East asian currency crisis of 1997 98

In 1997 the ' miracle' of the Asian tigers, typified by strong growth and high foreign investment, came to an end with the collapse of major corporations, banks, finance institutions, the stock markets and currencies. The five East Asian economies (Asian 5) hardest hit by the crisis were Indonesia, Korea, Malaysia, the Philippines and Thailand. This essay looks at what happened in these five countries leading up to and during the crisis. The essay seeks to discover whether currency crisis theory adequately explains the Asian collapse or whether these crises were based on other factors. Krugman and Sachs suggest that the Asian crisis differs from previous currency crises. It was not speculative attacks but weakness in the financial systems the instability of the international financial markets that triggered the crisisThe Asian crisis came as a surprise to the international community.

Even those who had controversially predicted a slow down in growth did not expect a collapse in these economies[1]. The reasons for this were East Asia's continued economic and human development successes in the 30 years before the crisis. Average income in Indonesia, Malaysia and Thailand had quadrupled between 1965 and 1995 and in Korea it had increased seven-fold (Figure 1). Furthermore average life expectancy rose from 57 years in 1970 to 68 years in 1995, well above the average for developing countries (Table 1). There were also significant gains in education with the adult literacy rate jumping from 73 percent to 91 percent in 1995.

In particular the benefits of growth in the Asian 5 economies appear to have been widely shared among the population. The incomes of the poorest quintile of the population grew as fast as average income, with exceptional growth in Korea and Malaysia. At the same time the share of the population

living below the poverty line fell. In Indonesia 60 percent lived below the poverty line in 1960 and only 15 percent in 19962.

In the years leading up to the crisis there were some important factors that contributed to the vulnerability of the Asian-5 to economic collapse. Capital inflows to the region averaged over 6% of GDP between 1990 and 1996 most were foreign borrowing by banks and financial institutions3. These flows are prone to quick and sudden reversals in the event of financial panic. The stable exchange rates maintained by the governments helped increase capital inflows, especially with short maturity structures, as the central banks were effectively absorbing the risks of fluctuations for investors (Sachs 1998). Real exchange rates appreciated by approximately 25 percent in the four South East Asian4 countries between 1990 and early 1997 as capital inflows also put upward pressure on nontradeables prices, especially real estate. These appreciations put upward pressure on export prices, reduced competitiveness and contributed to a sharp fall in export growth.

Export growth fell in all the countries (except the Philippines) in the mid 1990s and in Thailand exports actually decreased in nominal dollar terms in 1996 (Table 2). Along with increasing overvaluation of the currencies other factors such as the effects of the appreciation of the Japanese Yen against the US Dollar, a worldwide glut in semiconductor production and increased competition from Mexico's participation in NAFTA all reduced export growth. Crucially, not only did domestic bank lending expand rapidly reaching 140 percent of GDP in 1996 in Thailand, Korea and Malaysia but also a rising share of foreign borrowing was short-term debt. In Korea, Thailand and

Indonesia short-term debts to offshore banks reached $68 billion, $46 billion and $34 billion respectively at the end of 1996 (Table 3).

The ratio of short-term debt to reserves in these three countries was greater than one after 1994. This is sustainable as long as creditors are willing to roll over loans but shows a vulnerability to crisis. If something sparks a withdrawal of capital each foreign creditor has an incentive to demand repayment quickly as they know that there is not enough foreign exchange to repay everyone. The crisis started in Korea and Thailand in early 1997. The Korean chaebol Hanbo Steel declared bankruptcy with debts of $6 billion soon after Kia Motors and Sammi Steel also faced similar problems.

These difficulties put pressure on banks that had borrowed offshore to lend to the chaebol and raised concerns about the finances of the remaining Korean corporations. In Thailand property prices began to fall in late 1996 and a major developer Somprasong Land failed to meet a foreign debt payment. Confidence fell in the Thai financing companies that were heavily exposed to the property markets. Following this the baht came under speculative attack in late 1996 and again in early 1997.

