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THE ONSET OF THE EAST ASIAN FINANCIAL CRISIS

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ABSTRACT

This paper provides an early diagnosis of the financial crisis in Asia, focusing on the empirical record in the lead-up to the crisis. The main goal is to emphasize the role of financial panic as an essential element of the Asian crisis. At the core of the crisis were large-scale foreign capital inflows into financial systems that became vulnerable to panic. The paper finds that while there were significant underlying problems and weak fundamentals besetting the Asian economies at both a macroeconomic and a microeconomic level, the imbalances were not severe enough to warrant a financial crisis of the magnitude that took place in the latter half of 1997. A combination of panic on the part of the international investment community, policy mistakes at the onset of the crisis by Asian governments, and poorly designed international rescue programs turned the withdrawal of foreign capital into a full-fledged financial panic, and deepened the crisis more than was either necessary or inevitable.

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"Yet it is also true that small events at times have large consequences, that there are such things as chain reactions and cumulative forces. It happens that a liquidity crisis in a unit fractional reserve banking system is precisely the kind of event that can trigger — and often has triggered — a chain reaction. And economic collapse often has the character of a cumulative process. Let it go beyond a certain point, and it will tend for a time to gain strength from its own development as its effects spread and return to intensify the process of collapse. Because no great strength would be required to hold back the rock that starts a landslide, it does not follow that the landslide will not be of major proportions."

Milton Friedman and Anna Schwartz

A Monetary History of the United States, 1867-1960

I. Introduction

The East Asian financial crisis is remarkable in several ways. The crisis hit the most rapidly growing economies in the world, and prompted the largest financial bailouts in history. It is the sharpest financial crisis to hit the developing world since the 1982 debt crisis. It is the least anticipated financial crisis in years. Few observers gave much chance a year ago that East Asian growth would suddenly collapse.[1] The search in on for culprits within Asia -- corrupt and mismanaged banking systems, lack of transparency in corporate governance, the short-coming of state-managed capitalism. At least as much attention, if not more, should be focused on the international financial system. The crisis is a testament to the shortcomings of the international

capital markets and their vulnerability to sudden reversals of market confidence. The crisis has also raised serious doubts about the IMF's approach to managing financial disturbances originating in private financial markets. Perhaps most importantly, the turmoil demonstrates how policy mis-steps and hasty reactions by governments, the international community, and market participants can turn a moderate adjustment into a financial panic and a deep crisis.

One ironic similarity between the Mexican (1995) and Korean (1997) crises is that both countries joined the OECD on the eve of their respective financial catastrophes. There is a hint of explanation in that bizarre fact. Both countries collapsed after a prolonged period of market euphoria. In the case of Mexico, a high-quality technocratic team had led the country through stabilization, privatization, liberalization, and even free trade with the United States. Indeed, the supposed cornerstone of Mexico's coming boom was admission to NAFTA, which occurred in November 1993, just months before the collapse. In Korea, a generation-long success story of industrial policy and export-led growth had culminated in Korea's admission to the exclusive club of advanced economies. Korea had even succeeded in democratization without jeopardy to its enviable growth record. In both countries, collapse came not mainly because of a prolonged darkening economic horizon, but because of a euphoric inflow of capital that could not be sustained.[2]

In this sense, the Asian crisis can be understood as a "crisis of success,' caused by a boom of international lending followed by a sudden withdrawal of funds. At the core of the Asian crisis were large-scale foreign capital inflows into financial systems that became vulnerable to panic. However, this is more than the bursting of an unwanted bubble (cf.

Krugman, 1998). Much of the economic activity supported by the capital inflows was highly productive, and the loss of economic activity resulting from the sudden and enormous reversal in capital flows has been enormous. There were few, if any expectations, of a sudden break in capital flows. By early 1997, markets expected a slowdown — even a devaluation crisis — in Thailand, but not in the rest of Asia. Indicators as late as the third quarter of 1997 did not suggest a financial meltdown of the sort that subsequently occurred. A combination of panic on the part of the international investment community, policy mistakes at the onset of the crisis by Asian governments, and poorly designed international rescue programs have led to a much deeper fall in (otherwise viable) output than was either necessary or inevitable.

This paper provides an early diagnosis of the financial crisis in Asia. It builds on existing theories, and focuses on the empirical record in the lead-up to the crisis. The main goal is to emphasize the role of financial panic as an essential element of the Asian crisis. To be sure, there were significant underlying problems besetting the Asian economies, at both a macroeconomic and microeconomic level (especially within the financial sector). But these imbalances were not severe enough to warrant a financial crisis of the magnitude that took place in the latter half of 1997. In our view, certain policy choices and events along the way exacerbated the panic and unnecessarily deepened the crisis. We explore this possibility by examining the initial imbalances and weaknesses, the buildup to the crisis, and the events that led to the financial panic in the latter part of the year. The paper covers the period only till the end of 1997, and it does not aim to provide policy recommendations for the future, either regarding the Asian crisis or the reorganization of the international financial system to reduce the

likelihood of such crises in the future. These goals are left for a companion study (Radelet and Sachs, 1998).

The argument proceeds in VII sections. In Section II we provide a general overview of financial crises and their diagnosis. Section III gives a description of recent macroeconomic and financial events in the crisis countries. In Section IV we show that the crisis was not anticipated by key market participants, at least till the end of 1996, and in general not till mid-1997, following the devaluation of the Thai Baht. Section V describes the triggering events of the crisis. Section VI discusses, and critiques, the early IMF role in policy management in the Asian crisis (up to December 1997). Section VII offers some observations about future directions of research in the concluding section.

II. Diagnosing Financial Crises

Not all financial crises are alike, even though superficial appearances may deceive. Only a close historical analysis, guided by theory, can disentangle the key features of any particular financial crisis, including the Asian crisis. We identify five main types of financial crises, which may in fact be intertwined in any particular historical episode:

1) *Macroeconomic policy-induced crisis*: Following the canonical Krugman (1979) model, a balance of payments crisis (currency depreciation; loss of foreign exchange reserves; collapse of a pegged exchange rate) arises when domestic credit expansion by the central bank is inconsistent with the pegged exchange rate. Often, as in the Krugman model, the credit expansion results from the monetization of budget deficits. Foreign exchange reserves fall

gradually until the Central Bank is vulnerable to a sudden run, which exhausts the remaining reserves, and pushes the economy to a floating rate.

2) *Financial panic*: Following the Dybvig-Diamond (1983) model of a bank run, a financial panic is a case of multiple equilibria in the financial markets. A panic is an adverse equilibrium outcome in which short-term creditors suddenly withdraw their loans from a solvent borrower. In general terms, a panic can occur when three conditions hold: short-term debts exceed short-term assets; no single private-market creditor is large enough to supply all of the credits necessary to pay off existing short-term debts; and there is no lender of last resort. In this case, it becomes rational for each creditor to withdraw its credits if the other creditors are also fleeing from the borrower, even though each creditor would also be prepared to lend if the other creditors were to do the same. The panic may result in large economic losses (e.g. premature suspension of investment projects, liquidation of the borrower, creditor grab race, etc.).

3) *Bubble collapse*: Following Blanchard and Watson (1982) and others, a stochastic financial bubble occurs when speculators purchase a financial asset at a price above its fundamental value in the expectation of a subsequent capital gain. In each period, the bubble (measured as the deviation of the asset price from its fundamental price) may continue to grow, or may collapse with a positive probability. The collapse, when it occurs, is unexpected but not completely unforseen, since market participants are aware of the bubble and the probability distribution regarding its collapse. A considerable amount of modeling has examined the conditions in which a speculative bubble can be a rational equilibrium.

4) *Moral-hazard crisis*: Following Akerlof and Romer (1996), a moral-hazard crisis arises because banks are able to borrow funds on the basis of implicit or explicit public guarantees of bank liabilities. If banks are undercapitalized or under-regulated, they may use these funds in overly risky or even criminal ventures. Akerlof and Romer argue that the "economics of looting," in which banks use their state backing to purloin deposits is more common than generally perceived, and played a large role in the U.S. Savings and Loan crisis. Krugman (1998) similarly argues that the Asian crisis is a reflection of excessive gambling and indeed stealing by banks that gained access to domestic and foreign deposits by virtue of state guarantees on these deposits.

5) *Disorderly workout*: Following Sachs (1995), a disorderly workout occurs when an illiquid or insolvent borrower provokes a creditor grab race and a forced liquidation even though the borrower is worth more as an ongoing enterprise. A disorderly workout occurs especially when markets operate without the benefit of creditor coordination via bankruptcy law. The problem is sometimes known as a "debt overhang." In essence, coordination problems among creditors prevent the efficient provision of worker capital to the financially distressed borrower, and delay or prevent the eventual discharge of bad debts (e.g. via debt-equity conversions or debt reduction).

The theoretical differences among these five types of crises are significant at several levels: diagnosis, underlying mechanisms, prediction, prevention, and remediation. For example, to the extent that *panic* is important, policy makers face a condition in which viable economic activities are destroyed by a sudden and essentially unnecessary withdrawal of credits. The

appropriate policy response, then, is to protect the economy through lender-of-last-resort activities. Alternatively, if the crisis results from the end of a bubble or the end of moral-hazard-based lending, it may be most efficient to avoid lender-of-last-resort operations, which simply keep the inefficient investments alive. Unfortunately, in real-life conditions, these various types of financial crisis can become intertwined, and therefore are difficult to diagnose. The end of a bubble, for example, may trigger a panic, or a panic may trigger insolvency and a disorderly workout. Attentiveness to these kinds of possibilities is extremely important for policy design.

Table 1 outlines four major considerations in the differential diagnosis and treatment of financial crises. Key distinguishing features are: (1) whether the crisis is anticipated at least in probabilistic terms (e.g. in cases of policy inconsistency, bubble collapse, disorderly workout), or whether the crisis is essentially unanticipated (financial panic); (2) whether the crisis destroys real economic value (e.g. a financial panic or disorderly workout) or instead brings to a close a period of resource mis-allocation (e.g. a collapse of a bubble); (3) whether the crisis mostly involves debtors backed by official resources (e.g. as in moral-hazard-induced banking crises), or debtors that lack state guarantees (e.g. panics which undermine non-bank corporate borrowers); and (4) whether there is a case for official intervention (e.g. as lender of last resort).

Financial panic is rarely the favored interpretation of a financial crisis. The essence of a panic is that a "bad" equilibrium occurs that did not have to happen. Market analysts and participants are much more prone to look for weightier explanations than simply a bad accident. Once in a while, though, a relatively clean test of the panic interpretation occurs. Perhaps the best recent case is the Mexican crisis in 1995. After the Mexican devaluation in December 1994,

the Mexican Government was unable to roll over its short-term dollar-denominated debts (tesobonos). The Government was thrown to the brink of default. An emergency lender-of-last resort operation led by the U.S. Government and the IMF provided the Mexican Government with up to $50 billion to repay the short term debts. The Mexican Government avoided default, repaid the emergency loans early, and resumed economic growth in 1996. *Ex post*, it is difficult to understand the market's failure to roll over $28 billion in tesobonos due in 1995 as anything other than panic in the face of a currency devaluation.

In the following sections, we will point out several reasons to suppose that the Asian financial crisis also has substantial elements of panic and disorderly workout. First, the crisis was largely unanticipated. Although a small number of market participants were concerned *ex ante*, the vast majority of players did not view the Southeast Asian economies as bubbles waiting to burst. Second, the crisis involved considerable lending to debtors that were not protected by state guarantees, and those loans are now going bad in large numbers. To be sure, many borrowers did have explicit or implicit guarantees (or thought they did), but a substantial number of purely private banks and firms without such insurance are now facing bankruptcy. Third, the crisis has led to a seizing up of bank credits to viable enterprises, especially through the lack of working capital for exporters. Fourth, the market has reacted most positively to initiatives that bring creditors and debtors together for orderly workouts, such as in Korea. Fifth, the triggering events of the crisis involved the sudden withdrawal of investor funds to the region, rather than simply a deflation of asset values (although falling land and stock prices contributed to the crisis, especially in Thailand).

III. Macroeconomic and Financial Processes in the Asian Crisis

The Asian financial crisis has involved several interlinked phenomena. The single most dramatic element -- perhaps the defining element -- of the crisis has been the rapid reversal of private capital inflows into Asia. Table 2, reproduced from a recent report by the Institute for International Finance, gives an estimated breakdown of the reversal of flows for the five East Asian countries hit hardest by the crisis (Indonesia, Korea, Malaysia, Philippines, and Thailand, hereafter referred to as the Asian-5). According to these estimates, net private inflows dropped from $93 billion to -$12.1 billion, a swing of $105 billion on a combined pre-shock GDP of approximately $935 billion, or a swing of 11 percent of GDP. $77 billion of the $105 billion decline in inflows came from commercial bank lending. Direct investment remained constant at around $7 billion. The rest of the decline has come from a $24 billion fall of portfolio equity and a $5 billion decline in non-bank lending.

The sudden drop in bank lending followed a sustained period of large increases in cross-border bank loans, as shown in Tables 3 and 4. Again taking the Asian-5 countries as our point of reference, total foreign bank lending to these countries expanded from $210 billion at end-1995, to $261 billion at the end-1996, an increase of 24 percent in a single year. Between the end of 1996 and mid-1997, bank lending expanded further to $274 billion, or an increase of 10 percent at an annual rate. The growth in bank loans clearly slowed during the first half of 1997, and actually declined slightly in the case of Thailand. Nonetheless, the continued increase in bank lending till the mid-1997 is an important piece of evidence: outside of Thailand, the foreign

banks were not running until the last moment, though the pace of bank lending was abating somewhat. Since net outflows of bank loans reached $21 billion for 1997 as a whole according to the IIF, and since inflows during the first half of the year were $13 billion according to the BIS, we can surmise that outflows during the second half of the year were approximately $34 billion (note that BIS data for the second half of 1997 have not yet been released). With a combined pre-shock GDP of around $935 billion, net inflows of bank loans amounted to around 5.9 percent of GDP in 1996, 2.8 percent of GDP in the first half of 1997, and -3.6 percent of GDP in the second half of 1997. Thus, the swing in bank loans between 1996 and the second half of 1997 is a remarkable 9.5 percent of GDP. It is very difficult to attribute a reversal of this magnitude in such a short period of time to changes in underlying economic fundamentals.

