

# **The East Asian Financial Crisis: Diagnosis, Remedies, Prospects**

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## I. Introduction

History, Nehru famously observed, is written by the victors.<sup>1</sup> Financial history, it seems, is written by the creditors. When a financial crisis arises, it is the debtors who are called upon to take the blame. This is odd, since a loan agreement invariably has two parties. When a loan fails, it usually represents miscalculations on both sides of the transaction, or distortions in the lending process itself.

The East Asian financial crisis has so far been true to form. As soon as the crisis hit in mid-1997, the International Monetary Fund, which led the official international response, assigned primary responsibility for the crisis to the shortcomings of East Asian capitalism, especially the East Asian financial markets. The IMF's primary strategy for the three hardest hit countries -- Indonesia, Korea, and Thailand -- was to overhaul the East Asian financial systems. The basic diagnosis was that East Asia had exposed itself to financial chaos because its financial systems were riddled by insider dealing, corruption, and weak corporate governance, which in turn had caused inefficient investment spending and had weakened the stability of the banking system.

There is some truth in such claims. And yet, such Asia-centered accounts seem to be only a part of the explanation of the crisis. The hypothesis that East Asia's financial shortcomings alone caused the crisis and fully explain the depth of the crisis fits uncomfortably with several important facts. First, the East Asian economies had been highly successful for a generation, belying the notion of fatally dysfunctional economies. Second, the 1997 crisis was largely unanticipated, a point which also seems to be at odds with explanations that rest on allegations of long-standing ills of the East Asian economies. A few voices, notably Yung Chul Park (1996) in the *Brookings Papers on Economic Activity*, gave warnings that East Asia could be subject to the same kind of crisis that had hit Mexico in 1994-95, but such warnings were rare, and generally unheeded. Even the many observers who saw some danger signs in late 1996 -- for example in the overvaluation of the Thai baht -- did not anticipate the kind of financial meltdown that has in fact occurred. Third, and related to the first two points, foreign investors flooded the region with funds until the onset of the crisis. This behavior, too, does not comport easily with an explanation of the crisis that pins the blame on fundamental ills of the East Asian economic systems.

In short, the East Asian economies were successful for nearly a generation; they received very large inflows of funds in the years leading up to the crisis; there were few warning signs or alarm bells. Why, then, in such circumstances have the East Asian economies temporarily collapsed? Whatever the answer, the magnitude and suddenness of the financial reversal is made clear in Table 1, which records the net capital flows to the five East Asian countries hardest hit by the crisis: Indonesia, Korea, Malaysia, the Philippines, and Thailand. Private net inflows to these

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<sup>1</sup> "History is almost always written by the victors and conquerors and gives their viewpoint," in Jawaharlal Nehru, *The Discovery of India*, 1946.

five countries soared, rising from \$40.5 billion in 1994 to \$92.8 billion in 1996. Suddenly, in 1997, the long period of inflow abruptly reversed, with a net outflow of around \$12.1 billion. The remarkable and unexpected swing of capital flows \$105 billion (from \$93 billion inflow to 12 billion outflow) represents around 11 percent of the pre-crisis dollar GDP of the five Asian countries.

This paper begins by examining the broad characteristics of recent financial crises in Mexico in 1994-95, Argentina in 1995, and the five East Asian crisis economies -- Indonesia, Korea, Thailand, Malaysia, and the Philippines -- in 1997. Each of these incidents display elements of self-fulfilling crises, in which capital withdrawals by creditors cascade into a financial panic and result in an unnecessarily deep contraction. As we stress throughout, the panic itself may be “rational” on the part of individual creditors, each of whom is trying to flee ahead of the other creditors, even though the collective result is disastrous and the panic itself unnecessary in the sense that the fundamentals could have supported a much more favorable outcome. In short, international financial markets demonstrate a high degree of intrinsic instability, or to put things another way, the East Asian crisis is as much a crisis of Western capitalism as Asian capitalism.

The paper then considers other factors that have contributed to the crisis. East Asia was hit by several international macroeconomic shocks during 1994-96, including a dramatic surge by competitor economies (especially China and Mexico), and the abrupt reversal of the long-term trend towards appreciation of the yen vis-a-vis the dollar. These shocks, however, appear to have had only a modest impact on Asia’s economic performance. These international factors interacted with growing weaknesses in the East Asian financial systems to provoke the crisis. Each of the five crisis economies had initiated, but not completed, the process of financial sector liberalization and reform. The partial reforms led to increasingly fragile financial systems characterized by growing short-term foreign debt, rapidly expanding bank credit, and inadequate regulation and supervision of financial institutions. These weaknesses, in turn, left the Asian economies vulnerable to a rapid reversal of capital flows.

Once the capital withdrawals were underway, mistakes by both Asian governments and the IMF contributed to the panic and unnecessarily deepened the crisis. Thailand and Korea, in particular, failed to take appropriate actions in late 1996 and early 1997 that could have headed off the crisis. At a later stage, the IMF’s focus on “fixing Asia,” without considering the weaknesses in the international financial markets themselves, imposed excessive costs on the East Asian economies without giving proper regard to the root problems of international financial market instability.

Finally, we consider strategies to avoid future financial crises in emerging markets. We examine several options for emerging markets to slow (but not eliminate) short-term capital inflows, and reduce the vulnerability of financial institutions to rapid reversals of capital. We also discuss the possibility of a new international strategy for dealing with incipient financial crises.

The paper is organized as follows. Section II discusses some basic ideas about financial crises, to put the Asian crisis in a more general financial perspective. Section III gives some

background to the East Asian economies. Section IV discusses the onset of the crisis itself, and Section V provides our diagnosis of the factors contributing to the crisis. The sixth section reviews and challenges the IMF approach to crisis management, distinguishing the IMF's bailout strategy with a strategy based on "orderly workouts" between creditors and debtors. Section VII discusses some possible approaches towards long-term crisis prevention.

## **II. Emerging Market Crises**

In emerging market financial crises, an economy that has been the recipient of large-scale capital inflows suddenly stops receiving such inflows, and instead faces sudden demands for the repayment of outstanding loans. This sudden reversal of flows leads to financial embarrassment -- in which loans fall into default or at least are pushed to the brink of default. The outcome of the reversal of capital flows may be a period of outright default; a rescheduling of debt payments; or a rescue by a lender that provides a new loan to finance the repayments of past loans that are falling due.

In the twentieth century, there have been several dramatic international financial crises involving developing countries. In the fall of 1929, the flow of bond financing from the U.S. to Latin America suddenly dried up, followed by widespread defaults by Latin American sovereign borrowers that took nearly a generation to resolve once the Great Depression and World War II erupted. In August 1982, Mexico was pushed to the brink of default when it was unable to roll over short-term debts falling due. The Mexican crisis was soon followed by a generalized withdrawal of credits from developing countries, which in turn was followed in dozen debtor countries by debt reschedulings, defaults, and renegotiations. Chile, Uruguay, and Argentina experienced financial crises in the early 1980s following financial deregulation in the late 1970s (Edwards, 1996; Diaz-Alejandro, 1988). More recently, the large-scale lending of money to the emerging markets has been punctuated by several dramatic reversals, including Mexico, Turkey, and Venezuela in 1994, Argentina in early 1995, and several Asian countries this year, including Indonesia, Korea, Malaysia, the Philippines, and Thailand. In five recent cases (Mexico, Argentina, Indonesia, Korea, and Thailand), an extraordinary international loan was arranged to help forestall defaults on debt servicing.

Each of these crises had certain shared characteristics: they were marked by sudden shifts in financial flows; they were to some extent unanticipated; and they provoked deep economic contractions within the debtor countries, as well as losses to some of the foreign investors, especially equity investors. Most analysts have tried to explain these crises in terms of two kinds of "fundamental" factors:

- 1) abrupt changes in international market conditions which affect the ability of debtors to repay outstanding loans, such as shifts in interest rates, commodity prices, or trade conditions (e.g. the extent of protectionism);
- 2) abrupt shifts in the debtor country which cause creditors to reassess the ability or willingness of

the country to service the foreign debt, including changes in political leadership or economic policy, or in the burden of the debt for some reason (e.g. new information about the overall size of external debt obligations).

In the 1929 crisis, the main factor alleged to have provoked the cessation of bond finance was the boom conditions in the U.S. financial markets, which tightened the terms for new international bond issuances. In addition, falling international commodity prices called into question the debt-service capacity of commodity exporting countries in Latin America. Soon after the lending stopped, conditions worsened markedly, with the onset of the Great Depression and the global outbreak of protectionism. In the 1982 debt crisis in Mexico, the most important shift was the very steep rise in interest rates in the U.S., and the accompanying steep appreciation of the U.S. dollar. In turn, dollar appreciation and high interest rates caused the fall in the dollar prices of internationally traded commodities, including oil. The combination of soaring interest rates and falling commodities prices in turn caused international investors to reassess the debt-servicing capacity of borrowing countries such as Mexico.

One surprising feature of the recent emerging market crises is that the typical international factors have not been present. In the crises of 1994 and 1995 (Argentina, Mexico, Turkey, and Venezuela), international financial conditions were stable; U.S. interest rates were moderate; the global trading system was open. Mexico, indeed, had just entered into the North American Free Trade Agreement with Canada and the United States. Economic reforms in Mexico and Argentina had generally led to widespread enthusiasm for these economies. In one account of the Mexican crisis, Dornbusch and colleagues (1995) assigned a heavy responsibility to poor macroeconomic management within Mexico. In their view, the Achilles' heel of the Mexican and Argentine economies in 1994-95 was an overvalued exchange rate, which itself was a legacy of anti-inflation programs in the two countries that had been centered on nominal exchange rate stability. In the interpretation of the Mexico crisis in Sachs, Velasco, and Tornell (1996a, 1996b), the overvaluation of the exchange rate was seen to have played an *indirect* role; more important was creditor panic.

The 1997 East Asian crises are even more surprising. Not only were the international factors seemingly absent -- with benign conditions in international financial markets, commodity markets, and the trading system -- but domestic factors pointed to in Mexico and Argentina also did not obviously apply either. None of the East Asian countries was in the aftermath of an anti-inflation program. The real exchange rates were only mildly overvalued. The overall debt carrying capacities of the East Asian countries did not seem to present imminent risks of default. And yet the crisis hit with a vengeance.

### *Self-fulfilling Crises*

A closer look at the recent crises suggests that a third category of explanation is needed:

intrinsic instability in international lending.<sup>2</sup> Many observers, including Guillermo Calvo and Enrique Mendoza (1995), Barry Eichengreen, Andrew Rose and Charles Wyplosz (1996), Graciela Kaminsky and Carmen Reinhart (1996), and others have recently reached similar conclusions regarding the Mexican crisis and several other emerging markets crises before 1997. The basic notion is that international loan markets are prone to self-fulfilling crises in which individual creditors may act rationally and yet market outcomes produce sharp, costly, and *fundamentally unnecessary* panicked reversals in capital flows.

Our preferred explanation of such events turns on the critical distinction between illiquidity and insolvency. An *insolvent* borrower lacks the net worth to repay outstanding debts out of future earnings. An *illiquid* borrower lacks the ready cash to repay current debt servicing obligations, even though it has the net worth to repay the debts in the long term. A *liquidity crisis* occurs if a solvent, but illiquid borrower, is unable to borrow fresh funds from the capital markets in order to remain current on debt servicing obligations. Because the borrower is solvent, capital markets could in principle provide new loans to repay existing debts with the expectation that both the old loans and the new loans will be fully serviced. The unwillingness or inability of the capital market to provide fresh loans to the illiquid borrower is the nub of the matter.

Why might markets fail this way? The primary reason is a problem of collective action. Suppose that each individual creditor is too small to provide all of the loans needed by an illiquid debtor. A liquidity crisis results when creditors as a group would be willing to make a new loan, but no individual creditor is willing to make a loan *if the other creditors do not lend as well*. One possible market equilibrium is that no individual creditor is willing to make a loan to an illiquid borrower precisely because each creditor (rationally) expects that no other creditor is ready to make such a loan.

Consider a simple illustration. Suppose that a borrower owes debt  $D$  to a large number of existing creditors. The debt requires debt service of  $\theta D$  in period one, and debt service of  $(1+r)(1-\theta)D$  in period 2. The debtor owns an investment project which will pay off  $Q_2$  in the second period, where  $Q_2/(1+r)$  is greater than the present value of debt service payments  $\theta D + [(1+r)(1-\theta)D]/(1+r) = D$ . The debtor lacks the cash flow to repay  $\theta D$ , since the investment project only pays off in the second period. Moreover, if the debtor defaults, the loans repayments are accelerated (i.e. demanded at once by each of the individual creditors). The investment project is then scrapped, with a salvage value of  $Q_1 < D$ . In that case, the repayment of the outstanding loan is shared among the existing creditors on a *pro rata* basis.

The normal case for this solvent but illiquid borrower would be to borrow a fresh loan  $L$  in the first period, use it to repay  $\theta D$ , and then service  $(1-\theta)D + L$  in the second period. Thus,

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<sup>2</sup>Financial market instability also played a critical role in both the 1929 and 1982 crises, although an analysis of those earlier crises is beyond the scope of this paper.

with  $L = \theta D$ , the total repayment due in the second period is  $(1+r)\theta D + (1+r)(1-\theta)D = (1+r)D$ , which by assumption is less than  $Q_2$ . Suppose, however, that each individual creditor can lend at most  $\lambda$ , where  $\lambda \ll \theta D$ . This lending limit might result from prudential standards imposed on individual bank lenders, which limit their exposure to particular debtors. If only one lender is prepared to lend in the first period, the borrower will be forced into default, since it will not be able to service its debts in the first period. The new creditor that lends  $\lambda$  in the first period would then suffer an immediate loss on its loans (indeed, it might receive nothing if repayments are prioritized such that all of the preceding creditors have priority on repayment). Obviously, a first-period loan will require at least  $n_1$  new lenders, where  $n_1 = \theta D/\lambda$ .

There are clearly multiple rational equilibria in this situation. In the normal case,  $n_1$  lenders routinely step forward; the existing debts are serviced; and the future debts are also serviced. The investment project is carried to fruition. In the “financial crisis” case, each individual creditor decides not to lend, on the grounds that no other creditor is making loans. The debtor is pushed into default. The debt repayments are accelerated, the investment project is scrapped with sharp economic losses, since the salvage value  $Q_1$  is less than  $Q_2/(1+r)$ . Each individual creditor of course feels vindicated in its decision not to lend; after all, the debtor immediately goes into default.

A simple model of this sort was sketched in Sachs (1984) and Cooper and Sachs (1985) in the aftermath of the 1982 developing country debt crisis. A much more complete theory along these lines was drawn in Diamond and Dybvig (1983) in the context of banking institutions. Diamond and Dybvig (DD) seek to explain bank runs, in which individual depositors *en masse* suddenly demand withdrawals of their sight deposits, and thereby push the bank into insolvency. In the DD model, the bank receives deposits in period 0 from a large number of small depositors. The bank then lends the money for a long-term project coming due in period 2. If the depositors all demand immediate withdrawals of bank deposits in period 1, the bank must call in the loan on the long-term investment. The investment project must then be ended, and sold for its salvage value in period 1. The bank, moreover, is presumably forced into liquidation if the salvage value of the investment is insufficient to cover the withdrawals of deposits.

A panic among depositors is therefore one rational equilibrium. If the depositors run, thereby bring down the bank, they will end up losing part of the value of their deposits, thereby confirming the motivation to have run from the bank in the first place. The run occurs not when depositors fear that the bank has made a bad investment decision, but when individual depositors fear that *other depositors* are withdrawing their money from the bank, thereby driving the bank into illiquidity and eventual liquidation. If depositors indeed must get their money out of the bank on a first-come, first-serve basis, each depositor will have the incentive to try to be first place in the queue for early withdrawals in the event of a generalized bank panic.

The original Diamond-Dybvig paper was particularly insightful because it also addressed the question as to why banks would put themselves into such a vulnerable position of being subject to depositor runs. If banks are such fragile institutions, why do they exist at all? The answer, according to DD, is that the banks transform maturities (i.e. borrow short and lend long)

in order to provide liquidity services for their depositors, who on an individual basis are not sure whether they will need to withdraw funds in the first period or the second period to meet their idiosyncratic consumption needs. If there is individual uncertainty over the timing of withdrawals, but low aggregate uncertainty (i.e. the bank can generally forecast the overall demand for withdrawals in the first period, except in the event of a panic), then the bank can provide liquidity services by taking on short-term deposits and lending them long term. The only problem arises in the unlikely case in which depositors panic, not because they need the money in the first period, but because the other depositors are also panicking.

The illiquidity-insolvency model is one of two main approaches to explaining herd behavior in financial markets, that is cases where creditors act on the basis of the actions of other creditors, not on the basis of the debtor's fundamentals as perceived by the individual investor. The other approach is based on the assumption of asymmetric information. Abhijit Banerjee (1992), Frederic Mishkin (1991), Joseph Stiglitz (1981) and others have explored in detail the possible role of asymmetric information among creditors as a cause of market instability. One basic implication is that each individual creditor may rationally respond more to the actions of other creditors -- now taken as a signals -- than to their own private information. Banerjee (1992), for example, gives an example in which it is rational, but socially inefficient, for each decision maker to completely discard his own the private information and base actions purely on the actions of earlier movers in a queue. The result is socially inefficient in the sense that it would be pareto improving for each investor simply to ignore the actions of the other investors when making their individual decision.

### *Mexico and Argentina, 1994-95*

Let us return briefly to the Mexican and Argentine crises in the light of this discussion, since the Mexican and Argentine crises provide an invaluable backdrop for the Asian crises. The Mexican crisis actually proceeded in two stages (see Sachs, Tornell, and Velasco, 1996a, and Edwards, 1998, for a more complete discussion). In early 1994, foreign investors became more wary about Mexico as a result of election-year instability. Capital inflows into Mexico dropped sharply in the second quarter of 1994, threatening Mexico with currency depreciation and slower growth. Probably because Mexico was in an election year, the Mexican Central Bank expanded domestic credit in response to the slowdown of international lending. The central bank also continued to peg the exchange rate, after an initial modest depreciation. The result was a steady loss of reserves in 1994, from around \$28 billion in February 1994 to just \$10 billion in early December 1994. After the change of government in early December, rumors started to fly about devaluation. Reserves plummeted further in mid-December, to around \$6 billion at their nadir. The currency was devalued between December 19-22, and then allowed to float.

The second stage of the Mexican crisis emerged immediately after the devaluation. International and domestic creditors of the Mexican Government suddenly started to note that the Government owed around \$28 billion of short-term dollar denominated debts (*tesobonos*) within the following few months, but that the government had only around \$6 billion of reserves.



Suddenly, the Mexican government was unable to borrow fresh funds to service the \$28 billion in tesobonos falling due. The Mexican Government was solvent, but suddenly illiquid. The solvency was reflected by the fact that \$28 billion in debts was only around 10 percent of Mexico's pre-crisis GDP, and therefore not a crushing debt burden. Moreover, the budget was roughly in balance.

Nonetheless, the Mexican Government was pushed to the edge of default in early 1995. In the event, the U.S. Government and the IMF led an emergency loan to Mexico. Though no individual private-sector creditor could provide the amount of refinancing needed by Mexico (i.e. approximately \$28 billion falling due within a few months), the U.S. Government, IMF and other official creditors could provide such large sums. An emergency international loan was made; the Mexican government used the loan to retire tesobonos; and then the international loan was repaid ahead of schedule in 1996.

The patterns of Mexican macroeconomic adjustment between 1993 and 1997 are telling. The 1994-95 crisis has the hallmarks of a crisis that suddenly erupted unnecessarily but with severe but transitory effects. As shown in Figure 1, Mexican GDP growth collapsed in 1995, but then recovered strongly in 1996 and 1997 (the Argentine case, also shown, is discussed below). In Table 2, we also note that portfolio and other private investment flows tumbled in 1994 and 1995, but then quickly recovered in 1996 and 1997. Notably, foreign direct investment was much more stable than portfolio investments. The real exchange rate depreciated sharply in 1995, but then appreciated in 1996 and 1997. The stock market collapsed in 1995, but then recovered sharply in 1996 and 1997. *In short, Mexico suffered a deep, sharp shock without long-term lasting effects. The episode has the hallmarks of a crisis that "did not need to happen," in that it appears not to have been justified by fundamental factors.*

The Argentine crisis of 1995 followed in the wake of the Mexican crisis. Argentina faced an election in May 1995, just as Mexico had faced an election in August 1994. Domestic and foreign investors became skittish about Argentina's commitment to its pegged exchange rate. Even though the economy was performing strongly in 1994 and early 1995, investors began to withdraw funds from Argentine banks in the aftermath of the Mexican collapse and in anticipation of the May elections. The withdrawals turned into a depositor panic. Suddenly there was a mass exodus of depositors and creditors of the Argentine commercial banks. The banks were pushed to the brink of illiquidity and default. Argentina escaped from full-fledged collapse following an emergency international bailout loan, combining funds from the IMF, World Bank, Inter-American Development Bank, and some private creditors. As shown in Table 2, Argentina, like Mexico, suffered an abrupt collapse of GDP in 1995, which was followed by a rather swift recovery in 1996 and 1997. Also, like Mexico, capital outflows in 1995 turned again to net capital inflows in 1996-97. Once again, foreign direct investment was much more stable than other kinds of capital flows.