The government tried to suppress speculation about the fragile nature of the financial system and dwindling foreign exchange reserves. It promised to save Finance One, Thailand's major finance company, and not to float the baht. However on May 23rd Finance One collapsed and on July 2nd the baht was cut loose. This triggered a massive withdrawal of capital from the region (Table 4). Many foreign creditors jumped to the conclusion that if Thailand was in difficulties other South East Asian economies and Korea were too.

This increased the flow of capital from these countries. The intense pressure on the exchange rates in the region led to a 20 percent fall in the value of the currencies of the four South East Asian countries. As the currencies fell a self-reinforcing spiral of capital withdrawals putting further pressure on exchange rates emerged. Due to mistakes made by the IMF and governments of the countries this quickly led to a panic that heightened the severity of the crisis. Considering the economic performance prior to the crisis the severity and unpredictability of the situation surprised many. The essay now examines currency crisis models that may explain why East Asian suffered such extreme crises.

The first formal currency crisis model was developed by Krugman (1979) and is known as a " first generation model". Krugman argued that crises occur when the economic fundamentals necessary to maintain a fixed exchange rate system are inconsistent with domestic monetary policy. Weaknesses arise due to excessive creation of domestic credit in order to finance fiscal deficits or to assist a weak banking system. The model assumes that the government cannot access capital markets so is forced to monetize its expenditures. In order to maintain interest rate parity there would be capital outflows and a gradual loss in foreign exchange reserves. Eventually the economy is subjected to a speculative attack on its foreign exchange reserves once they reach a ' critical level'.

Speculators will exhaust the remaining reserves in a short time period in order to avoid capital losses necessarily resulting in the abandonment of the peg or devaluation5. The crises arise due to persistent money-financed budget deficits running down a limited stock of foreign exchange reserves,

which eventually become the target of a speculative attack. In " second generation" models the continuous deterioration in economic ' fundamentals' is not a necessary condition for a currency crisis6. In " second generation" models the government chooses whether or not to defend a pegged exchange rate, making a trade off between long run credibility and short-term macro economic stability. The model requires three conditions.

The first is that there must be a reason why a government would abandon the fixed rate. For example if there is high unemployment the government may require expansionary monetary policy. There must also be a reason that the government would defend the fixed rate. It may believe that a fixed rate is important for trade and investment. The third condition is that the cost of defending the exchange rate must increase when people expect the rate to be abandoned.

Expectations of a future depreciation may require high short-term interest rates to defend the peg. However this will depress output and employment further. If the costs of maintaining parity increases then the government may wish to devalue at some point in the future. Foresighted investors may realise this and sell the currency now, which would worsen the government's trade off, leading to an earlier devaluation, in turn causing more investors to sell. This allows for multiple equilibria, the attack may be successful or unsuccessful depending on whether the government defends the peg.

The 1992 ERM currency crises in Europe were due to governments abandoning the regime in order to pursue expansionary monetary policy, deciding that the cost of maintaining parity outweighed the need for

macroeconomic flexibility7. Many believe that " second generation" crisis cannot be predicted, they are simply be the result of speculation against the currency causing a " self-fulfilling" crisis. These models stress the importance of ' herding behaviour' in foreign investors whose imperfect information may lead them to be more sensitive to rumours (Calvo and Mendoza 1997). However, currency crisis models do not adequately explain the Asian crisis.

The fundamentals that drive " first generation" models were not present leading up to 1997. The governments were in fiscal balance and had not engaged in irresponsible credit creation or monetary expansion before the crisis. The inflation rates of the Asian countries were also low, particularly when contrasted with the South American economies whose previous currency crises have largely been explained by high inflation rates and excess credit creation using these models. Other international factors, such as the steep rise in US interest rates thought to have caused the 1982 Mexico crisis, were also absent.

The international financial conditions were stable at the onset of the Asian crisis. " Second generation" models require policy inconsistencies that lead the government to abandon the exchange rate such as high unemployment and recession. In the UK currency crisis of 1992 the government did not maintain parity, as higher interest rates would have caused a further contraction of an economy already in recession. In contrast the Asian 5 economies were growing and did not have high unemployment. Krugman (1998) suggests that a third approach is needed in the case of the East Asian economies. Krugman argues that the boom-bust cycle in asset markets that

preceded the Asian crisis and the widespread existence of financial intermediaries can better explain the Asian collapse.