The bank lending went to both domestic banks and domestic non-bank borrowers during this period, as shown in Table 3. In Korea, lending was heavily to banks; in Indonesia, lending was heavily to non-bank corporate borrowers. In all countries except Korea, bank lending to non-banks exceeded lending to banks. We might suppose that international banks assumed that *lending to banks* was at least partly protected by lender-of-last-resort facilities, both domestic (e.g. from the central bank) and international (e.g. from the IMF). The same might be true for a portion of private sector firms with particularly strong political connections. There is no reason to suppose, however, that foreign banks expected such guarantees on lending to the majority of non-bank private corporations. Notably, lending to non-banks as well as to banks continued to increase strongly until mid-1997.

The withdrawal of foreign capital has had several interlocking macroeconomic and microeconomic effects. Most immediately and dramatically, exchange rates depreciated, after a defense of a pegged exchange rate (as in Thailand and the Philippines[3]) or a crawling peg (as in Indonesia, Malaysia, and Korea). Domestic interest rates soared upon the withdrawal of foreign credits, leading directly to a tightening of domestic credit conditions even before central banks reacted to the crisis.[4] Since the withdrawal of credits immediately led to a sharp reduction of absorption (which had been financed by foreign capital inflows), not only the nominal exchange rate, but also the real exchange rate (defined as the ratio of tradeable to non-tradeable goods prices) depreciated.

The combination of real exchange rate depreciation and sharply higher interest rates led to a rapid rise in non-performing loans (NPLs) in the banking sectors of the Asian economies, especially as real estate projects went into bankruptcy. In many cases, real estate developers had borrowed in unhedged dollar-denominated loans from domestic banks to finance real estate projects. These projects failed under the weight of currency depreciation. Moreover, to the extent that banks had open short positions in dollars (i.e. net dollar borrowers), the exchange rate depreciation led to a sudden loss of bank capital. The combination of sharply rising NPLs and direct balance sheet losses due to currency depreciation has wiped out a substantial portion of the market value of bank capital in Indonesia, Thailand, and Korea.

The sudden withdrawal of foreign financing was itself an enormous contractionary shock. The resulting collapse of domestic bank capital added sharply to the contraction by severely restricting bank lending. Banks cut back their own lending both because the banks themselves

were illiquid (as a result of the withdrawal of foreign credits, and in some cases, deposits) and because they were de-capitalized. The de-capitalized banks restricted their lending in order to move towards capital-adequacy ratios required by bank supervisors and reinforced by the IMF. The rush to improve bank capital adequacy took on urgent proportions in Indonesia, Korea, and Thailand, after the IMF threatened to require the closure of undercapitalized banks. This threat was credible in view of the moves to suspend or close financial companies and banks throughout the region at the start of each of the IMF adjustment programs.

As described below, the IMF programs up till the end of 1997 apparently added both to the panic and to the contractionary force of the financial crisis. The IMF programs generally called for six key actions: immediate bank closures; quick restoration of minimum capital-adequacy standards (especially in the first Thai and Indonesian programs); tight domestic credit; high interest rates on central bank discount facilities; fiscal contraction; and non-financial sector structural changes. Of all of these measures, the bank closures, capital adequacy enforcement, and tight credit were probably the most consequential, in that they probably added to the virulence of the banking panics that were already underway in these economies. Domestic bank lending stopped abruptly in the three countries with Fund programs (Indonesia, Korea, and Thailand). There were widespread anecdotes of firms unable to obtain working capital, even in support of confirmed export orders from abroad.

On December 22, 1997, Moody's downgraded the sovereign debt of all three of these countries, putting them below investment grade. The "junk bond" status of these countries immediately applied to the banking and non-bank corporate sectors as well, by virtue of the

"sovereign ceiling" doctrine, according to which all domestic enterprises must have a credit rating no higher than the sovereign. There were two major immediate implications of the downgrade. First, most of the commercial banks in these countries could no longer issue internationally recognized letters of credit for domestic exporters and importers, since the banks were all rated as sub-investment grade. Second, the downgrading immediately prompted a further round of debt liquidations, since many portfolio managers are required by law to maintain investments only in investment-grade securities. Moreover, the downgrade triggered various put options linked to credit ratings, enabling borrowers to call in loans immediately upon the downgrade.

As a result of the creditor panic, the bank runs, and the sovereign downgrades, Korea, Indonesia and Thailand were thrown into partial debt defaults. In the case of Korea, these defaults were initially handled by an emergency standstill of debt repayments, followed by a concerted rollover of the short-term debt into longer term instruments backed by Korean Government guarantees. This rollover applies to around one-third of the Korean external debt falling due in 1998. In the case of Indonesia, the defaults were unilateral, and have not been followed to this point by any negotiated arrangements. In Thailand, the extent of outright default remains unclear, though certain payments by non-bank borrowers are clearly in effective default.

IV. Why the Asian Crisis was not Predicted

Capital Flows into Southeast Asia

We have stressed that at the core of the Asian financial crisis were the massive capital inflows that were attracted into the region during the 1990s. Capital inflows increased from an average of 1.4 percent of GDP between 1986-90 to 6.7 percent between 1990-96. In Thailand, capital inflows averaged a remarkably high 10.3 percent of GDP between 1990-96. The bulk of Thailand's inflows came in the form of offshore borrowing by banks and private corporations, which together averaged 7.6 percent of GDP in the 1990s. Portfolio capital inflows (1.6 percent of GDP) and FDI (1.1 percent of GDP) were substantially smaller. Although Thailand was the most extreme case, across the region the bulk of the capital inflows were from offshore borrowing by banks and the private sector. Malaysia is the only exception, where extraordinarily large FDI inflows (6.6 percent of GDP) were larger than bank and private sector borrowing (3.6 percent of GDP). In each country, net portfolio capital inflows averaged less than 2 percent of GDP. In Malaysia, where short-term foreign investors have been harshly criticized, net portfolio inflows were either very small or actually negative in each year of the 1990s. Importantly, net government borrowing was less than half a percent of GDP in each country, except in the Philippines, where it averaged 1.3 percent of GDP. Banks (in Thailand and Korea) and private corporations (in Indonesia) were the main forces behind the capital inflows, not the government.

The surge in capital inflows had its roots in changes in both internal economic policies and world markets. Internationally, capital market liberalization in the industrialized countries facilitated a greater flow of funds to emerging markets around the globe, including the Philippines. New bond and equity mutual funds, new bank syndicates, increased Eurobond

lending and other innovations allowed capital to flow across borders quickly and easily. In addition, low interest rates in the U.S. and Japan favored increased outward investment from these countries to Southeast Asia and other emerging markets. Domestically, five broad factors contributed to the capital flows:

- Continuing, and in some cases increasing, high economic growth gave confidence to foreign investors;
- Wide-ranging financial deregulation made it much easier for banks and domestic corporations to tap into foreign capital to finance domestic investments;
- Financial sector deregulation was not accompanied by adequate supervision, especially in Thailand. Lax supervision created an environment conducive to high rates of foreign borrowing, since it allowed banks to take on substantial foreign currency and maturity risks;
- Nominal exchange rates were effectively pegged to U.S. dollar, with either limited variation (Thailand, Malaysia, Korea, and the Philippines) or very predictable change (Indonesia). Predictable exchange rates reduced perceived risks for investors, furthering encouraging capital inflows;
- Governments gave special incentives that encouraged foreign borrowing, even after concern arose about "hot money" flows in the early 1990s. Banks operating in the Bangkok International Banking Facility (BIBF), which operated exclusively in borrowing and lending foreign currencies, received special tax breaks. In the Philippines, banks are subject to a tax rate of 10 percent for onshore income from foreign exchange loans,

whereas other income is subject to the regular corporate income tax rate of 35 percent. Philippine Banks also face no reserve requirements for foreign currency deposits, while for peso deposits the reserve requirement currently is 13 percent, down from 15 percent in 1996 (IMF, 1997a).

Capital flows from abroad can be an important engine for growth, if they are channeled to productive investment activities. However, foreign capital flows can make macroeconomic management much more complex when they are large, volatile, unsustainable, and/or poorly utilized. Macroeconomic pressures tend to manifest themselves through two channels:

- Capital inflows lead to a real appreciation of the exchange rate, and to an expansion of non-tradeables sectors at the expense of tradeables sectors. Even though this real appreciation tends to be temporary (since it is reversed when the net foreign borrowing is serviced in future years), new investments tend to be drawn towards nontradeables, partly as a result of myopic expectations regarding real exchange rate trends.
- High levels of capital inflows place new pressures on underdeveloped financial systems. In both commercial banks (which are intermediating rapidly growing levels of foreign financing), and central banks (which are trying to regulate and supervise rapidly growing activities), institutional change generally cannot keep pace with the high levels of international capital flows. There are ample conditions for excessive risk taking, poor banking judgment, and even outright fraud.

Both of these kinds of pressures, over time, contribute to increasing financial risk. Following a liberalization and a rapid inflow of capital, some slowdown of foreign borrowing is to be expected. The most profitable investment opportunities are seized early on; overinvestment in nontradeables (e.g. real estate) becomes evident; and a slowdown in export growth gives pause to both foreign and domestic investors. There is no reason, however, to expect a sudden and sharp reversal of capital flows. The preceding inflow of foreign funds into Asia was a precondition for the subsequent crisis, but the capital inflows do not, by themselves, provide an explanation of the crisis that followed.

Signs that the Crisis was Unpredicted

One of the most unusual aspects of the Asian crisis is the extent to which it was unpredicted by market participants and market analysts. Although some observers did anticipate the possibility of a crisis (see, for example, Park, 1996), such warnings were rare. This actually tells us a lot. Just as the silence of the hound alerted Sherlock Holmes to the real culprit in The Silver Blaze, the fact that the financial markets did not signal alarm helps us to understand the real nature of the current crisis. All signs point to a very recent and dramatic shift in expectations. For example, capital inflows remained strong through 1996, and in most cases till mid 1997. The only exception to this is found in the equity markets in Thailand and Korea, where foreign investors became uneasy in 1996. In Malaysia, both bank and equity investors showed optimism until 1997. Equity markets began a rather steep decline in March 1997, while

bank inflows continued to be very strong at least till mid-year. In Indonesia, both the stock market and bank lending remained strong till mid-1997.

Another indicator of market sentiment is the risk premia attached to loans to the emerging market economies. To the extent that markets anticipated the growing risks of capital inflows, lending terms and conditions would have tightened in advance of the onset of the crisis. In fact, the evidence suggests just the opposite. A recent study by William Cline and Kevin Barnes (1998) at the Institute for International Economics found that bond spreads (i.e., the interest rate premium over U.S. Treasury securities) fell in emerging markets, including Southeast Asia, between mid-1995 (as the Mexico crisis came to a close) and mid-1997 to levels well below what could be justified by economic fundamentals in these countries. Similarly, syndicated loan spreads were also low and falling before the crisis. In Indonesia, Malaysia, the Philippines, and Korea, syndicated loan spreads were lower in early 1997 than they had been in 1996. Only in Thailand did spreads begin to rise somewhat in early 1997, but from a very low base. The spread on Thai sovereign bonds stood at an extremely low 39 basis points in the second quarter of 1996, and was just 43 basis points at the end of 1996. The spread began to rise in early 1997, but was still just 79 basis points in August, a month after the crisis had begun.

The credit rating agencies such as Standard & Poor's and Moody's provide an ongoing assessment of credit risk in the emerging markets. We may therefore examine, directly, whether there was a recognition of increasing risk in these markets. If the markets expected a financial crisis and public sector bailouts, the ratings of sovereign bonds should have fallen in the run-up to the crisis. Instead, upon examining data such as those in table 5, we find that the rating

agencies did not signal increased risk until after the onset of the crisis itself. Long term sovereign debt ratings remained unchanged throughout 1996 and the first half of 1997 for each of the Asian countries except the Philippines, where debt was actually *upgraded* in early 1997. In each country, the outlook was described as "positive" or "stable" through June 1997. Only many weeks after the crisis had begun did these ratings agencies downgrade the regions' debt. At that point, rather than helping creditors assess future risk, the downgrades simply pushed interest rates higher and added to the panic.

Aside from credit rating agencies, a number of independent firms provide ongoing risk analysis. One widely circulated assessment is the Euromoney Country Risk Assessments, shown in Table 6. We can trace the changes in risk attached to the key Asian economies according to the Euromoney rankings. In most cases, Asia's country rankings changed little or even improved (in the cases of the Philippines and South Korea) between March 1993 and March 1997, providing little warning of the growing risks to investors. Even in September 1997, after the crisis had begun, the Philippines' ranking continued to improve, and Indonesia's and Malaysia's remained steady. Only Thailand's and South Korea's rankings fell sharply. Rankings for the other countries did not tumble until December, five months after the onset of the crisis. Note that the country rankings for Singapore (from 3rd in March 1997 to 16th in December 1997) and Japan (from 1st in March 1993 to 18th in December 1997) have both fallen sharply.

The leading investment banks also provide ongoing forecasts of overall economic performance and market returns. Therefore, we can look at the major forecasts to see whether there were growing indications of risk in the lead-up to the crisis. Table 7 shows the export and

exchange rate forecasts as produced by Goldman Sachs, perhaps the most capable of all the investment banks in the region. These forecasts show the extent to which the dramatic slowdown in export growth in 1996 and 1997 was unanticipated. Even after the poor 1996 performance, analysts expected a rebound in 1997 (except in Thailand), which was not forthcoming (except in the Philippines). With regard to exchange rates, no one in the markets anticipated the extent to which currencies would depreciate, even once the crisis began. The August 1997 forecasts shown in Table 7b -- produced one month after the crisis had begun in Thailand -- show little expectation of the slide which took place in the following months.

Another measure of expectations for the region may be found in IMF reports on the Asian economies. The IMF makes two kinds of public assessments: overall market forecasts, as presented in the its periodic World Economic Outlooks, and country assessments, generally contained in the reports of Executive Board discussions of Article IV consultations with member countries. With regard to the market forecasts, the IMF gave very little indication of a sense of macroeconomic risk to the Asian region. As late as the October 1997 World Economic Outlook (IMF, 1997b), the IMF predicted 6.0 percent growth for Korea in 1998, and 7.4 percent for developing Asia (or 5.4 percent for developing Asia excluding China and India). These marked a predicted slowdown of about 1.5 percentage points relative to 1995.

