 181). The choice is between an inflation tax that robs depositors or price stability with a schedule of future taxes to service the increased national debt. The "transition economies" of the former Soviet bloc mostly chose the first route, as has Indonesia in the current crisis. The United States in its S&L crisis and the Scandinavian countries, victims of brainless liberalization of banking regulation, chose the second. Operationally, the aphorism holds that the authorities "socialize the liabilities" (i.e., explicit or implicit deposit insurance makes the depositors whole at government expense) and "privatize the assets" (i.e., the portfolios of the busted banks, having passed into public hands, are resold into the market).

Two Ways out of Banking Crises

Two competing models for recovery from banking crises, both with roots in American experience, have been offered: the Reconstruction Finance Corporation model from the early 1930s and the Resolution Trust Corporation model from the 1990s. In the RFC model, a government agency sought to encourage the renewal of lending by purchasing preferred stock in banks "in need of funds for capital purposes either in connection with the organization or reorganization of such [banks]" (*Federal Reserve Bulletin* 1933, 115). In the RTC model, insolvent S&Ls were closed or merged into other depository institutions and their assets acquired by the agency.

Though the RFC did useful chores in the late 1930s and helped the war effort in the early 1940s—and closed down soon after the war with a profit to the government—it was not in fact effective in reviving a banking system that was as reluctant to renew lending as its former borrowers were worried about assuming debt. Moreover, the RFC model leaves existing management in place, ignoring the warning once issued by a governor of the central bank of Malaysia: "Never let monkeys look after bananas" (Sheng 1996, 54). It fits rather neatly with Japanese cultural preferences, but it doesn't work.

Most have forgotten that the Resolution Trust Company, the agency chartered in 1969 to clean up the S&Ls, was a great disaster in its first 18 months, when it acquired and appraised and did legal work on property but did not sell for fear that low prices would subject it to political criticism. (I argued before the House Banking Committee that this retention of assets was freezing the real estate and junk bond markets at a very low and still falling level: "The wisdom of the market is that the government will sell at the bottom. If the government hasn't sold yet, we haven't reached the bottom yet; might as well wait.") In 1991 new leadership at the RTC began to auction off enormous packages of assets, which recreated the markets. The first buyers made immense profits, which brought in new cadres of bidders for subsequent auctions, and the reviving markets launched the great expansion of this decade. *The sale of overvalued assets from failed banks, at distress prices, creates sound assets for surviving banks, reviving their willingness to lend.*

As the RTC auctioned off its properties, grease began returning to the wheels of trade and the sand of past mistakes was carted away. The purpose of the agreements to restructure bank loans to Asia, and of the IMF programs that facilitate those restructurings, is to stimulate the return of lending and investment to these nations. For good or ill, the RTC model in effect nationalizes many of the bad debts, paying bank depositors in full (even when, as in the American S&L situation, the deposits had been lured by extravagant returns) and giving other creditors, including foreigners, claims on the state.

The most difficult decision confronting a government that has suffered a bank run and a currency crisis is the extent to which it will yield to creditor demands that the state itself undertake the obligations of the

banking system and state-owned (or partly owned) enterprises. Even after agreement has been reached on the liabilities to be negotiated with the creditors' committees, the work-out process is slow and uncertain. There are different classes of creditor with different kinds of claims, and no accepted process by which the mess can be sorted out. Jeffrey D. Sachs of Harvard, among others, has called for the establishment of an international bankruptcy code and a tribunal to interpret it, so that creditor claims can be assessed and if necessary reduced in an orderly fashion. But different countries have different concepts of bankruptcy and different views of the obligations of debtors.

Sheng said that, as a realistic matter, losses cannot be allocated to foreigners, and the best hope is to seduce new foreign loans and investment to increase the pot of national income from which the necessary taxes will be siphoned. Eichengreen and Portes rather tentatively proposed an international arbitration tribunal and exercise of the powers of the International Monetary Fund, under Article VIII(2)(b) of its Articles of Agreement, to validate a standstill in international payments imposed by a crippled sovereign debtor—tentatively because they fear that a standstill by one country could cause a spread of financial disease to other countries as creditors denied payment here would rush to get their money out there. (There is also some question about the value of Article VIII(2)(b) in American or British courts, which control the legal system under which almost all contracts for cross-border lending are written.) Eichengreen and Portes also noted that historically foreign bondholders have not had to bear much of the burden of bad borrowing by sovereigns: "across a long historical sweep, with many defaults and reschedulings and under a variety of different institutional arrangements, the average *ex-post* real rate of return on lending to sovereigns has remained remarkably similar: about 2–3 percent, not much different from that on 'riskless' lending" (1995, 21).

The felt need of the debtors, of course, and perhaps of the system, is for the functional equivalent of what American law calls "debtor in possession" lending. The bankrupt firm is kept functioning by loans authorized by the bankruptcy court to become a first claim on the "estate," prior to all previous obligations. Loans by the international financial institutions, which take priority over government and private loans, can and sometimes do perform that function. Prior to 1987, probably because the major

industrial countries were frightened of what might happen to their own banks if they were forced to write off foreign assets, the International Monetary Fund refused to disburse its loans until needy countries made their deal with creditor banks, which presumably minimizes the problem that the monkeys may be left to tend the bananas. Among the major developments of the 1980s was the decision at the IMF to advance money to debtors who were behind in their payments to the banks, which deprived the banks of much of their leverage in the negotiations. But the amounts now required to restore the net flow of funds into debtor countries have become very large even by IMF standards.

