

1 Introduction

It has been more than a year since the currency crisis broke out in Thailand and spread to other Southeast Asian countries and Korea. Although the crisis is far from over, its severity has generated an enormous and growing volume of literature on the causes and effects of the East Asian turmoil. Most of the recent studies seek to unearth the domestic and external factors that led to the collapse of the foreign exchange and domestic financial markets and plunged East Asian economies into deep recession. Not surprisingly, these studies are divided on the question of whether the crisis was attributable to an unsustainable deterioration in underlying fundamentals or to intrinsic instability in international lending, which tends to provoke financial panic where short-term creditors withdraw their loans *en masse* from solvent borrowers without warning.

Radelet and Sachs (1998a, 1998b) suggest that neither the changes in international factors nor domestic developments, including political changes, could justify the deep crisis that is still raging in East Asia; they cite instead creditor panic as the major cause of the crisis. Many others disagree with this diagnosis and point to growing weaknesses in financial systems and governance and poor economic policies in the region, although they too would concede that the financial markets overreacted and that asset prices fell further than warranted by the initial deterioration.¹ Although the controversy is essentially an empirical issue, empirical studies have been unable to resolve it, largely because of the lack of data and difficulty in modelling the crisis.

A casual observation of the movements in exchange rates and other asset prices throughout the region since July 1997 shows that the Thai crisis has spilled over into other countries in the region. The spillover also raises the issue of

* Statistical and empirical evidence referred to in this article is given in detail in the above mentioned conference paper on which this article is based, presented at the East Asia Crisis Workshop, 13–14 July, 1998, and which is referred to as Park and Song (1998).

¹ See, for instance, Krugman (1998a, 1998b), Dornbusch (1998), and Corsetti *et al.* (1998). This is also the official view of the IMF on the Asian crisis; see Fischer (1998).

The East Asian Financial Crisis

*A Year Later**

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whether the Thai crisis caused market participants to panic and withdraw their investments and lending from neighbouring countries, irrespective of the strength of their fundamentals. According to Radelet and Sachs (1998a, 1998b), many international lenders may have regarded the region as basically a single entity and therefore expected other countries in the region to experience, soon, similar difficulties to Thailand's. In other words, the contagion has been driven by the irrational behaviour of international lenders, as was the case when the Thai crisis broke out.

Corsetti *et al.* (1998), on the other hand, argue that the contagion was rational and that real shocks may have been propagated through trade spillovers and competitive devaluations, common domestic and external shocks, and financial investment and trade links between the countries. From our perspective, the contagion process is important in that it could shed some light on whether the financial crisis was caused by financial panic or deterioration in economic fundamentals.

The purpose of this article is to analyse the causes and consequences of the East Asian financial crisis with the view to discovering whether intrinsic instabilities in the international capital markets helped set it in motion and also whether they deepened the crisis, particularly in Thailand, Malaysia, Indonesia, and Korea. Section 2 analyses some of the causes and consequences of the crisis in these countries. This will be followed in section 3 by an examination of the spillover effects of the Thai crisis on other countries. An empirical analysis of the various causes of contagion is in section 4, and concluding remarks are in the final section.

2 Causes and Consequences of the Crisis

2.1 Causes

Radelet and Sachs (1998b) suggest three broad categories of explanations for the East Asian crisis: (i) a shift in international market conditions; (ii) growing weaknesses and mismanagement in the East Asian economies; and (iii) instability intrinsic to the international capital markets. According to Fischer

(1998), the East Asian difficulties are primarily the result of inadequate financial sector supervision and poor assessment and management of financial risks. Combined with these risks, relatively fixed exchange rates led banks and corporations to borrow large amounts of international capital, much of it short-term, denominated in foreign currency, and unhedged. The crisis was further exacerbated by governance issues such as lack of transparency in the accounting system and unreliability of financial and economic data.

In opposition to this view, Radelet and Sachs (1998a) argue that while the first two conditions certainly played a role, the structural deficiencies of the international capital market were primarily responsible for the depth, severity, extent, and simultaneity of the crisis in the region. Thailand was suffering an illiquidity, not as insolvency problem, because it had the capacity to service its foreign debts in the long term, but was unable to borrow fresh funds to remain current on its debt servicing obligations in the short run. The creditors panicked, and their abrupt refusal to roll over short-term foreign loans provoked the crisis in Thailand and its spread to the other East Asian countries.

Although it is too early to determine the relative significance of the two contrasting views, a closer examination of the series of events that led to the currency crisis in East Asia and the available evidence leave little doubt that the massive capital inflows to the region during the early 1990s played a great part in bringing on the East Asian crisis. Financial institutions and private corporations in Thailand and other crisis-stricken countries in East Asia were at fault in overborrowing excessively from international capital markets and in financing poor-quality investments. At the same time, however, international lenders must also bear the blame for the East Asian crisis, because it was they who were willing to lend so much money to banks and corporations in East Asia without due diligence and careful risk analyses.²

According to the IMF, the East Asian developing countries experienced a net inflow of \$320 billion during the period of 1990–95, more than twice

² See also Stiglitz (1998a) on this point.

their total inflow during the whole decade of the 1980s.³ Capital inflows into the five Asian countries discussed here – Indonesia, Korea, Malaysia, the Philippines and Thailand – averaged over 6 per cent of GDP between 1990 and 1995. The net capital inflows into Thailand averaged more than 10 per cent of GDP during the same period and actually reached 13 per cent in 1995. The bulk of the inflows were funds borrowed by banks and financial institutions. In Indonesia, the inflows averaged a more modest 3.9 per cent of GDP, mostly in the form of borrowing by the corporate sector. Malaysia also saw a massive increase in capital inflows, averaging 9.7 per cent of GDP, but these inflows consisted mostly of foreign direct investment (FDI). Korea had also been a recipient of a large capital inflow, much of which was borrowing by banks and other financial institutions, although the total amount relative to GDP was a modest 2.2 per cent.