Mexico and Argentina were vulnerable to crisis because each was illiquid, in the sense that short-term liabilities to foreigners exceeded short-term assets. As a simple measure, we compare the short-term debts owed by each economy to the international banks with the foreign exchange

reserves held by the central bank. This ratio, shown for a large number of emerging markets in Table 3, illustrates clearly that Mexico and Argentina both had reached a vulnerable range in which short-term debts exceeded official reserves. Interestingly, the nature of the debts differed markedly in the two countries, though the economic outcomes were similar. In the case of Mexico, the total debts owed to international banks were divided among the major Mexican sectors as follows: government 41 percent; banks 20 percent; and non-bank private sector 39 percent. The tesobono crisis, in particular, was a crisis of public-sector indebtedness. In Argentina, the breakdown of debts owed to international banks was quite different: government 26 percent; banks 22 percent; and non-bank private sector 52 percent. In essence, in Mexico the creditor run was on the government; in Argentina, the creditor run was on the banking system. In Asia we will see similar variety. In Indonesia, the international bank debts are mainly owed by the corporate sector; in Korea and Thailand, the international bank debts are owed mainly by the financial sector.

#### *Why domestic capital markets are less prone to panic*

Advanced economies have introduced mechanisms and institutions that limit the onset of self-fulfilling panics within the domestic economy. These lessons are insightful for understanding the nature of the international crises.

The U.S., for example, was long prone to banking crises that were heavily domestic in origin. Such crises shook the U.S. economy in 1873, 1893, and 1907. The last of these, of course, helped to bring on the Federal Reserve Act, which established the Federal Reserve System and the role of the Federal Reserve as Lender of Last Resort (LLR) to member banking institutions facing creditor runs. The lender of last resort mechanism short-circuits a Diamond-Dybvig panic by providing the funds  $L = \theta D$  needed to preserve short-term liquidity. The central bank, the ultimate issuer of high-powered money, is ostensibly free to issue credits as needed to illiquid but solvent financial institutions in order to overcome such panics. The lender of last resort can work in two senses. Most directly, it prevents outright default by providing liquidity on an elastic basis. More subtly, but perhaps more importantly, it can eliminate a self-fulfilling panic if depositors/creditors believe that the LLR will provide the credits  $L$  if needed to forestall a banking collapse. Armed with that knowledge, there is no reason for an individual depositor to panic even if the others do.

The U.S. has used this mechanism several times in recent years to ward off panic. When the stock market crashed in October 1987, the Federal Reserve Board responded by lowering interest rates and flooding the financial markets with increased liquidity to ensure continued operation of the settlements. During the savings and loans crisis, when the federal government began to close down insolvent institutions, the Fed established (with strong support from the White House) a \$100 billion line of credit would be made available to support remaining institutions, thus limiting the potential for a bank run. In 1991, when several major banks, including Citibank, probably had liabilities in excess of assets if assets were marked to market, the Bush administration and the Federal Reserve Board took steps to bolster these insolvent banks, and keep them liquid, until they had a chance to recapitalize.

The lender of last resort mechanism depends, of course, on the ability of the LLR to issue sufficient credit to cover the liquidity needs of the cash-strapped borrowers (usually banks, but sometimes other financial institutions).<sup>3</sup> When the loans are in domestic currency, the LLR in principle has the assured means to provide the necessary credits. When the loans are in foreign currency, however, the central bank may be stymied in its LLR role by lack of adequate foreign exchange reserves. Thus, there was no threat of outright default on peso-denominated Treasury bills, only on Tesobonos. The LLR function can, however, be frustrated by the assignment of monetary policy to goals other than the provision of liquidity. For example, if the central bank is pegging the exchange rate, or maintaining a gold standard, it may be unwilling or unable by law to act as a lender of last resort, even though in principle it could issue the needed credits. In the case of the U.S. in the Great Depression, for example, Friedman and Schwartz (1963) and Wigmore (1987) argue convincingly that the Fed refused its LLR role in part for fear of pushing the U.S. off the Gold Standard, an eventuality which in fact transpired in 1934. In Argentina in 1995, part of the vulnerability to financial panic came from the widely recognized fact that the Central Bank of Argentina was limited in its capacity to act as a lender of last resort because of the currency board arrangements in that country, under which the Argentine Peso is fixed one-to-one with the U.S. dollar, and the Central Bank is limited by law in its ability to issue credits that are unbacked by dollar reserves.

In addition to the LLR, domestic financial markets tend to have other bulwarks against self-fulfilling panics that are not available in the international context. Deposit insurance, backed ultimately by the Central Bank, is a crucial instrument to prevent bank runs by domestic depositors. Notably, the U.S. experienced its last major banking panic in 1933, which prompted the adoption of the Federal Deposit Insurance Act of 1934, and the creation of the Federal Deposit Insurance Corporation. Again, the effective functioning of deposit insurance depends on the deposits being in domestic currency; countries with dollarized banking systems often leave themselves exposed to creditor runs even when some deposit insurance arrangements are in place, because such deposit insurance often lacks adequate reserve funds and therefore credibility.

An additional bulwark against panic is a well-defined and relatively transparent system for managing bankruptcies, liquidations, and other forms of debt workouts. Once again, such institutional and legal mechanisms do not exist in some countries, and are often unworkable when creditors and debtors are residents of different countries. Part of the reason for panic, we have noted, is the “creditor grab race,” in which each creditor flees from an illiquid or insolvent debtor in order to be the first one out of the door. This kind of grab race is very costly: solvent and fundamentally healthy firms may be driven to default and eventual liquidation; debtors are unable to attract working capital; and so forth. Bankruptcy laws can forestall these adverse outcomes by bringing creditors and debtors together for orderly negotiations, rather than disorderly panics. Bankruptcy laws may also ensure adequate interim financing of illiquid enterprises in the course of the orderly workouts.

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<sup>3</sup>The Fed provided credit to several brokerage firms in the aftermath of the October 1987 stock market crash, in order to prevent a meltdown of the settlements system.

Since many emerging markets lack the regulatory and legal infrastructure to support highly liberalized banking transactions, and since they almost inevitably lack the LLR capacity to handle sudden shifts in depositor confidence, trenchant observers have long warned about the dangers of premature financial liberalization in such markets. Two notable such warnings are by Carlos F. Diaz-Alejandro (1988) and Ronald McKinnon and Huw Pill (1996). The latter authors stress the need to “restrain short-term capital flows, particularly those intermediated through the domestic banking system” (p. 35), conclusions that are very similar to those reached in this paper.

### **III. East Asia’s Growth Strategy: Was the Miracle a Mirage?**

We are now ready to turn to the East Asian crisis. One reason that the crisis came as such a surprise was East Asia’s long track record of economic success. The broad outlines of that success are well-known. In Malaysia, Indonesia, and Thailand, average income more than quadrupled between 1965 and 1995, and in Korea, income rose seven-fold (Chart 1). Average incomes in these four countries climbed from 10 percent of the US average in 1965 to around 27 percent today. Life expectancy at birth rose from 57 years in 1970 to 68 years in 1995, and the adult literacy rate jumped from 73 percent to 91 percent (Table 4). Notably, the benefits of economic growth were widely shared throughout the population. Incomes of the poorest quintile of the population grew just as fast as average incomes, and poverty rates fell substantially in each country. In Indonesia, for example, the share of the population living under the poverty line fell from 60 percent in the 1960s to under 15 percent in 1996.

The origins of Asia’s rapid growth have been hotly debated, and these discussions have taken on new energy with the onset of the financial crisis. Some observers now suggest in the aftermath of the crisis that Asia’s rapid development was somehow a mirage that either never really happened, or has been completely wiped out by the crisis. This view is obviously mistaken. The enormous gains in income levels, health, education, and general welfare in Asia during the last three decades will not be dissipated by even an extended recession. After all, even if the crisis is followed by several years of zero growth, standards of living will still be four times higher than they were one generation ago, and 50 percent higher than they were just one decade ago.

Others argue, more reasonably, that there may have been something in Asia’s growth strategy that inevitably led to the financial crash. As we have documented in another paper (Radelet and Sachs, 1998) and summarize in the next section, problems began to emerge in both macroeconomic (capital inflows, real exchange rate appreciation) and microeconomic fundamentals (credit expansion, financial regulation and supervision) in the 1990s that partially contributed to the onset of the crisis. Was the crash destined by Asia’s development strategy?

Such a conclusion might be compelling if it were true that the Asian “miracle” in fact was due to strong authoritarian governments, a close-knit relationship between governments and corporate leaders in fostering heavy industry, or large state subsidies to help exporters gain market share. Such interpretations draw heavily on the distinctive experiences of Japan, Korea, and Taiwan, since governments in those countries did intervene heavily for a period with directed

credit, subsidies, and tariff protection to promote specific strategic industries (Amsden, 1989; Wade, 1990). Although this view of the “Asian model of development” has gained widespread popularity during the last decade, it generally fails to hold up under close scrutiny. These kinds of interventionist policies were clearly not central to the success of Hong Kong, Singapore, Thailand, China, Malaysia, and Indonesia. Hong Kong is probably the most open and least interventionist economy in the world; Singapore’s interventions were very different than in northeast Asia; and industrial interventions in Southeast Asia and China have clearly hindered rather than helped growth (Perkins, 1994; Hill 1996, ADB 1997). Even in Korea, where such industrial policies were most extensive, there is plenty of evidence that Korea’s deeper strength came not from the industrial policies but from the general orientation towards export-led growth.

We have argued elsewhere (Radelet, Sachs, and Lee, 1997) that the core industrial strategy in East Asia was the success in integrating national production with international production, not merely through export orientation, but through specific institutions such as technology licensing, original equipment manufacturing, and export processing zones which helped to attract export-oriented foreign investment. This strategy enabled economies to begin with low-technology manufactured export activities (apparel, footwear, electronics assembly) and gradually to upgrade to high-technology products, such as consumer electronics design and production. Of course, this outward oriented industrialization strategy also depended fundamentally on several core macroeconomic policies pursued throughout the region: (1) high rates of government and private saving; (2) reliance on private ownership in the industrial sector; (3) low inflation rates and restrained domestic credit policies; (4) convertible currencies, with low or zero black-market premia on foreign exchange. During the period of rapid foreign borrowing in the 1990s, the vast proportion of new lending supported increased investment spending rather than consumption.

One part of the long-term development process is the strengthening of financial institutions. As production processes become more complex and more deeply integrated with the world economy, a greater range of sophisticated and well-regulated financial services takes on greater importance. Changes in firm ownership structure and financing arrangements require deeper capital markets for equities, bonds, bank loans, and other forms of financial intermediation. More capital intensive production processes require low cost long-run financing in order to be competitive, and a range of hedging instruments to protect against a variety of market risks.

At least in part, the Asian financial crisis has its roots in attempts at financial reforms in East Asia in the early 1990s that were aimed at upgrading financial institutions, but in fact left the economies exposed to the instabilities of the international financial markets. In Indonesia, for example, a series of financial deregulation packages led to a tremendous expansion in the banking sector, with the number of private banks (including foreign and joint venture banks) nearly tripling from 74 in 1988 to 206 six years later. The centerpiece of Thailand’s effort to compete with Singapore and Hong Kong as a regional financial center was the introduction of the now notorious Bangkok International Banking Facility (BIBF) in 1992. The BIBF allowed for very rapid growth in the number of financial institutions that could borrow and lend in foreign currencies, both on and offshore. In Korea, financial market reforms in the mid-1990s similarly

opened the door towards greatly expanded banking activity, and increased access of domestic banks to short-term international loans (see Park, 1998).

As a general matter, the rapid expansion in financial services was not matched by careful regulation and supervision. Regulatory reforms tended to be partial and incomplete. The piecemeal approach led to a situation in which reforms in one area tended to open up loopholes in other areas, which firms were quick to exploit (Cole and Slade, 1996). Moreover, the huge expansion in banking activity would have made supervision much more difficult, even under the best of circumstances, and the circumstances were not the best. State-owned banks in Indonesia and Korea were allowed to break many prudential regulations on a regular basis without penalty. As in many countries around the world, many banks were owned by politically well-connected individuals who used the banks to heavily finance the operations of affiliated companies. In Indonesia, for example, almost all the major corporations also had their own banks, and the division between the two is often blurred.

The Asian countries hit hardest by the crisis -- like Mexico and Argentina before them in the early 1990s, and Chile in the early 1980s -- all had started, but not completed the process of financial-market liberalization and reform. Ironically, East Asia became vulnerable to external financial shocks in part because it attempted to reform its financial markets in the 1990s in a market-oriented manner. These reforms led to a dramatic increase in the number of banks and their linkages to the international economy, which, in turn, increased the exposure of these economies to international financial shocks, mainly through the remarkable buildup of short-term debts. Asian countries with stronger financial systems (e.g., Singapore and Hong Kong) had taken steps to redress inadequate regulations and poor supervision, and thus were less prone to a crisis. At the other end of the spectrum, Asian countries that had not undertaken significant financial sector reforms (e.g., China, Vietnam) were shielded from the crisis by the fact that there had been much less short-term capital inflow in the early 1990s. Seen in this light, the developments of 1997 were not the inevitable result of an "Asian capitalist model," but rather the accidents of partial financial reforms that exposed the Asian economies more directly to international financial market instability. We now turn to the proximate causes of the crisis.

#### **IV. The Onset of the Crisis**

##### *Buildup to the Crisis: 1990-97*

In a related paper (Radelet and Sachs, 1998), we describe the onset of the crisis in detail. We point out that while the East Asian economies continued to achieve rapid economic growth in the 1990s, there were indeed growing imbalances and weaknesses in the East Asian economies both at the microeconomic and macroeconomic levels. Most importantly, there was a rapid buildup of short-term external debt into weak financial systems -- made possible both because of East Asia's successful track record which attracted foreign credits, and because of partial financial market liberalization in East Asia, which opened new channels for foreign capital to enter into the Asian economies. The inflows led to appreciating real exchange rates, a rapid expansion of bank

lending, and especially to *increasing vulnerability to a reversal in capital flows*. When capital inflows waned in late 1996 and early 1997, a financial panic erupted following a series of missteps by the Asian governments, market participants, the IMF, and the international community. The result was a much deeper crisis than was either necessary or inevitable. Several aspects of the buildup to the crisis are worth highlighting:

- Capital inflows into the Asian-5 countries averaged over 6% of GDP between 1990 and 1996. Capital inflows into Thailand averaged over 10% of GDP during the 1990s, and reached a remarkable 13% of GDP in 1995 alone. Thailand's inflows were predominately borrowing by banks and financial institutions. In Malaysia, inflows averaged 9% of GDP, and jumped to over 15% of GDP in both 1992 and 1993 before tapering off. However, the bulk of Malaysia's inflows came in as foreign direct investment, which of course is less prone to quick reversals. In Indonesia, inflows averaged a more modest 4% of GDP, mostly in the form of borrowing by private corporations.
- Governments maintained exchange rates either with very little variation (Malaysia, Thailand, the Philippines) or small, predictable changes (Indonesia, Korea). In effect, the central banks absorbed the risks of exchange rate movements on behalf of investors, which helped encourage capital inflows, especially with short maturity structures.
- Exchange rates appreciated in real terms as the capital inflows put upward pressure on nontradeables prices. Real exchange rates appreciated by more than 25% in the four Southeast Asian countries between 1990 and early 1997. In Korea, the appreciation was about 12%. Note, however, that the real appreciations in Asia during the 1990s were relatively modest compared with other developing countries. Brazil and Argentina, for example, have seen real appreciations of more than 40% since 1990.
- Export growth, measured in current US dollars, began to slow in the mid-1990s, and then dropped sharply in each country (except the Philippines) in 1996. In Thailand, exports actually fell in nominal dollar terms in 1996, while in Korea exports increased just 3.7 percent. Several factors probably contributed: the increasing overvaluation of the exchange rates, the appreciation of the Japanese yen against the dollar after 1994, the devaluation of the Chinese yuan in January 1994, the competitive effects of Mexico's participation in NAFTA and the peso devaluation, and the world-wide glut in semiconductor production.
- Domestic bank lending expanded rapidly throughout the region. (See McKinnon and Pill, 1996, for a formal analysis of the "overborrowing syndrome" in emerging markets). In Thailand, Korea, and Malaysia, banking claims on the private sector increased by more than 50 percent relative to GDP in seven years, reaching 140 percent of GDP in 1996. The Philippines, starting from a much lower base, recorded private credit growth of over 40 percent per year between 1993 and 1996. Only in Indonesia did credit growth remain at more modest levels (but here, private corporations were borrowing directly offshore). Much of the new lending was financed by the banks borrowing offshore. In Korea,

foreign liabilities of the banking system more than doubled from 4.5 percent of GDP in 1993 to 9.5 percent of GDP in mid-1997. In the Philippines, these liabilities soared from 8.8 percent of GDP at the end of 1995 to an astonishing 21 percent of GDP in mid-1997, just 18 months later. The most extreme case was Thailand, where, after the introduction of the BIBF, foreign liabilities of banks and financial institutions increased rapidly to over 28 percent of GDP by 1995.

- Apparently, a modestly increasing share of domestic bank lending was used for real estate, property, and purchases of equity funds. Official data on lending by sector show a small increase in loans for real estate, but nearly all market observers suggest that these data understate the true amount of lending for these activities.
- A rising share of foreign borrowing was short-term debt, especially in Korea, Thailand, and Indonesia. Short-term debts to offshore banks in these three countries reach \$68 billion, \$46 billion, and \$34 billion, respectively, at the end of 1996 (Table 5). Even these numbers understate total short term liabilities, since non-bank finance (e.g., bonds) are not included in these data. In Thailand, Korea and Indonesia -- the three countries hardest hit by the crisis -- the ratio of short-term debt to foreign exchange reserves exceeded one after 1994. A ratio greater than is not by itself sufficient to spark a crisis, since it can be sustained as long as foreign creditors are willing to roll over their loans. A high ratio, however, does indicate *vulnerability* to a crisis. Once something sparks a withdrawal of foreign capital, each foreign creditor has the incentive to demand repayment quickly, since they each know that there is not enough foreign exchange available to repay everyone.

It is worth highlighting that these imbalances were centered in the private sector, not the government. Throughout the early 1990s, these governments kept their budgets in surplus positions, maintained overall money growth at prudent levels, and kept inflation rates below 10%. In each country, government foreign debt actually declined (as a share of GDP) during the 1990s.

### *Capital Withdrawal and Panic*

Pressure began to mount at nearly the same time in early 1997 in both Korea and Thailand. In Korea, Hanbo steel declared bankruptcy in January, leaving \$6 billion in debts. In the next few months, both Sammi Steel and Kia Motors faced similar difficulties. These problems put increasing pressures on merchant banks (which had borrowed offshore to lend to these and other chaebol), and began to raise concerns about the financial strength of other chaebol. In Thailand, property prices fell in late 1996, and a major property developer, Somprasong Land, was unable to meet a foreign debt payment due on February 5th. These developments provided the first clear indication that financing companies heavily exposed to the Bangkok property market were in trouble. The baht came under attack in late 1996, and twice more in the early months of 1997. In March, the Thai government promised to buy \$3.9 billion in bad property debt from finance companies, but then quickly reneged on its promise. As evidence grew of the fragile condition of the property sector and the financial institutions, speculation mounted that foreign exchange reserves were dwindling and that the government would have to float the baht.



The government's protestations that it would not allow Finance One (the largest financial institutions) to go under, and that it would not allow the baht to float, were to no avail. By late June, Thailand had sharply reduced its liquid foreign exchange reserves, and the baht was cut loose on July 2.

Foreign creditors reacted by withdrawing capital from around the region, and exchange rates came under intense pressure. By early September, currencies in the each of the four Southeast Asian countries had fallen by 20% or more. As the currencies fell and capital flows reversed, several forces came into play to create a self-reinforcing spiral that quickly evolved into a panic. First, in the early stages, creditors made little effort to distinguish amongst the Southeast Asian countries, and assumed that if Thailand was in trouble, the other countries could not be too far behind. Second, as exchange rates depreciated and the domestic currency costs of servicing foreign debts rose, foreign creditors became more reluctant to extend new loans and roll over existing loans. Domestic debtors had to buy foreign exchange to retire these debts, which put more pressure on exchange rates, which in turn reinforced the tendency for creditors to not roll over loans. Third, domestic debtors, many of which had not hedged their foreign exchange exposure, began to purchase foreign exchange to try to close their positions. Fourth, the major ratings agencies belatedly began to downgrade countries in the region, triggering further creditor withdrawals. Fifth, as we discuss in more detail below, both governments in the region and the international community made several mistakes in handling the crisis that added fuel to the fire. As international confidence in these strategies waned, and it became clear that the economic contractions in the region would be much larger than originally thought, creditors withdrew even more funds, intensifying the panic.