With regard to the Article IV consultations, the 1997 IMF Annual Report (IMF, 1997c) contains summaries of IMF Executive Board discussions on Indonesia, Korea, and Thailand that took place during the second half of 1996. Since the Annual Report is not completed until much later (transmitted in July 1997), the IMF staff may update the summary with an additional

paragraph in the event of dramatic changes in policies or economic circumstances. Thus, we may interpret the summaries as conveying the basic attitude of the IMF up to the date of the Annual Report, i.e. until mid-1997. In general, the IMF Executive Board expressed concerns about the Asian economies, but in the context of overall optimism. There are several common features in the analysis of the three countries. The IMF recommends: (1) more flexible exchange rates; (2) improved banking sector supervision; (3) tightened fiscal policy; and (4) increased the openness to capital flows. The most explicit concerns were raised in the case of Indonesia; the least, in the case of Korea. But in no case did the Board express major concerns. Some excerpts of the Board discussions are included in the Appendix.

Stock prices provide the only indication of growing concern among market participants in the months preceding the crisis. The Thai stock market fell continuously after January 1996, a full 18 months before the crisis began. The main index fell 40 percent in 1996 alone, and dropped an additional 20 percent in the first six months of 1997 as concern grew over the health of property companies and financial institutions. The Seoul bourse also fell sharply during 1996 and early 1997. In the case of Thailand, the stock market decline was matched by a slight decline in foreign bank lending in the first half of 1997. In the case of Korea, foreign bank lending continued to rise in the first half of 1997, albeit at a slower rate than in 1996. In Indonesia, by contrast, both the stock market and bank lending show continued confidence until mid-1997. In Malaysia, the stock market began to turn down in March, while foreign bank lending rose very

strongly in the first half of 1997 (increasing by a remarkable 29.7 percent in the six-month period).

Why Didn't the Alarm Bells Ring?

One reason that the crisis was largely unanticipated by international lenders and most market observers was that many of the signals that analysts normally associate with impending problems showed little sign of deterioration. Most fundamental aspects of macroeconomic management remained sound throughout the early 1990s. Government budgets, which were at the center of economic crises in Latin America in the 1980s, registered regular surpluses in each country. This will be an important fact to remember when we turn to appropriate solutions for addressing the crisis. While governments may have been too enthusiastic in promoting large-scale infrastructure investment financed by foreign inflows, and while there are no doubt important fiscal liabilities outside of the formal budget, all five countries maintained a fairly responsible budgetary position between 1990 and 1996, as shown in Table 8. Thailand's budget reportedly deteriorated markedly in late 1996 and early 1997, partly in response to the crisis itself, rather than as an independent cause. Partly as a result of budgetary prudence, inflation rates have been below 10 percent across the region during the 1990s. Sovereign debt remained at prudent levels, and had been steadily falling in the Philippines and Indonesia, the two countries in the region with historically high levels of sovereign foreign debt.

Similarly, domestic savings and investment rates were very high throughout the region, suggesting that even if foreign capital flows slowed, robust growth could continue. Moreover,

while current account deficits were large, capital inflows were even larger, so foreign exchange reserves were actually growing across the region (except in Malaysia were they leveled off after 1993). Foreign exchange reserves at the end of 1996 were well over four months of imports in each country except South Korea, where they were equivalent to 2.8 months of imports. In Thailand, official figures suggest that reserves reached a seemingly very healthy $38.6 billion at the end of 1996, equivalent to over 7 months of imports (although it is apparently around this time that Thailand began to take forward positions in the foreign exchange market, so the official figures may overstate the actual level of net reserves).

At the same time, world market conditions did not portend a crisis, as they had in Latin America when world interest rates rose, commodity prices were highly volatile, and industrial country growth rates were slow. Indeed, world interest rates have been unusually low in recent years, so that the burden of repaying foreign obligations did not seem onerous. Although some important prices (e.g., semiconductors) slumped, key commodity prices have been relatively stable, so external terms of trade changed little. Of course, the Japanese economy has been very sluggish throughout the 1990s, but the U.S. economy, which is the major market for most of Asia's exports, has been very robust. In sum, the macroeconomic fundamentals across Asia seemed sound, and the usual alarm bells were not ringing. As a result, the crisis was not easily predictable.

Some Signs of Growing Risk

There were, however, several signs of growing financial vulnerability during 1996 and early 1997. In some cases (e.g., growing current account deficits, overvalued exchange rates, and slowing export growth), these signs seemed merely to suggest growing imbalances and the need for a modest adjustment, but not an impending major crisis. In other cases, important indicators appear to have been missed by the market (e.g., rapid expansion of commercial bank credit and growing short term foreign debt).

In line with the high levels of capital inflow, current account deficits were growing increasingly large across the region in the early 1990s, and were far higher than they had been in the late 1980s. Between 1985 and 1989, current account deficits averaged just 0.3 percent of GDP in the five countries (table 9). In fact, South Korea and Malaysia had current account *surpluses* of 4.3 percent and 2.4 percent of GDP, respectively. The largest deficit was Indonesia's 2.5 percent of GDP, which resulted primarily from the fall in world petroleum prices in the mid-1980s. By contrast, between 1990-96, current account deficits averaged 4.0 percent of GDP, and in most countries were rising. Only Indonesia's deficit remained basically unchanged relative to the earlier period, although it rose slightly to 3.5 percent of GDP in 1995 and 1996. Korea's current account position shifted by 6 percentage points of GDP, which is a very large change, but the deficit still averaged less than 2 percent of GDP, which appeared prudent. However, in 1996 the deficit abruptly grew to 4.8 percent of GDP. Malaysia's deficit increased by 8 percentage points of GDP, Thailand's by nearly 5 percentage points, and the Philippines' by about 3 percentage points (though in this case, the actual increase was probably larger, since certain Philippines' inflows are probably mis-classified as current account receipts). But the

current account deficit is not always a good predictor: Indonesia and South Korea, with the smallest deficits, have arguably been the hardest hit countries, while Malaysia's deficit was much larger in 1995 (8.6 percent of GDP) than it was in 1996 (5.3 percent) or early 1997.

In line with the current account deficits and large capital inflows, exchange rates appreciated significantly in real terms between 1990 and the first quarter of 1997. It is difficult to precisely measure real exchange rates in these countries, since there are no accurate, direct data on the prices of tradable and non-tradable goods, or on labor productivity or labor costs. In Table 10, we show a common approximation in which the real exchange rate is calculated as the ratio $(EP)^*/P$, where P is the home-country consumer price index, $(EP)^*$ is the foreign country wholesale price index expressed in the local currency, by converting the foreign WPI to the domestic currency using the contemporaneous nominal exchange rate.[5] $(EP)^*$ is calculated using a geometric average of prices for the major *developed-country* trading partners.[6] (We calculated alternative measures of the RER using foreign consumer and import prices indices in the numerator, as well as a simple ratio of domestic wholesale to consumer prices indices, with similar results).

In Table 10, we observe a significant real appreciation between 1990 and 1997 Q1 in all five countries. The real appreciation exceeds 25 percent in each of the four Southeast Asian nations, and was especially rapid after 1994, when the US dollar began to appreciate against other major world currencies. Indeed, in many ways the appreciation of the dollar against the yen marked a turning point for Southeast Asia and the beginning of the stage of overvaluation. The appreciation in Korea was a more modest 12 percent (but amounted to over 30 percent

between 1987 and 1997). In fact, the actual real appreciations may have been even larger than these indices indicate, since our proxy for non-tradeables prices (the domestic CPI) does not include property, real estate, and other non-tradables sectors that were booming in the early 1990s.

Despite their simplicity, these indices are informative. Such large appreciations in a relatively short period of time have often been associated with a subsequent balance-of-payments crisis. Nevertheless, we should be careful not to overstate the magnitude of the appreciations. While they signaled the need for some kind of correction, the appreciations were not nearly as large as those in Latin America. Mexico's exchange rate appreciated in real terms by 40 percent between 1988 and 1993, just before its most recent crisis. In Argentina, Brazil, and Chile, exchange rates have appreciated by 45 percent or more since 1990, without the kind of crisis seen in either Mexico or Southeast Asia.

As expected with the real appreciation, export growth rates fell sharply in 1996 and 1997. Export growth, as measured in nominal dollar terms, fell from an average of 24.8 percent in the five countries in 1995 to just 7.2 percent in 1996, and fell further in early 1997. In Thailand, exports were actually lower (by 2 percent) in nominal dollar terms in 1996 than they had been in 1995. (In fact, the slowdown in Thailand's exports was ultimately a critical factor in the reversal of expectations in mid-1997 that launched the crisis). Broadly speaking, the export slowdown should have provided some indication that investment quality was weakening, and that firms would be less able to repay foreign exchange obligations. Nevertheless, the slowdown

was thought to be very short term and accounted for by specific commodities (e.g, semiconductors), rather than a sign of an impending crisis.

Probably the biggest signs of growing risk were in the financial sector. Financial institutions were becoming increasingly fragile throughout the 1990s. Banks strained to keep up with both rapidly growing incomes (and the concurrent demand for more sophisticated financial services) and the huge amounts of capital flowing in from abroad. Credit to the private sector expanded very rapidly, with much of it financed by offshore borrowing by the banking sector. Financial sector claims on the private sector jumped from around 100 percent of GDP in 1990 to over 140 percent in Malaysia, Thailand, and Korea (table 11). In the Philippines, the stock of credit was much smaller (reaching just 49 percent of GDP in 1996), but credit grew by an average of over 40 percent per year from 1993 to 1996. Only in Indonesia did credit growth remain comparatively modest. Both the commercial banks and their supervisors at the central banks had difficulty adapting to these changes.[7]

Apparently much of this credit headed for speculative investments in real estate markets, rather than into increasing productive capacity for manufactured exports as in earlier periods. Although official data show only a small share of private bank credit for real estate, these figures probably understate the true amount, as firms apparently diverted their own working capital and other loans towards real estate. The weaknesses of these financial systems were widely recognized and discussed, both in and out of official circles. We note, for example, the cover story of an April 1993 edition of the *Far East Economic Review* -- published more than four years before the crisis -- which wondered aloud whether Indonesia's new Cabinet would "fix the

banks." But little action was taken to strengthen the banks, and some policy changes (e.g., the establishment of the Bangkok International Banking Facility) actually weakened the system further.

At least part of the expansion in private credit was ultimately financed by commercial bank offshore borrowing. Partial financial liberalization in the late 1980s and early 1990s gave banks much more latitude to act as financial intermediaries and channel foreign money into domestic enterprises. In the Philippines, foreign liabilities of commercial banks skyrocketed from 5.5 percent to 17.2 percent of GDP between 1993 and 1996, and continued to grow rapidly through the middle of 1997 (table 12). In Thailand, these liabilities jumped even more sharply, from 5.9 percent of GDP in 1992 to 28.4 percent of GDP in 1995. Indeed, the net foreign assets of the Thai banking system fell from 14 percent in 1993 to zero in 1995. In Malaysia, foreign liabilities of the banking sector grew rapidly to peak at 19.5 percent of GDP in 1993, before falling off sharply by 1996. These liabilities did not grow as rapidly in Indonesia, where much of the offshore borrowing was undertaken directly by private firms, without using domestic banks as intermediaries (hence the somewhat smaller buildup in commercial bank credit to the private sector in Indonesia). Nonetheless, the risks to the Indonesian economy were similar: rupiah revenue streams were expected to repay dollar liabilities, leaving these firms exposed to significant exchange rate risks.

The sharp increase in foreign borrowing by domestic banks and private corporations is evident from data from the Bank for International Settlements (BIS), as we saw earlier in Table 3. Total obligations to foreign banks of the five countries grew from $210 billion to $260 billion

in 1996 alone. Obligations by the banking sector jumped from $91 billion to $115 billion, even after foreign bank lending to Thai banks had leveled off because of growing concerns about the Thai financial system. Particularly significant is the sharp increase in short-term debt, especially in Indonesia, Thailand, and Korea. The short-term debts owed to banks by these three countries reached $147 billion in 1996. Of course, the actual amount of short-term liabilities were even larger, since these data do not include offshore issues of commercial paper and other non-bank liabilities. The use of short-term foreign currency borrowing to finance domestic investments in real estate and other non-tradeable activities was particularly dangerous. Banks became increasingly vulnerable for at least two reasons. First, by borrowing in foreign exchange and lending in local currencies, the banks were exposed to the risk of foreign exchange losses from a depreciation. Even if the domestic loans were denominated in dollars, borrowers that were not earning foreign exchange (e.g. real estate) faced bankruptcy in the event of depreciation. Second, to the extent that banks borrowed offshore in short-term maturities and lent onshore with longer payback periods, they were exposed to the risk of a run.

A particularly telling indicator of these risks is the ratio of short-term debt to foreign exchange reserves. Essentially, this measure compares a country's short-term foreign liabilities to its liquid foreign assets available to service those liabilities in the event of a creditor run. Table 14 shows this ratio for a large number of countries in mid-1994 (on the eve of the Mexican crisis) and mid-1997 (the outset of the Asian crisis). Mexico and Argentina each had short-term debt in excess of foreign exchange reserves in 1994, indicating their vulnerability to a crisis. In mid-1997 in Indonesia, Thailand, and Korea -- the three countries most severely afflicted by the crisis

-- short-term debt also exceeded available foreign exchange reserves. It is also instructive to note that the ratio exceeded 1.0 in several other countries that were not affected by the crisis (including the Asian countries in 1994). This suggests that short-term debt in excess of reserves does not necessarily cause a crisis, but that it renders a country *vulnerable* to a financial panic. Once a crisis starts, each creditor knows that there are not enough liquid foreign exchange reserves for each short-term creditor to be fully paid, so each rushes to be the first in line to demand full repayment. Under normal circumstances, short-term debts can be easily rolled over. However, once creditors begin to believe that the *other* creditors are no longer willing to roll over the debt, each of them will try to call in their loans ahead of other investors, so as not to be the one left without repayment out of the limited supply of foreign exchange reserves. Even sound corporations may be unable to roll over their debts. Countries with relatively large foreign exchange reserves relative to short term debt (e.g., Taiwan) are much less vulnerable to a panic, since each creditor can rest assured that sufficient funds are available to meet his claims.

Predictability and Explanation of the Crisis

Summarizing the findings of this section, we note following. First, the crisis was not predicted by most market participants and analysts. This fact is supported by data on capital flows, risk premia, credit ratings, IMF reports, and other indicators. The biggest warnings came in Thailand, where the expectations of currency depreciation grew markedly in 1996 and early 1997. Korea also gave off increasing warnings. There were few if any alarm bells in Indonesia, Malaysia, or the Philippines. Second, traditional warning signs (current account deficits,

overvalued exchange rates, export growth) gave some reasons for concern, but the signals were muted and generally ignored. While East Asian currencies had appreciated in real terms in the 1990s, the real appreciation was considerably less than in most of Latin America. Current account deficits were very high in Thailand and Malaysia in 1996, but considerably lower in Indonesia and Korea. Malaysia's current account deficit had declined markedly in 1996 compared with the preceding year.