The capital inflows to each of these countries had been excessive in that they were much larger than could have been absorbed in the short-run without destabilising the foreign exchange and other domestic financial markets. The capital inflows put upward pressure on prices of non-tradeables and built up excess supply of foreign exchange, leading to a substantial appreciation of the real exchange rates (RERs).

The massive inflows also fuelled the large increase in domestic bank lending in the region: much of the lending was financed by bank borrowing offshore. The increase in the availability of both domestic and external financing generated strong stimuli for domestic investment. Domestic investment surged in all of the five countries in the 1990s, and in the case of Thailand and Malaysia, it shot up to over 40 per cent of GDP. The investment boom pushed up the demand for imports and eventually resulted in a large increase in current account deficits because the rates of saving in these countries remained relatively stable.

Corsetti *et al.* (1998) argue that the rise in foreign indebtedness was to a large extent driven by domestic investment promoted by the East Asian governments themselves out of their eagerness to sustain

high rates of growth. However, in our view, the causality ran in the opposite direction: other than the capital inflows, there had been no developments that could have stimulated investment to such a degree. Empirical evidence comparing the ratios of the current account to GDP and of net capital inflows to GDP before and after capital account liberalisation can be shown to be consistent with this hypothesis (Park and Song 1998). This supports the argument that with the opening of domestic financial markets and decontrol of capital account transactions, capital inflows into the East Asian countries surged and that the increased availability of foreign capital had made it easier to finance many of the projects which would not have been undertaken otherwise. That is, capital inflow was driving domestic investment, not the other way around.

Although the available evidence is not conclusive, a substantial proportion of the investment was directed to projects in the non-tradeable sector, in particular real estate and property, and to speculative investment in stocks and other financial assets in some of the East Asian countries. In Thailand, it is evident that such investment fuelled real asset speculation and created a bubble in the property market. However, in other countries, notably Korea, the bulk of the capital inflow had been used to finance investment in manufacturing.

During the investment boom period, the incremental capital output ratios (ICORs) rose in all countries except the Philippines. The increase, which reflects a decline in the profitability of investment, may have been one of the factors which made these countries more vulnerable to a crisis. However, Radelet and Sachs (1998a) argue that the decline in investment quality was not serious enough to provoke a crisis, since other emerging markets with higher ICORs did not experience a crisis.

Throughout East Asia, export growth began to slow considerably around 1996 as a number of adverse developments had cut into the competitiveness of exporters in the region. As noted earlier, the capital inflows were exerting appreciatory pressure on the real exchange rates, and this was further aggravated by the continuous depreciation of the Japanese yen

³ East Asian developing countries include Cambodia, China, Indonesia, Korea, People's Republic of Lao,

Malaysia, Myanmar, the Philippines and Thailand.

against the US dollar, which had begun in August 1995, while the long awaited recovery of the Japanese economy has yet to occur. To make matters worse, these countries also suffered a large deterioration in the terms of trade in the early 1990s. It is not surprising that the combination of these developments contributed to the decline in export growth and to a further increase in current account deficits.

With the slowdown in growth in export earnings and the associated deceleration in GDP, a growing number of both large and small firms suffered heavy losses and were unable to meet their debt obligations. Many of them eventually went bankrupt. What in some respects was the critical event leading to the crisis, however, was the bursting of the bubble in the property market in Thailand in early 1997. The increasing number of business failures then translated into a large increase in non-performing loans at banks and other financial institutions. The visible deterioration in some of the macroeconomic fundamentals became a cause of growing concern among both domestic and foreign creditors, as the rapid growth supported by foreign capital began to appear unsustainable as early as in the second quarter of 1996.

The cost of borrowing offshore started to go up and foreign creditors became increasingly reluctant to extend new loans to either banks or private corporations in the five countries. The availability of credit at the long end of the international capital markets began to dry up and, as a result, a growing share of the current account deficits had to be financed by short-term foreign-currency borrowing. By the third quarter of 1997, the short-term liabilities of Thailand, Indonesia, and Korea, which were going to mature before the end of the year, exceeded their holdings of foreign exchange reserves. While the growing current account deficits, the increasing costs of borrowing from the international capital markets, the losses of reserves, and the burgeoning short-term foreign liabilities were reaching dangerous levels, the policymakers were often inconsistent in their policy responses. They were also in some respects misguided, especially in maintaining effective pegging of their currencies to the US dollar. What is more, the frequent changes in policy stance, which were often dictated by political considerations, greatly undermined the credibility of the governments.

It is the bursting of the speculative bubble in the property markets and the failure of finance companies which appear to have triggered the crisis in Thailand. The effects of the Thai crisis were then transmitted to the neighbouring countries. With a time lag, both Hong Kong and Taiwan came under speculative attacks in October 1997, but they were able to ward them off. Korea was not so lucky. A series of corporate bankruptcies, a rising current-account deficit, and increasingly serious non-performing loan problems at commercial banks and merchant banks threw the country into a severe currency crisis in late November 1997.

Radelet and Sachs (1998a, 1998b) argue that the changes in international conditions, such as the depreciation of the Japanese yen and the terms-of-trade losses, could not explain the sudden eruption of the currency crises in East Asia. Although the economic and political changes in the East Asian economies – in particular the growing weaknesses, policy mismanagement, and the revelations of the true severity of the difficulties in the corporate and banking sectors – obviously played a role, they were not so serious as to cause such a sudden shift in market expectations as actually occurred in East Asia. Radelet and Sachs also provide econometric evidence supporting their hypothesis.

To what extent were international creditors the culprits of the East Asian crisis? If they were culprits at all, how serious was their herd behaviour? Creditors acting irrationally cannot exert much effect individually; but collectively, they can produce sharp, costly, and fundamentally unnecessary reversals in capital inflows because no one creditor is willing to make a loan if too many other creditors do not lend as well (Radelet and Sachs 1998a, 1998b). In our view, international investors cannot avoid bearing most of the blame for the crisis. They exacerbated the adjustment costs that caused their flight in the first place. The consequences of their panic proved their perception of the economic and political difficulties in a self-fulfilling way.