Toward a New Architecture

The whirlpool that drowns the voyagers is the interbank market, and the best short-term program for reducing the chance of new crises and minimizing their severity would be a system for identifying and fencing off the use of interbank borrowing. This is where the worst of the "moral hazard" lies. Because governments and central banks will ultimately stand behind their failing banks, bankers are lax about loans to other banks. Interbank dealings are often accomplished through "blind brokers," so that neither lender nor borrower knows the identity of its counterparty until the trade is finished. There are some controls. Most banks have a limit on how much in overnight Fed Funds they will "sell" to any given bank, but they have no way to know what that bank may be buying from others in the market or its total interbank indebtedness. Banco Ambrosiano Holdings, an essentially unregulated Luxembourg offshoot of an Italian bank, was able to borrow half a billion dollars from 250 international banks in 1983. "Clearly," Robert E. Litan and Richard J. Herring noted, "these interbank placements were not made on the basis of rigorous credit analysis, because even now, with the benefit of a decade of hindsight, little is known about what BAH actually did with the money" (1994, 101).

The international community needs some sort of registry that would call attention to any bank's or national banking system's continuing increase in short-term borrowings from financial firms. Because most of these borrowings take the form of repurchase agreements for investments that exist only as book-entry items at a central bank, there is in fact a record that

can be consulted. Unfortunately, each bank's end-of-day position is created in a maelstrom of trading that runs 24 hours every business day. Securities houses as well as banks are continuous participants in the market, and the net position of the banks at the close of day may reflect the requirements of securities houses, not banks. Moreover, bank treasurers who know they will need to borrow money tonight may well spend the first hours of the day selling it to see if they can push down their price, while treasurers who know they will have money on offer at the end of the day may spend much of their time buying in hopes of helping a trend they can profitably ride. Choosing a time when the music stops and everybody has to announce his interbank position will be difficult (though not impossible—American banks do have to get their required reserves into the Fed before the FedWire closes). And even those who most value transparency in financial matters will see the need for limiting access to this information: the efficiency of a banking system would not be enhanced by daily speculations over why some bank shows an anomalous change in its net interbank position. Still, just as the CHIPS computer at the New York Clearing House has a program that flags any bank's promised payments to the clearing far in excess of its contemporaneous receipts of promises to pay by other banks, some international institution could monitor large anomalous short-term borrowings by banks.

Arrangements to police interbank lending will be meaningless, however, unless the central banks and the banking regulators can get a handle on the generation of over-the-counter derivatives. Action on this front is long overdue. In mid-1997, according to the International Swap Dealers Association, the "notional value" of outstanding OTC contracts was about $29 trillion (Tait 1998, 15). Notional value is considered a deceptive figure, because the derivative contract pays off or imposes costs according to the *change* in relative values of the instruments. A swap that trades interest payments on $1 million for some multiple of interest payments on 140 million yen places the parties at risk for much less than the million dollars of notional value. In the Asian crisis, however, because currency values and interest rates changed so rapidly, notional value turned out to be a number of considerable significance. A lawsuit by J. P. Morgan against a Korean counterparty indicates that the loss on a notional $250 million leveraged currency swap had turned out to be a real $189 million. Sheng had stated the problem the year before:

> Some analysts argue that regulators should not be concerned with the gross value of derivatives, but only with the net replacement cost of derivatives trading. Net replacement costs could be quite low when the volatility of markets is low. But in unusual markets . . . underlying markets can dry up and bid-ask spreads can widen considerably, resulting in many derivatives models not being able to price their derivatives correctly and placing their buyers and sellers in a high-risk environment. . . . The current lack of transparency in derivatives trading means that many regulators are not aware of the true size of the risks being assumed by their banking systems. (1996, 178)

Not the least of the reasons why the Asian currencies and markets fell so far so fast was the fact that *nobody* knew the extent of the contingent liabilities the banks and their counterparties had assumed in OTC derivatives contracts. The mathematical models of price movements and covariance underlying the construction of these liabilities simply collapsed as actual prices departed so far from "normal" probabilities. One would have expected the banks involved to play down the theoretical justifications for their mistakes and to seek better information and judgment. But a participant in a conference about derivatives at the Stern School at New York University, held soon after the Asian disaster, reported that the topic was not limitations on the complexity and opacity of derivative instruments, but rather their extension and refinement to cover even more contingencies beyond the parameters of the bell curve.