The biggest indicators of risk were financial, but were generally ignored. Short-term debts to international banks had risen to high levels relative to foreign exchange reserves in Indonesia, Korea, and Thailand. Domestic claims on the private sector (measured as a percent of GDP) had also risen significantly, suggesting growing strains in the banking sector. This was especially the case in Malaysia, the Philippines, and Thailand, and much less so in Indonesia and Korea. These indicators show some growing weaknesses, and point to the need for moderate adjustments in the Asian economies. These imbalances, however, were not large enough to warrant a crisis of the magnitude that has been seen in Asia.

Perhaps the most notable fact, however, is that these financial indicators show the vulnerability to crisis, but do not guarantee the onset of crisis. They seem to be, in short, necessary but not sufficient conditions. In 1994, Indonesia, Korea, and Thailand already had ratios of short-term debt to foreign exchange reserves well in excess of 1.0, but they were not hit by the Tequila shock. In 1997, South Africa evinces major vulnerabilities to panic, but fortunately, without an episode of panic. These patterns may indeed be the best confirmation of the multiple-equilibrium character of financial panics: we can identify conditions of

vulnerability, and the need for modest adjustments, but we can not predict the actual onset of crisis, since the crisis requires a triggering event that leads short-term creditors to expect the flight of other short-term creditors.

V. Triggering Events

The cracks began to appear at almost the same time in Korea and Thailand in early 1997. In January, Hanbo Steel collapsed under $6 billion in debts. Hanbo was the first bankruptcy of a Korean chaebol in a decade. In the months that followed, Sammi Steel and Kia Motors suffered a similar fate. These bankruptcies, in turn, put several merchant banks under significant pressure, since much of the foreign borrowing of these companies had been, in effect, channeled through (and in some cases guaranteed by) the merchant banks. In Thailand, Samprasong Land missed payments due on its foreign debt in early February, signaling the fall in the property markets and the beginning of the end for the financial companies which had lent heavily to property companies. During the ensuing six months, the Bank of Thailand lent over Bt 200 billion ($8 billion) to distressed financial institutions through its Financial Institutions Development Fund (FIDF). As concerns began to mount, the BOT also committed almost all of its liquid foreign exchange reserves in forward contracts, much of it to speculators that correctly guessed that the combination of slow export growth and financial distress would ultimately require a devaluation. By late June, net forward sales of reserves approximately equaled gross reserves. This does not mean that the central bank had run out of usable reserves (since the open forward positions could be closed at a partial, not complete, loss), but usable reserve levels had

fallen sharply. In late June 1997, the Thai Government removed support from a major finance company, Finance One, announcing that creditors (including foreign creditors) would incur losses, contrary to previous announcements and market expectations. This shock accelerated the withdrawal of foreign funds, and prompted the currency depreciation on July 2, 1997. In turn, the Thai baht devaluation triggered the capital outflows from the rest of East Asia.

The proximate causes of the withdrawal differed somewhat across the region.

- Bank failure. In Thailand, the failures of finance companies helped set off the exodus.
- Corporate failure. In Korea, the withdrawal of funds was based on concerns over the health of the corporate sector.
- Political uncertainty. In Korea, Thailand, the Philippines, and Indonesia, political uncertainty hastened the credit withdrawals, since each country faced the potential for a change in government. (Korea and Thailand have both changed governments since the onset of the crisis. A new President will be elected in the Philippines in May 1998. Elections are scheduled for mid-March in Indonesia, though with no chance of a change through the ballot box. Suharto's weakening health, along with the absence of a clear successor, and growing discomfort with economic role played by the President's family -- rather than the president's electoral vulnerability -- are the notable features of the Indonesia political uncertainty).
- Contagion. Many creditors appeared to treat the region as a whole, and assumed that if Thailand was in trouble, the other countries in the region probably had similar difficulties. Part of the contagion effect was the sudden loss of government credibility

throughout the region. After all, the Thai government had pledged for months that Finance One was in good shape, that plenty of foreign exchange reserves were available, and that the baht would not be devalued. Malaysia, the Philippines, and Indonesia were all hit hard by contagion effects.

- International Interventions. Although at times the IMF can help restore confidence in battered economies, it can also send a signal to creditors of impending crisis, leading to an accelerated outflow of foreign funds. This depends especially on the specific measures that the IMF recommends. In the case of the Asian programs, the IMF recommended immediate suspensions or closures of financial institutions, measures which actually helped to incite panic.

The withdrawal of foreign funds triggered a chain reaction which quickly developed into a financial panic. The exchange rate depreciation associated with the withdrawal itself sparked new withdrawals of foreign exchange, as domestic borrowers with unhedged currency positions rushed to buy dollars. Throughout Southeast Asia, few firms had hedged their exposure, since they believed that government would retain a stable exchange rate. In addition, most central banks required that firms seek prior approval before undertaking any hedging, making it somewhat more burdensome for firms to cover their risks (this was not the case, however, in Indonesia). At the same time, as the currency depreciated, foreign lenders became more concerned that their customers would be unable to repay their debts, and began to call in their loans, reinforcing the depreciation.

The withdrawal of funds also set off a liquidity squeeze and a sharp rise in interest rates. As a result, firms that were profitable before the crisis found it difficult to obtain working capital or to remain profitable with significantly higher interest rates. Offshore creditors become concerned about the profitability of their customers and grew increasingly reluctant to roll over short-term loans. The lack of clear bankruptcy laws and workout mechanisms added to the withdrawal of credit, since foreign lenders feared they would have little recourse to collect on bad loans. The banking system quickly came under intense pressure. Non-performing loans rose quickly, and depositors withdrew their funds either out of concern over the safety of the banking system or in order to meet pressing foreign exchange obligations. The losses on foreign exchange exposure and the rise in non-performing loans eroded the capital base of the banks, adding to their stress. In Korea, the fall in the stock market exacerbated the erosion of the capital base, since banks were allowed to hold some of the capital as equity in other companies. As a result, even liquid banks were constrained in their ability to make loans, as they struggled to stay ahead of the minimum capital adequacy standards.

The rapid evolution into panic was aided by policy misjudgements and mistakes across the region. Had Thailand responded to the fall in property prices in early 1997 by floating the baht and moderately tightening monetary and fiscal policies, the Asian financial crisis could have been largely avoided. Thailand and Korea, of course, made the paramount mistake of trying to defend their exchange rate peg until they had effectively exhausted a substantial proportion of their foreign exchange reserves. In Indonesia, the state enterprises were instructed to withdraw a sizeable portion of their deposits from the banking systems and purchase central bank notes,

adding to the intense liquidity squeeze and driving up interest rates. Large investment projects of dubious economic value were postponed, then given the go-ahead, the postponed again in both Indonesia and Malaysia, adding to the confusion. Malaysia and Thailand introduced mild controls on foreign exchange transactions. Malaysia announced the formation of a large fund to be used to prop up stock prices, then abandoned the plan a few days later. Thailand and Korea injected large sums into failing financial institutions, opening a large hole into what had previously been prudent fiscal positions. Inflammatory statements by government officials and market participants alike (especially the well-known interchanges between the Malaysian Prime Minister and George Soros) further frayed nerves and added to the panicked withdrawal of funds.

Once the trigger was pulled, several powerful feedback mechanisms amplified the withdrawal into a panic. Undercapitalized Japanese banks with heavy exposure in the rest of Asia felt further downward pressure on their balance sheets as a result of the emerging crisis, and therefore began to call in loans. Similarly, Korean banks with extensive exposure in South East Asia began to call in loans as a result of the Korean crisis. Downgrades by the major ratings agencies led to new rounds of withdrawals.

The regional crisis intensified and threatened to spread when the Hong Kong dollar came under attack in November as a result of currency depreciations in the rest of Asia and the consequent loss of trade competitiveness in Hong Kong itself. Hong Kong banks faced steeply rising interest rates on liabilities, and it is likely that they reacted in part by calling in loans from the rest of Asia (data on Hong Kong bank loans to the rest of Asia are not publicly available). Moreover, the attack in Hong Kong strongly indicated the potential for the crisis to cross

international borders, and fears rose that the problems would spread throughout the rest of Asia and beyond. Indeed, the New Taiwan dollar also came under pressure and fell sharply, despite Tawain's huge stock of reserves. These events almost certainly accelerated withdrawals from Southeast Asia, and especially Korea.

Contagion, Panic, and Crisis in Indonesia

The extent of the crisis in Indonesia calls for special comment, since at this writing it is the country that has been hardest hit in the region. This outcome is in many ways ironic, since at the outset many observers thought it would be the least affected country, and in the early stages Indonesia was praised for taking quick and conserted action.[8] Indonesia appears to be the clearest case of contagion in the region. Of course, there were many problems and weaknesses in the Indonesian economy before the crisis, including under-supervised banks, extensive crony capitalism, corruption, monopoly power, and growing short-term debt, some of which at least one of us has discussed previously.[9] Yet by most measures, Indonesia's imbalances were among the least severe in the region, and clearly much less dramatic than in Thailand. Consider the following:

- the current account deficit, at 3.5 percent of GDP, was the lowest of the Asian-5 countries;
- export growth in 1996 of 10.4 percent, while down from the 1995 level of 13 percent, was the second highest in the region;
- the budget had been in surplus by an average of over 1 percent of GDP for 4 years;

- credit growth had remained at more modest levels than elsewhere in the region;
- foreign liabilities of the commercial banks, at 5.6 percent of GDP, were substantially below those of the other affected economies (although corporate foreign debts were high);
- there had been no major corporate bankruptcies, and the stock market continued to rise strongly through early 1997 until the onset of the crisis in Thailand.

Indonesia was applauded early on for first widening the rupiah's trading band to 12 percent, and then moving to a float without spending its foreign exchange reserves in a futile defense of the currency. When the rupiah did come under severe attack in August, problems arose when the government abruptly raised interest rates, which had the effect of intensifying short-run pressure. The governments' decision to cancel 150 investment projects was designed to be a bold attempt to restore international confidence, but the reversal of the decision just a few days later for 15 of the largest projects undermined the strategy and simply added to the confusion. By early September Indonesia had joined Thailand, Malaysia, and the Philippines in the crisis.

Nonetheless, since reserve levels remained strong at well over $20 billion, Indonesia did not seem an obvious candidate for an IMF program.[10] When Indonesia signed its first IMF program on October 31st, the rupiah immediately strengthened as a result of large concerted interventions by Japan and Singapore. Yet, the boost in the rupiah was very short lived. As the impact of abrupt bank closures and the ensuing bank runs (discussed in the next section), higher interest rates, and decapitalization of the banks set in, the rupiah depreciated by 23 percent and the stock market fell by 19 percent (in rupiah terms) between November 3rd and December 4th.

The slide was augmented by confusion over the bank closures, since two of the President's relatives publicly balked (and threatened legal action) when their banks were ordered closed. (This event illustrates one of the dangers of hasty bank closures -- such abrupt institutional changes are almost always poorly thought through and badly implemented, thereby creating a sense of confusion and panic rather than building confidence.) Quite suddenly, within a couple of weeks of the start of the IMF program, Indonesia began to look even weaker than its neighbors.

In December, the effects of the severest drought in many years set in, with food prices rising and food shortages emerging in some parts of the archipelago. The drought complicated the task of crisis management enormously (both economically and politically), since food prices jumped sharply, the foreign exchange costs of food imports rose, and displaced urban day laborers could not easily return to rural areas to find work. At the same time, world petroleum prices fell, sharply reducing Indonesia's export receipts, adding to pressure on the exchange rate.

On December 4th, Korea signed its IMF program, adding a new round of uncertainty to the entire region. Then, on December 5th, it was announced that President Suharto was ill and had to cancel a foreign trip. The markets fell precipitously, accelerating a fall that had been underway for a month. The prospect of a severe illness or death of Suharto, with no clear Presidential successor in sight, added to the ongoing panic. By early January, Indonesia had become the pariah of the region, with the IMF and US Treasury publicly blasting a proposed budget (which, upon later inspection, turned out to be far less onerous than initially described).[11] Indonesia's waffling on promised structural reforms and its flirtation with the ill-advised notion

of introducing a currency board only added to negative perceptions about the country. At this point, the crisis in Indonesia has become as much political as it is economic. (Note that both Thailand and Korea each received a boost from a change in government, whereas there seemed little prospect of political change in Indonesia). The economic and political issues have fed off of each other, adding a whole new dimension to the dynamics of the panic.

Indonesia's extensive meltdown is far more severe than can be accounted for by flaws in economic fundamentals, since those were not especially poor. The "moral hazard cum bubble" model seems to be even less appropriate for Indonesia than for Thailand and Korea (where it is also an exaggeration of fundamental weaknesses). To reiterate in the case of Indonesia, most foreign lending was to private firms, and not to banks. While many of these companies may have been assumed to have implicit government backing, much of the lending to corporations was surely unprotected by government guarantees and was seen in that light. There was also no sign of market concern of a growing crisis, since the stock market and other indices performed very strongly right up until early July. International credit ratings remained high and positive, and international banks continued to lend, well after they had cut back on loans to Thailand and Korea. In short, Indonesia seems to be a clear case of contagion leading to panic, and ultimately to a severe, unnecessary economic contraction.

VI. The IMF Programs

One month after Thailand floated the baht, it announced on August 5th a policy reform package that had been formulated in cooperation with the IMF. The 34-month, $17.2 billion

standby arrangement was approved by the Fund Board on August 20th. The IMF contributed $4 billion, the World Bank and Asian Development Bank $2.7 billion, and individual governments the balance of $10.5 billion (including $3.5 billion from neighboring Southeast Asian countries). Japan contributed $4 billion; the United States did not contribute to the package. Indonesia followed suit by signing a 36-month, $40 billion package on October 31st. The IMF contributed $10 billion, and the World Bank and the ADB added $8 billion, and other governments the balance (including $5 billion and $3 billion in "second line of defense" from Japan and the U.S., respectively). Somehow, the official figure of $40 billion includes $5 billion of "assistance" from Indonesia's own reserves! Korea signed its $57 billion three-year standby on December 4, with $21 billion from the IMF, $14 billion from the World Bank and the ADB, and $22 from a group of industrial countries. With the Philippines continuing its previously-signed standby program, four of the five afflicted economies came under the tutelage of the IMF.