Even before capital market transactions were deregulated and ever increasing volumes of foreign capital began to flow into East Asia, most of these countries were already growing at higher rates than any others in the world. In fact, it is this success, and the potential for future success, that attracted

foreign capital into the region. Not only was there both rapid growth and domestic stability, but the rates of return to capital, adjusted for credit and market risks, were and still are relatively high in East Asia. In most East Asian countries, the national budgets are balanced or are generating surpluses. Since the mid-1980s, all of the countries in the region have pursued ambitious policies of trade and financial liberalisation, and they continue to do so to this day. Given these sound economic fundamentals and the region's commitment to liberalisation, commercial banks, fund managers, and other institutional investors saw enormous opportunities to make money and therefore lent enormous sums to East Asian borrowers. Many East Asian financial markets have become emerging markets, where investors have sought to be the first to move in and also to be ready to get out first, if need be. To some, this type of investment and economic expansion looked like a speculative bubble in the making.⁴

When foreign investors see an opportunity to earn handsome returns, they often rush into a local financial market as a herd. As a result, the volume of their aggregate lending can be excessive in that it is greater than what the host country can absorb in the short run. Many of these foreign investors, especially small creditors, are likely to be noise traders, in that they follow closely major international banks' patterns in their lending, since it would be too costly for them to collect and analyse economic and other information on the economies they invest in and to do due diligence on the local institutions of those countries.

By the end of June 1997, relatively small Canadian and European banks had lent to Korea \$10,721 million, which was 5.7 per cent of their total international lending. Within a six-month period, they curtailed their lending by \$2,973 million, thereby reducing their Korean exposure to 2.7 per cent, much greater adjustments than those by the major international banks from the UK, Germany, and France during the same period. According to estimates of the Institute of International Finance, the external financing of the five East Asian countries

(Indonesia, Korea, Malaysia, the Philippines, and Thailand) fell to \$15.2 billion in 1997 from almost \$93 billion. A swing of more than \$70 billion over a period of only one year cannot be anything but the result of a financial panic.

The policy authorities in East Asia should have been more careful in opening their financial markets and should have better managed and more efficiently allocated the inflows of foreign capital. However, during the early 1990s, these countries were under heavy external pressure to deregulate and open their financial systems, although in retrospect it is clear they were unprepared to do so, given their lack of experience and expertise in supervising financial institutions. This external demand was compounded by the domestic market pressure stemming from the large interest rate differential between the home and foreign markets.⁵

Could they have avoided or minimised the costs of the crisis if they had been more aggressive in liberalising their financial markets? The available evidence would suggest not. After accepting the IMF programme, Korea, since December 1997, has carried out extensive financial market deregulation and opening. Although Korea is still in a crisis condition, the financial market opening has so far done very little in the way of restoring the confidence of foreign market participants in the Korean economy. It is often argued that had Korea opened the domestic long-term bond market earlier, it would have been able to rely less on short-term foreign currency loans and hence minimise the risks of a liquidity problem. This argument is seriously flawed. Foreign holders of Korean equities had begun to pull out of the Korean market in September 1997, even before Korea's financial situation became precarious, thereby precipitating the crisis. Foreign investors holding non-public Korean bonds would have acted accordingly whenever they became uncertain and frightened off by the pessimistic prospects of the Korean economy.⁶

As noted earlier, there had been no evidence, statistical or otherwise, that East Asian economies

⁴ See Park (1996).

⁵ According to Stiglitz (1998b), the misallocation of investment in the crisis countries is not evidence that their system is fundamentally flawed and better

regulation of banks would not have deterred private corporations and non-banks from borrowing directly on international capital markets.

⁶ See Park (1998).

borrowed heavily to sustain high rates of investment at home before the onset of the crisis in the region. Even if the policymakers of these countries were following such a development strategy, they would not have been able to borrow as much as they did unless there were willing lenders. And our analysis shows that there were plenty of eager lenders bringing large sums of money into the region for the purchase of financial as well as real assets and for lending to financial institutions. Thailand, Malaysia, Korea, and the Philippines were all extremely averse to the kind of pell-mell financial market opening often demanded of them. In the end, they buckled under the pressure, even though they knew that they were not prepared to pursue comprehensive opening.

Using a simple probit model, we have empirically examined whether the onset of the crisis in East Asia was the result of an unsustainable deterioration in macroeconomic fundamentals or caused by financial panic. Our analysis uses a panel data for the 1995–97 period for eight East Asian countries. Of the eight economies, Indonesia, Thailand, Malaysia, the Philippines, and Korea fell into crises, whereas Taiwan, Hong Kong, and Singapore managed to successfully fend off similar crises. Our probit model uses four explanatory variables: the current account/GDP ratios; growth rate of private claims; the degree of real exchange rate overvaluation; and the ratio of foreign reserve holdings to short-term foreign liabilities plus imports. If the crisis is a case of a liquidity problem, foreign reserve holdings should be significant in our estimation.

Our estimation results show that the current account deficit, misalignment of the real exchange rate and the size of the international reserve were important (Park and Song 1998). Our results are not able to determine which interpretation – financial panic or fundamentals – goes further in explaining the causes of financial crises in East Asian countries. It appears that both variables played roles in initiating and deepening the currency crisis.

2.2 One year after the crisis

One year after the crisis erupted in Thailand and spread to other countries in the region, East Asia is littered with idle plants, insolvent financial institutions, loan defaults, and bankrupt businesses, both

large and small. All of the countries hit by the currency attack are now in deep recession. Their GDP growth will collapse in 1998 with no prospects for early recovery. The total volume of foreign capital inflows has dwindled to a trickle and is unlikely to exceed the 1997 level. Similarly the RERs, which depreciated sharply in 1997, are unlikely to change significantly for some time to come. The stock markets in the region remain depressed and show little sign of recovery.