### *Initial Responses to the Crisis*

It is likely that had Thailand reacted differently to the fall in land and stock prices and the growing fragility of the financial institutions in late 1996 and early 1997, it would have escaped a serious crisis. Contagion to the rest of the region would then also have been avoided. Despite the fall in property prices, the warnings of investment analysts, and the large infusions of money to ailing banking institutions, the government staunchly maintained the exchange rate peg of the baht to the U.S. dollar, thereby leading to a massive loss of reserves. By the time the currency was allowed to float in July, the government had spent considerable foreign exchange reserves in defense of the currency, and has committed large amounts of foreign exchange to forward purchases of baht, as well as billions of dollars in baht propping up failed banking institutions without taking fundamental steps towards their closure, merger or rehabilitation.<sup>4</sup> The result was

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<sup>4</sup>The government reportedly injected \$3- 4 billion in Bangkok Bank of Commerce after seizing it in 1996. The Bank of Thailand (BOT) also announced that it spent 500 billion baht (about \$19.3 billion) to keep 91 finance companies afloat in 1996 and early 1997, of which it expected to recover at most 100 billion baht. It also reportedly spent \$16 billion in defense of the baht in late 1996 and early 1997, and by June had an additional \$23 billion in forward swaps outstanding. Of course, it did not stand to lose all of the \$23 billion, but rather only the difference between the forward rates and

the Thailand became extremely vulnerable to investor panic, since investors recognized that Thailand's available foreign exchange reserves had fallen far below the outstanding short-term debts owed to international banks.

Once the crisis began to spread, other countries also made mistakes that accelerated the capital withdrawals. Malaysian Prime Minister Mahathir's harsh comments about foreign investors and his threats to ban foreign currency trading are prime examples. Thailand and Malaysia imposed mild capital controls. Malaysia announced it would establish a fund to support stock prices, then abandoned the plan a few days later. Korea seemed to be boldly facing some of its problems by allowing some of the chaebol to go bankrupt, but it inexplicably spent down its reserves in a desperate attempt to defend the won in October and November. Ironically, Indonesia was at first widely praised for its handling of the crisis, as it first widened the trading band on the rupiah, and then floated the currency in August.<sup>5</sup> It resisted the temptation to spend reserves, eased the rules governing foreign ownership of stocks, and announced that it would postpone over 100 investment projects. However, it retracted that decision for several large projects, then later postponed them again. These on-again and off-again pronouncements, and the government's instructions for state enterprises to pull their large deposits out of the banking system (which sharply increased interest rates) frayed nerves and encouraged further withdrawals of foreign funding.

The initial IMF programs, rather than inspiring confidence, seem to have accelerated the flight of currency from the region, despite the pledge of more than \$100 billion in emergency funds to Thailand, Indonesia, and Korea. As we describe in more detail in Section IV, the initial Fund programs focused on fiscal deficits, high interest rates, restrictive money growth, and the immediate closures of insolvent financial institutions. The original Fund programs in Thailand, Indonesia, and Korea were discarded within months. Korea's first program lasted but three weeks. In each country, the signing of Fund agreements was greeted by brief enthusiasm, followed by continued depreciation of the exchange rate and falls in stock prices. The first signs of the end of the currency free-falls came only on December 24th, when the international community changed its strategy and initiated a different approach to the problem based on debt restructuring, accelerated disbursements of international funding, and more comprehensive and rational financial sector restructuring.

## **V. Alternative Approaches to Explaining the Crisis**

In the introduction, we listed three broad categories of explanations for the East Asian

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the future spot rates at the time that the forward positions would be liquidated. Moreover, some of the forward contracts were dated as much as one year forward, so the losses would not be realized immediately.

<sup>5</sup> See, for example, "In Battle for Investors, This is No Contest: Amid a Crisis, Indonesia Opens Up and Thrives as Malaysia Stumbles." *Asian Wall Street Journal*, September 5-6, 1997.

crisis: (1) shifts in international market conditions; (2) growing weaknesses and mismanagement in the Asian economies; and (3) instabilities intrinsic in the international capital markets. In this section, we apply this tripartite framework to the case of East Asia. There are certainly candidate explanations in each category; indeed, almost surely, all three factors have played a role. The question is one of degree, with an eye towards proper policy responses and guidelines for preventing or containing future crisis. While we believe that shifts in international conditions and mis-management (and corruption) played a role, we think the evidence is also clear that intrinsic capital market instability is a key feature of the depth, severity, extent, and simultaneity of the crisis in the region.

### *Shifts in International Market Conditions*

On the most general level, international market conditions were benign or favorable before the onset of the East Asian crisis. U.S. interest rates remained low. World commodity markets were relatively stable. Risk premia on loans to emerging markets were falling, not rising. The growth in total volume of international trade was strong, if a little bit slower in the aggregate in 1996 and 1997 compared with 1993-95. World export volumes world-wide grew 6% in 1996, down slightly from the 9% recorded in 1994 and 1995 but still above the world average for the early 1990s.<sup>6</sup>

Despite this favorable environment, there are several specific hypotheses that have been advanced about unexpected international shocks to the Asian economy. Upon closer inspection, however, it appears that these shocks were at best a modest contributor to the crisis. The suspicion centers around the collapse of export growth in 1996 in two of the five crisis countries, Thailand and Korea, as shown in Table 6, as well as the slowing of export growth in Malaysia and Indonesia. The most extreme case was Thailand, where the dollar value of exports actually fell 1 percent in 1996, after two years of growth in excess of 20 percent. Korea's exports grew by just 4 percent (down from 30 percent growth in 1995), and Malaysia's by only 6 percent (down from 26 percent the previous year). Indonesia's situation was a bit different, as it registered 10 percent export growth, about the same as in the previous three years (but well below the 1990-92 average). Only the Philippines registered substantial export growth of 19 percent in 1996.

We note in Table 6 that the division of the fall in dollar export earnings between volume and unit value differs widely across countries. (Of course, the usual strong caveats about the poor quality of trade volume and unit value data applies here). In Korea and Malaysia, export volumes appear to have continued to grow rapidly (19% and 14%, respectively), but unit values fell sharply. In Thailand, by contrast, the volume of exports stagnated in 1996, while unit values changed little. Indonesia is an intermediate case, with much slower growth in volumes than Korea or Malaysia, but greater than in Thailand.

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<sup>6</sup> In value terms, world exports grew just 4% in 1996, after jumping an average of 17% in 1994 and 1995 (IMF, 1997).

One hypothesis holds that there is a new global glut in labor-intensive manufactured exports, precisely the kind that fueled East Asia's growth in the past generation. This glut would be reflected in slower export earnings in labor-intensive countries, and declining terms of trade for labor-intensive products such as apparel, footwear, and consumer electronics. World prices for manufactured exports fell about 2% in 1996 (IMF, 1997). Semiconductors were hit especially hard, with prices estimated to have fallen by as much as 80% in 1996 before beginning to rebound (BIS, 1997). The rapid growth in electronics production in East Asia, coupled with the addition of China and Mexico to these markets (see below), probably created excess productive capacity and contributed to these price declines. This provides a plausible explanation for the fall in unit values in Korea and Malaysia, both of which export substantial amounts of electronics products.

A second, and closely related hypothesis suggests that the rise of China (and perhaps in the future India) may have dramatically shifted export-oriented production away from South East Asia. From a mere \$20 billion in exports 20 years ago, China's \$150 billion in exports in 1996 made it the eleventh largest exporter in the world. China's manufactured exports grew by more than 22 percent per year in nominal dollar terms between 1990 and 1995. Concerns about competition from China were heightened by its effective 50% devaluation of the yuan in January 1994. As Yung-Chul Park (1996) and others have pointed out, this competition could be expected to put downward pressure on both wages and export growth in the rest of the region. Indeed, some observers have directly linked the 1996 decline in South East Asian exports to China's 1994 devaluation.

Chinese firms compete directly against other firms in the region in textiles, apparel, and electronics, and in certain products, China is clearly gaining market share. Consider China's share of total exports from the group of six countries consisting of itself and the five crisis economies (Indonesia, Korea, Malaysia, the Philippines, and Thailand). Of the total exports from the group of six countries (China plus the Asian-5), China's share of garment exports surged from 37 percent in 1990 to 60 percent in 1996, and its share of electronics exports jumped from 12 percent to 18 percent. Nevertheless, while China's emergence may have affected certain markets, its overall impact on the Southeast Asian export slowdown in 1996 was probably modest at best. After all, China's export growth also plunged in 1996, registering a rather anemic growth rate of just 1.5 percent. Its textile exports fell 12 percent, and its garment exports grew by just 4 percent. China's share of total manufactured exports from the six countries was 32 percent in 1996, actually down two percentage points from 1994 and exactly the same as in 1992. In other words, China's presence had little impact in displacing total manufactured exports from the rest of the region between 1992 and 1996. The 1994 devaluation of the yuan also probably had a relatively limited impact, since its real effects had been substantially eroded by 1996 through a gradual nominal appreciation of the yuan and two years of inflation averaging 20 percent, compared with an average of 6 percent in the Asian-5.

We would suggest a third, related hypothesis vis-a-vis the U.S. market, which remains the single most important market for the crisis countries of Asia. The passage of NAFTA, and the dramatic surge of Mexico's exports (especially in the wake of the 1994 Peso devaluation) may have resulted in intense new competition for East Asia. Mexico's total exports soared from \$52

billion in 1993 to \$96 billion in 1996, with gains in several areas that directly compete with East Asia (electronic machinery, apparel, automotive components). Again, however, as with China, while the effect on certain sectors was probably important, the overall impact of Mexico's surge on Asia's exports was moderate. Table 7 shows export growth rates and shares of total exports for the group of seven countries consisting of the five Asian crisis economies, China, and Mexico. Between 1990 and 1996, China's share of exports from these countries grew slightly from 25.8 percent to 27.8 percent, while Mexico's fell slightly from 11.3 percent to 10.9 percent (although Mexico's fall is partly due to the high share in 1990 because of high oil prices during the Gulf war). Relative to 1992, China's share of the total is about the same (that is, China's export growth rate was equal to the weighted average for the other six countries), while Mexico's share increased. The Asian countries showed different patterns: Indonesia and Korea's share of total exports from the group fell, while Malaysia's and the Philippines' rose. Thailand's share rose from 9.6% in 1990 to 11 percent in 1994, then fell slightly to 10.2 percent in 1996. On the whole, then, the Asian countries were not losing major markets shares to China and Mexico (although some specific sectors were more adversely affected).

The sharp real appreciation of the U.S. dollar vis-a-vis the European currencies and the yen after 1994 also may have played some role. Since all of the Southeast Asian currencies were effectively pegged to the dollar, each appreciated significantly against the yen as the yen/dollar rate moved from ¥/\$ 85 in June 1995 to ¥/\$ 127 in April 1997. For example, each 100 yen of Thai exports to Japan brought in 29 baht in early 1995, but only 20 baht by early 1997. Of course, prices of imports from Japan fell commensurately, providing some benefit to manufacturers that imported raw materials and intermediate goods from Japan. In Table 6, we show the unit values of both imports and exports for several Asian countries in 1996. Since the unit values fell for both exports and imports for a wide variety of countries, we can reasonably conclude that the appreciation of the dollar pushed dollar prices down on world markets for a wide variety of goods and services, including East Asia's exports to Japan and Europe. Since the bulk of East Asia's foreign debt is denominated in dollars, the dollar appreciation probably modestly increased the real debt servicing burden in these countries.

Probably each of these factors contributed to the export slowdown in 1996, which, in turn, probably raised concerns among Southeast Asia's creditors about the ability of firms in these countries to repay their debts. But in aggregate, the effect appears to have been modest. Unlike the Latin American debt crises of the 1980s, it is difficult to attribute much weight to international shocks as a critical contributor to the East Asian financial crisis.

### *Economic Management and Asian Capitalism*

The second major hypothesis holds that weaknesses in Asian economic management brought on the crisis. This type of hypothesis requires some amplification. As we have argued, there were clearly growing weaknesses in the Asian economies in the early 1990s that increased their economic vulnerability. Asia's haphazard and partial financial liberalization, coupled with pegged exchange rates, seems to have worsened the allocation of investment funds within the

economy. New banks and finance companies were allowed to operate without supervision or adequate capitalization. The issue is the extent to which these problems were responsible for the capital withdrawals, panic, and deep economic contraction which followed. If Asian “fundamental weaknesses” are really fully to blame, we must still account for two things: (1) the apparently unanticipated nature of the crisis; and relatedly (2) the continued high levels of capital inflow into East Asia until the very brink of the crisis itself.

One ingenious attempt at reconciling these factors within an overall critique of “Asian capitalism” is the arguments of Krugman (1998) and Dooley (1997) that foreign investors expected to be bailed out from East Asia’s faulty use of the loans. (McKinnon and 1996, also employ such an analytical framework). Assume that foreign creditors lent to Asian banks in the expectation that the Central Banks plus the IMF would provide funds to the Asian banks to prevent their collapse in the event of a funding crisis. In that case, foreign credits to the banks would be safe up to the amount of the expected bailout, which might (crudely) equal the foreign exchange reserves of the Central Bank plus an anticipated sum from the IMF. If such a bailout were confidently expected, foreign creditors would have little need to do due diligence on the repayment potential of the debtor financial institutions.

To examine this theory, we need to check whether the patterns of lending within the Asian economies had in fact deteriorated sharply in the 1990s (in view of the fact that investment allocations were rather successful in promoting growth and debt servicing in the period of the 1970s and 1980s), and explore patterns of stock and land prices prior to the crisis. We should also examine, as closely as possible, whether foreign investors in fact operated on the expectation of that they would receive bailouts as necessary, or rather that they operated on the expectation of continued success in the Asian economies and therefore with little need for bailouts. Finally, we should examine whether this kind of theory helps to account for the closely related crises in Mexico and Argentina.

Table 8 shows shares of commercial bank and financial institution lending by sector for the Asian-5 countries in 1990 and 1996. These data show some signs of a modest shift in lending away from manufacturing activities and towards construction, finance, real estate, and services. The extent of the shift differs across countries. In Indonesia, the shift is fairly large; in Malaysia, the shift is tiny; in the Philippines it is moderate. In Korea and Thailand, there is very little shift in lending by the commercial banks, but a moderate shift for the other financial institutions. In aggregate, the data indicate a modest shift in lending, but not a dramatic surge into real estate. Of course, these data are probably not an accurate reflection of loan composition, since customers can claim a loan is being used to expand manufacturing capacity, but actually use it to buy property or equity shares. Moreover, the shift in annual (new) net lending would of course be more pronounced than these data indicate, since the data in the table are averages of all outstanding loans (including older loans).

One indicator of growing pressures in real estate markets is property prices. If the countries in crisis had indeed been in the midst of a speculative frenzy, we would expect to see real estate prices growing rapidly in the run-up to the crisis, and then crashing. Krugman (1998)

takes this view, arguing that “in all the afflicted countries, there was a boom-bust cycle in the asset markets that *preceded* the currency crisis: stock and land prices soared, then plunged” (emphasis in original). The actual data, however (which he does not report), give mixed support at best to this hypothesis. Table 9 shows stock and land prices indices for both Thailand and Indonesia prior to the crisis. In Thailand, stock prices indeed rose very sharply in the early 1990s, then fell after 1995 and dropped sharply in the second half of 1996. Surprisingly, however, property prices (as indicated by the sales prices of Grade A office space in Bangkok) showed almost no change between 1992 and the end of 1996. These prices fell sharply in early 1997, helping to set off the crisis. What is interesting is the property prices were seemingly not rising at all between 1992 and 1996. In Indonesia, there is even less evidence of a boom-bust pattern. Stock prices rose steadily after 1992, and continued to do so right up until the baht was floated, without a bust preceding the crisis. Land prices were almost exactly the same in June 1997 as they had been in June 1993, displaying no evidence of either a sharp rise or fall. The boom-bust cycle probably was a feature in Thailand (and perhaps to a lesser degree in Korea as well), but it was not in Indonesia which ended up being hardest hit by the crisis.

Another possible indicator of loan quality is the share of non-performing loans (NPLs) to total loans, shown in Table 10. As with the data on lending by sector, these data should be viewed with extreme caution. The numbers are undoubtedly lower bounds, as banks probably under-report the true level of NPLs. In any event, many bad loans generally don't show up during periods of easy credit, and are only uncovered when credit conditions tighten. Nevertheless, in each of the Asian countries, reported NPLs actually fell during the 1990s. In Indonesia, the volume of NPLs peaked in 1993, two years after a dramatic monetary tightening put bank balance sheets under severe pressure. As banks became more profitable starting in 1994, many loans were written off. The NPL ratio was also helped when a large state-owned bank (Bank Negara Indonesia) cleaned up its balance sheet prior to listing its shares publicly. The World Bank, in a country report on Indonesia written just before the crisis (May 1997), noted the decline in NPLs with caution, but stated “The quality of commercial bank portfolios continued to improve during 1996, albeit slowly.”<sup>7</sup> In Malaysia, the dramatic drop in NPLs is probably a combination of both the rapid increase in bank lending and a concerted effort to clean up balance sheets in the early 1990s. Despite the upbeat nature of these data, it probably is true that loan quality deteriorated as lending expanded in the 1990s, especially lending in for certain activities, such as real estate. Without question, NPLs rose sharply for Thai financial institutions with heavy exposure to property markets when property prices fell in Bangkok in early 1997, and the costs of those bad debts mounted sharply in early 1997. However, a dramatic deterioration in loan quality throughout the early 1990s, as some have suggested, does not show up in the data.

A crude macroeconomic indicator of the quality of investment is the incremental capital-output ratio (ICOR), which is the ratio of the value of new investment to the change in output in a given year. This measure has to be viewed with some caution, since it does not provide for

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<sup>7</sup> “Indonesia: Sustaining High Growth with Equity,” Country Department III, East Asia and Pacific Region, May 30, 1997.

necessary lags between investment and subsequent changes in output. Generally speaking, when investment quality deteriorates, this ratio increases, as more investment spending is needed to support a given increase in GDP. Indeed, investment rates rose in the Asian-5 in the early 1990s, as the increased capital inflows added to already high savings to create a large pool of investment funds. Economic growth continued to be brisk, but did not rise commensurately with the increase in investment. As a result, ICORs rose in each country in the region except the Philippines (reflecting its earlier economic morass), as shown in Table 11. These figures suggest a decline in investment quality, or diminishing returns to new investment as capital deepening was taking place, or a lag between the heavy investment spending in the 1990s and an increase in growth. Similar increases in ICORs, however, were recorded for other emerging markets that did not experience a crisis (e.g., Chile), and much larger increases were recorded in Mexico and Turkey.

How can we reconcile these data with the popular perceptions that banks were lending recklessly, especially for real estate, and that investment quality had sharply deteriorated during the early 1990s? The answer, we believe, is a matter of degree. We have already shown that bank lending was increasing rapidly. Lending activities almost certainly exceeded prudential limits in some cases. But it is much too easy in hindsight to overstate the degree of bad loans, and to make sweeping statements about the reckless nature of lending and investment in Asia prior to the crisis. In addition to the property investments, there were clearly many profitable ongoing investments in manufacturing activities that were earning a solid rate of return. A substantial share of lending supported labor-intensive manufactured exports, not the kinds of activities one normally associates with irrational boom-bust cycles or gambling.

Did foreign lenders believe that Asia's financial situation was unsustainable, but continued to lend with the expectation of an eventual bail out? It is hard to find any generalized perception of an impending major problem, either in the available data or in statements and reports made before the crisis. For example, if lenders perceived a growing risk in Asia, spreads on Asian bonds should have increased in the run up to the crisis. However, a recent study by William Cline and Kevin Barnes showed that both bond spreads and syndicated loan spreads actually *fell* in emerging markets, including Southeast Asia between mid-1995 and mid-1997. A recent Bank for International Settlements report also shows declining spreads (BIS Annual Report, 1997). A widespread sentiment in Asia following the Mexican crisis -- with a few dissenting voices -- was that a similar crisis couldn't happen in Asia.

Another possible indicator that international markets perceived the risks of a crisis and bailout in Asia were growing are the ratings compiled by Moody's, Standard and Poor's, and Euromoney. If creditors believed that the risks of a government-led bailout were increasing, this should be reflected by a decline in ratings for long-term government bonds. But these ratings were either stable or improving in each of the Asian-5 crisis between 1995 and 1997, and did not fall until after the onset of the crisis. Even in Thailand, where private investors began to become concerned in late 1996 and early 1997 when property prices fell, sovereign bond ratings remained high right up to the float of the baht.

If foreign investors believed that a widespread crisis was impending (with only the timing



uncertain), this sentiment would show up in the reports and newsletters of investment banking firms. Instead, these reports gave a more nuanced picture. They often pointed out weaknesses in the Asian economies (slower export growth, rapid loan growth, booming property markets), but they did not give any sense of a bubble waiting to burst. Most investment analysts displayed guarded confidence in Southeast Asia's prospects, in both the short and the long-run.