The IMF programs have had nine main declared goals:

- prevent outright default on foreign obligations;
- limit the extent of currency depreciation;
- preserve a fiscal balance;
- limit the rise in inflation;
- rebuild foreign exchange reserves;
- restructure and reform the banking sector;
- remove monopolies and otherwise reform the domestic non-financial economy;
- preserve confidence and creditworthiness;

- limit the decline of output.

To achieve these objectives, the programs have been based on six key policy components:

- Fiscal policy. The IMF placed fiscal contraction at the very heart of the programs. For example, the official press release on the Thai program states that "Fiscal policy is the key to the overall credibility of the program." The press release on Indonesia similarly put fiscal policy at the forefront: "First, the authorities will maintain tight fiscal and monetary policies..." The objectives of fiscal contraction were to (i) support the monetary contraction and defend the exchange rate, and (ii) provide for funds necessary to inject into the financial system.
- Bank closures. In Thailand, 58 out of 91 finance companies were immediately suspended, and 56 of these were eventually liquidated. In Indonesia, 16 commercial banks were closed. In Korea, 14 (of 30) merchant banks were suspended. The goals of these actions were to limit the losses being accumulated by these institutions, and to send a strong signal that governments were serious about implementing reforms in order to restore confidence in the banking system.
- Enforcement of capital adequacy standards. While banks were facing rapid de-capitalization because of losses on foreign exchange exposure and an increase in non-performing loans, the initial Fund programs pushed for a rapid recapitalization. The goal was to return the banking system to solid footing as quickly as possible.

- Tight domestic credit. Through contractionary base money targets, the IMF programs raised interest rates and reduced domestic credit availability. The purpose was to defend the exchange rate.
- Debt repayment. Foreign exchange targets in each program provide for full payment of foreign debt obligations, backed by "bailout funds" mobilized by the IMF.
- Non-financial structural changes. In each program, structural reforms were included that were aimed at reducing tariffs, opening sectors for foreign investment, and reducing monopoly powers.

The three original programs failed to meet their objectives, and none of the programs lasted in its original form for more than a few weeks. New letters of intent were signed with Thailand, Korea, and Indonesia on November 25, December 24, and January 15, respectively. Currency depreciation and stock market collapse continued long after the programs were signed, and there was no sign of an immediate restoration of confidence. Bank closures in Thailand and Indonesia added to the sense of financial panic, rather than stemming the outflow. Output is now projected to fall much more sharply than originally targeted, and the original targets for inflation and exchange rates have been revised. Credit ratings collapsed in each country after the agreements were in place.

The Fund has attributed this continuing decline mainly to unexpected contagion effects, political uncertainty, and poor implementation of the programs by the governments in the region. There is clearly some truth in these observations. Korea's collapse made matters worse in Indonesia and Thailand, Suharto's health and the elections in Korea created market jitters, and

each government has stopped short of full implementation of agreed reforms. But there are several reasons to believe that the underlying design of the programs added to, rather than ameliorated, the panic. Four areas, in particular, are open to question.

1. Bank closures. There is no question that many financial institutions in the region were unviable, and needed to be merged or liquidated. The appropriate question is how to do so, and over what time frame, in the midst of a financial panic. Abruptly shutting down financial institutions without a more comprehensive program for financial sector reform, as was done in Thailand and Indonesia, only served to deepen the panic. With no deposit insurance in place, the hastily-arranged closures predictably ignited a bank run, with depositors in other institutions fearing that their bank would be next in line.[12] The closures added to the ongoing liquidity squeeze, making it more difficult for banks to continue their normal lending operations. Since it was not immediately clear how the foreign liabilities of these banks would be handled, foreign creditors of other banks became more reluctant to roll over their loans, adding to the squeeze.

Kindleberger (1978) offers some close historical analogies:

> "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 vulnerability of expectations to such sharp shifts from "almost nothing" results from the condition of multiple equilibrium that we have stressed throughout this essay. Creditor runs are self-fulfilling.

A far better approach would have been to implement a longer-term, more comprehensive strategy for bank restructuring, rather than a quick show of force designed simply to demonstrate resolve. Problem banks could have been put under some form of receivership, which would have protected depositors and allowed good borrowers continued access to credit.

The IMF appears to have recognized the error in its bank closure strategy. According to press reports, a confidential IMF document reviewing the first standby arrangement with Indonesia concluded that "(t)hese closures, however, far from improving public confidence in the banking system, have instead set off a renewed 'flight to safety.'" The report found that Indonesians had withdrawn $2 billion from the banking system and shifted funds from private to state-owned banks, which depositors felt offered stronger guarantees. The report concluded that by the end of November, two-thirds of Indonesia's banks "had experienced runs on their deposits."[13] The text of Indonesia's second agreement with the Fund[14] reinforced the point:

> "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. 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."

The memorandum continues at a later stage by observing that

> "...the continued depreciation of the rupiah, the slowdown in growth, and high interest rates since then have led to a marked deterioration of the financial condition of the remaining banks. This deterioration has been exacerbated by deposit runs and capital flight, forcing many banks to increasingly resort to central bank liquidity support."

The Fund program in Korea focused on merchant banks (which do not take household deposits) rather than commercial banks. Nonetheless, the sudden closure of 14 merchant banks and the IMF's insistence on a rapid tightening of bank capital-adequacy ratios, added to the sense of panic over the financial system. As in Indonesia, depositors and foreign lenders accelerated their withdrawals from the banking system, while the banks cut back on their loans in order to enhance their balance sheets. The second round of programs in Thailand and Indonesia include more comprehensive financial restructuring plans, although even here the plans are not complete.

2. Bank Recapitalization. There is no question that after the crisis, many banks needed to be recapitalized. As mentioned previously, the combination of a sharp increase in non-performing loans at the onset of the crisis and the effect of exchange rate movements on the banks' foreign liability positions quickly eroded the capital bases of even the strongest banks. The question is: how quickly should banks be pushed to recapitalize, especially during times of widespread economic distress? Pushing banks to recapitalize within an unrealistic time frame can cause them to sharply curtail lending, including by otherwise strong banks. This, in turn, can lead to a more severe credit crunch, increased distress for private firms, and a further rise in non-performing loans. This seems to be exactly what took place in the last few months of 1997. The first two IMF programs, in particular, pushed hard for quick recapitalization of the banks. For example, the first Indonesian program required that "(t)he instruction issued by the central bank to raise capital adequacy to 9 percent by end-1997, and 12 percent by end-2001, will be strictly enforced." Thus, banks were initially expected not only to return to their previous capital adequacy level of 8 percent, but to actually *add* to their capital. The first Thai program stated that "(c)ommercial banks and remaining finance companies will be required to raise capital in anticipation of possible further deterioration in their asset quality.... Severely under-capitalized institutions that cannot raise their capital to the legally required level will be taken over by the FIDF (performance criterion as of November 15, 1997)." The second programs in these countries eased the requirements somewhat, but were still quite strict. The second Thai program required the government to establish "timetables for the recapitalization of all undercapitalized financial institutions during 1998," while the second Indonesian program stated that "(c)apital adequacy

rules are being enforced within the context of the bank restructuring strategy."[15] Only the Korean program initially provided for a longer time frame for full enforcement of the capital adequacy standards. Private discussions with several bankers in the region revealed uncertainty as to how fully and over what time frame these standards would be applied, with the result that banks substantially curtailed lending. Had more forbearance been given on the capital adequacy ratios early in the crisis, with a clear and longer term schedule for otherwise strong banks to return to full compliance, the extent of the credit squeeze would have been much less severe.

3. Monetary policy. There are really two aspects to the IMF's monetary policy which have not been carefully disentangled. The first is quantitative domestic credit targets. In most programs, there are limits to high-powered money or central bank credit. The second is interest rate targets, or floors on interest rates, which are usually added as prior actions to an IMF program. Both types of policies are highly problematical. The problem with quantitative credit targets is that they may directly interfere with the Central Bank's lender of last resort function. If the central bank is instructed not to provide domestic credit, market participants will know that the lender-of-last resort mechanism has been switched off. Thus, a tightening of quantitative credit limits may actually trigger a panic by short-term creditors who come to doubt the ability or willingness of the central bank to provide liquidity. As H.S. Foxwell put it in 1908 (cited in Kindleberger, p. 111), "To refuse accommodation altogether is always held to be dangerous . . . the Bank [of England] was responsible for the solvency of this crowd of small, ill-managed institutions [country banks], but dared not call them to account, on peril of provoking a general collapse of credit."

A closely related but distinct issue is interest rate policy. There is no question that following the withdrawal of foreign capital, interest rates had to rise. After all, capital flows equivalent to 9 percent were reversed in a matter of weeks, leading to an immediate elimination of current account deficits across the region. As a result, interest rates rose sharply at the outset of the crisis. A sharp economic contraction was inevitable. The problem was the IMF's insistence on raising interest rates even higher and demanding a fiscal surplus (see below) on top of the huge withdrawal of funds (and shrinking current account deficit) that was already underway. These steps led to an unnecessarily harsh economic contraction.

The IMF instructed the Central Banks of Indonesia, Korea, and Thailand, to drain reserves from the system in order to maintain interest rates above certain floors. There is little question that higher interest rates have undermined the profitability of banks and private firms in the short run, and added to the economic downturn. (Indeed, the passage from the second Indonesia program cited above states that high interest rates contributed to a marked deterioration of the financial condition of the banks.) The policy question is the effect that higher interest rates might have on the exchange rate, and whether any benefits with respect to the exchange rate would outweigh the negative effects on short-run production. The Fund assumes that higher interest rates will lead to stability or appreciation of the currency, and that the benefits of currency stabilization outweigh the short-run output costs. For example, Deputy Managing Director Shigemitsu Sugisaki stated recently that:

> "We know that higher interest rates are likely to hurt the corporate sector, but an appreciation of the currency that follows a tightening of monetary conditions would

greatly benefit those corporations indebted in foreign currency. There is no alternative in the short term. A relaxation of monetary policy would only lead to further depreciations of the currencies."

Despite sharply higher interest rates, currencies have not appreciated, so the supposed benefits of this policy are in question. It is entirely possible that in the unique conditions of the midst of a financial panic, raising interest rates could have the perverse effect in the very short run of weakening the currency. Kindleberger (1978) has made this point clearly, based on the historical experience:

"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."

There is little evidence indeed that higher interest rates have succeeded in supporting Southeast Asian currencies during the panic phase of the crisis. As the accompanying figures show, exchange rates continued to plummet after the signing of IMF programs. The exchange rate targets in these programs were breached in a matter of days in all three countries. Part of the problem was not in the interest rate policy, but in accompanying measures: the bank closures almost surely helped to induce a panic that simply overwhelmed short-term interest rates. It is

possible, though, that the interest rate policy itself had the adverse effects that Kindleberger noted. Creditors understood that highly leveraged borrowers (whether Indonesian conglomerates, Korean chaebol, or banks in all countries) could quickly be pushed to insolvency as a result of several months of high interest rates. Moreover, many kinds of interest-sensitive market participants, such as bond traders, are simply not active in Asia's limited financial markets. The key participants were the existing holders of short-term debts, and the important question was whether they would or would not roll over their claims. Higher interest rates did not feed directly into these existing claims (which were generally floating interest rate notes based on a fixed premium over LIBOR). It is possible, however, that by undermining the profitability of their corporate customers, higher interest rates discouraged foreign creditors from rolling over their loans.

4. Fiscal policy. The Fund initially demanded a fiscal surplus of 1 percent of GDP in each country. It is not clear why government budgets were made so central to the programs, since fiscal policy had been fairly prudent across the region, and budget profligacy was clearly not the source of the crisis. Moreover, while the Fund argued that fiscal contraction was necessary to reduce the current account deficit, there was no clear rationale provided for why additional contraction was necessary on top of the massive contraction that was already automatically taking place in the region. The fiscal targets simply added to the contractionary force of the crisis. Nor was there any clear analytic basis for the precise figure of 1 percent of GDP (indeed, the figure appears to have been largely arbitrary). Under the circumstances, a small deficit would seem to have been more appropriate, funded entirely by foreign exchange

inflows in support of the program. The Fund also appears to have recognized the inappropriateness of the fiscal surplus demanded in the first round of programs. The second programs in Indonesia and Korea target a 1 percent deficit and a balanced budget, respectively, and recent reports suggest the IMF has re-thought its position in Thailand and will allow the government to run a small deficit.[16]

VII. Conclusions and Extensions

In our interpretation, the East Asian crisis resulted from vulnerability to financial panic that arose from certain emerging weaknesses in these economies (especially growing short-term debt), combined with a series of policy mis-steps and accidents that triggered the panic. Since we view the crisis as a case of multiple equilibrium, our hypothesis is that the worst of the crisis could have been largely avoided with relatively moderate adjustments and appropriate policy changes. Explanations that attribute the entire massive contraction to the inevitable consequences of deep flaws in the Asian economies — such as Asian "crony capitalism" — seem to us to be strongly overstated. Without question, there were macroeconomic imbalances, weak financial institutions, widespread corruption, and inadequate legal foundations in each of the affected countries. These problems needed attention and correction, and they clearly contributed to the vulnerability of the Asian economies. However, most of these problems had been well-known for years, and the Asian-5 countries were able to attract $211 billion of capital inflows between 1994 and 1996, under widely known conditions of Asian capitalism. To attribute the crisis fully to fundamental flaws in the pre-crisis system is to judge that the global financial

system is prone to shere folly, or somehow expected to avoid losses despite the fundamental flaws. Paul Krugman's explanation of the crisis — that investors knew that their investments were to weak borrowers, but felt protected by explicit and implicit guarantees — also seems to us to be only a partial explanation. One obvious reason is that much of the lending was directed to private firms that did not enjoy these guarantees. Approximately half of the loans by international banks and almost all of the portfolio and direct equity investments went to non-bank enterprises for which state guarantees were far from assured. This comes to around three-fifths of the total capital flows to the region.

Moreover, the actual market participants, by their statements and actions (e.g., decisions on credit ratings), while recognizing the flaws in these economies, simply didn't forsee a crisis, with or without bailouts. It is difficult, therefore, to make the case that a crisis of this depth and magnitude was simply an accident waiting to happen. We do not believe that such a vicious crisis was necessary, nor that its depth should be interpreted as an indication of the extent of the underlying economic problems in the region. Instead, we believe that a much more moderate adjustment would have been possible had appropriate steps been taken in the early stages of the crisis.

We have stressed the role of financial panic to make several points of significance for policy analysis. First, capital markets are subject to multiple equilibria. Second, credit collapses such as those in Asia are not simply the end of socially destructive bubbles, but also (or even mainly) result in the destruction of socially productive output. Third, because of the vulnerability to panic in international markets, there may be a role for an international lender of last resort.