Thailand, Indonesia, and Korea are expected to generate large ‘recession surpluses’ on their current accounts, ranging from 2 per cent of GDP in Indonesia to 8 per cent in Korea in 1998. It was expected that after the IMF programmes were initiated the patterns of adjustment in these countries would follow a ‘V’ shaped recovery, but with the passage of time, it appears that the performances are more likely to resemble the letter ‘L’, with long drawn-out floors. Unlike Mexico in 1994 and 1995, the East Asian countries are going to suffer a deep, sharp shock with long-lasting effects. The East Asian recovery has been further frustrated by the ongoing crisis in Japan, which is no longer able to play the role of locomotive in the region.

Thailand, Indonesia, and Korea have been pursuing IMF rescue and restructuring plans. We have to ask, is this working? In all three countries, the major components of the IMF programmes include: (i) a macroeconomic policy framework based on fiscal tightening and monetary contraction aimed at stabilising the nominal exchange rate; (ii) financial, corporate, and labour market restructuring; and (iii) market deregulation and opening, including in the financial sector.

The IMF programmes were designed to reestablish financial market confidence by stabilising the exchange rate. In this regard, the contractionary monetary and fiscal policy was necessary and to some extent successful in calming the foreign exchange markets in earlier stages of the crises, but it has also exacted a heavy cost on these countries, as we shall discuss later in this section. The IMF places emphasis on structural reforms as a crucial element of its rescue programmes in restoring financial market confidence. To signal their determination, the crisis countries were asked to take decisive actions by closing or suspending non-

viable financial institutions as well as to follow a strict timetable of longer-term reforms for the financial markets, corporate governance, and domestic market liberalisation and opening.

In earlier stages of the crisis, the IMF programme for Korea stood out as the most successful of all the similar programmes applied to countries in East Asia. A wide range of measures for financial market opening, suspension of a number of failing merchant banks and, most importantly, the Korean government's commitment to restructuring of financial institutions saddled with huge burdens of non-performing loans and highly leveraged and poorly managed large conglomerates, were well received and widely considered appropriate by foreign financial-market participants and multilateral institutions alike. This favorable response no doubt helped Korea to reschedule \$24 billion in short-term foreign liabilities at banks into longer-term loans in early February 1998.

This rescheduling was followed in April 1998 by the successful floating of \$4 billion in sovereign bonds. These two events were regarded as the turning point in Korea's adjustment in the crisis and signs of a quick recovery with severe but transitory effects, resembling the pattern of the Mexican adjustment. However, the Korean economy has since sunk deeper into recession, and perhaps for this reason, foreign creditors' confidence has yet to be restored, as evidenced by Korea's borrowing cost premium of 500 basis points or more over LIBOR (London Inter-Bank Offered Rate).

Soon after the restructuring plan was announced in early 1998 in Korea, reports began to surface that the levels of non-performing loans and corporate debts were much higher than expected. The total of non-performing loans at banks was estimated to be more than 100 trillion won (\$70 billion), much more than expected, and the volume of corporate debts was estimated at almost twice the size of Korea's annual GDP. The dismal state of affairs at Korean corporations and financial institutions naturally raised uncertainties in the minds of foreign creditors as to whether Korea would be able to mobilise enough resources domestically to pay off these debts.

In the meantime, the high nominal interest rate and credit crunch further deepened the recession. Since

most Korean firms are highly leveraged, the high cost of credit increased their debt service burden so much that an increasing number of both large and small firms – some of which would be completely viable under normal circumstances – have been closing down their operations. The unemployment rate at the beginning of May 1998 was more than twice the rate of a year earlier, and the GDP forecast for 1998 has been revised downward to minus 5 per cent. The current account has been generating a huge surplus almost entirely because of the collapse in imports.

Contrary to initial expectations, the real exchange-rate depreciation and domestic recession have not improved the prospects for a boom in Korea's exports, certainly not as much as under different circumstances. Exporters have been hampered by the limited availability of suppliers' credits and by the unwillingness of foreign banks to accept Korean banks' letters of credit. The limited availability of import credits has also made it costly for exporters to import parts, components, and other industrial materials needed to produce export goods.

What has gone wrong in Korea and the other crisis countries in East Asia which have been following an IMF programme? By and large Korea's experience with restructuring would typify the kinds of predicaments these countries are faced with, although they would differ in detail.

Foreign lenders, including major international banks, have yet to resume new lending. They are even reluctant to restore trade credit facilities, largely because they are uncertain about the future outcomes of the restructuring plans of these countries. Their position has been that they would not return to East Asian financial markets unless they are convinced of the success of the restructuring efforts, or at least until they see some positive signs that the restructuring programme is working. The IMF has been monitoring the process of restructuring in these countries and has on many occasions expressed its satisfaction with the progress they have made. The IMF's endorsement has done little in the way of building up foreign creditors' confidence, however. Perhaps, as Radelet and Sachs (1998b) point out, the IMF may be 'poorly placed to rally market confidence in the short run'.

More importantly, there is no consensus on what constitutes a successful restructuring. Experts differ in their opinion of the proper scope, speed, and optimal path of adjustment that a successful reform of banks, corporations and labour markets would require. There are also no widely accepted indicators or criteria by which one could judge whether a restructuring programme is progressing as planned. Foreign market participants cannot be lumped into a single group of homogeneous lenders. Instead, they include a large number of commercial and investment banks, insurance companies, bond market dealers, and fund managers of all types with diverse business backgrounds, and different investment strategies and interests. It is hard to imagine that as a group they could reach consensus on the optimal restructuring programme to help these East Asian countries to find a way out of the current crisis. Different individual lenders are likely to have different views on the appropriate scope and speed of any restructuring plan and react differently to the side effects of a crisis. Some creditors may not believe these crisis countries will survive the restructuring programme or have the will to follow it through to the end. They may view the side effects as a signal of a mismanaged and hence unsuccessful restructuring. In particular, small lenders have been sensitive to the market disruption and instability that inevitably occur during the restructuring process.