Thus, there is little evidence to support the idea that the majority of investors expected a crisis in Asia any time soon. There is a second relevant question. Did investors expect to be bailed out, if there were a crisis? There is no question that many banks and firms across Asia had close government connections that supported their profitability. State-owned banks in obviously could expect to be bailed out if there were a crisis. Korea's chaebol had long been given strong support, and none had been allowed to fail for a decade before Hanbo steel collapsed in early 1997. In Indonesia, firms closely connected with the first family or the army have long been given special privileges. Across Asia, infrastructure projects built under build-own-operate (BOO) or build-own-transfer (BOT) relationships generally have a guaranteed revenue stream from government agencies (such a electric utilities).

It is hard to make the case, however, that foreign investors felt themselves in a general way to be indemnified against risk through the prospects of generous bailouts. A substantial share of funds went to equity markets, where price fluctuations were indeed real and risky. Even bank loans went heavily to the non-financial corporate sector, where many loans had little prospect of a direct government bailout. Moreover, creditors have long complained that weak bankruptcy laws and ineffectual judicial systems in Asia reduce their ability to collect on collateral in the event of non-performing loans -- that is, creditors worry that they would not be compensated if loans went bad. Thus, it is probably fairer to say that foreign investors thought too little about risk *because they expected rapid growth and high profitability to continue*, not because they expected a bailout.

We can summarize this section as follows: the combination of the rapid inflows of foreign capital, the appreciating real exchange rate, and rapid growth in bank lending undoubtedly led to a some deterioration of the quality of investments in Asia. Lenders to some well-connected firms, or to major commercial banks, no doubt felt secure in their positions, confident that they would make a nice profit and that the odds of default on a protected project were slim. Some observers, but relatively few, foresaw a major financial crisis on the horizon. Speculators certainly did not smell a kill in Asia on the heels of the Mexican peso crisis. There was almost no expectation of a widespread financial crash cum subsequent bailout.

### *Financial Market Instability*

The third hypothesis is that the crisis was triggered by dramatic swings in creditor expectations about the behavior of *other* creditors, thereby creating a self-fulfilling, though possibly individually rational, financial panic. This hypothesis depends on several underlying assumptions: (1) that fundamental conditions, though not perfect, were strong enough to sustain debt servicing on a reliable basis; (2) that needed adjustments in exchange rates in mid-1997 could

have been carried out without financial collapse; and (3) that foreign exchange and financial markets in fact overshot in their initial reactions to the panic at the end of 1997. We have elaborated the theory underlying this view at some length. It is consistent with several major facts: the role of short-term debt in the onset of the crisis, the unexpected character of the crisis, the continuing rapid lending to Asia until the brink of the crisis, and the initial overshooting as indicated by the reversal of exchange rate and stock indices beginning in January 1998. We now show that it is the most successful view in accounting for which of the emerging markets has actually succumbed to financial crisis in recent years.

### A Probit Analysis of Emerging Market Crises

To explore further these various hypotheses, we test the relative strength of alternative risk indicators in predicting the onset of a financial crisis in the emerging markets during the period 1994 - 97. We estimate a simple probit model in which the onset of a financial crisis depends on a vector of economic and institutional variables, including the variables suggested in the earlier discussion. We use a panel of data for the years 1994-97 for 22 emerging markets. Our left-hand-side variable is a 0-1 indicator, equal to 1 if the country fell into a financial crisis during the year, and 0 otherwise. For these purposes, we have defined a financial crisis as a sharp shift from capital inflow to capital outflow between year  $t-1$  to year  $t$ . We have nine cases set equal to 1: Turkey and Venezuela in 1994; Argentina and Mexico in 1995; and Indonesia, Korea, Malaysia, the Philippines, and Thailand in 1997. Note that after a crisis has occurred, we drop the subsequent observations of the country (since we suppose that a true reversal from inflow to outflow can occur only once in the interval). Thus, we do not include observations for Turkey and Venezuela in 1995-97; and observations for Argentina and Mexico, 1996-97. In total, we have 78 observations (22 x 4 - 10 excluded observations).

According to the central hypothesis of financial market instability, we would predict that countries with a *high ratio of short-term debt to short-term assets* (measured as the ratio of BIS short-term debt to the foreign exchange reserves of the central bank) would be more vulnerable to crisis. A high ratio of short-term debt to reserves will not necessarily induce a crisis in a given year, but it indicates the vulnerability of the country to a crisis, since it is when the debt-reserve ratio is high that foreign creditors realize that there is not enough foreign exchange available to pay off all short-term creditors in the case of a panic. Alternatively, if we believe that the crisis is one of fundamental solvency, we might expect that total debt outstanding (regardless of its maturity) would matter more than short-term debt. Thus, we include as a second possible explanatory variable the *ratio of total foreign debt to reserves*.

Second, our discussion suggests that countries with a *rapid build-up in bank credit* would have more fragile banking systems, a greater quantity of bad loans, and therefore greater vulnerability to a crisis. Specifically, we measure the ratio of the financial system claims on the private sector relative to GDP, and then calculate the change in that ratio over the preceding three years. Countries with sharply rising financial sector claims relative to GDP are expected to be more vulnerable to financial crisis. As an alternative measure (available for only a subset of the sample), we use an index of bank strength based on 1996 ratings of commercial banks in each

country by Moody's Investors Service, as found in Bosworth (1998).<sup>8</sup>

Third, some observers claim that large current account deficits lead to crisis, suggesting that we test the explanatory power of the *current account ratio to GDP*. The current account per se may not be as important as the capital account, given our focus on capital inflows as a key component to the crisis. In each of the crisis episodes, the capital account surplus was even larger than the current account deficit. Thus, we also examine the *capital account ratio to GDP*.

Several other variables are also be examined. *Real exchange rate appreciation* could signal the likelihood of crisis. We therefore test the explanatory power of an index of the percentage change in the real exchange rate (RER) in the previous three years. A rise in the RER indicates a real depreciation. In the aftermath of the Asian crisis, many observers have decried widespread corruption and crony capitalism as an underlying cause of the financial crisis. To test this idea, we include a cross-country *comparative index of corruption*, as judged by a leading political risk advisory service. The corruption index is measured on a scale of 1 to 6, with 1 signaling the most corrupt, and 6 the least corrupt.

The results are shown in Table 12. As expected, a higher ratio of short-term debt to reserves is strongly associated with the onset of a crisis. The estimated coefficient is positive and significant at the 5% level in each specification. This ratio averages 1.82 in the nine crisis countries, and 0.99 in the non-crisis countries (Table 13). Note that in eight of the nine crisis episodes, the ratio of debt to reserves exceeded 0.8 (the only exception is Malaysia, where the ratio was 0.61). A ratio of 0.8 is exceeded by only three of the thirteen non-crisis economies (Russia, South Africa, and Zimbabwe, as shown in Table 14). It is possible to have a high level of short term debt without entering a crisis (the Asian countries, for example, by-and-large escaped contagion from Mexico in 1995), but it surely seems to indicate vulnerability to a crisis.

The level of long-term debt, by contrast, is not statistically associated with a crisis (column 4), a result which holds up even when the short-term debt variable is excluded. The average ratio of total debt to reserves is slightly larger in the crisis countries (2.3) than in the non-crisis countries (2.2), but the difference is small. This evidence strongly suggests that these crises are indeed crises of liquidity, not solvency.

A rapid buildup in the claims of the financial sector on the private sector is also associated with crises. The estimated coefficient is positive and significant at the 5% level in three of the four specifications. The increase in claims to GDP increased by 17 percentage points in the crisis economies in the three years prior to the observation, but by just 4 percentage points in the non-crisis countries. Thus, we have some evidence to support the notion that it is the buildup of bank claims that leaves the financial system weakened and vulnerable to attack. We remember, however, that in Mexico in 1994, and Indonesia in 1997, the short-term debt problems lay mostly outside of the banking systems, with the government in the case of Mexico, and the non-financial

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<sup>8</sup> Our thanks to Barry Bosworth for supplying this data.

corporate sector in the case of Indonesia.

A larger current account deficit is only weakly associated with the onset of a crisis. In column 3, the estimated coefficient on the current account is of the correct sign, but is not significant at the 10% level. As can be seen in Table 13, current account deficits averaged 5% of GDP in the crisis episodes, compared to 2% in the non-crisis episodes. Some observers have argued that it is the current account deficit *per se* that drives these financial crises, but this is not correct. Instead, there is a stronger relationship between crises and the capital account ratio, as shown in columns 1, 2, and 4. This seems reasonable, since it is the capital inflows that create pressures, rather than the trade and current account deficits *per se*. The relationship, however, is not as strong as with short-term debt or the increase in claims of the banking sector.

Somewhat surprisingly, our measure of real exchange rate overvaluation does not seem to be associated with a financial crisis. In each specification, the estimated coefficient on the change in the RER is close to zero and is insignificant. There is almost no difference in the average change in the RER in the previous three years between the crisis (-15.8%) and non-crisis episodes (-15.9%). Finally, the level of corruption is not significantly associated with financial crises, even after controlling for the level of short-term debt, bank credit, and other variables. While the estimated coefficient is of the correct sign, it is not significant at conventional levels. There is little difference in the level of perceived corruption in the crisis and non-crisis episodes. For the non-crisis economies, the crisis index averaged 3.6 (a measure of 6 is the least corrupt); in the crisis economies the average was 3.2. We can put it another way. Yes, there is extensive corruption in East Asia, but also in other emerging markets that did not fall prey to crisis. Corruption does not seem to be the driving force of the crisis.

The simple probit technique is obviously limited. The variables are no doubt measured with significant error. Not all emerging markets crises can be lumped into a single model. And yet, the cross-country evidence is highly suggestive. *The defining element of such crises has been the vulnerability to panic, as measured by high levels of short-term debt to reserves.* A rapid buildup of bank claims is also predictive. Measures of foreign borrowing *per se* (either the total stock of debt, or the flow current account deficit) are less important. Corruption is rife in emerging markets (and many emerged markets!), but the end is not necessarily nigh for corruption-laden economies.

## **VI. The IMF Response to the Asian Crisis**

The official international response to the Asian crisis, led mainly by the IMF, has evolved over time. A dividing line was reached at the end of December 1997. At that point, the original mechanisms and goals envisioned by the IMF were altered in view of rapidly evolving market outcomes. Thus, we analyze two phases of the crisis management: August to December 1997, and January to the present.

*The first phase: August to December 1997*

During August - December 1997, the International Monetary Fund signed three emergency lending agreements with Thailand (August), Indonesia (November), and Korea (December). These programs established packages of international financial support at an unprecedented cumulative sum of approximately \$110 billion, based on the financing commitments shown in Table 15. This represents the sum of commitments of \$18 billion for Thailand, \$35 billion for Indonesia, and \$57 billion for Korea. (The official community spoke of a \$40 billion program for Indonesia, but \$5 billion of this sum was Indonesia's own money!) However, these figures overstate the actual amount of funding made available. \$22 billion of the funds for Indonesia and \$22 billion for Korea were "second line of defense" funds from individual donor governments (mainly the U.S., Japan, Singapore, and Europe), with relatively little likelihood of being available early in the program. Of the remaining money, only a part could be disbursed early in the adjustment program.

The basic character of the three loan agreements was similar. All of the IMF programs were predicated on the following design:

- (1) a package of loans to the respective central bank and governments, that could be drawn upon directly or indirectly to help support the repayment of debts falling due to international creditors, and directly or indirectly to help stabilize exchange rates;
- (2) a macroeconomic framework based on budget balance or surplus, and high nominal interest rates and restrictive domestic credit targeted at exchange rate stability;
- (3) a program of drastic financial sector restructuring, built upon the immediate closures or suspensions of several financial institutions, and a significant intensification of financial sector supervision in various forms;
- (4) other "good governance" and "structural" measures, aimed at increased transparency and competitiveness of the economic system, including: accelerated trade reform, demonopolization, and privatization.

The concepts underlying these programs may be summarized as follows. First, the IMF envisioned that the immediate objective was to re-establish financial market confidence, most importantly by stabilizing the exchange rate. Exchange rate stabilization was to be based on a combination of macroeconomic discipline (fiscal balance, high interest rates, tight credit), the increased availability of foreign exchange reserves, and confidence that fundamental reforms of the economic system were moving forward. These reforms, in turn, would be signaled by decisive actions at the start of the program to close or suspend loss-making financial institutions, as well as the announcements of a strict timetable of longer-term reforms regarding financial markets, corporate governance, and increased market competition in various areas.

The mechanics of the IMF loans merit special attention. The specific treatment of the IMF loan packages differed somewhat among the three countries, both in the letter and application of the agreements. In all cases, the loan packages had the direct function of providing reserves to

the Central Bank that could then support the repayment of debts falling due, while limiting the adverse effects of such repayments on the exchange rate. In the case of Korea, the linkage of the loan package to the repayment of foreign debts was direct and fairly automatic. Korean commercial banks in early December simply notified the Bank of Korea of the daily foreign creditor demands for foreign exchange loan repayments. The Bank of Korea would then credit the commercial banks with the necessary foreign exchange for making the repayments. In this way, the foreign creditors were repaid out of IMF loan package, while the Bank of Korea became the new creditors of the Korean commercial banks, and the new debtors of the IMF. The upside of this arrangement was that the original loans were repaid, and default was avoided. The downside, of course, was that the original private loans were effectively socialized. If the original loans had been allowed to go into default, the foreign creditors and the owners of the Korean banks would have shared the bulk of the losses.<sup>9</sup> Instead, the foreign creditors were allowed to escape losses, while the Korean Government took over the burden of repaying the foreign debts (which were now owed to the IMF, rather than to the international private creditors).

The case of Thailand is similar to that of Korea. The Central Bank made credits available to financial institutions to support the repayment of foreign debts. This has explicitly been the case in 1998, after the Government made explicit its guarantees on all bank liabilities, including the debts owed to foreign creditors, and thereby effectively pledged foreign exchange reserves to the servicing of bank debts.

In the case of Indonesia, most of the short-term debts were owed by non-financial corporations. These corporations were not entitled to direct credit lines from Bank Indonesia. The IMF loans, therefore, supported debt repayments only indirectly, by allowing the Bank of Indonesia to intervene in the foreign exchange market to provide dollars at a cheaper rate than would otherwise have been available, thereby facilitating the repayment of loans by reducing the rupiah cost of debt servicing.

The Fund has stressed that the goal of the lending packages was to support stabilization, not merely to bail out foreign financial institutions. The Fund hoped that its role as a quasi Lender of Last Resort would restore enough market confidence to obviate the need for the Asian Governments to actually draw down the full package of loans. If the exchange rate could be stabilized and default avoided, the thinking presumably ran, then private lending would be restored. The Fund also had one more consideration clearly in mind. It feared that an outright default in Asia would trigger a massive upheaval in other emerging markets. Therefore, even if the loan packages did little more than to repay creditors and forestall default in Asia, it might have important salutary effects in the rest of the emerging markets.

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<sup>9</sup>The Korean Government might still have borne some of the losses if the Korean banks had become fully insolvent. In that case, the Government would probably have had to guarantee the repayment of the domestic deposits in the insolvent, which would still have required public rescue funds.

During the period August to December, the IMF programs failed dramatically to meet the objective of restoring market confidence. This is demonstrated in Figures 5-10, where we see the movements of the exchange rate and stock markets in the aftermath of the IMF agreements. In all three countries, the exchange rate was expected to stabilize, but in fact quickly depreciated far below the targets set in the program, and this despite a very sharp increase in interest rates. Foreign investors remained unconvinced about the debt servicing capacity of the private debtors despite the announced availability of IMF loans, and continued to demand the repayment of short-term loans as they fell due. Official reserves fell more rapidly than the IMF had predicted. In the case of Korea, the withdrawal of short-term debts was so much more intense than predicted in the December 3 program that Korea faced imminent default by December 24. Indeed, on December 22, Moody's downgraded the sovereign debts of all three bailout countries, Indonesia, Korea, and Thailand, to "junk-bond" status.

The most important measure of failure of the IMF programs lies in the outcomes on economic growth, shown in Table 16. The basic goals of IMF programs are enunciated in Article I of the IMF Articles of Agreement, including "to give confidence to members by making the general resources of the Fund temporarily available to them under adequate safeguards, thus providing them with opportunity to correct maladjustments in their balance of payments without resorting to measures destructive of national or international prosperity." This purpose has not been well served. Since the launch of the IMF programs in each country, actual outcomes have turned out to be far worse than projected, but we think predictably so. The IMF has been forced repeatedly to reduce its growth forecasts for 1998. Even the much lower revised forecasts are much more optimistic than private forecasters. When pressed on this point, IMF officials answer that the original forecasts simply were built on "best-case" assumptions. There is much more to it than that: as discussed below, the IMF's own responses added to the risks of a sharply contractionary outcome.

*The second phase: December to the present (March, 1998)*

The management of the crisis entered a second phase on December 24. With Korea on the brink of default, the U.S. Government (led by the Federal Reserve Board and U.S. Treasury) decided to press the foreign commercial banks to roll over their short-term credits on an enforced basis, rather than waiting for market confidence to be restored. Initially, the banks and the Korean Government announced a standstill on debt servicing, pending a formal agreement. On January 16th, the Korean Government and the banks agreed to a complete rollover of all short-term debts falling due in the first quarter of 1998. On January 28th, an agreement was reached to convert \$24 billion in short term debt into claims of maturities between 1 and 3 years. Notably, the IMF, with U.S. Government backing, insisted on the comprehensive debt rollover as a condition for further disbursements of the IMF lending package. Those disbursements were in fact accelerated as part of the new arrangement. In one sense, the new arrangements represented a failure of the original conception embodied in the programs between August and December. Rather than using a loan package cum economic reforms to re-instill market confidence, the new arrangement represented a non-market postponement of debts falling due, albeit one ratified by market participants in a collective undertaking.

The new Korean arrangements put a brake on the fall of the Won, and on the decline in stock markets in all three countries. The currencies in Thailand and Indonesia continued to depreciate, however, for several more weeks. In Thailand, the end of currency depreciation seems to have occurred around the announcements of January 21, 1998, when the Thai Government formalized its guarantees of all liabilities owed by Thai commercial banks, including those liabilities owed to foreign creditors. The clarification of such state guarantees on what had been private-sector debts, in combination with other policy actions and the improvements in Korea, stemmed the collapse of the Baht, and initiated a period of currency appreciation. Thai corporate debts owed to foreign creditors, in the meantime, fell into partial suspension, though systematic data on the extent of debt servicing by non-financial corporate borrowers is not available.

In Indonesia, the situation became more chaotic rather than less in the early weeks of January. The key turning point was the government's January 6th announcement of its proposed budget for the new fiscal year (starting April 1, 1998). The budget called for a 32% increase in spending in nominal rupiah terms. The proposed budget was immediately strongly denounced by the US Treasury and the IMF as being inconsistent with the IMF program and signaling that Indonesia was not seriously implementing the program. Since few outsiders actually had seen the confidential IMF documents, these claims could not be independently verified, and the markets plummeted. Unfortunately for Indonesia, the statements from Washington turned out to be too hasty. The increased spending was entirely due to pass through effects of the depreciation, and in real terms, the budget represented a reduction in spending. Several days later, Stanley Fischer from the IMF was quoted as saying that the new budget was "not as bad as it was being portrayed," and within a few weeks the IMF had approved a budget with an even larger 46% increase in spending. Nevertheless, by that time the damage from the original statements had been done.

On January 15, the Indonesian Government and the IMF signed another agreement, revising the agreement of November 1. In this case, the principles of the new agreement did not reflect a new strategy -- there was no consolidated rollover of private-sector debts as in Korea, or public guarantee of bank liabilities, as in Thailand. Surprisingly, given the success of the new strategy in Korea, Indonesia's second agreement said nothing about the private sector foreign debt. Instead, the new agreement simply intensified the previously agreed strategy, based on the IMF loan package and accelerated structural reforms. The strategy failed once again to spur a revival of market confidence. The markets reacted negatively to the new package, with further declines in the exchange rate.

The turn in Indonesia towards a modicum of financial market stabilization came two weeks later, when the Government of Indonesia made two policy announcements: first, a *de facto* suspension of payments on short-term debt; and second, a government guarantee of all commercial bank liabilities, both to foreign and domestic depositors and other creditors. Despite considerable other turmoil the following weeks (including the government's flirtation with a currency board, the re-election of the President, and the replacement of the Cabinet), the steep decline of the rupiah halted. The announced voluntary suspension of debt payments was in one



sense merely reporting the actual state of affairs, since most corporate debts were not being paid. Nonetheless, the recognition that debt payments could in fact be delayed without a punitive response from the IMF calmed the markets. The Indonesian government announced that a framework would be established for an orderly negotiation of debt restructuring, but the actual implementation of such a framework has remained delayed.

On April 10, 1998, Indonesia signed its third IMF agreement in six months, and finally the agreement included provisions on restructuring private sector foreign debt and a more comprehensive strategy for reorganizing the commercial banks. It also eased requirements on fiscal stringency and the time table for removing subsidies. The initial market reaction was favorable, with the rupiah appreciating 6 percent by the following Monday.