Fourth, because of the possibility of panic, small events can have large consequences (as in the epigram at the start of the paper). In particular, abrupt actions by domestic and international policy makers can gravely worsen an incipient crisis, by helping to trigger the capital outflow.

This paper has not addressed several highly pertinent issues in the Asian crisis, which are left for a companion paper and future work. First, can we say more about the balance between socially productive and unproductive investments in Asian in the run-up to the crisis? This involves a detailed look at the sectoral allocation of credit and investment. Second, do the moral hazards that result from IMF-led bailouts undermine the broad social value of such operations? In particular, did the Mexican bailout help to prepare the base for the subsequent Asian crisis? Third, how should an incipient financial crisis, centered on weak banks, be managed in order to avoid inciting a financial panic? When and how should bad banks be closed? Fourth, can orderly workout mechanisms (e.g. the rollover negotiations directly between creditors and debtors, as in the case of Korea) substitute for IMF loans, or are loans and orderly workouts in fact complementary actions? Fifth, what should be done now in Asia, especially in view of the de-capitalization of banks throughout the region, which is hindering production and trade finance throughout the region? Sixth, what institutional steps could be taken in the future to reduce the likelihood of future financial crises of this sort? Is there a case for controls on short-term capital movements, and if so, should these be applied country by country, or also through international mechanisms?

Appendix:

Summaries of IMF Executive Board discussions on Indonesia, Korea, and Thailand

Indonesia (Board discussion, July 1996):

"The Board strongly endorsed the authorities' aim to reduce broad money growth in 1996. Directors agreed with the authorities''emphasis on maintaining an open capital account and welcomed the steps already taken to widen the exchange-rate band and give greater flexibility to exchange rate policy. . .

"In the Board's view, further substantial reforms, including financial sector reforms and the development of a strong capital market, were essential for maintaining rapid, sustained growth. Directors urged the authorities to address weaknesses in the banking sector, and in particular to act decisively to resolve the problem of insolvent banks and recover non-performing loans. They considered these actions as critical to reduce the vulnerability of the economy to shocks and to lessen moral hazard."

Korea (Board discussion, November 1996):

"In their discussion, Directors welcomed Korea's continued impressive macroeconomic performance: growth had decelerated from the unsustainably rapid pace of the previous two years, inflation had remained subdued notwithstanding some modest pickup in the months prior to the consultation, and the widening of the current account deficit largely resulted from a temporary weakening of the terms of trade.

"Directors praised the authorities for their enviable fiscal record and suggested that fiscal policy could best contribute to strengthening medium-term macroeconomic performance by

maintaining a strong budgetary position as much-needed spending on social overhead capital was undertaken. They also welcomed the recent acceleration of capital account liberalization; although some Directors agreed with the authorities' gradual approach to capital market liberalization, a number of Directors considered that rapid and complete liberalization offered many benefits at Korea's stage of development."

Thailand (Board discussion, July 1996):

"Directors strongly praised Thailand's remarkable economic performance and the authorities' consistent record of sound macroeconomic fundamentals. They noted that financial policies had been tightened in 1995 in response to the widening of the external current account deficit and the pickup of inflation, and this had begun to bear results, but they cautioned that there was no room for complacency. . .

"The recent increase in the current account deficit had increased Thailand's vulnerability to economic shocks and adverse shifts in market sentiment. On the one hand, Directors noted, economic fundamentals remained generally very strong, characterized by high saving and investment, a public sector surplus, strong export growth in recent years, and manageable debt and debt-service returns. On the other hand, the level of short-term capital inflows and short-term debt were somewhat high. Also, the limitations of present policy instruments constrained the authorities' ability to manage shocks. Caution in the use of foreign saving was warranted, Directors observed, and early action was required to reduce the current account deficit. While fiscal policy could play a role in the short term, over the medium term the emphasis should be on measures to increase private saving."

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Endnotes

1. Yung-Chul Park (1996) is a notable exception, but voices such as his were rare and generally went unheeded. Paul Krugman's (1994) provocative critique of East Asian growth suggested a slowdown in growth, not a collapse, a point that Krugman himself made clear in the Fall of 1997, at the start of the financial crisis.

2. A member of the Bundesbank Board has reported to us his own discussions with German banks. He asked these banks why they extended such large loans to Korea in 1997, just on the verge of the financial collapse. Several banks replied that Korea's new membership in the OECD had given them confidence that Korean economic performance would continue to be strong (private communication, February 1997).

3. Technically, the Philippine peso operated under a floating regime, but there was so little variation in the exchange rate that it was perceived to be effectively pegged to the dollar by market participants.

4. As we note later, central banks augmented the rise in interest rates by a further tightening of domestic credit in the context of IMF-supported adjustment programs.

5. The idea of using the CPI in the denominator and the WPI in the numerator is that the CPI is heavily weighted towards nontradeable goods, while the WPI is heavily weighted towards tradeables.

6. Specifically, we use all trading partners that are members of the OECD, except Mexico and Korea.

7. Earlier studies (e.g., Sachs, Tornell, and Velasco, 1996) have stressed the role of rapid increases in bank lending as a predictor of subsequent financial crisis.

8. 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.

9. Radelet (1995) raises concerns about "quasi-public sector" foreign liabilities of well-connected Indonesian firms and rising short-term debt, while Radelet (1996) documents the overvaluation of the rupiah.

10. McLeod (1997) argues that an IMF program was not necessary, a conclusion with which we agree.

11. The IMF and the US Treasury severely criticized the proposed 32 percent increase in spending as indicating that Indonesia was not serious about reform, which sent markets reeling. However, all of the increase was simply due to exchange rate movements. Within three weeks the Fund had quietly approved a new budget with a 46 percent increase in spending, but the damage to market perceptions had been done.

12. Two aspects of the bank closures added to the panic. First, regarding deposits at the 16 banks closed in early November, the Indonesian government announced that accounts would be protected in the closed banks only up to 20 million rupiah (or around $7,000 at the time). This protection was not extended to deposits in banks that remained open. Second, the very fact that the President's son's bank was one that was closed quickly gave rise to the view in Indonesia that no bank was safe. The attempt to show "toughness" and political resolve backfired, by dramatically undermining confidence in the entire banking system.

13. "IMF Now Admits Tactics in Indonesia Deepened the Crisis," *New York Times*, January 14, 1998.

14. "Indonesia - Memorandum of Economic and Financial Policies," *Jakarta Post*, January 17, 1998.

15. Bank of Thailand website; *Jakarta Post* January 17, 1998.

16. "IMF Concedes Its Conditions for Thailand Were Too Austere," *New York Times*, February 11, 1998.

Table 1. Distinguishing Among Financial Crises

	Policy-induced crisis	Financial Panic	Bubble Collapse	Moral-hazard induced crisis	Disorderly workout
Anticipation of crisis by market participants and analysts	High	Low	Market participants and analysts understand probability of collapse	High. Creditors are lending based on state guarantees rather than fundamental values	High. Market participants understand the lack of coordination among creditors
Destruction of real economic activity	Not necessarily	High	Low. The end of the bubble may improve resource allocation	Low. The end of moral-hazard based lending improves resource allocation	High. Creditor grab race; liquidity crisis of the borrower; premature liquidation of the borrower
Lending induced by moral hazards	No	Not necessarily	Possibly	Yes. Most or all creditors are protected by explicit or implicit guarantees	Not necessarily
Case for official intervention	Macro-economic adjustment, especially budgetary reduction	Lender of last resort	No. Delaying the bursting of the bubble can lead to a deeper crisis later.	No. State guarantees prolong the mis-allocation of resources	Yes. Public institutions may provide framework for an orderly workout.

Table 2: Five Asian Economies*: External Financing

(Billions of dollars)

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

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 3. International Claims Held By Foreign Banks-- Distribution by maturity and sector

(Billions of dollars)

		Obligations by Sector:					
	Total Outstanding	Banks	Public Sector	Non-bank Private	Short Term	Reserves	Short Term/Reserves
A. End 1995							
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. End 1996							
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		
C. Mid-1997							
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 4. International Claims Held By Foreign Banks-- Distribution by country of origin

(Billions of dollars)

	Total Outstanding	Claims held by banks from: Japan	U.S.A.	Germany	All others
A. End 1995					
Indonesia	44.5	21.0	2.8	3.9	16.8
Malaysia	16.8	7.3	1.5	2.2	5.8
Philippines	8.3	1.0	2.9	0.7	3.7
Thailand	62.8	36.9	4.1	5.0	16.8
Korea	77.5	21.5	7.6	7.3	41.1
Sub-total	209.9	87.7	18.9	19.1	84.2
Total, all reporting countries *		429.3	132.6	264.0	
B. End 1996					
Indonesia	55.5	22.0	5.3	5.5	22.7
Malaysia	22.2	8.2	2.3	3.9	7.8
Philippines	13.3	1.6	3.9	1.8	6.0
Thailand	70.2	37.5	5.0	6.9	20.8
Korea	100.0	24.3	9.4	10.0	56.3
Sub-total	261.2	93.6	25.9	28.1	113.6
Total, all reporting countries *		389.4	165.7	292.3	
C. Mid-1997					
Indonesia	58.7	23.2	4.6	5.6	25.3
Malaysia	28.8	10.5	2.4	5.7	10.2
Philippines	14.1	2.1	2.8	2.0	7.2
Thailand	69.4	37.7	4.0	7.6	20.1
Korea	103.4	23.7	10.0	10.8	58.9
Sub-total	274.4	97.2	23.8	31.7	121.7
Total, all reporting countries *		404.4	166.3	301.2	

* Reporting countries include G-10 plus Austria, Denmark, Finland, Ireland, Luxembourg, Norway, Spain, plus 15 financial centers

Source: Bank For International Settlements

Table 5 Market Creditworthiness

Moody's and Standard and Poor's Long Term Debt Ratings 1996-97

	Jan. 15, 1996		Dec 2, 1996		June 24, 1997		December 12,1997	
	Rating	Outlook	Rating	Outlook	Rating	Outlook	Rating	Outlook
Moody's (Foreign currency debt)								
Indonesia	Baa3		Baa3		Baa3		Baa3	
Malaysia	A1		A1		A1		A1	
Mexico	Ba2		Ba2		Ba2		Ba2	
Philippines	Ba2		Ba2		Ba1		Ba1	
South Korea	A1		A1	Stable			Baa2	Negative
Thailand	A2		A2		A2		Baa1	Negative
Standard & Poor's							Oct. 97	Oct. 97
Indonesia: Foreign currency debt	BBB	Stable	BBB	Stable	BBB	Stable	BBB-	Negative
Domestic currency debt			A+		A+		A-	Negative
Malaysia: Foreign currency debt	A+	Stable	A+	Stable	A+	Positive	A+	Negative
Domestic currency debt	AA+		AA+		AA+		AA+	Negative
Philippines: Foreign currency debt	BB	Positive	BB	Positive	BB+	Positive	BB+	Stable
Domestic currency debt	BBB+		BBB+		A-		A-	Stable
South Korea: Foreign currency debt	AA-	Stable	AA-	Stable				
Thailand: Foreign currency debt	A	Stable	A	Stable	A	Stable	BBB	Negative
Domestic currency debt			AA		AA		A	Negative
Mexico: Foreign currency debt	BB		BB		BB			
Domestic currency debt	BBB+	Negative	BBB+	Stable	BBB+	Positive		

Rating Systems, from highest to lowest:
Moody's: Aaa, Aa1, Aa2, Aa3, A1, A2, A3, Baa1, Baa2, Baa3, Ba1, Ba2, Ba3
S&P's: AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-, BB+, BB, BB

Table 6. Euromoney Country Risk Ratings

(Country Rank out of approximately 180)

	March '93	March '95	March '97	Sept. '97	Dec. '97
Indonesia	41	40	43	43	49
Malaysia	33	28	28	28	35
Philippines	71	60	54	49	57
Thailand	34	30	34	46	51
South Korea	32	26	22	27	30
Singapore	14	8	3	11	16
Japan	1	2	13	13	18
Hong Kong	25	24	27	25	25

Table 7a. Expectations of Export Growth

	Expected 96	Outcome 96	Expected 97	Revised 97
Indonesia	14.3	4.9	15.0	10.0
Malaysia	18.0	7.3	15.0	7.4
Philippines	25.0	17.7	23.0	22.8
Thailand	22.0	-1.7	7.7	-0.5

Note: Expected 1996 from December 1995 forecast; Expected 97 from December 1996 forecast; Revised 1997 from August 1997 forecast.

Table 7b. Exchange Rate Expectations

	August Forecast: 3-month Horizon	October 29 Rate
Indonesia	2500	3610 (44.4)
Malaysia	2.75	3.40 (23.6)
Philippines	28.00	35.1 (25.3)
Thailand	32.00	39.1 (22.2)

Note: Expectation error as percent of August forecast in parentheses

Source: August Forecast, Goldman Sachs, Asian Economic Quarterly, August, p. 12. October rate, Economist Magazine, November 1, 1997.