Actually, the solution to the derivatives dilemma is easy to find and easy to administer. The supposed risk-reduction purpose of derivatives can also be achieved by the use of exchange-traded and publicly priced futures and options contracts. This solution was proposed in 1994 by David Folkerts-Landau, then director of capital markets research at the International Monetary Fund, and Alfred Steinherr of the European Investment Bank. Their essay on the subject won the annual American Express Bank Review brilliancy prize. They wrote:

> By increasing capital requirements for OTC derivative positions and thereby making them more costly relative to exchange/clearing house positions, it is possible to induce a

> shift towards the exchange/clearing house market structure. In terms of the various risks generated by OTC derivative activity, credit risk would be reduced by marking to market with margining, transparency of price discovery would increase, liquidity risk would be reduced by the fungibility of contracts, legal risks would be eliminated under existing laws, and operational risk would be reduced. (Folkerts-Landau and Steinherr 1994, 2–3)

What is actually happening, unfortunately, is that the central banks, the Bank for International Settlements, and the private-sector Group of Thirty are all looking for ways to *reduce* the capital that banks must allocate against their derivatives positions. Chairman Greenspan has said that "stress tests, which address the implications of extreme scenarios," will take care of the garbage-in problem the mathematical models now cannot solve. "[A]s credit risk analysis and risk management processes in general become more sophisticated," he added, "the framework for regulation and supervision, including the framework for capital charges, will need to adapt to, and take advantage of, evolving risk management practices" (Greenspan 1998, 8).

Central banks are the source of the moral hazard in cross-border banking. Concerned by the diminishing franchise value of a banking charter, they are virtually without exception eager to help banks try new things that promise higher rewards. To the extent that these rewards are bought by greater risks, they are not real. "[T]he compensation for greater risk," as Joseph Schumpeter wrote in 1911, "is only apparently a greater return; it has to be multiplied by a probability coefficient whereby its real value is again reduced—and indeed by exactly the amount of the surplus. Anyone who simply consumes this surplus will atone for it in the course of events" (Schumpeter 1934, 33). But like the money illusion at the beginning of inflation, profits from taking positions in derivatives look good early on.

It is because the large banks know that the central banks will take care of their liabilities, especially in an international context, that they engage in risky behavior. The violence of the break when trouble occurs is because the market loses faith in the central banks. The recommended remedy on all sides is better accounting practice for all, more transparency and market discipline. But central banks want to maintain their

discretion to use charitable accounting procedures that will give their banks a *bella figura*, they believe in bank secrecy, and their view of market discipline is that of McKinsey & Co.'s Lowell Bryan: "so-called market discipline is simply another name for bank panic" (Bryan 1991, 40).

When the crunch comes, to quote Sheng once more, "There is an inherent conflict between monetary policy and bank supervision policy. At a time when the central bank is concerned with maintaining a stable currency, there may be a need to rescue banks, which creates a quasi-fiscal burden. Monetary creation through lending to rescue banks negates the ability of tight monetary policy to combat inflation or capital flight" (1996, 179). The difficulty is Ricardo Hausman's point, cited above, that banks are both the operators of the payments mechanism and financial intermediaries. Quite apart from the question of their putative independence from the government, the central banks cannot afford to lose the services of the banks in the payments system and must therefore protect them from their own errors as financial intermediaries.

The *Financial Times* can see no prophylaxis against the Asian disease except the complete removal of the banks from development finance.

> If there is one lesson from the experience of the last two decades, it is that banks are disastrous vehicles for large-scale capital flows across frontiers. The short-term money they provide is unsuitable for finance of long-term investment; the expectation of help from their home authorities makes them willing to take on excessive risk; and their attempts to take their money out impose intolerable pressure on exchange rates of the capital importers. (*Financial Times* 1998)

But banks that are not also part of the payments system that must be protected from systemic risk will not carry these diseases, and the good news is that technology will soon rescue us from the dilemma. Banks as we have known them are no longer needed in the payments system, and deposits are no longer a major part of the funding of a large bank. As technology lowers the cost of processing payments, the risk-free "narrow bank" that invests exclusively in government securities becomes practical. Real time gross settlement, which will be achieved in Europe by 2001, virtually eliminates the uncertainties of missed payments. The

creation of the Euro largely destroys monetary policy as a tool of governance in the European Union. The credit card companies, the data processors, and the ATM networks have sabotaged the demand-for-money function that informs the theory of central banking. To the extent that the banks themselves wish to be brokers rather than holders of assets, the danger of a "run" is greatly diminished. From the experience of Drexel in 1990, we know that very large securities firms, very significant participants in international clearing operations, can be allowed to fail without systemic consequences.

Looking ahead, the plan should be to separate depository institutions and payments providers from the wholesale financial institutions that would be authorized in all versions of pending American banking legislation. Financial intermediaries reporting their assets at market prices, financed by the market and relying on their own rather than the government's safety net, will be better partners for the developing world and less likely to break apart with Minskian fragility.

Notes

1. Banks may charge less interest than the market allows because higher rates would bring an adverse selection of borrowers that run greater risks. See Alan Blinder and Joseph Stiglitz (1983, 297–302).
2. It is interesting to note that Eichengreen, not believing that the European Monetary Union could come to pass, took Italy as his illustration of the country that couldn't afford to raise interest rates because of the effect on its debt service obligations and thus its budget deficit. In the event, the progress of the Euro lowered Italian interest rates and brought the budget deficit low enough to qualify the country for admission to what had been planned as a North European exclusive club.

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