Importantly, the achievement of currency market stability across the region during the first quarter of 1998 (and even nominal appreciation in the cases of Korea and Thailand) came in conjunction with a *relaxation* of the IMF's fiscal targets. In all three countries, the IMF relented on its goal of a fiscal surplus in 1998. In the revised programs, Indonesia, Korea, and Thailand will aim for modest fiscal deficits. The currency markets demonstrated that exchange rate movements were not closely linked to the realization of budget surpluses.

While there was no formal articulation of a change of IMF strategy after December, 1997, the management of crisis clearly entered a distinctive phase in 1998. The new principles included:

- (1) partial suspensions of foreign debt payments, based on collective agreements between creditors and debtors (Korea) or unilateral actions to be followed by creditor-debtor negotiations (Indonesia);
- (2) government guarantees of all bank liabilities (in contrast, for example, to the policy in the November program of Indonesia, in which only small depositors in the closed banks were protected);
- (3) reduced focus on bank closures in the short term, and more focus on longer-run restructuring and bank recapitalization (the IMF dropped, for example, a demand for further Indonesian bank closures that it had tabled in discussions in early January);
- (4) an abandonment of fiscal surplus targets.

On the other hand, certain principles remained unchanged, especially:

- (1) the targeting of exchange rate stability through high interest rates and restrictive domestic credit policies;
- (2) the implementation of a wide range of structural measures, in finance, trade, and corporate governance.

### *Why did the original IMF programs fail?*

The Asian countries are currently suffering an extreme contraction of economic activity in 1998, despite the commitment of \$110 billion in emergency international support. The IMF programs failed to achieve their goal of maintaining moderate economic growth in the Asian countries. The programs also failed on several intermediate goals, including the preservation of creditworthiness, the continuation of debt payments, and the stabilization of the exchange rate at levels that prevailed upon the signing of the original lending agreements. It is crucial to understand what went wrong in order to best re-design these programs, and prepare for future international support efforts that might arise in other countries.

In the simplest terms, the IMF failed to re-establish market confidence in time to prevent a collapse of debt servicing or an early stabilization of the exchange rate. In our view, there are four reasons for that failure. First, the IMF is rather poorly placed in any circumstance to rally market confidence in the short term. The arrival of the IMF gives all the confidence of seeing an ambulance outside one's door. Second, the IMF greatly amplified the jitters that it naturally creates by declaring — both for negotiating purposes and as a result of substantive institutional views — that the financial crisis engulfing Asia was mostly the result of deep fundamental weaknesses, not a self-fulfilling panic among creditors. As the IMF argued in Korea, for example,

“While the contagion effects of developments in Southeast Asia contributed to the current crisis, the magnitude and speed of deterioration in the financial situation owed much to the fundamental weaknesses in Korea's financial and corporate sectors.” (Korea — Memorandum on the Economic Program, Annex I, Request for Stand-by Arrangement, December 3, 1997, p. 38).

Third, the basic IMF approach to restoring market confidence was based on a very peculiar hypothesis, that tough actions of financial market restructuring — including closures of financial institutions, tightened regulatory standards, and the like — would reassure creditors so much that they would roll over their short-term claims as they fell due. As the IMF declared in Thailand's program, “We strongly believe that the policies outlined here will serve to quickly restore market confidence to the high levels of previous years by addressing the two underlying sources of current economic difficulties, namely, *the imperative need to restructure large parts of the financial sector* and to reduce the high level of the external current account deficit.” (Emphasis added). We have discussed at length the problems that existed in many banks and financial institutions across the region, and the need for reform. The key issue is *how* to introduce the needed reforms, and *over what time frame*, especially in the midst of an incipient creditor panic.

There is simply no reason to believe that strong regulatory actions to close down banks and finance companies in the middle of a panic, and to tighten supervisory standards, would in fact restore market confidence, in the sense of halting the demand for repayments of short-term debts. Indeed, the logic of creditor panics is the opposite: the sudden realization that a bank will *not be bailed out* by a lender of last resort can easily incite a panic that would not have arisen. Kindleberger (1978) points out that “decisive” regulatory actions have often triggered panics

rather than calm.

Apart from lags and mistakes of discount policy, the authorities may precipitate panic by brusque action in early stages of distress. In the summer of 1836, with credit extended in acceptances drawn by American houses on British joint-stock banks, the Bank of England refused to discount any bills bearing the name of a joint-stock bank, and specifically instructed its Liverpool agent not to rediscount any paper of the so-called "W banks" (Wiggins, Wildes, and Wilson) among the seven American banks in Britain, an action that "seemed vindictive" and led immediately to panic. As it turned out, the Bank of England had to reverse its policies. It had long conferences with the "W banks" in October, extended them lines of discount in the first quarter of 1837, but failed to prevent their failure in June of that year. The Bank's instinct was right: to frustrate the extension of dangerous credit. But credit is a dangerous thing. Expectations can quickly be altered. Something, sometimes almost nothing, causes a shadow to fall on credit, reverses expectations, and the rush for liquidity is on. (pp. 112-3)

The IMF's actions in Indonesia were particularly egregious. Sixteen commercial banks were suddenly closed with the explicit proviso that deposits over 20 million Rupiah (approximately \$5,000 at the time) would be unprotected. This was a recipe for panic. The IMF program of November 1 indeed seems to have been aware of the risk of the policies:

During the process of financial restructuring a key objective will be to ensure that confidence in the remainder of the banking system is maintained. The authorities are mindful of the risk that bank closures could induce a run on other healthy institutions (p. 18, Indonesia, Request for Stand-By Arrangement, November 1, 1997).

In the event, the bank closures in Indonesia provoked a financial panic and a run on the entire private-sector banking system other than the foreign-owned banks. As the IMF dryly observed on January 15, 1998:

Following the closure of 16 insolvent banks in November last year, customers concerned about the safety of private banks have been shifting sizeable amounts of deposits to state and foreign banks, while some have been withdrawing funds from the banking system entirely. [Para 15]. These movements in deposits have greatly complicated the task of monetary policy, because they have led to a bifurcation of the banking system. By mid-November, a large number of banks were facing growing liquidity shortages, and were unable to obtain sufficient funds in the interbank market to cover this gap, even after paying interest rates ranging up to 75 percent. At the same time, another smaller group of banks [the state and foreign banks -- S.R. and J.S.], were becoming increasingly liquid, and were trading among themselves at a relatively low JIBOR (Jakarta Interbank Offer Rate) of about 15 percent. As this segmentation continued to increase, while the stress on the banking system intensified, Bank Indonesia was compelled to act. It provided banks in distress with liquidity support, while withdrawing funds from banks with excess liquidity, thereby raising JIBOR to over 30 percent in early December, where it has since remained.

[Para 16] Nevertheless, despite this increase in interest rates -- to levels higher than in any other country in the region -- the problems of the Rupiah have only intensified. (Indonesia -- Memorandum of Economic and Financial Policies, IMF, January 15, 1998).

Across the region, even relatively strong banks came under intense pressure as foreign creditors refused to roll over loans and depositors fled to state and foreign owned banks. By January, the banking systems in Indonesia, Korea, and Thailand had nearly ground to a halt. Foreign banks stopped accepting letters of credit written by banks in these countries, and firms whose banks had been closed had difficulty finding new banks to service their needs. Ironically, even exporters were badly affected, despite the potential for increased profitability from the exchange rate depreciations. There were widespread reports of exporters with confirmed orders unable to obtain needed trade credits because banks were simply not making new loans. Thai exports in January 1998 were actually 8 percent below the level of January 1997, despite the massive depreciation. Prime Minister Chuan Leekpai attributed the problems to the banking sector, noting that “(t)he main problem we are facing with regard to exports is that of liquidity. The banks are charging high interest rates, and some banks do not have the funds to make new loans.”<sup>10</sup> For similar reasons, Indonesian shoe manufacturers appealed to the Government for emergency credits. Despite having an estimated \$1 billion in confirmed export orders for the first six months of 1998, these firms were unable to arrange for the working capital credits that they need to import the inputs (representing roughly 60 percent of the final price of exports) to be able to produce the shoes for export.

Fourth, the IMF’s fiscal and monetary policy approach was also problematic. The IMF put great stress on the need for strong fiscal contraction in order to ensure a fiscal surplus in 1998, even though the countries were already being hard hit by the contractionary force of the withdrawal of foreign credits. We have noted that Thailand was asked to take fiscal contractionary adjustments equal to approximately 2.6 percent of GDP (from deficit of 1.6 percent of GDP in FY 1996/97 to surplus of 1 percent of GDP in FY 1997/98); Indonesia was required to take fiscal contractionary actions equal to 1 percent of GDP in FY 1997/98 and 2 percent of GDP in FY 1998/99; Korea was asked to take fiscal adjustment measures equal to 1.5 percent of GDP. The IMF asserted that such fiscal adjustments were core components of confidence building measures needed for currency stabilization. There is no evidence that the currency markets reacted at all favorably to the fiscal surplus targets. These markets certainly did not react adversely when the IMF eased these fiscal targets in early 1998.

The monetary targets are more conventional, but also problematic. The IMF used interest rates as both instruments and intermediate targets to achieve financial stabilization. Most macroeconomists share the view that interest rate increases would help to support currency stabilization, and yet this basic proposition becomes problematical -- even doubtful -- in the context of an extreme creditor panic. Again, Kindleberger’s (1978) survey of past manias and crashes had already made clear that interest rate increases can actually work against currency

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<sup>10</sup> Financial Times, April 3, 1998.

stabilization in the precise circumstance of financial panics:

Tight money in a given financial center can serve either to attract funds or to repel them, depending on the expectations that a rise in interest rates generates. With inelastic expectations -- no fear of crisis or of currency depreciation -- an increase in the discount rate attracts funds from abroad, and helps to provide the cash needed to ensure liquidity; with elastic expectations of change -- of falling prices, bankruptcies, or exchange depreciation -- raising the discount rate may suggest to foreigners the need to take more funds out rather than bring new funds in.

This point is not just a theoretical curiosity. The experience of the Asian currencies in the second half of 1997 gives some direct support.

Consider, again, the case of Indonesia, this time in the lead-up to the November 1 program. The IMF notes in early November that “the downward pressure on the rupiah has persisted despite policy measures that, by and large, have been timely and broadly appropriate.” (Indonesia, Request for Stand-By, November 1, p. 8). As the IMF describes, in August 1997 “liquidity conditions in domestic money markets were tightened significantly with one month interest rates on central bank certificates (SBIs) being increased from 11 ½ percent to 30 percent on August 19.” (p. 8) Fiscal policy was also tightened. As the Fund goes on to observe,

This policy response initially had a salutary effect on the exchange rate, but this respite did not last long. The tightening of monetary conditions transferred market pressures to the domestic economy, putting heavy strains on the already-weak financial sector. As a consequence, a significant number of banks found themselves without sufficient resources to meet their payments obligations . . . [Para 16] The authorities, and market participants, soon realized that the banking system could not bear this stress for long. (p. 9)

Eventually, the central bank needed to provide emergency liquidity financing, and the rupiah again fell under significant pressure by the end of September. Hence, the idea that high interest rates could stop the panic had been essentially tested, and proved incorrect, by the start up of the program on November 1. Yet the same strategy was then followed in the formal IMF program launched on November 1. The justification was that the combination of tight monetary policy, plus “decisive actions to address the fundamental weaknesses of the economy” (p. 9) would do the trick. Once again, however, the higher interest rates had little positive effect. Indonesia’s second letter of intent (January 15, 1998) notes that interbank rates were raised to over 30 percent in early December, but “(n)evertheless, despite this increase in interest rates--to levels higher than in any other country in the region--the problems with the rupiah have only intensified.”

A fifth important reason for the failures of the IMF programs was that the IMF loan packages provided only a weak shadow of a true lender of last resort facility. While we are not enthusiastic about the possibilities of success in casting the IMF as a true international lender of last resort (as we amplify in the final section of this paper), we stress that announcements of large

sums of money that are not readily available for short-term support are unlikely to succeed in stopping a creditor run. The amounts of money actually available to be drawn upon by each country are unclear: substantial sums are announced as contingency funding (or a “second line of defense”) from bilateral supporters, but the actual conditions for use of those contingent funds are left undefined and are subject to future IMF staff appraisals and negotiations with the bilateral creditors that have announced the support.

In Table 15 we try to assess the money that is really in hand. Commitments were made as both “first lines” and “second lines” of defense. The first line of defense was made up of funding committed from the IMF, the World Bank, the Asian Development Bank, and in the case of Thailand only, from bilateral donors. The funding that is announced in the packages is for three years, and the money is traunched (i.e. available only in “slices” over the program period). Moreover, the World Bank and ADB funding is predicated on negotiations of separate agreements related to financial markets, social policy, and other substantive areas. In Thailand, by December, \$7.3 billion of the original commitments of \$17.2 billion had actually been disbursed. In Korea, \$13.2 billion of the original \$57 had been disbursed, and this amount was reached only after the emergency acceleration of disbursements on December 24. By the end of March 1998, none of the “second line” of funding had actually been disbursed in Korea. In Indonesia, only \$3 billion of the promised \$40 billion had been disbursed by March 1998, with nothing from the World Bank, the ADB, or the bilateral “second line” donors. Note that the amounts actually disbursed are very small compared with the short-term debts falling due. Unlike a true lender of last resort, which provides the full amount  $L = \theta D$  needed for debt servicing, the IMF packages put only a small proportion of that funding directly on offer.

When we examine the IMF programs with care, we note that they were predicated on a very optimistic assumption of the likelihood of rollover of short-term debt. In Indonesia, for example, the baseline IMF program placed the voluntary roll over of short-term debt at two-thirds of the amount falling due (IMF, November 1, p. 22). In Korea and Thailand, the baseline assumptions were even more optimistic. The Thai program assumed that “short-term lines to Thai banks (\$11 billion, much of which have been undertaken by the five largest) will also be broadly maintained.” (p. 15). In the Korean program, the working assumption was “that, on the basis of the beneficial effects on market confidence of the announced program and the large financing package, the bulk of the short-term debt would be rolled over.” (p. 12). While these programs did indeed build in contingencies, the contingencies could only be triggered as extraordinary events, as in fact occurred on December 24, when after considerable public hand-wringing of U.S. and Korean officials in the preceding days, \$10 billion of the “second line of defense” was activated. In such circumstances, the lender of last resort effect is not really secured. Creditors still essentially face a one-way bet: leaving in their money in the country with a real risk of imminent default or forced roll over (the actual Korean outcome), or taking it out, at little cost, to see whether enough contingent funds will indeed be made available.

In two other regards, the IMF programs were far from optimal in restoring financial market confidence in the short term. First, these programs have covered a very wide range of policies beyond the immediate financial crisis, including trade liberalization, demonopolization,

privatization, and so forth. Reforms in such areas may well be desirable, and some may be germane to strengthening the weak banking sector (e.g., monopolies with effective open lines of credit with the commercial banks). Most of the structural reforms in the programs, however, are simply a distraction from the financial crisis. These reforms have taken government expertise, negotiating time, and political capital away from the core issues of financial markets, exchange rate policy, and the like. (See Feldstein, 1997, for a critique of IMF programs along these lines). Second, the first-round programs were not released to the public. The secrecy of those programs, a traditional feature of IMF loan agreements, was a major liability in the Asian circumstances since the programs aimed in large part to restore public confidence in the short term. Fortunately, the second-round of programs negotiated since December have, much more sensibly, been made public and even posted (after February 1998) on the IMF web site.

### *An evolving framework for 1998*

The Asian crisis will take a very serious toll on the Asian economies in 1998. The depth of the crisis, however, is still to be determined. Though Asian financial markets have begun to strengthen again in early 1998, the real effects of the reversal of credit flows are yet to be fully felt. The effective time-out on debt servicing in Korea and Indonesia -- the first by negotiation and the latter by default -- have given some breathing space for longer-term solutions. Several urgent issues remain to be addressed.

The continuing overhang of short-term debt will continue to plague all three of the economies. Korea's time-out lasts until the end of the first quarter of 1998. Considerable amounts of short-term debt remain to be paid during the remainder of the year. Indonesia has yet to negotiate a formal rollover or standstill on debt payments, while a large proportion of the corporate external debt is now in outright default. The experience from Mexico and Argentina suggests that bank creditors are likely to continue to demand the repayments of short-term debt as they fall due, even if some new foreign investors begin to enter these economies.

There is a reasonable chance that all three economies will need a further stretching out of debt payments for the remainder of 1998. (Korea, however, was able to return to the markets and effectively refinance some debt payments with a new bond issue of \$4 billion floated on April 8, 1998<sup>11</sup>). If there is a renewed significant net outflow of funds, a further debt restructuring should be carried out in an orderly manner, without desperate measures to avoid another round of negotiation. There is no justification, for example, in further boosts of interest rates in order to try to forestall another round of concerted roll overs of short-term debts. Furthermore, the IMF and Asian countries should insist on debt restructurings, rather than the drawing down of IMF

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<sup>11</sup> Korea sold \$1 billion in five-year government notes (at 335 basis points over LIBOR) and \$3 billion in ten year notes (at 345 basis points over LIBOR) on April 8, 1998. The issue was reportedly substantially over-subscribed, and the government immediately initiated plans for another offering pending an expected ratings upgrade.

funds, as the more effective way to meet the net debt servicing obligations coming due. Not only do concerted workout arrangements introduce much less moral hazard into rescue operations, but as we note below, there are far more effective uses of the IMF program funds than simply recycling them to international creditors.

The banking sectors in all of the crisis countries remain illiquid and heavily undercapitalized. Since the banks are net borrowers from abroad, the sharp real depreciations of the national currencies almost surely has meant that a large proportion of net worth has been wiped out. On paper, the banks generally tried to hedge their positions, with dollar-denominated lending roughly in balance with dollar-denominated borrowing. Since much of the dollar lending, however, was to domestic investors that will face bankruptcy in the wake of the sharp exchange rate depreciations, even banks that are hedged on paper will suffer a large loss of net worth. The early evidence suggests a not-surprising soaring rate of non-performing loans. Even more dangerously, almost all non-foreign commercial banks in Indonesia, and many in Thailand and Korea, have been so sharply downgraded as credit risks that they are no longer able to open letters of credit that are recognized by international banks. As we noted earlier, the result has been a sharp credit squeeze facing Asian exporters, which is preventing many exporters from responding to the huge rise in profitable opportunities following the currency depreciations.

In the short term, a portion of the emergency IMF loans could be used to create dedicated pools of working capital to help finance credits for exporters (for example, this funding could provide guarantees on letters of credit opened by commercial banks). In the medium term, the commercial banks will need to be re-capitalized and re-floated to private investors. There are many possible models for bank rehabilitation. Generally, they require the infusion of public funds to re-establish positive net worth of insolvent banks; the temporary transfer of ownership of those insolvent banks to a public intervenor; and then the re-sale of the banks to the private sector, with both foreign and domestic investors invited to provide fresh capital. There is also an important need to mobilize public funds to back the recent public guarantees of bank deposits and liabilities. Again, part of the IMF loan program could be usefully dedicated to establishing a rudimentary deposit insurance fund, partly as a way to strengthen public confidence in the banking sector.

In parallel with bank restructuring and capitalization will be enterprise restructuring and capitalization in the non-financial corporate sector. Each of the three countries is in the process of establishing new bankruptcy mechanisms to facilitate the inevitable financial reconstruction of the corporate sector. This will include the widespread conversion of debt to equity, and the transfer of equity of insolvent enterprises from existing shareholders to creditors.

Another part of the IMF funds should provide the gross reserves needed to back a more appreciated level of the exchange rate in the three countries. Exchange rate targets failed in the second half of 1997 because they were overwhelmed by panicked withdrawals of loans. New exchange rate targets will be viable if accompanied by realistic reschedulings of the foreign debt obligations falling due in the year. There is little case for a return to pegged exchange rates, and still less for the establishment of a currency board. Nonetheless, there is a useful and realistic possibility for nudging the real exchanges rates of the Asian countries towards more realistic,



post-panic levels. The availability for this purpose of adequate and usable gross reserves will surely help to establish greater market confidence.

## VII. Preventing and managing future crises

The current arrangements for integrating the emerging markets into the global financial system are clearly defective. Capital market liberalizations in Latin America, Eastern Europe, and Asia have been followed by extreme macroeconomic crises. The IMF responses to those crises have not prevented deep dislocations in the emerging market countries. Moreover, the emergency IMF bailout packages in Mexico, Argentina, and East Asia have arguably contributed to significant new moral hazards in international lending. The IMF has shown itself to be extremely fearful of a default in any major emerging market, and in fact prepared to devote large sums of money to bailing out foreign credits. U.S. Deputy Treasury Secretary Lawrence Summers has described the current system as one in which policymakers often “confront the choice between uncontrolled chaos and confusion, on the one hand, and large bailouts on the other.”<sup>12</sup>

We have argued that international financial markets are inherently unstable, at least for countries borrowing heavily from abroad, at short maturities, and in foreign currency. It may be true that better banking supervision will solve the problem of unstable capital markets, though it is also the case that many *advanced* economies, such as Sweden in the early 1990s, suffered enormous banking crises following financial market liberalization. In this setting, the rapid push towards fully open capital markets among the developing countries would seem to be misguided. There is certainly no strong empirical evidence that economic growth in middle-income developing countries depends on unfettered access to *short-term* capital flows from abroad. Such short-term financing is useful to finance trade flows, not longer term investments. Still less are short-term inflows useful to finance long-term on-lending by highly leveraged financial institutions. The notion that improved supervision will quickly render short-term capital flows benign is unproven and unlikely in our opinion.