Moreover, the dilemma of the collective action problem that played a role in causing the crisis also serves as a serious roadblock to the restructuring process. Individually, some foreign creditors probably believe that the IMF programme is the best alternative for the crisis countries to restore market confidence in East Asia. They may also realise that restructuring is a protracted process often marked by backslidings and relapses and often opposed by adversely affected groups such as labour unions. They are also likely to know that the resumption of lending and the restoration of export and import related credits is crucial for speeding up the restructuring process. However, few individual creditors will make a move if other creditors do not lend as well.

The reluctance of foreign creditors to restore trade credit facilities and to extend new loans to these countries creates a serious dilemma of a non-

cooperative game, as their reluctance to normalise credit flows certainly hampers and could possibly jeopardise the entire restructuring programme. In fact, the longer they wait until they see tangible results of restructuring, the higher the restructuring costs and hence the higher the potential losses to international lenders. The reason for this is that the restructuring plan cannot be engineered successfully unless corporations and banks are able to obtain trade credits and new loans from international financial markets. International creditors know this, but they are demanding the evidence that the restructuring plan is moving in the right direction before extending their loans. And different lenders demand different pieces of evidence. As a result, the catch 22 situation continues in East Asia.

Individual lenders also know the pitfalls of the non-cooperative game that both they and East Asian countries are locked in. However, individual lenders would not take an initiative to break the deadlock by making a new loan unless other lenders are prepared to do the same. As in the case of a self-fulfilling crisis, the problem of collective action in international capital markets could possibly derail the IMF-guided restructuring plans.

3 The Contagion of the East Asian Crisis

3.1 Evidence of contagion

Even a casual observation of the asset price movements of East Asian countries strongly suggests that the currency crisis in Thailand in July 1997 did indeed spill over into other Southeast Asian countries – Indonesia, Malaysia, the Philippines, and Singapore – in the early stages and to Hong Kong, Taiwan, and South Korea somewhat later. The entire crisis began when the Thai baht lost roughly 15 per cent of its value against the US dollar nearly overnight after Thailand proved unable to maintain its peg to the US dollar and adopted a floating exchange rate system on 2 July 1997. This sent shock waves throughout the whole of Southeast Asia and immediately caused the Malaysian ringgit, the Philippine peso, and the Indonesian rupiah to fall precipitously. The Singapore dollar did not escape unscathed either, although it held its value better than the other currencies.

Other countries in East Asia have also been affected. Taiwan and Korea have experienced large depreciation of their currencies and serious foreign-exchange market turmoil. During the first five months after the Thai crisis, Taiwan saw its currency depreciate by more than 16 per cent against the US dollar, and the Korean won fell by 3.14 per cent. Unable to control the speculative pressure on the won and the volume and flow of foreign capital, the Korean government by late November 1997 had little other choice than to approach the IMF for financial assistance, and it subsequently adopted a free-floating exchange-rate system. While Hong Kong has been able to maintain the parity of its currency vis-à-vis the US dollar – at the same level as set in 1983 – despite the plunge in stock prices caused by a large capital outflow, doubts have been raised as to whether the Hong Kong authorities can continue to protect their currency indefinitely in the face of such a ferocious speculative attack and the recent weakening of the yen.

All of the eight East Asian countries listed above have seen huge declines in their stock prices in addition to sustaining steep depreciations of their currencies. The co-movements in the asset prices of the East Asian currencies since July 1997 raise two issues, which are interrelated. One is whether the simultaneous depreciations in the currencies and the sharp drop in stock prices of these countries were the result of contagion of the Thai crisis. It is possible that all of these countries have experienced internal and external shocks similar to those which brought down the foreign exchange and other financial markets in Thailand. On the other hand, if indeed it can be shown that the Thai crisis has been contagious, the East Asian experience also raises the issue of the importance of identifying the causes of contagion.

In order to ascertain whether the contagion effects exist in the East Asian crisis, we examined to what degree the volatility of the Korean won, measured by the GARCH variance, has changed due to the currency crises in Thailand, Malaysia, and Indonesia. Conversely, we also investigated whether exchange-rate volatility in those three countries was affected by the outbreak of the currency crisis in Korea (Park and Song 1998). Our empirical results demonstrate that the currency crisis in East Asia was contagious; the effects of the crises in Indonesia

and Thailand were transmitted to the foreign-exchange market while the effects of the Korean crisis also spilled over into the two Southeast Asian countries.

This empirical evidence raises two additional questions. One naturally concerns the causes of the contagion. Did the observed contagion reflect panic on the part of international creditors as did the crises in specific countries? Did international creditors make little effort to distinguish among East Asian countries including Taiwan and Korea? And could the observed spillover be explained by weak fundamentals in those affected countries and therefore be considered rational? This question will be taken up in Section 4.

3.2 The channel of contagion

The other question concerns identification of the major players who initiated and spread the contagion throughout East Asia. Commercial banks, fund managers, and other institutional investors and private holders of Asian equities and other financial assets, all must have been involved in and hence responsible for the spillover of the Thai crisis. However, is it possible to determine which particular group of foreign investors were the main carriers of the contagion? Existing literature assumes that one specific group of international institutional investors played the most important role in spreading contagion in the past financial crises in emerging markets.