Table 8: Overall Central Government Budget Balance

(% of GDP)

Year	Indonesia	Malaysia	Philippines	Thailand	Korea	Mexico
1990	*0.4*	*-3.0*	*-3.5*	*4.5*	*-0.7*	*-2.8*
1991	*0.4*	*-2.0*	*-2.1*	*4.7*	*-1.6*	*-0.2*
1992	*-0.4*	*-0.8*	*-1.2*	*2.8*	*-0.5*	*1.5*
1993	*0.6*	*0.2*	*-1.5*	*2.1*	*0.6*	*0.3*
1994	*0.9*	*2.3*	*1.1*	*1.9*	*0.3*	*-0.7*
1995	*2.2*	*0.9*	*0.5*	*2.9*	*0.3*	*-0.6*
1996	*1.2*	*0.7*	*0.3*	*2.3*	*-0.1*	*n.a*

Table 9. Balance of Payments 1985-96

(% of GDP)

	Korea		Indonesia		Malaysia		Philippines		Thailand	
	1985-89	1990-96	1985-89	1990-95	1985-89	1990-95	1985-89	1990-96	1985-89	1990-95
Current Account	4.3	-1.7	-2.5	-2.5	2.4	-5.6	-0.5	-3.3	-2.0	-6.8
Balance of Trade	3.6	-1.2	5.9	4.5	13.7	3.2	-2.9	-8.7	-2.2	-4.7
Exports	30.7	25.0	21.9	24.2	56.1	73.2	17.1	17.4	22.9	29.6
Imports	-27.2	-26.2	-15.9	-19.7	-42.5	-70.0	-20.0	-26.1	-25.1	-34.3
Capital and Financial Account	-2.5	2.5	3.5	4.1	0.5	9.6	1.4	5.5	4.2	10.2
Direct Investment (net)	-0.1	-0.3	0.5	1.2	2.4	6.9	1.0	1.1	1.1	1.5
Portfolio Investment (net)	0.2	1.9	-0.0	0.9	1.0	-1.0	0.2	0.3	1.2	1.5
Equity Securities	0.0	0.8	0.0	0.5	0.0	0.0	0.0	0.0	0.8	0.7
Debt Securities	0.1	1.1	-0.0	0.4	1.0	-1.0	0.2	0.3	0.4	0.9
Other Investment (net)	-2.4	1.0	3.0	2.0	-2.8	3.8	0.2	4.0	2.0	7.1
Monetary Authorities	-0.0	-0.0	0.0	0.0	0.0	0.0	-0.6	0.0	0.0	0.0
General Government	-1.2	-0.3	2.6	0.5	-1.7	-0.3	2.3	1.1	0.2	-0.4
Banks	-0.8	0.1	0.0	0.4	-1.0	1.8	-0.2	1.4	0.2	3.5
Other Sectors	-0.4	1.2	0.4	1.2	-0.0	2.4	-1.2	1.6	1.5	4.0
Financing	-1.7	-0.6	-0.1	-1.1	-2.9	-5.0	-1.8	-1.8	-3.0	-3.6
Reserve Assets	-1.4	-0.6	-0.2	-1.0	-2.7	-5.0	-1.0	-1.7	-2.7	-3.5

Table 10. Real Exchange Rate Index

(Based on WPI; Trade-Weighted, 1990=100)

Year	Indonesia	Malaysia	Philippines	Thailand	China	Korea	Argentina	Brazil	Chile	Mexic
December 1988	98	98	90	102	80	102	156	159	94	10
December 1989	93	94	85	98	85	95	692	175	99	10
December 1990	100	100	100	100	100	100	100	100	100	10
December 1991	99	99	82	97	103	99	66	112	91	8
December 1992	92	87	69	90	98	94	49	119	74	7
December 1993	88	88	71	88	86	93	42	148	71	6
December 1994	92	86	62	89	109	91	44	53	66	11
December 1995	89	84	63	87	95	88	46	39	65	12
December 1996	80	78	56	80	84	88	44	35	61	9
March 1997	75	72	53	75	79	89	42	33	55	8
June 1997	78	75	54	76	80	89	42	33	55	7
September 1997	99	92	66	104	77	88	42	33	53	7
December 1997	150	108	75	124	74	157	41	33	53	7

Notes: 1. An increase means depreciation.

2. End-of-Period Exchange Rates

3. Estimates are based on trade weights of OECD countries excluding Mexico and Korea.

Table 11. Money and Credit

	1990	1991	1992	1993	1994	1995	1996
Indonesia							
M2 (share of GDP)	43.3	43.7	45.8	43.4	44.9	48.3	52.5
M2 (annual growth rate)		17.5	19.8	20.2	20.0	27.2	27.2
Claims on Private Sector (share of GDP)	50.6	50.7	49.5	48.9	51.9	53.7	55.8
Claims on Private Sector (annual growth rate)		16.7	11.4	25.5	23.0	22.6	21.4
Malaysia							
M2 (share of GDP)	66.2	69.3	78.9	90.6	88.9	92.7	97.8
M2 (annual growth rate)		16.9	29.2	26.6	12.7	20.0	21.8
Claims on Private Sector (share of GDP)			111.4	113.3	115.0	129.6	144.6
Claims on Private Sector (annual growth rate)				12.1	16.5	29.7	28.9
Philippines							
M2 (share of GDP)	34.1	34.5	36.2	42.1	45.7	50.4	54.0
M2 (annual growth rate)		17.3	13.6	27.1	24.4	24.2	23.2
Claims on Private Sector (share of GDP)	19.3	17.8	20.6	26.4	29.1	37.5	48.6
Claims on Private Sector (annual growth rate)		7.3	25.4	39.6	26.5	45.2	48.7
Thailand							
M2 (share of GDP)	69.8	72.7	74.8	78.9	78.5	80.8	79.9
M2 (annual growth rate)		19.8	15.6	18.4	12.9	17.0	12.6
Claims on Private Sector (share of GDP)	83.1	88.6	98.4	110.8	128.1	142.0	141.9
Claims on Private Sector (annual growth rate)		22.7	24.8	26.3	31.2	26.0	13.7
Korea							
M2 (share of GDP)	38.3	38.8	40.0	42.0	43.5	43.7	45.7
M2 (annual growth rate)		21.9	14.9	16.6	18.7	15.6	15.8
Claims on Private Sector (share of GDP)	102.5	103.1	110.7	121.3	128.8	133.5	140.9
Claims on Private Sector (annual growth rate)		20.9	19.6	21.8	21.6	19.2	17.0

Table 12. Net Foreign Assets of the Banking System

(share of GDP)

	1990	1991	1992	1993	1994	1995	1996
Indonesia							
Foreign Assets of the Banking System (net)	5.4	7.6	11.4	8.6	6.4	6.7	9.6
Monetary Authorities (net)	5.9	8.0	12.6	11.4	9.5	8.9	11.3
Deposit Money Banks (net)	-0.5	-0.4	-1.2	-2.8	-3.1	-2.2	-1.7
Foreign Assets	6.0	4.9	5.0	3.4	3.4	3.8	3.9
Foreign Liabilities	6.5	5.2	6.2	6.2	6.5	6.0	5.6
Malaysia							
Foreign Assets of the Banking System (net)	22.1	18.7	23.0	34.3	33.2	27.2	23.7
Monetary Authorities (net)	23.3	23.5	32.2	47.3	36.7	29.8	28.2
Deposit Money Banks (net)	-1.3	-4.8	-9.2	-13.0	-3.5	-2.6	-4.9
Foreign Assets	5.8	4.3	3.6	6.5	5.7	4.8	4.4
Foreign Liabilities	7.0	9.1	12.7	19.5	9.2	7.4	9.2
Philippines							
Foreign Assets of the Banking System (net)	-9.1	-1.5	2.6	7.4	7.4	6.2	3.2
Monetary Authorities (net)	-13.0	-5.5	-0.6	3.8	5.4	6.2	10.6
Deposit Money Banks (net)	4.0	4.0	3.1	3.5	2.0	-0.0	-7.4
Foreign Assets	10.2	8.4	8.7	9.0	8.7	8.8	9.8
Foreign Liabilities	6.2	4.4	5.6	5.5	6.7	8.8	17.2
Thailand							
Foreign Assets of the Banking System (net)	14.0	16.4	15.9	14.3	4.1	0.0	-1.7
Monetary Authorities (net)	16.5	18.5	19.0	20.4	21.0	22.7	21.2
Deposit Money Banks (net)	-2.4	-2.0	-3.2	-6.1	-16.9	-22.6	-22.9
Foreign Assets	2.6	2.9	2.7	5.0	4.7	5.8	3.9
Foreign Liabilities	5.0	4.9	5.9	11.1	21.6	28.4	26.8
Korea							
Foreign Assets of the Banking System (net)	5.7	3.8	5.1	6.6	6.7	6.4	5.2
Monetary Authorities (net)	6.0	4.9	5.7	6.2	6.8	7.2	7.2
Deposit Money Banks (net)	-0.3	-1.1	-0.6	0.4	-0.1	-0.8	-2.0
Foreign Assets	3.8	3.8	4.2	4.9	5.4	6.1	7.3
Foreign Liabilities	4.1	4.9	4.8	4.5	5.5	6.9	9.3

Table 13. Selected Crisis Indicators

Country	Current Account/GDP (%) 1996	Capital Account/GDP (%) 1996	Real Exchange Rate (1990=100) 1996	Financial Inst. Claims on Private Sector/GDP (%) 1990	1996	Short Term Debt/Reserves June 1994	June 1997
Argentina	-1.4	2.5	44	15.6	18.4	1.3	1.2
Brazil	-2.7	4.4*	20	40.8	30.7	0.7	0.8
Chile	-4.1	8.8	61	47.0	57.0	0.5	0.4
Colombia	-5.5	7.9	...	30.8	41.2	0.5	0.7
India	-1.6	3.1*	...	26.8	24.7	0.3	0.3
Indonesia	-3.5	4.9	80	50.6	55.4	1.7	1.7
Jordan	-3.1	5.4	...	64.4	65.3	0.5	0.4
Korea	-4.8	4.8	88	56.8	65.7	1.6	2.1
Malaysia	-5.3	9.4	78	71.4	144.6	0.3	0.6
Mexico	-0.6	1.2	95	22.7	21.6	1.7	1.2
Pakistan	-5.6	4.1*	...	27.7	26.7	0.7	2.4
Peru	-5.9	5.1	...	10.1	19.6	0.4	0.5
Philippines	-4.3	11.0	56	19.3	48.4	0.4	0.8
South Africa	-1.6	2.1	...	85.0	137.7	15.0	3.1
Sri Lanka	-4.7	4.2	...	19.6	25.2	0.3	0.2
Taiwan	4.4	-4.0	...	97.0	165.0	0.2	0.2
Thailand	-8.0	10.6	80	83.1	141.9	1.0	1.5
Turkey	-0.8	5.0	...	16.7	23.5	2.1	0.8
Venezuela	13.1	-2.6	...	25.4	9.6	0.8	0.3
Zimbabwe	...	...	...	23.0	31.2	1.3	1.6