The policy goal, we believe, should be to support long-term capital flows, especially foreign direct investment, and equity portfolio flows, but to limit short-term international flows mainly to the financing of short-term trade transactions. Banks and non-financial corporations could be discouraged from short-term international financing, for example with maturities of under six months, except to finance documented trade transactions. As always, one can approach such limits via taxation (as in Chile, which imposes a 30% reserve requirement on dollar deposits in the banking system), or via outright supervisory limits. Practical enforcement considerations (administration, monitoring) would probably push towards outright quantitative limits on short-term flows, even though economic arguments would generally come down on the side of taxation. The argument that short-term flows are essentially uncontrollable (because of poor monitoring or access to financial derivatives that allow the circumvention of controls) is not convincing. The

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<sup>12</sup>Lawrence Summers, “Go with the Flow,” *Financial Times*, Wednesday March 11, 1998.

huge buildup of short-term debts in Asia in the 1990s followed hard on the heels of a specific set of financial liberalization actions. It is fair to argue that without institutional changes like the Bangkok International Banking Facility, the Thai buildup of debt could well have been contained. Similarly, Korea's buildup of short-term debt was a specific consequence of the regulatory treatment of Korea's merchant banks in the mid-1990s. Of course, some short-term capital will always evade whatever form of taxation or quantitative controls are used, but the evidence from Chile and Malaysia suggests that these tools can be effective in slowing such inflows on the margin.

The IMF has, ironically, been pushing the Asian countries towards accelerated capital market liberalization in the wake of the crisis. In Korea, for example, the December 3, 1997 program announces that "The government plans to accelerate substantially its ongoing capital account liberalization" Among other measures, "[i]n order to instill market discipline a timetable will be set by end-February 1998 to eliminate restrictions on foreign borrowing by corporation." (p. 10). According to our analysis, the IMF's push towards further liberalization of long-term capital flows, including foreign direct investment, has little risk -- and probably significant long-term economic benefit. The problems arise mainly from the lack of distinction between short-term and long-term capital flows.

While the liberalization of short-term capital movements should therefore be undertaken only gradually and with extreme caution, the opening of the financial sector to foreign direct investment should probably be undertaken much more quickly and forthrightly. Indonesia, Korea, Malaysia, and Thailand were all characterized by a limited presence of foreign bank branches and subsidiaries, especially in the latter three countries. Despite significant interest in establishing a full banking presence in these countries, foreign banks were generally unable to obtain general banking licenses, as a result of protectionism in support of domestic banks. More foreign banks would almost surely have helped to calm the Asian financial crisis, for several reasons. First, branches of major international banks would have been much less subject to depositor panics (indeed, in Indonesia, depositors fled from Indonesia national banks to the few foreign banks). Second, these foreign banks would have been less likely to withdraw their own loans to local customers than they were to withdraw their cross-border credits to Asian banks. Third, these banks would have raised the general level of competition in the banking system, and would probably have helped to limit the politicization of bank ownership and bank lending.

We have also argued that the IMF bailout lending has been ineffective, and probably intrinsically so. On the one hand, the IMF, is unable to be a true lender of last resort. Its provision of loans will always be sufficiently restrictive, conditional, and tranching as to leave continuing doubts in the markets, and therefore continuing room for "rational" panics. Even after the announcement of IMF loan packages, short-term claimants will still have the preferred option of withdrawing their loans to see what will happen in the future. The provision of IMF loans is unlikely, therefore, to staunch a panicked outflow of loan capital. The result may therefore be the worst of both worlds. On the one hand, the panic continues, with adverse macroeconomic consequences; on the other hand, the foreign lending is socialized (i.e. repaid by the public sector), with objectionable distributional consequences (since the foreign banks get bailed out at

the expense of the taxpayers of the emerging markets) and with deep problems of moral hazard.

The Korean episode points to a better approach, which one of us has advocated in recent years: *orderly workout arrangements* that rely on private-sector funds rather than IMF bailout loans (Sachs, 1995). The analytical starting point is the recognition that Chapter 11 style bankruptcies in the United States (or Chapter 9 in the case of municipalities) create a negotiating framework for creditors and debtors that overcomes many of the collective action problems inherent in financial crises. A bankruptcy arrangement typically involves a standstill on debt servicing (such as in Korea in the first quarter of 1998); an arrangement for tapping private capital markets for interim financing (so-called debtor in possession financing, under Section 364 of the Bankruptcy Code); and a system for debt reduction and debt-to-equity conversions that overcomes the inevitable problems of free-riding among creditors in the course of debt restructuring exercises.

The provision for debtor-in-possession financing under the bankruptcy law is critical. The general idea is that the bankruptcy court can enable the bankrupt debtor to tap the private capital markets by granting *priority* to the new loans in the repayment queue. In our context, it would be as if Korea had been enabled to go to the Eurobond markets in December 1997 with the enforceable legal right to borrow fresh loans that would be repaid ahead of all of the existing creditors. In this way, the bankruptcy court is able to get working capital to the bankrupt debtor despite the fact that the court (unlike the IMF) has no ability to tap official funding sources.

International workout arrangements could be modeled on the Chapter 9 or 11 process. When an official borrower (such as Mexico in 1995) faces imminent default, a standstill on debt servicing would be triggered (and perhaps officially approved by the IMF Executive Board). The debtor country would fall under IMF protection, which would facilitate negotiations between the debtor and private-sector creditors concerning a restructured repayment program. The plan would be conditioned on economic reform measures agreed by the debtor country. The IMF would facilitate interim financing, not by providing it directly out of official funds, but rather by overseeing new priority borrowing by the debtor country. Since the new loans would be prior in repayment to the existing debts, the debtor country would still be able to tap the capital markets despite the standstill on repayments of the earlier debt.

A much more complex situation arises when there is a mass exodus from private-sector debtors, as in the East Asian cases, as opposed to the Mexican case. In those circumstances, individual bankruptcy-type proceedings on a case-by-case basis will certainly not resolve a financial panic in a timely and efficient way. There may still be the need for a generalized standstill on debt servicing, followed by a mechanism to bring the various international creditors and national debtors under *one roof* for a collective renegotiation and rollover of debts, precisely as occurred in the case of Korea in late December and early January. Thus, the design of orderly workout mechanisms might have to contemplate provisions for across-the-board standstills and rollovers of debts on a country basis, even when the debts are in fact owed by individual private-sector entities. The IMF's Interim Committee acknowledged the need to "involve private creditors at an early stage, in order to achieve equitable burden sharing via-a-vis the official sector

and to limit moral hazard.”<sup>13</sup>

The Korean negotiations demonstrated that such a mechanism could work in practice. Now, we suppose, we will have to discover whether it can work in theory (and thereby pursued more systematically in future cases)! The better hope remains, surely, that prudential limitations on short-term capital flows, and greater market sensitivity to risk of panic, will render the need for such extraordinary interventions much less likely, by limiting the buildup of unstable short-term debts before a crisis occurs.

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<sup>13</sup>Communique of the IMF Interim Committee, April 17, 1998, section 3(e).

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**Table 1: Five Asian Economies\*: External Financing**

(billions of dollars)

	1994	1995	1996	1997e	1998f
<b>Current account balance</b>	<b>-24.6</b>	<b>-41.3</b>	<b>-54.9</b>	<b>-26.0</b>	<b>17.6</b>
<b>External financing, net</b>	<b>47.4</b>	<b>80.9</b>	<b>92.8</b>	<b>15.2</b>	<b>15.2</b>
<i>Private flows, net</i>	40.5	77.4	93.0	-12.1	-9.4
<i>Equity investment</i>	12.2	15.5	19.1	-4.5	7.9
<i>Direct equity</i>	4.7	4.9	7.0	7.2	9.8
<i>Portfolio equity</i>	7.6	10.6	12.1	-11.6	-1.9
<i>Private Creditors</i>	28.2	61.8	74.0	-7.6	-17.3
<i>Commercial banks</i>	24.0	49.5	55.5	-21.3	-14.1
<i>Non-bank private creditors</i>	4.2	12.4	18.4	13.7	-3.2
<i>Official flows, net</i>	7.0	3.6	-0.2	27.2	24.6
<i>Int'l financial institutions</i>	-0.4	-0.6	-1.0	23.0	18.5
<i>Bilateral creditors</i>	7.4	4.2	0.7	4.3	6.1
<b>Resident lending/other, net**</b>	<b>-17.5</b>	<b>-25.9</b>	<b>-19.6</b>	<b>-11.9</b>	<b>-5.7</b>
<b>Reserves excl. gold ( - = increase)</b>	<b>-5.4</b>	<b>-13.7</b>	<b>-18.3</b>	<b>22.7</b>	<b>-27.1</b>

*e = estimate, f = IIF forecast*\* *South Korea, Indonesia, Malaysia, Thailand and the Philippines.*\*\* *Including resident net lending, monetary gold, and errors and omissions.*

Source: Institute of International Finance, Inc. "Capital Flows to Emerging Market Economies."

January 29, 1998.

**Table 2. Crisis and Recovery: Mexico and Argentina**

<b>Argentina</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>
<b>As % of GDP</b>				
<b>Capital and Financial Account</b>	4.02	3.25	0.09	2.54
DIRECT INVESTMENT (Net)	0.99	1.04	1.44	1.35
PORTFOLIO INVESTMENT (Net)	7.88	1.63	1.84	3.65
OTHER INVESTMENT: PRIVATE SECTOR (Net)	0.51	0.35	-3.45	-2.42
Nominal Exchange Rate (N.C. per US\$)	1.0	1.0	1.0	1.0
Real Exchange Rate (Trade-Weighted, 1990=100)	42.2	43.7	45.7	44.4
End-Year Stock Market Index (US\$, 1990=100)	692.3	531.1	525.9	577.2
<b>Mexico</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>
<b>As % of GDP</b>				
<b>Capital and Financial Account</b>	8.37	3.74	-3.66	1.23
DIRECT INVESTMENT (Net)	1.09	2.60	3.32	2.28
PORTFOLIO INVESTMENT (Net)	7.03	1.76	-3.62	4.39
OTHER INVESTMENT: PRIVATE SECTOR (Net)	0.53	-0.05	-1.90	-2.34
Nominal Exchange Rate (N.C. per US\$)	3.1		7.6	7.9
Real Exchange Rate (Trade-Weighted, 1990=100)	66.6	110.6	123.2	94.6
End-Year Stock Market Index (US\$, 1990=100)	474.0	276.2	192.6	225.1

Data Source: BOP data are from IFS; Stock Price Indices are from DataStream.

Note: An increase in RER means depreciation.

**Table 3. Short Term Debt and Reserves, 1994 and 1997 (US\$, millions)**

Country	June 1994			June 1997		
	Short-Term Debt	Reserves	Short-Term Debt/Reserves	Short-Term Debt	Reserves	Short-Term Debt/Reserves
Argentina	17,557	13,247	1.325	23,891	19,740	1.210
Brazil	28,976	41,292	0.702	44,223	55,849	0.792
Chile	5,447	10,766	0.506	7,615	17,017	0.447
Colombia	3,976	7,718	0.515	6,698	9,940	0.674
India	5,062	16,725	0.303	7,745	25,702	0.301
Indonesia	18,822	10,915	1.724	34,661	20,336	1.704
Jordan	647	1,291	0.501	582	1,624	0.358
Korea	35,204	21,685	1.623	70,612	34,070	2.073
Malaysia	8,203	32,608	0.252	16,268	26,588	0.612
Mexico	28,404	16,509	1.721	28,226	23,775	1.187
Pakistan	1,708	2,307	0.740	3,047	1,249	2.440
Peru	2,157	5,611	0.384	5,368	10,665	0.503
Philippines	2,646	6,527	0.405	8,293	9,781	0.848
South Africa	7,108	1,755	4.050	13,247	4,241	3.124
Sri Lanka	511	1,983	0.258	414	1,770	0.234
Taiwan	17,023	90,143	0.189	21,966	90,025	0.244
Thailand	27,151	27,375	0.992	45,567	31,361	1.453
Turkey	8,821	4,279	2.061	13,067	16,055	0.814
Venezuela	4,382	5,422	0.808	3,629	13,215	0.275
Zimbabwe	704	534	1.319	731	447	1.635

Sources: Bank for International Settlements, IMF

**Table 4. Human Development Indicators in 5 Asian Countries: 1970-1995**

	<b>Indonesia</b>	<b>Korea</b>	<b>Malaysia</b>	<b>Philippines</b>	<b>Thailand</b>	<b>Other Developing Countries (average)</b>
<b>Life-Expectancy at birth (years)</b>						
<b>1970</b>	48	60	62	57	58	56
<b>1995</b>	64	72	72	66	69	63
<b>Adult (15+) Literacy Rate (%)</b>						
<b>1970</b>	54	88	60	83	79	43
<b>1995</b>	84	98	85	95	94	64
<b>Average Income of poorest 20% (PPP '85 dollars)</b>						
<b>1970*</b>	392	303	431	218	361	731
<b>1990**</b>	908	2071	1070	435	726	892

Note: \*1976 for Indonesia, 1965 for Korea and Philippines, and 1969 for Thailand.

\*\* 1988 for Korea and Philippines, 1989 for Malaysia, and 1992 for Thailand.

Source: World Bank (1997) and Deininger-Squire (1996)

**Table 5. International Claims Held By Foreign Banks (billion \$)**  
**Distribution by maturity and sector**

	Total Outstanding	Obligations by Sector:			Short Term	Reserves	Short Term/ Reserves
		Banks	Public Sector	Non-bank Private			
<b>A. End 1995</b>							
Indonesia	44.5	8.9	6.7	28.8	27.6	14.7	1.9
Malaysia	16.8	4.4	2.1	10.1	7.9	23.9	0.3
Philippines	8.3	2.2	2.7	3.4	4.1	7.8	0.5
Thailand	62.8	25.8	2.3	34.7	43.6	37	1.2
Korea	77.5	50.0	6.2	21.4	54.3	32.7	1.7
Total	209.9	91.3	20.0	98.4	137.5		
<b>B. End 1996</b>							
Indonesia	55.5	11.7	6.9	36.8	34.2	19.3	1.8
Malaysia	22.2	6.5	2.0	13.7	11.2	27.1	0.4
Philippines	13.3	5.2	2.7	5.3	7.7	11.7	0.7
Thailand	70.2	25.9	2.3	41.9	45.7	38.7	1.2
Korea	100.0	65.9	5.7	28.3	67.5	34.1	2.0
Total	261.2	115.2	19.6	126.0	166.3		
<b>C. Mid-1997</b>							
Indonesia	58.7	12.4	6.5	39.7	34.7	20.3	1.7
Malaysia	28.8	10.5	1.9	16.5	16.3	26.6	0.6
Philippines	14.1	5.5	1.9	6.8	8.3	9.8	0.8
Thailand	69.4	26.1	2.0	41.3	45.6	31.4	1.5
Korea	103.4	67.3	4.4	31.7	70.2	34.1	2.1
Total	274.4	121.8	16.7	136.0	175.1		
Memo Item: Mexico							
end-1994	64.6	16.7	24.9	22.8	33.2	6.4	5.2
end-1995	57.3	11.5	23.5	22.3	26.0	17.1	1.5

Source: Bank For International Settlements

**Table 6. Changes in Exports and Imports: Selected Countries**

<b>Country</b>	<b>Exports Value Growth</b>		<b>Exports Volume Growth</b>		<b>Change in Unit Value</b>	
	<b>1995</b>	<b>1996</b>	<b>1995</b>	<b>1996</b>	<b>1995</b>	<b>1996</b>
China	22.9	1.6	15.3	8.3	6.6	-6.2
India	22.7	7.4	22.4	16.9	0.2	-8.1
Hong Kong	14.8	4.0	1.9	-8.6	12.6	13.8
Korea	30.3	3.7	24.0	19.1	5.0	-12.9
Singapore	22.1	5.7	15.7	6.3	5.6	-0.6
Indonesia	13.4	9.7	10.3	4.8	2.8	4.7
Malaysia	26.0	5.8	15.6	13.6	9.0	-6.9
Philippines	31.6	16.7	17.0	18.8	12.4	-1.8
Thailand	25.1	-1.3	14.2	-0.7	9.5	-0.6
Argentina	33.9	13.6	17.8	3.2	13.7	10.0
Mexico	40.3	22.6	24.5	14.7	12.7	6.9
Poland	34.3	6.8	30.8	6.9	2.7	-0.1
<b>Country</b>	<b>Imports Value Growth</b>		<b>Imports Volume Growth</b>		<b>Change in Unit Value</b>	
	<b>1995</b>	<b>1996</b>	<b>1995</b>	<b>1996</b>	<b>1995</b>	<b>1996</b>
China	11.6	7.6	15.1	16.4	-3.0	-7.5
India	28.6	8.3	23.6	18.9	4.0	-8.9
Hong Kong	19.2	3.0	13.6	4.0	4.9	-1.0
Korea	32.0	11.3	21.2	11.9	8.9	-0.6
Singapore	21.3	5.5	13.0	6.4	7.3	-0.9
Indonesia	27.0	5.7	17.4	10.7	8.2	-4.6
Malaysia	30.5	0.9	23.4	17.7	5.8	-14.3
Philippines	25.7	20.4	14.6	24.2	9.7	-3.0
Thailand	30.0	3.8	15.9	-3.6	12.1	7.7
Argentina	-6.5	18.1	-17.5	25.2	13.3	-5.7
Mexico	-23.1	30.4	-14.9	20.8	-9.6	8.0
Poland	35.9	27.8	24.5	28.9	9.1	-0.8

Data Source: Data on Values are from IFS; Volume data are from BIS report.

## Table 7. Regional Exports

### A. Annual Growth Rate of Exports (% , based on nominal US\$)

Year	China,P.R.	Indonesia	Korea	Malaysia	Philippines	Thailand	Mexico
1990	18.2	15.9	4.2	17.4	4.0	14.9	17.7
1991	15.8	13.5	10.5	16.8	8.7	23.2	0.7
1992	18.1	16.6	6.6	18.5	11.2	14.2	1.4
1993	7.1	8.4	7.3	15.7	13.7	13.3	9.2
1994	33.1	8.8	16.8	24.7	20.0	22.7	14.2
1995	22.9	13.4	30.3	26.0	31.6	25.1	40.3
1996	1.6	9.7	3.7	5.8	16.7	-1.3	22.6

### B. Share of Exports as % of Total Exports of Seven Countries

Year	China,P.R.	Indonesia	Korea	Malaysia	Philippines	Thailand	Mexico
1990	25.8	10.7	27.0	12.2	3.4	9.6	11.3
1991	26.5	10.7	26.4	12.6	3.2	10.5	10.1
1992	27.7	11.1	25.0	13.3	3.2	10.6	9.0
1993	27.1	11.0	24.5	14.1	3.3	11.0	9.0
1994	29.6	9.8	23.5	14.4	3.3	11.0	8.4
1995	28.9	8.8	24.3	14.4	3.4	10.9	9.4
1996	27.8	9.1	23.8	14.4	3.7	10.2	10.9

Source: IFS

**Table 8. Loans and Advances by Sector (%Share)**

Sectors	Indonesia		Malaysia		Philippines	
	1990	1996	1990	1996	1990	1996
Agriculture and Mining	9.0	6.0	6.4	2.4	13.8	6.5
Manufacturing	35.0	27.0	21.3	22.0	38.5	32.3
Construction			7.0	8.9	2.7	3.9
Trade and Transportation	34.0	24.0	16.5	12.1	18.2	22.2
Finance, and Real Estate			39.5	39.2	16.9	21.8
Service Rendering Industry	18.0	31.0				
Households: Consumer Credit			2.4	3.7		
Others	3.0	11.0	6.9	11.8	10.0	13.3

Sectors	Korea, Republic					
	Total		Banks		Others Institutions	
	1990	1996	1990	1996	1990	1996
Agriculture and Mining	6.6	5.0	10.3	9.9	1.1	0.5
Manufacturing	44.0	39.9	42.0	39.2	46.9	40.6
Construction	13.1	9.8	16.5	7.4	8.1	12.0
Trade and Transportation	12.8	11.7	10.1	10.4	16.6	12.9
Finance, and Real Estate	4.8	6.6	5.6	2.1	3.6	10.6
Households: Consumer Credit	15.0	23.7	12.2	28.3	19.1	19.6
Others	3.8	3.3	3.3	2.7	4.5	3.8

Sectors	Thailand					
	Total		Banks		Finance Companies	
	1990	1995	1990	1995	1990	1995
Agriculture and Mining	6.2	3.5	7.2	4.3	1.3	0.8
Manufacturing	23.7	23.1	25.1	25.8	17.1	14.3
Construction	3.8	4.1	4.0	4.4	2.7	3.1
Trade and Transportation	25.5	21.7	28.3	25.4	12.1	9.6
Finance, and Real Estate	19.2	21.5	17.0	17.4	29.6	35.0
Households: Consumer Credit	13.8	16.3	10.6	12.3	28.9	29.6
Others	7.9	9.7	7.8	10.4	8.2	7.7

For Indonesia: Banking System Credit by Economic Sector.