This is known as the institutional investors' practice channel: contagion is transmitted through the investment community in New York. The large depreciation of the currency and decline in equity prices in Thailand that occurred due to the Thai crisis caused international investors to incur large capital losses. This may have induced institutional investors in New York, specifically open-end emerging-market mutual-fund managers, to sell off securities in emerging markets after the Thai crisis in order to raise cash, because they would naturally expect to see a higher frequency of redemptions in the wake of the Thai crisis. Another possibility is that the Thai crisis could very well have induced institutional investors in New York to sell off their holdings in other emerging countries in East Asia, because they tend to maintain proper proportions of each type of stock, and stocks of each country or

region in their portfolios. As a result, the equity markets in other East Asian countries would also experience large declines in prices, and their currencies would significantly depreciate.⁷

Frankel and Schmukler (1996) took up the question of whether or not the institutional practice channel was partly responsible for spreading the contagion of the 1994 Mexican crisis to other developing countries in Latin America and Asia. If this channel was important, then the international mutual fund managers in New York would have responded to the Mexican crisis by selling off securities in other emerging markets in addition to Mexico. Frankel and Schmukler (1996) therefore tested the hypothesis that the adverse shock in Mexico was not directly transmitted to other emerging markets, but that instead it went through Wall Street in New York on the way.

Following the method suggested by Frankel and Schmukler (1996) we investigated the possibility of contagion being transmitted by this channel in the East Asian crisis (Park and Song 1998). Our empirical results seem to indicate that the shocks to the Thai stock market affected the stock markets of Indonesia, Malaysia and Singapore through the international financial centres. The institutional practice channel does seem to have played a part in transmitting the contagion of the Thai crisis to other Southeast Asian countries.

4 Causes of Contagion

Most of the previous studies on currency crises had sought to determine under what conditions and how a speculative attack on a single foreign-exchange market would be mounted and sustained (see e.g. Krugman 1979; Flood and Garber 1984; Flood and Hodrick 1986; Blanco and Garber 1986). These studies, however, do not analyse how a crisis in one country can spill over into other countries. Impacts which the Mexican crisis had on the currencies of many other Latin American and even some Asian countries, after it erupted in December 1994, are well documented. Although the Mexican crisis has generated a great deal of interest in analysing the causes of speculative attacks, not much is known

about the causes of contagion (see, e.g., Kaminsky *et al.*, 1997; Calvo and Mendoza 1996; Frankel and Rose 1996). There are only a few recent empirical studies on the causes of currency crisis contagion (see, e.g. Calvo and Reinhart 1996; Frankel and Schmukler 1996; Eichengreen *et al.* 1996).

By a broad classification, there are three causes of contagion. The first is related to macroeconomic similarities. It seems only reasonable to expect that a currency crisis in one country will lead to an attack on the currencies of other countries which have macroeconomic conditions similar to those of the country where the crisis began. For example, international investors may readily conclude that those countries which experience the same macroeconomic difficulties as Thailand will find it difficult to maintain the stability of their currencies, so the investors subsequently pull out of these markets *en masse*.

If the Thai crisis reflected macroeconomic mismanagement and an unsustainable deterioration in macroeconomic fundamentals, the macroeconomic similarities suggest that to the extent Southeast Asian countries share some of the same structural characteristics and macroeconomic difficulties in common, a similar problem was responsible for the contagion in East Asia in the second half of 1997. On the other hand, if sudden shifts in market expectations and confidence were the key causes of the Thai crisis, then financial panic was the major reason for the regional contagion.

The second cause of contagion is the trade link and the associated competitive devaluations. Any country which is a major trade partner of a country where a financial crisis has resulted in a large currency depreciation will likely be the target of a speculative attack on its foreign exchange market because the investors will naturally expect it to incur a decline in its exports to the crisis-affected country and hence a deterioration in its trade account. This may also be the case if the two countries compete heavily in the same export markets because the depreciation of one of these country's currencies will adversely affect the competitiveness of the other country.

⁷ The institutional investors' practice channel does not explain why stockholders of mutual funds in New York

and elsewhere demand redemptions of their investment.

The initial depreciation could lead, through trade linkages, to a significant deterioration in the current accounts as well as anticipated competitiveness of other countries. According to Corsetti *et al.* (1998), a game of competitive devaluation causes greater currency depreciation than required by the initial deterioration in fundamentals, and the non-cooperative nature of the game results in still deeper depreciation relative to what could have been attained in a cooperative equilibrium. If market participants expect that a 'game' of competitive devaluation will follow as a result of a currency crisis in one country, they will naturally sell their holdings of securities of other countries and curtail their lending or refuse to roll over short-term loans to borrowers in those countries.

Even countries such as Taiwan and Singapore, which were not necessarily vulnerable to speculative attack, saw their exchange rates depreciate substantially. An interesting question to be raised is whether or not these two countries let their currencies depreciate to maintain export competitiveness in order to drain foreign reserves by defending the original parity. Their response may have been rational and optimal in that the perceived welfare costs of maintaining stable exchange rates might have been too high. Corsetti *et al.* (1998) seem to argue that these two countries would have defended the original parities, given their massive holdings of reserves, if they were not concerned about loss of competitiveness. However, their decision to float their currencies may have been dictated by their efforts to fend off possible speculative attacks driven by arbitrary shifts in expectations and the reaction of panicky and irrational investors.

The third cause of contagion entails the process of economic integration; that is, the integration of individual countries' markets for both goods and services, including financial services. In a region that is increasingly integrated economically, the trade, investment, and financial links transmit real shocks to the financial markets of other countries. If firms in Singapore, Hong Kong, Taiwan, and Korea had exported and heavily lent to Thailand and Indonesia and had also invested in firms in those two countries, the financial crisis would be rationally reflected in the market valuations of Thai and Indonesian firms and financial institutions, as their profitability would be adversely affected by the crisis.

With regard to the spread of the crisis, the degree of financial market integration is especially important. If the financial markets of the countries in the region are tightly integrated, then market participants will expect to see co-movements in financial asset prices in those markets. This condition may give rise to contagion of a shock.

4.1 Macroeconomic similarities

The macroeconomic conditions of Indonesia, Malaysia and the Philippines were in many respects similar before the Thai crisis erupted. These countries were dynamic, newly emerging economies which had succeeded in sustaining rapid growth through export promotion. It was also known that their economic fundamentals were strong before the onset of the financial crisis, but they shared some rather more disturbing similarities as well.