* 1995 data

Sources: Bank for International Settlements, IMF, author's calculations

Figure 1. Exchange Rate: Indonesia

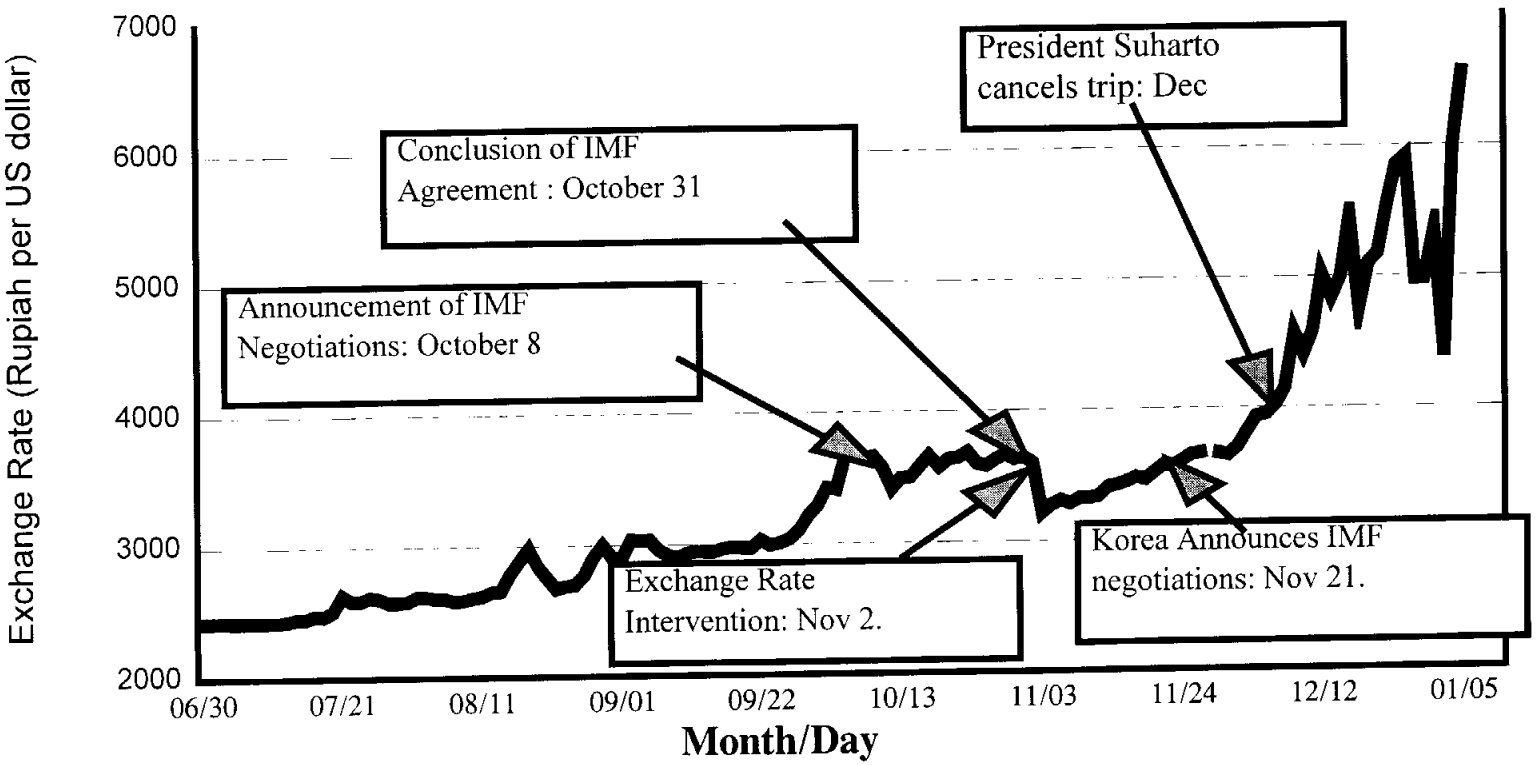


Figure 2. Exchange Rate: Thailand

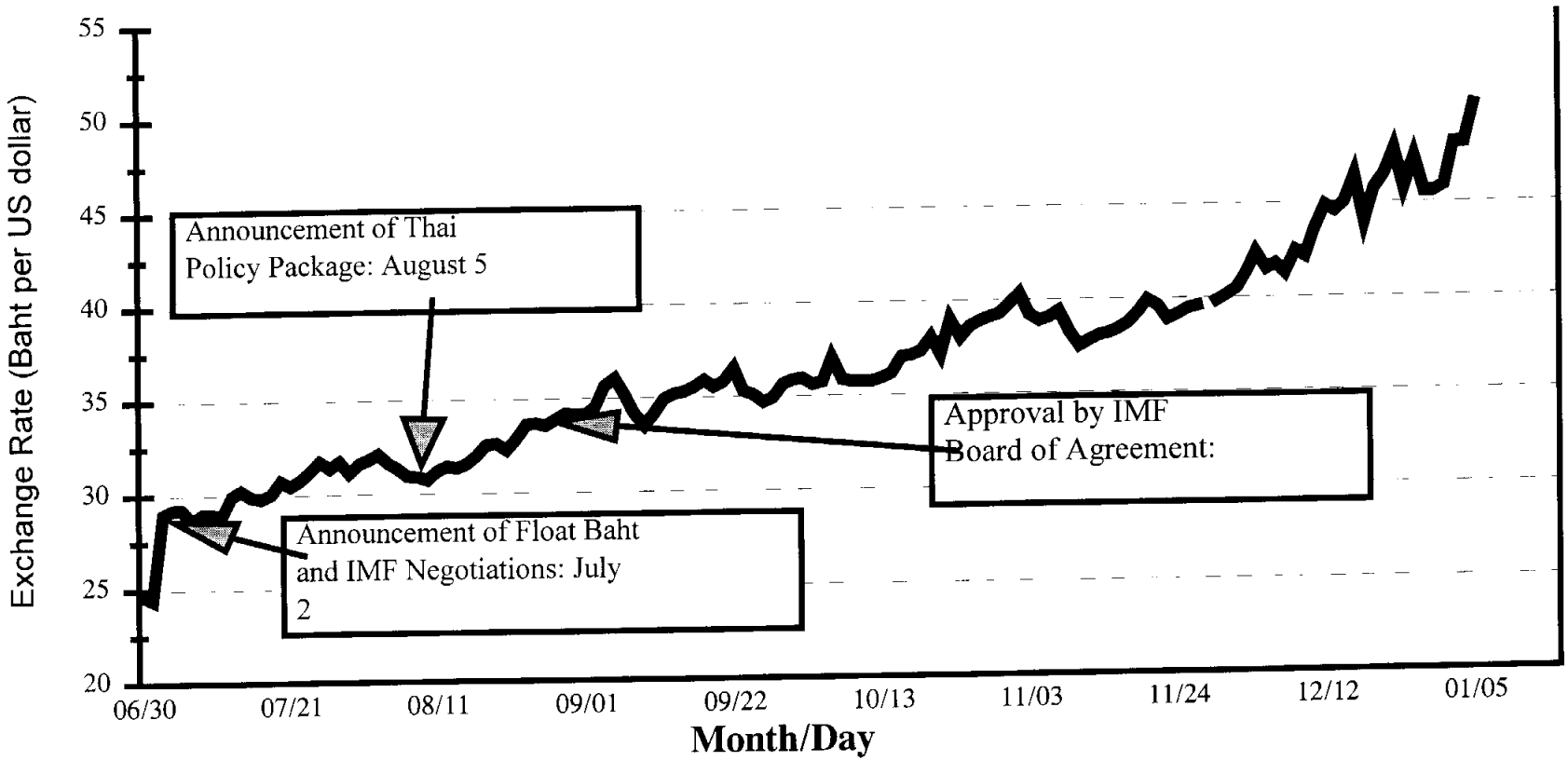


Figure 3. Exchange Rate: Korea

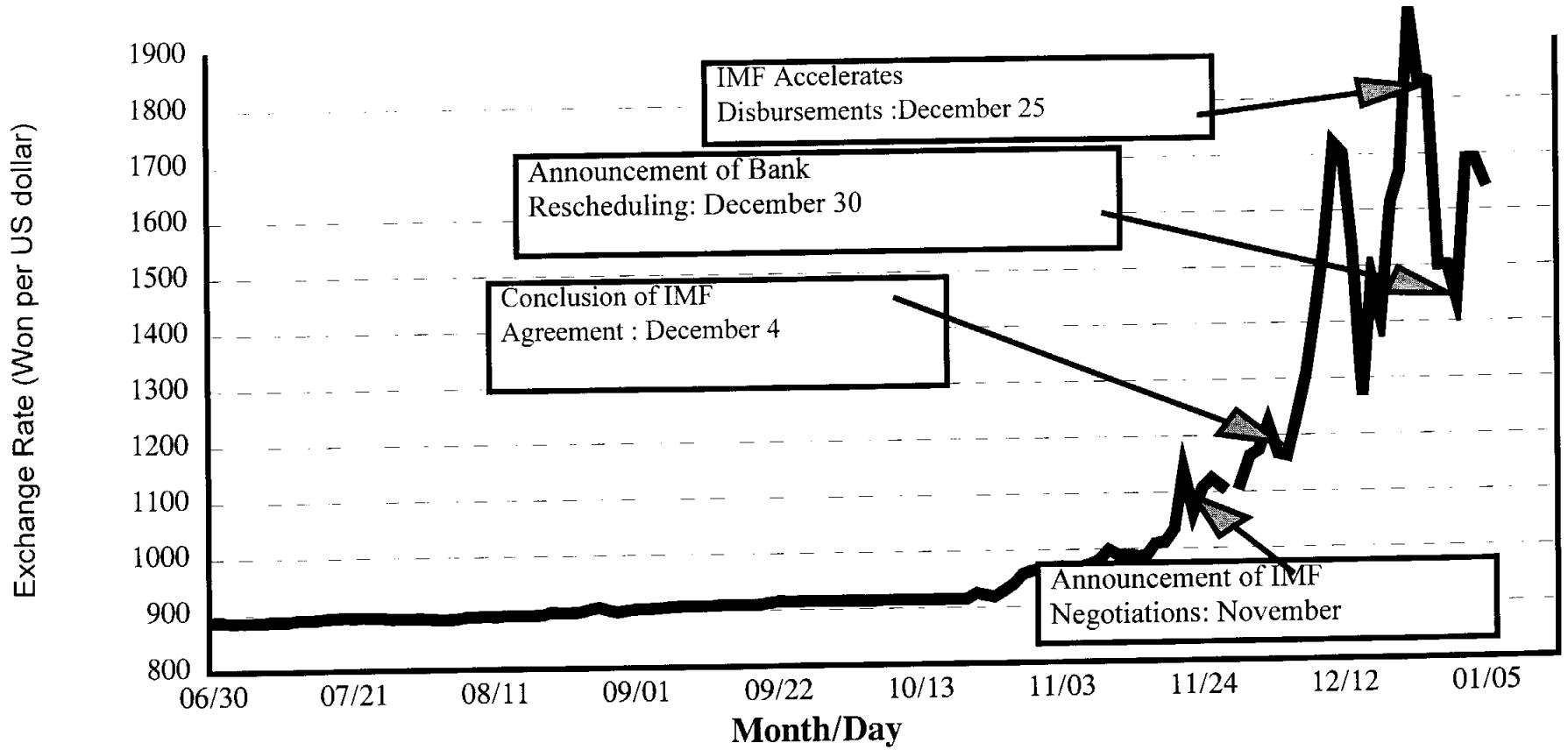
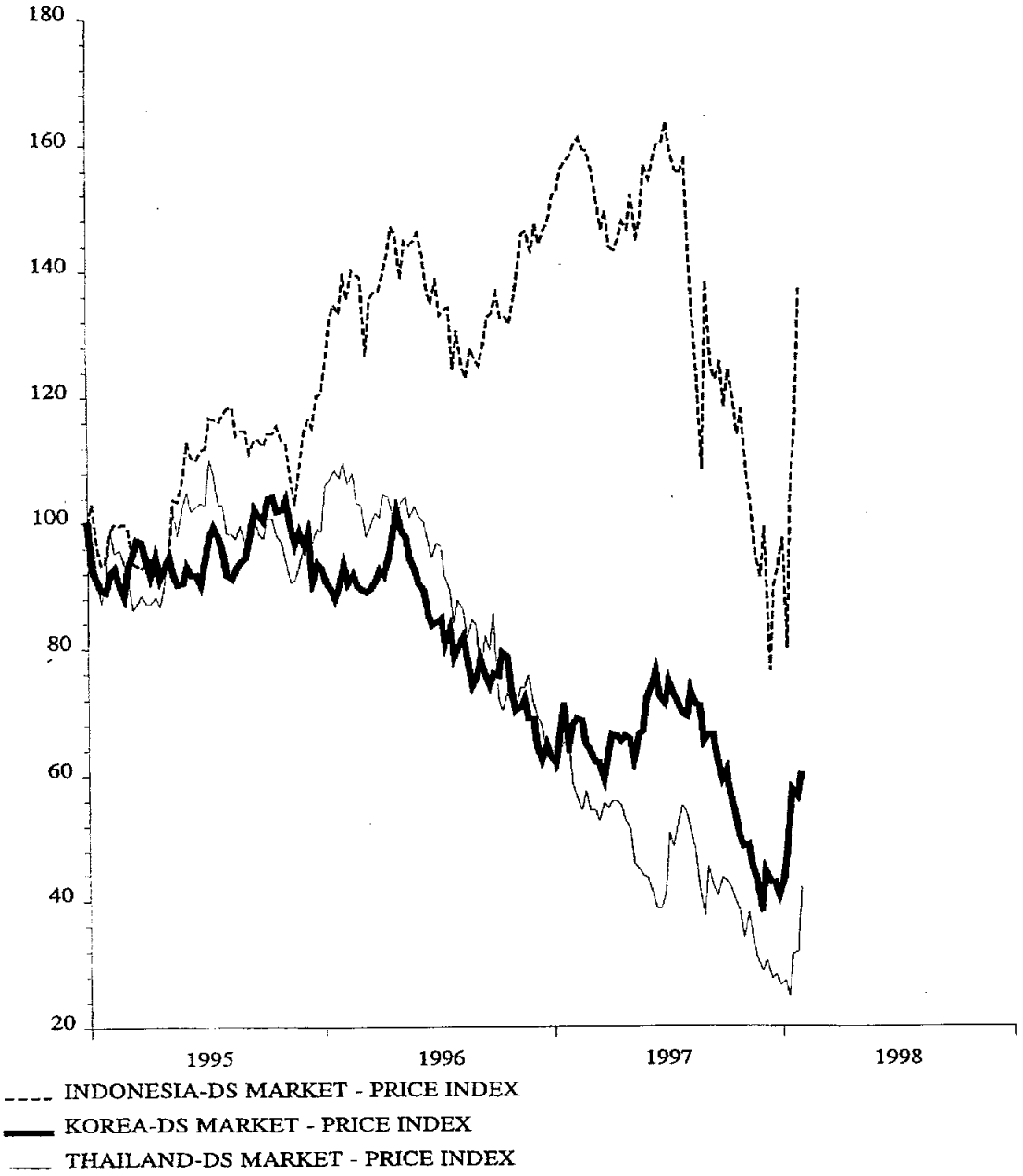


Figure 4. Stock Market Indices

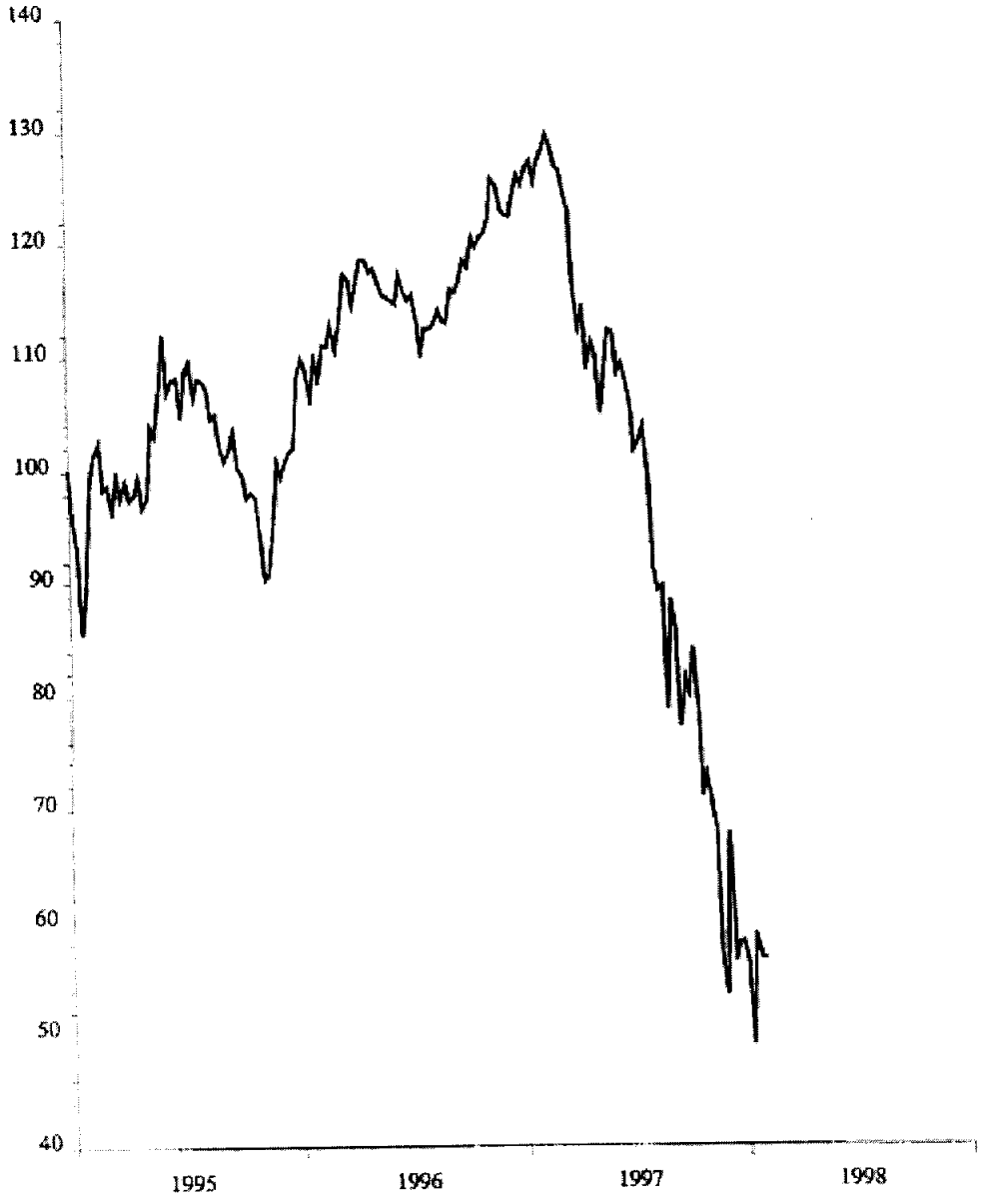
January 1995 to February 1998 (Jan 1995=100)



Source: Datastream

Figure 5. Malaysia: Stock Market Index

From January 1995 to February 1998 (January 1995=100)



High: 129.59 on 24/ 2/97. Low: 49.02 on 12/ 1/98. Last: 56.62

Source: Datastream