For Korea: Loans and Discounts of Deposit Money Banks and Other Financial Institutions.

For Malaysia: Loans and Advances of Commercial Banks.

For Philippines: Loans Outstanding of Commercial Banks.

For Thailand: Bills, Loans and Overdrafts of Commercial Banks and Finance Companies.



**Table 9: Stock and Land values, Thailand and Indonesia**

Period	THAILAND		INDONESIA	
	Stock Price Index	Sales Price: Grade A Office Space Bangkok (000B/m. sq.)	Stock Price Index	Capital Value: Grade A Office Space Jakarta (\$/m. sq.)
Q2 90	439	60.0	92	2525
Q4 90	308	66.0	56	3019
Q2 91	406	70.5	45	2911
Q4 91	392	67.0	33	2788
Q2 92	449	63.5	41	2482
Q4 92	529	60.0	33	2327
Q2 93	554	59.5	44	2279
Q4 93	1103	59.5	67	2402
Q2 94	878	59.8	54	2358
Q4 94	981	60.5	55	2358
Q2 95	1038	60.5	61	2200
Q4 95	963	60.5	64	2179
Q2 96	940	60.7	72	2136
Q4 96	610	60.4	75	2250
Q2 97	391	43.0	80	2267

Sources: DataStream & Jones Lang Wootten.

**Table 10. Non-Performing Loans (percentage of total loans)**

	<u>1990</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Indonesia	4.5	12.0	10.4	8.8
Korea	2.1	1.0	0.9	0.8
Malaysia	20.4	8.1	5.5	3.9
Thailand	9.7	7.5	7.7	n.a.
Mexico	2.3	10.5	14.4	12.5
Argentina	16.0	8.6	12.3	9.4

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Data are not available for the Philippines

n.a.: data not available

Source: Bank For International Settlements, Annual Report (1997)

**Table 11. Incremental Capital-Output Ratios, 1987-1996**

<b>Country Name</b>	<b>1987-89</b>	<b>1990-92</b>	<b>1993-95</b>
Indonesia	4.0	3.9	4.4
Korea, Rep.	3.5	5.1	5.1
Malaysia	3.6	4.4	5.0
Philippines	3.3	22.8	6.0
Thailand	2.9	4.6	5.2
Chile	2.9	3.3	4.4
Colombia	4.3	4.7	4.1
India	3.2	6.0	4.7
Mexico	8.9	6.5	11.7
Pakistan	2.8	2.9	4.9
Turkey	6.8	5.4	9.2

Source: Calculated based on data from World Development Indicators, the World Bank

**Table 12. Probit Results for the Onset of Financial Crises.****(Crisis=1,0)**

Independent Variable	Coefficient (z-statistic)			
	(I)	(II)	(III)	(IV)
Short-term debt/reserves ratio	<b>0.570</b> (2.50)**	<b>0.652</b> (2.41)**	<b>0.748</b> (2.36)**	<b>2.412</b> (2.11)**
Total debt/reserves ratio				<b>-0.986</b> (-1.49)
Private credit/GDP ratio (Change in previous 3 years)	<b>3.222</b> (2.31)**	<b>3.484</b> (2.34)**	<b>3.457</b> (1.87)*	<b>4.048</b> (2.38)**
Capital Inflow/GDP ratio	<b>3.789</b> (1.85)*	<b>4.033</b> (2.09)**		<b>2.685</b> (0.97)
Current Account surplus/GDP ratio			<b>-14.626</b> (-1.55)	
Real Exchange Rate (Percent change in previous 3 years)		<b>-0.003</b> (-0.26)	<b>-0.002</b> (-0.14)	<b>-0.008</b> (-0.59)
Corruption		<b>-0.360</b> (-1.14)	<b>-0.386</b> (-1.24)	<b>-0.356</b> (-1.04)
Constant	<b>-2.435</b> (-4.91)**	<b>-1.414</b> (-1.20)	<b>-1.734</b> (-1.38)	<b>-1.556</b> (-1.17)
Pseudo R-squared	<b>0.24</b>	<b>0.28</b>	<b>0.33</b>	<b>0.37</b>
Number of observations	<b>78</b>	<b>78</b>	<b>78</b>	<b>78</b>

Notes:

1. Real Exchange Rate : higher index means depreciation.
2. Corruption index is scaled from 1 to 6; 6 means least corrupt.
3. \*\* significant at 5% level; \* significant at 10% level.

**Table 13. Means of Variables used in Probit Sample.**

(standard deviations in parentheses)

	<b>Crisis=1</b>	<b>Crisis=0</b>
<b>Short-term debt/reserves ratio</b>	1.82	0.99
	(1.40)	(1.01)
<b>Total debt/reserves ratio</b>	2.31	2.17
	(0.78)	(3.06)
<b>Private credit/GDP ratio</b> (Change in previous 3 years)	0.17	0.04
	(0.21)	(0.20)
<b>Capital Inflow/GDP ratio</b>	0.07	0.03
	(0.02)	(0.18)
<b>Current Account surplus/GDP ratio</b>	-0.05	-0.02
	(0.02)	(0.07)
<b>Real Exchange Rate</b> (Percent change in 3 years)	-15.82	-15.92
	(8.42)	(27.21)
<b>Corruption</b> (Index: 1 to 6)	3.22	3.60
	(0.67)	(0.91)

**Table 14. Summary of Crisis Variables in Probit Sample**

Country	Year	Short-term debt to reserves ratio	Total debt to reserves ratio	3-year change in Private credit to GDP ratio	Capital Inflow to GDP ratio	Current Account balance to GDP ratio	3-year percent change in Real Exchange Rate	Corruption Index: (0 to 6)
<b>Non-Crisis Countries</b>								
Brazil	1994-97	0.71	1.24	-0.07	0.03	-0.01	-47.66	3.1
Chile	1994-97	0.50	0.99	0.05	0.11	-0.02	-17.89	3.3
Colombia	1994-97	0.68	1.53	0.03	0.10	-0.05	-29.09	2.5
Hungary	1994-97	0.40	1.14	-0.08	0.14	-0.08	-9.96	5.0
India	1994-97	0.36	0.80	-0.01	0.04	-0.01	9.06	3.0
Jordan	1994-97	0.35	0.60	0.03	-0.01	-0.06	-3.39	4.0
Peru	1994-97	0.49	0.66	0.06	0.05	-0.06	-33.05	3.0
Poland	1994-97	0.19	0.64	-0.03	0.02	-0.01	-25.07	5.0
Russia	1994-97	3.33	7.82	0.03	-0.48	0.18	-77.13	2.8
South Africa	1994-97	3.17	9.31	-0.01	0.01	-0.01	2.76	5.0
Sri Lanka	1994-97	0.24	0.40	0.03	0.14	-0.05	-7.09	3.3
Taiwan	1994-97	0.22	0.25	0.26	-0.03	0.03	21.85	3.8
Zimbabwe	1994-97	1.40	2.00	0.06	0.05	-0.05	-2.77	3.5
<b>Crisis Countries</b>								
Argentina	1995	1.57	2.74	0.06	0.07	-0.04	-25.66	3.0
Indonesia	1997	1.70	2.89	0.07	0.06	-0.04	-8.22	2.0
Korea	1997	2.06	3.04	0.08	0.05	-0.05	-6.65	4.0
Malaysia	1997	0.61	1.08	0.69	0.04	-0.08	-13.78	4.0
Mexico	1995	5.28	3.40	0.20	0.07	-0.08	-30.74	3.0
Philippines	1997	0.85	1.44	0.22	0.10	-0.05	-22.64	3.0
Thailand	1997	1.45	2.21	0.20	0.09	-0.08	-11.24	3.0
Turkey	1994	2.06	2.26	0.01	0.09	-0.04	-11.32	4.0
Venezuela	1994	0.81	1.70	-0.01	0.06	-0.03	-12.09	3.0

**Table 15: Commitments and Disbursements under Asian IMF Programs (billion US\$)**

<b>Lenders</b>	<b>Indonesia</b>			<b>Korea</b>			<b>Thailand</b>		
	Commitments	Disbursed by 12/31/97	Disbursed by 3/31/98	Commitments	Disbursed by 12/31/97	Disbursed by 3/31/98	Commitments	Disbursed by 12/31/97	Disbursed by 3/31/98
IMF	10.0	3.0	3.0	21.0	8.2	13.7	4.0	2.4	2.7
World Bank	4.5	0.0	0.0	10.0	3.0	5.0	1.5	0.0	0.5
Asian Dev. Bank	3.5	0.0	0.0	4.0	2.0	3.0	1.2	0.0	0.6
Bilateral	22.0	0.0	0.0	22.0 *	0.0	0.0	10.5	4.9	6.4
Japan	5.0	0.0	0.0	10.0	0.0	0.0	4.0	1.7	2.7
United States	3.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
Singapore	5.0	0.0	0.0				1.0	0.6	0.7
Australia	1.0	0.0	0.0				1.0	0.6	0.7
China	1.0	0.0	0.0				1.0	0.6	0.7
Hong Kong (China)	1.0	0.0	0.0				1.0	0.6	0.7
Malaysia	1.0	0.0	0.0				1.0	0.6	0.7
Indonesia	5.0	0.0	0.0				0.5	0.0	0.0
Korea							0.5	0.2	0.2
Brunei							0.5	0.0	0.0
<b>Total</b>	<b>40.0</b>	<b>3.0</b>	<b>3.0</b>	<b>57.0</b>	<b>13.2</b>	<b>21.7</b>	<b>17.2</b>	<b>7.3</b>	<b>10.2</b>

\* Note: details on the bilateral commitments to Korea, other than by Japan and the United States, were not available.

Sources: IMF, World Bank, ADB, Bank of Thailand, and press reports.

**Table 16. GDP Growth Rates for Indonesia, Korea and Thailand:  
IMF Estimates and Market Forecasts.**

	<b>1997</b>	<b>1998</b>
<b>Indonesia</b>		
First IMF Program (10/31/97)	5.0	3.0
Second IMF Program (01/15/98)		0.0
Third IMF Program (04/10/98)		-5.0
Market Forecast Feb 1998		-8.8
World Economic Outlook Forecast April 1998		-5.0
<b>Korea</b>		
First IMF Program (12/04/97)	6.0	2.5
Third IMF Program (02/07/98)		1.0
Market Forecast Feb 1998		-2.5
World Economic Outlook Forecast April 1998		-0.8
<b>Thailand</b>		
First IMF Program (08/20/97)	2.5	3.5
Second IMF Program (11/25/97)	0.6	0.0 to 1.0
Third IMF Program (02/24/98)		-3.0 to -3.5
Market Forecast Feb 1998		-6.0
World Economic Outlook Forecast April 1998		-3.1

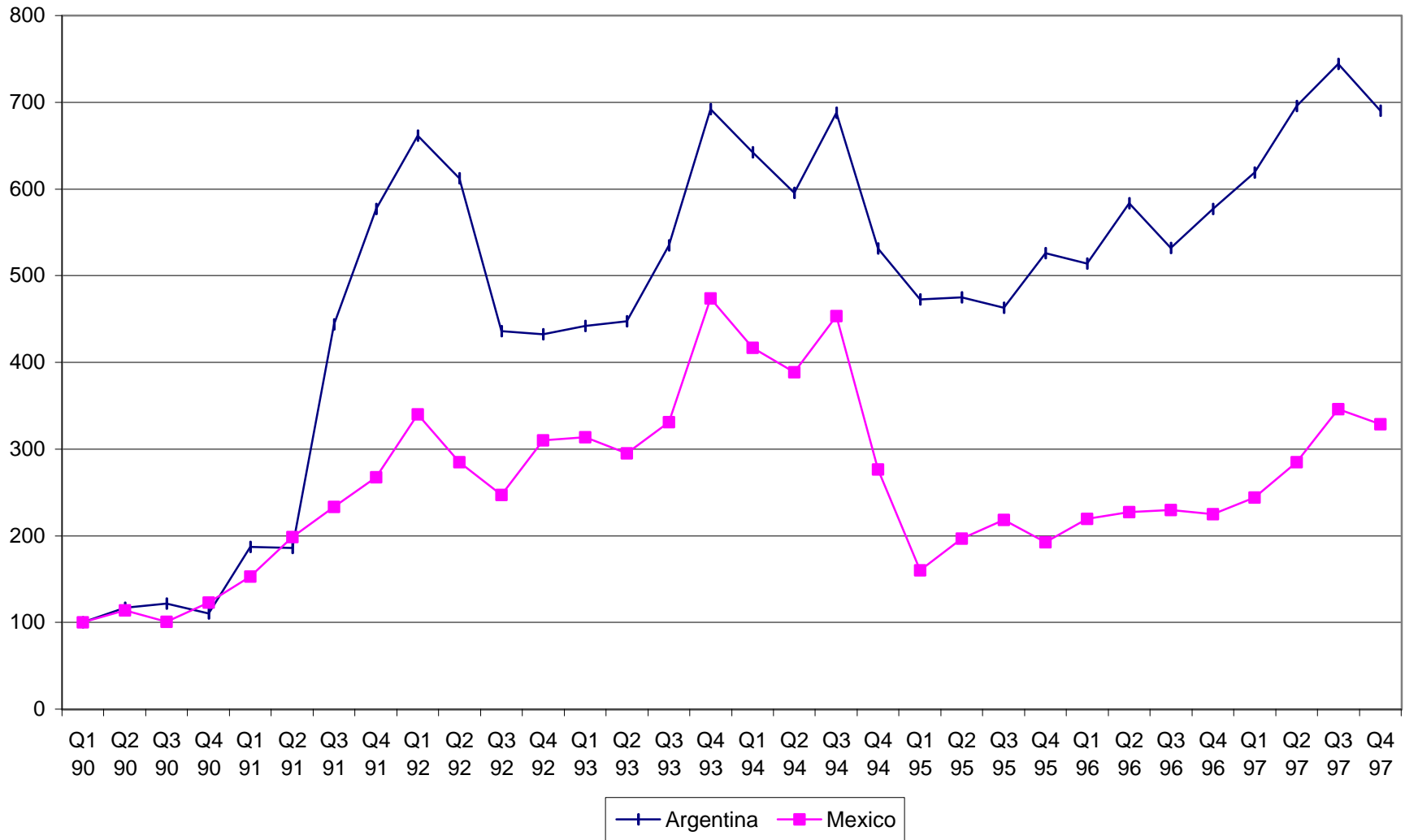
Note: Market forecasts are from Goldman Sachs & other investment banks in the region.



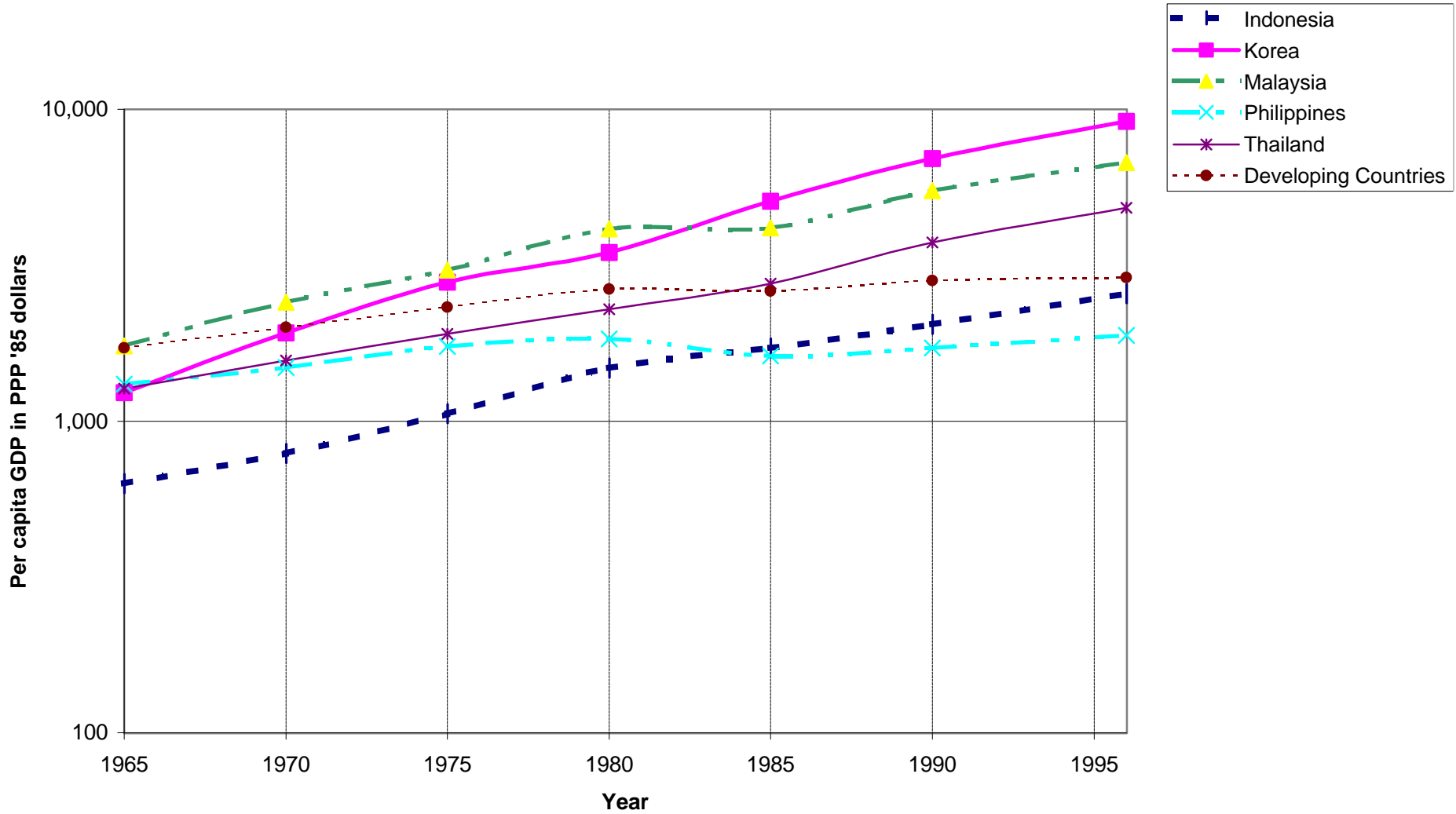
**Figure 1:**  
**Real GDP Growth Rate Trends, Argentina and Mexico**



**Figure 2**  
**Argentina and Mexico:**  
**Quarterly Stock Price Index (US\$)**



**Figure 3:**  
**Per Capita GDP in 5 Asian Countries: 1965-1995**  
**(PPP 1985 dollars)**



Source: Summers-Heston 5.6 and World Bank.