First, Indonesia, Malaysia, the Philippines and Thailand experienced slowdowns in economic growth in 1996. Second, they had seen their current account deficits rise substantially, in part due to sluggish growth in export earnings. As a percentage of GDP, Indonesia, Malaysia, the Philippines, and Thailand saw their current account deficits deteriorate substantially: from 2.0, 3.8, 1.7, and 5.7 in 1992 to 3.4, 4.9, 4.7, and 7.9 per cent in 1996 respectively. Third, these countries experienced large foreign capital inflows during the 1990s, and a significant part of these flows was in the form of short-term portfolio investment. Fourth, the four countries accumulated large external debts. In 1996, Indonesia's, the Philippines' and Thailand's external debts amounted to 48.7 per cent, 52.1 per cent and 48.8 per cent of GDP respectively. Fifth, the real exchange rates in all four countries appreciated markedly from 7.6 per cent in Indonesia to 11.9 per cent in the Philippines between 1990 and the first half of 1997. Finally, the levels of international reserves as a percentage of yearly imports were falling in Malaysia, the Philippines, and Thailand during the first half of 1997 (for all these data, see Park and Song 1998).

This common deterioration in macroeconomic fundamentals suggests that these four Southeast Asian countries had become increasingly vulnerable to a reversal in capital flows and hence to a speculative attack. Alarmed by the burgeoning current account deficits, a growing number of international

creditors may have contemplated reductions in their Asian exposure. The Thai crisis confirmed their doubts, and triggered their pullout from other Southeast Asian countries. In this sense, the contagion in Southeast Asia was not necessarily the result of financial panic but rather of rational decisions on the part of investors. This explanation, however, does not account for the speculative attacks on Taiwan, Hong Kong, Singapore and Korea, all of which were known to be much stronger in terms of macroeconomic fundamentals.

To examine this issue, we have devised a simple score analysis of macroeconomic structure and soundness (Park and Song, 1998). We have chosen twelve macroeconomic variables for the eight East Asian countries (Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand). To measure their macroeconomic soundness, we first calculate a mean and standard deviation of each variable for the eight countries for the 1994–1996 period. On the basis of the magnitude of the deviation from the mean, each country is assigned a yearly score.

The results of our score analysis suggest that the macroeconomic dissimilarities were substantial among some countries; it is highly unrealistic to lump all East Asian countries into a single category in terms of macroeconomic conditions, especially in the cases of Taiwan, Singapore, and Hong Kong. The speculative attacks on the currencies of these countries seem to have been partly driven by financial panic.

4.2 Financial market integration

Cross-border bank lending, FDI and capital market activities of international investors have encouraged financial market integration among countries. In general, the more closely integrated two countries are financially, the more closely the financial prices in those countries will move together over the long run. Suppose that the stock markets in Thailand and Indonesia are tightly integrated and that the stock prices in Thailand decline significantly due to a certain permanent shock. Investors, domestic as well as foreign, will naturally expect stock prices in Indonesia to fall, and probably without much time delay, perhaps even as quickly as the very next trading day. Observing the market plunge in Thailand, investors will have a strong incentive not only to

sell off Indonesian stocks but also to withdraw their money from Indonesia. And so the shock which originally hit Thailand spills over into Indonesia.

The financial integration of East Asian countries has been examined in many empirical studies, but most of them focussed on financial integration between East Asia and the developed countries such as the US and Japan (see e.g. Glick and Hutchison 1990; Cheng and Mak 1992; Bekaert and Harvey 1995; Kuen and Song 1996). Their main findings suggest that the financial markets of East Asian countries have become increasingly integrated with the US markets. It has been argued also that the liberalisation of domestic financial markets and cross-border capital movements in East Asia have encouraged financial integration among East Asian countries (see e.g. Kawai 1995). However, no strong evidence of extensive intraregional financial integration in East Asia has been found, and more rigorous analysis on this is needed.

Using the co-integration technique, we have investigated whether the financial markets of East Asian countries that experienced serious currency crises during 1997–98 are integrated (Park and Song 1998). If the financial markets of a given group of countries are integrated and interdependent, there are probable co-integrating relationships between the financial variables of these countries. Our empirical results, however, show no strong evidence that the financial markets of the crisis countries in East Asia are tightly integrated. For example, a shock to the Thai financial markets or to the Korean financial markets is not likely to have long-run effects on the financial markets of other countries in the region such as Indonesia, Malaysia, and the Philippines. Our results indicate that the financial-market linkage has not played an important role in transmitting the effects of the Thai or the Korean crisis to other countries in East Asia

One might wonder why the financial-market deregulation and opening that has been progressing in recent years in East Asia has not complicated the current crisis as much it could have. Since the mid-1980s, East Asian developing countries such as Indonesia, Malaysia, the Philippines, Thailand, and Korea have taken steps to deregulate and open their domestic financial markets. As a result, by the early 1990s, they had established relatively liberalised

financial regimes, which in turn induced and facilitated large capital inflows from advanced countries during the 1990–96 period. The volume of capital movements between these countries, on the other hand, has been relatively small, mainly because they have been net borrowers from the international financial markets. Capital movements between these countries are more likely a result of changes in the country exposures by foreign investors. This pattern of capital movements therefore suggests that the financial markets of the East Asian developing countries have been more integrated with those of advanced countries than with each other.

4.3 Trade linkage

All else being equal, any country which trades heavily with Thailand, for example, would experience a deterioration in its trade balance in the event of a large depreciation of the Thai currency. As such a depreciation would improve Thai exporters' competitiveness, this would provoke a speculative attack on the currency of the country in question, that is, the important trade partner to Thailand. This is indeed what occurred in 1993 in Ireland, a country which trades very heavily with its nearest neighbour, the United Kingdom (Eichengreen *et al.* 1996). Not surprisingly, the UK is Ireland's most important export market. The Irish punt was attacked at the beginning of 1993 after an attack on sterling, which caused the British currency to decline substantially.

A depreciation of the currency of a country could also affect the currencies of its major trading partners in another way. Suppose the Southeast Asian countries, which trade heavily with Thailand, also compete in the same export markets outside of the region, for example, in North America. A large depreciation in the Thai currency would mean significant deterioration in any other Southeast Asian country's international competitiveness relative to Thailand. Its current-account balance would in all probability turn for the worse, thus provoking an attack on its foreign exchange market.

An examination of the direct trade relationship between East Asian countries helps us to determine whether or not the trade link has been important in transmitting the contagion of crisis in East Asia. It can be seen from the export matrix of the four Southeast Asian countries (Indonesia, Malaysia, the

Philippines, and Thailand) and Korea for 1996 that the direct trade links between the four Southeast Asian countries are weak. It seems that the role of direct trade linkage was weak in transmitting the Thai crisis to Indonesia, Malaysia, and the Philippines. While Korea's direct trade links to individual Southeast Asian countries are weak, the five Southeast Asian countries together accounted for more than 9 per cent of Korea's total exports. This means that Southeast Asia as a whole is an important export market to Korea, indicating that the growing trade links may have been an important cause of transmitting the contagion of the Southeast Asian crisis to Korea.

Countries which compete in the same export markets must closely monitor the fluctuations of the real effective exchange rates of their competitors and adjust their nominal exchange rates whenever necessary, so as to preserve their competitive edge. Given this kind of competition, the real effective exchange rates between these countries are likely to be highly correlated.

In order to verify this argument, we examined the correlation coefficients of the monthly real effective exchange rates of the four Southeast Asian countries and Korea (Park and Song 1998). The correlation coefficients for the entire sample period from January 1990 to June 1997 seem to indicate that the interrelations between the Southeast Asian countries are weak. The correlation coefficient between Thailand and Indonesia is the highest of all: about 0.8. However, during the period between January 1990 and December 1994, the correlation coefficients are lower than those of the entire period, which means that the interrelations strengthened in the last three years. This point can be further verified by the fact that the correlation coefficients between these countries during the period from January 1995 to June 1997 are much higher than during the previous period. Most of the coefficients are greater than 0.9. The real effective exchange links between Thailand and the other Southeast Asian countries, in particular, are very strong. This evidence means that the competition in trade between those countries in common export markets has become more intense, suggesting that the importance of trade links as a cause of the spillover of the Thai crisis into other Southeast Asian countries cannot be ignored.

Our conclusion is further corroborated by the export similarity of the East Asian countries. We established export similarity indices of the East Asian countries and compared them (Park and Song 1998). It is found that East Asian countries are heavily engaged in export competition to third markets outside as well as inside East Asia. This competitive structure, to the extent it is known to foreign investors, may have compelled a large number of them to pull out of the other countries in the region when they saw the crisis develop in Thailand in 1997.

5 Concluding Remarks

It has already been one year since the currency crisis swept through East Asia, but Thailand, Indonesia, and Korea are still beset by the feeling of a sinking economy. They are struggling to escape from the miseries of job losses, business failures, and bank closures brought on by the financial turmoil, and there seems to be no light at the end of the tunnel. The crisis has been further compounded by the lack of vision. The East Asian countries, especially those hit hard by the crisis, have been under pressure to dismantle the very economic systems that had worked so well for several decades before breaking down suddenly last year. However, few people seem to know what kind of systems should replace the old ones. This sense of loss of direction has made it difficult to reach consensus on what should constitute an effective restructuring programme and how it should be carried out.

The purpose of this article has been to analyse the causes and consequences of the financial crisis in East Asia. For this purpose, we have examined which of the two alternative explanations – panic or fundamentals – was a critical feature of the crisis.

Although our empirical analysis is rather inconclusive on the relative importance of the two views, it clearly suggests that the massive inflow of capital into the region during the 1990s was at the centre of the crisis. The large capital inflow led to an equally large increase in domestic investment in manufacturing as well as in real estate and properties. The investment boom in turn resulted in real appreciation, large increases in liquidity and rising current account deficits.

All of the countries under consideration in this paper are classified as emerging market economies that have grown rapidly and that have pursued liberal economic policies. Foreigners were attracted by their strong economic fundamentals, and the opening of the capital markets in Southeast Asia facilitated portfolio investment. As a result of financial market liberalisation and the subsequent inflows of foreign capital from Europe, North America and Japan, the region's financial markets have become much more closely integrated with those of advanced economies than with each other.

A visual inspection of the changes in financial variables in the Southeast Asian countries indicates that the Thai currency crisis has been contagious. Our empirical analyses show that both fundamental weaknesses and creditor panic were important in transmitting the effects of the Thai crisis to the other countries. The Thai financial turmoil first spread to other member states of ASEAN including Singapore, and then disrupted the financial and foreign exchange markets of Taiwan. The financial instability in Taiwan no doubt contributed to the stock market plunge in Hong Kong, which sent shock waves to other stock markets throughout the world. It was only a matter of time before Korea would come under a speculative attack, which it could not overcome.

We have examined, in the context of the ongoing East Asian crisis, the three causes of contagion. It has been found that the trade link partly explains the contagion of the Thai crisis among the East Asian economies. Our analysis also indicates that macroeconomic similarities have contributed to the spreading of the crisis, but not necessarily to Taiwan, Hong Kong, and Korea.

Our empirical tests suggest that institutional investors operating out of New York and other international financial centres played an important role in transmitting the crisis to other Southeast Asian countries. In fact, the financial turmoil throughout East Asia was precipitated and further aggravated by the mass withdrawal of funds by institutional investors operating out of the major international financial centres. When they saw the crisis in Thailand, they may have panicked and hurriedly moved out of other East Asian countries, irrespective of the latter's macroeconomic strength.

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