**Figure 4:**  
**Real Exchange Rates: June, 1997 -March,1998**

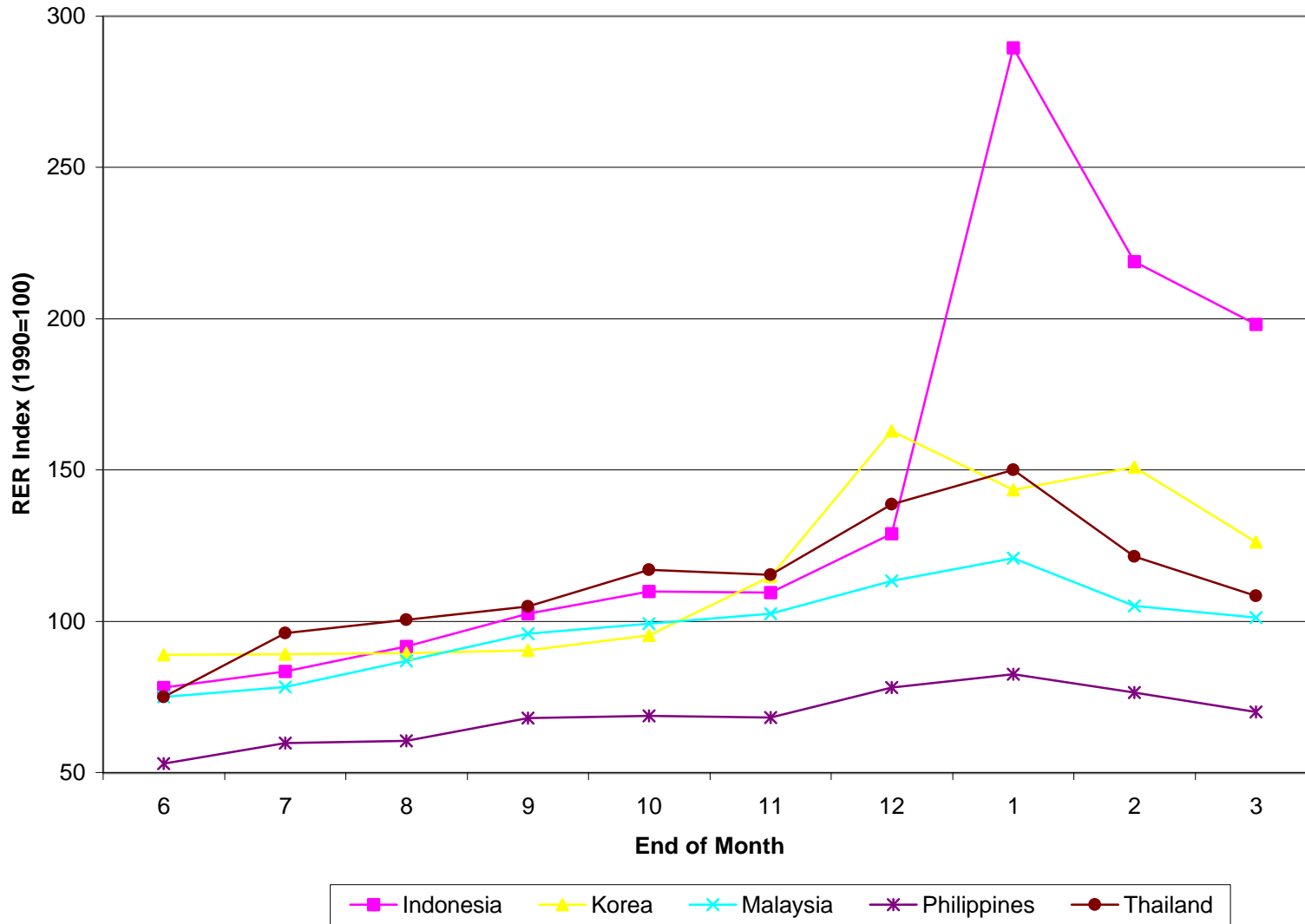
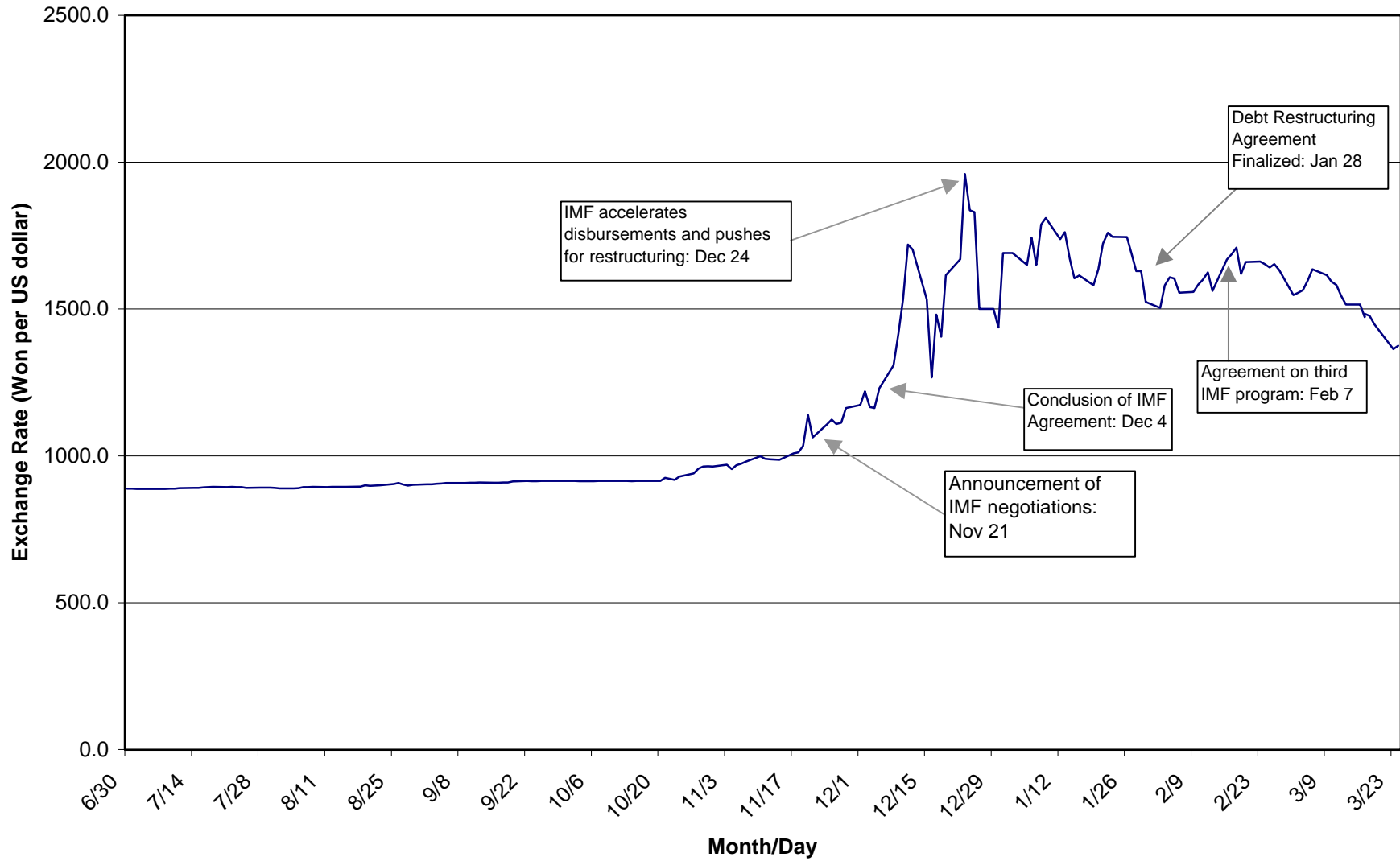
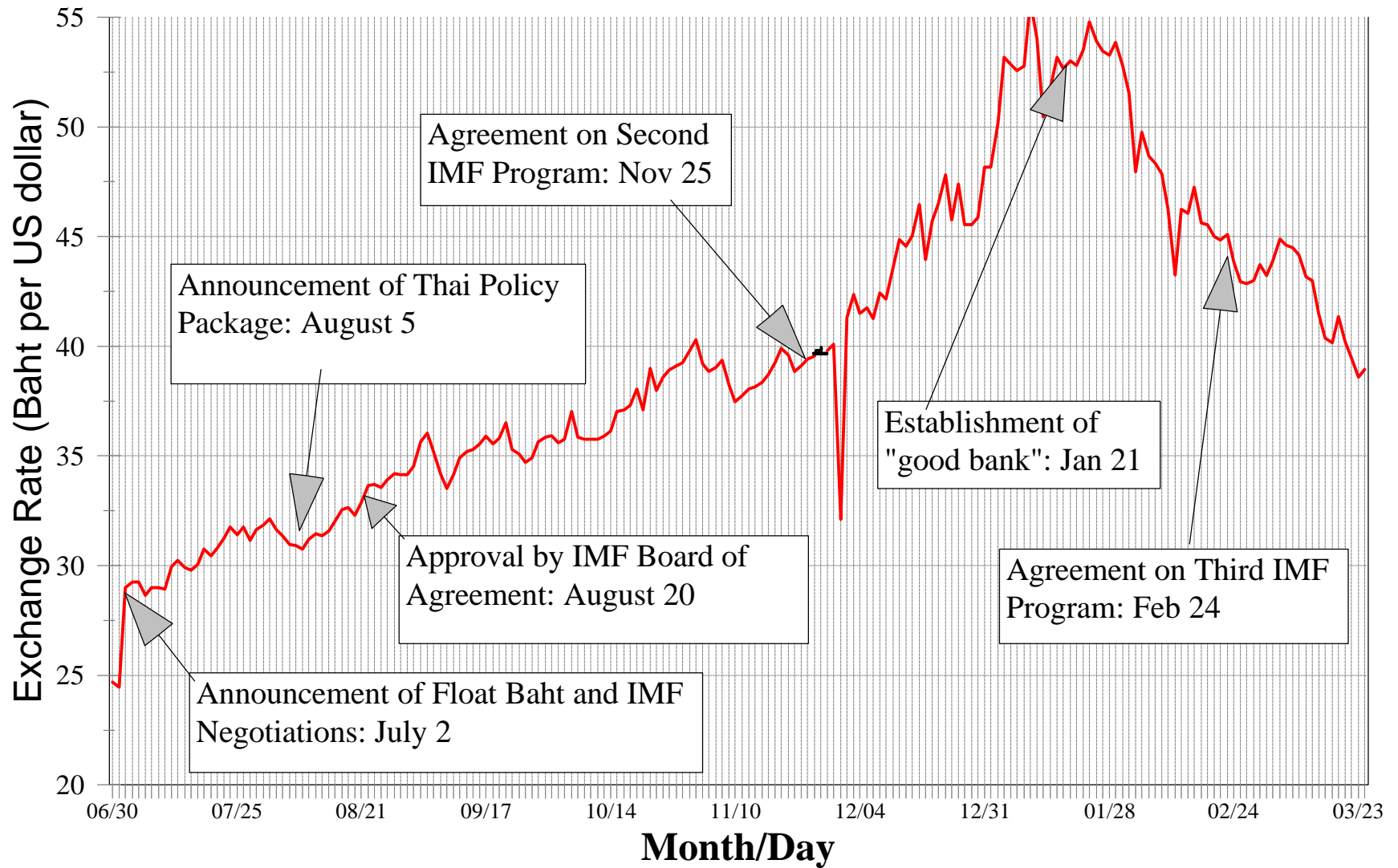


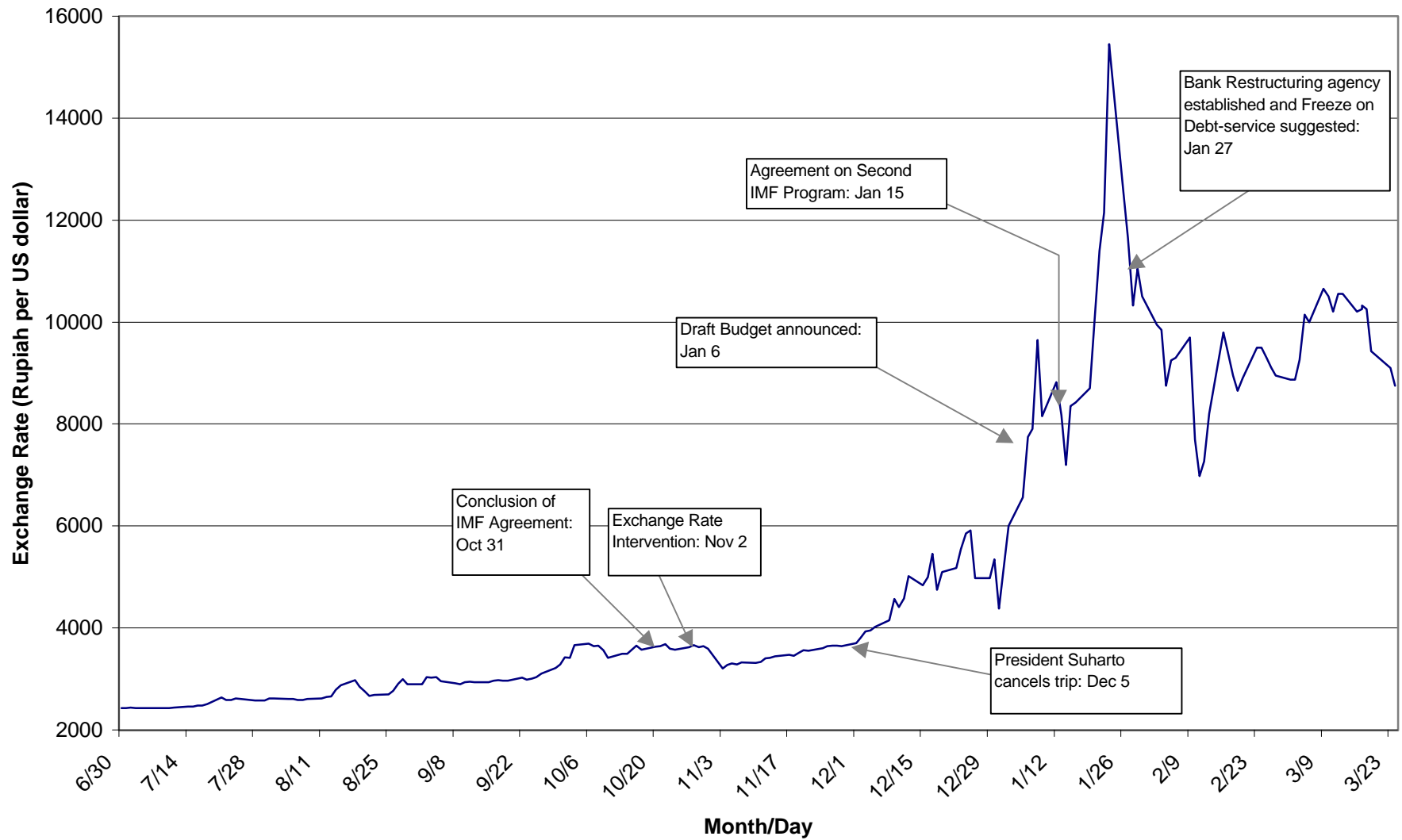
Figure 5. Exchange Rate: Korea



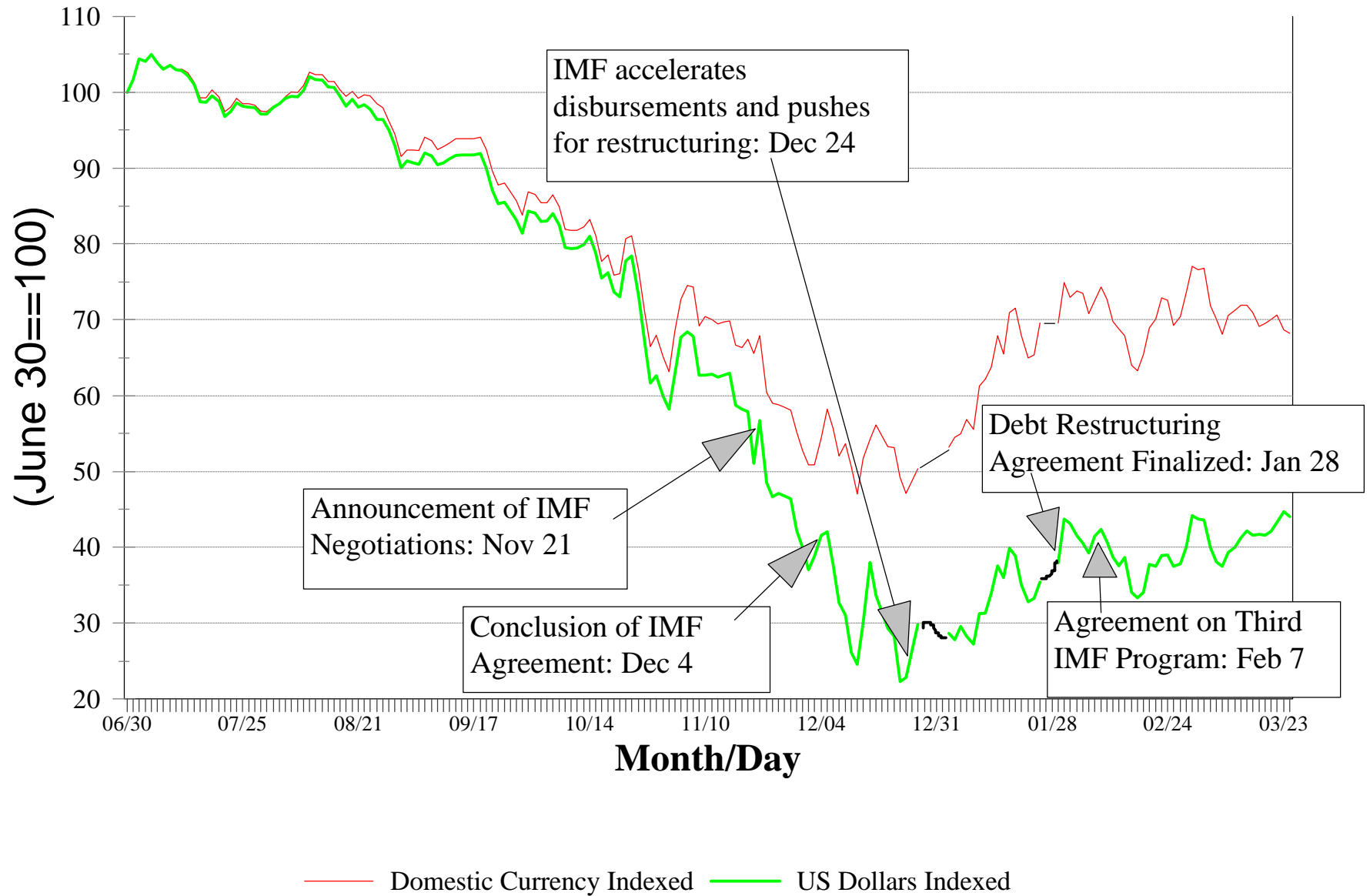
# Figure 6. Exchange Rate: Thailand



**Figure 7. Exchange Rate: Indonesia**

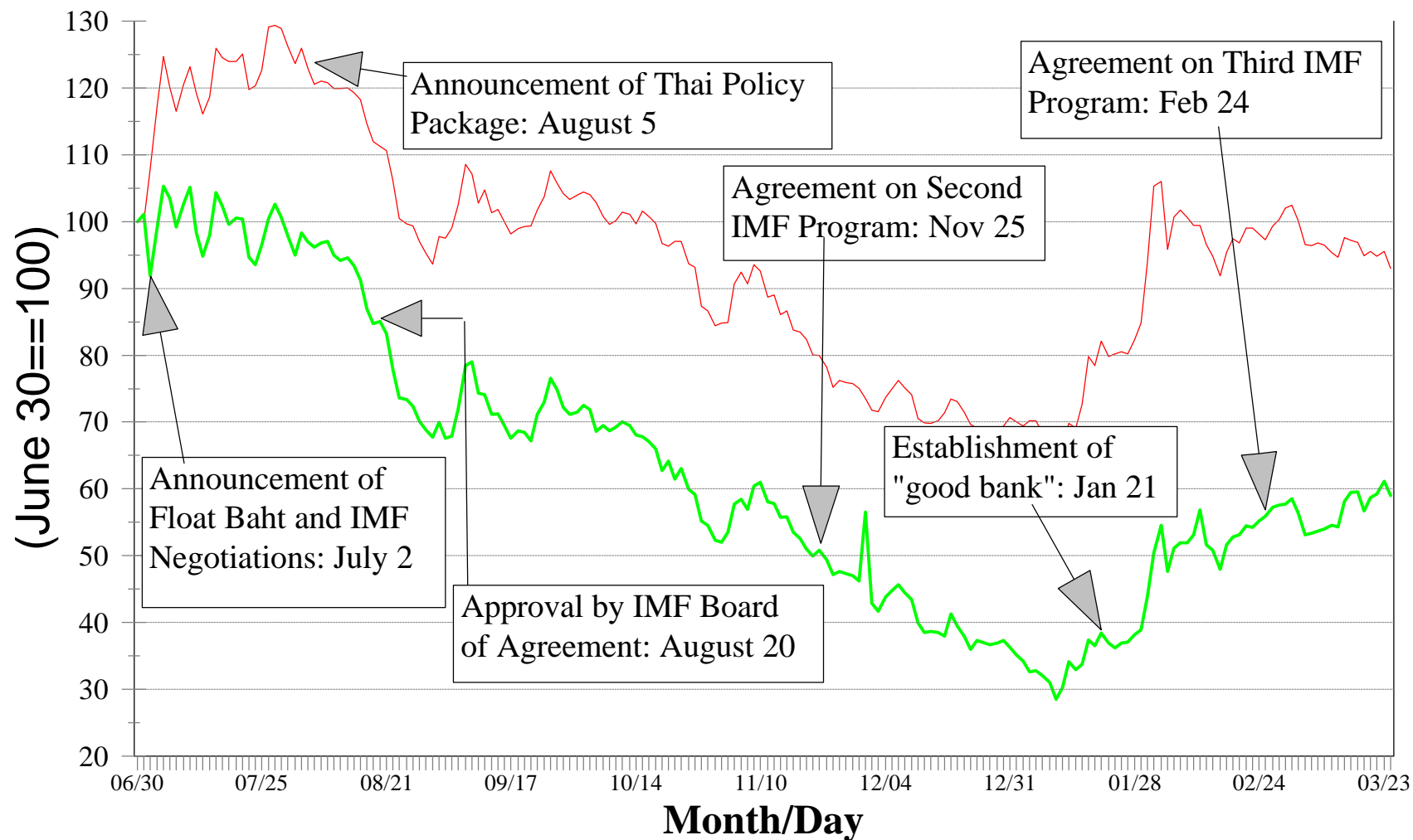


# Figure 8. Stock Market Indices: Korea





# Figure 9. Stock Market Index: Thailand



— Domestic Currency Indexed — US Dollars Indexed

**Figure 10. Stock Market Index: Indonesia**