The role of intermediaries, especially " Finance Companies" in Thailand, who borrowed short-term money and lent to speculative investors are crucial in his theory. These intermediaries a part of were subject to severe moral hazard problems, as their liabilities were perceived as having an implicit government guarantee. A simple, numerical example of the moral hazard problem is shown in Appendix 1. The owner of the intermediary is assumed to have raised $100 million from guaranteed creditors and has not put up any of his own capital (Milgrom and Roberts 1992).

If the ' good state' and ' bad state' are equally likely even a risk neutral investor would prefer the safe asset with a return of $7million. However if the owner of the intermediary can walk away and lose nothing in the bad state and yet expect a gain of $10 million in the good state he will chose the risky asset even though it has a lower expected return. Krugman builds on this simple idea of moral hazard and argues that over-guaranteed and under-regulated financial intermediaries can lead to excessive investment by the economy as a whole8. In Krugman's model owners of intermediaries are no longer responding to expected values of investments instead they focus on a " Pangloss" value, the value of an investment in the best possible scenario.

The excessive investment leads to a lower expected welfare as the increased returns in the ' good state' are outweighed by the losses in the ' bad state'. Assuming that the supply of capital goods is perfectly elastic, all of the increase in investment demand due to financial excess is translated into

increases in the actual volume of investment. On the other extreme the model assumes the supply of assets is completely inelastic. In this case the investment distortions lead to increased land prices, in the numerical example the price of land is doubled (Appendix 2). The guarantees in the Krugman model are implicit guarantees that are available until honouring them becomes too expensive. If creditors need to be bailed out due to the losses of intermediaries the guarantees disappear and future creditors withdrawal their capital causing the collapse of the intermediaries.

The process of disintermediation magnifies the losses to the economy, the prospective end to intermediation causing a further reduction in asset prices and the further collapse of more institutions. In Asia there has now been a major change in financial regime, finance companies and banks have closed and the others have been forced to curtail risky lending. This model shows how the Asian crisis may well have been less about currencies and much more about bad financial practices. The model suggests that the Asian economies were all in a vulnerable position to self-fulfilling crises but not on their currencies. This theory shows how the " first" and " second generation" models do not appear to be able to adequately explain the Asian crisis. Instead the financial crisis was the trigger mechanism for the Asian collapse with the currency fluctuations more a symptom than a cause (Krugman 1998).

The model has many limitations9. Firstly it assumes the intermediaries are merely rent seeking devices that serve no useful purpose and that the owners invest none of their own capital. Both of which are unrealistic.

Furthermore the overinvestment and overvaluation of assets are also blamed entirely on the intermediaries.

However, foreign investors still bought stocks and real estate in economies that suffered severe crises so some other market failures, possibly ' herding behaviour' by investors, must apply. Empirical evidence would suggest that the Krugman model is insufficient. The theory states that the pattern of lending had deteriorated sharply in the years leading up to the crisis due to risky investments by intermediaries. Table 5 shows the share of bank and financial institution lending by sector in the Asian-5 in 1990 and 1996. The results show a modest shift in lending from manufacturing towards real estate, construction and services. In Indonesia the shift is large and in the Philippines it is small10.

The results are mixed showing a moderate shift into real estate but not a dramatic surge, which does not support Krugman's theory of a deterioration in the pattern of investment. However it must be remembered that the figures may not accurately represent loan composition as customers can claim that a loan is being used to expand manufacturing capacity and use it to buy real estate. The boom bust pattern that Krugman identified is also missing from empirical data. The real estate values should have soared then crashed in 1997 if there was a high level of speculation present. Table 6 shows stock and land values in two of the hardest hit economies Thailand and Indonesia.

Although stock prices rose in Thailand there is almost no change in property prices up to the crisis. In Indonesia there is even less evidence of a boom

bust cycle. Another indicator of loan quality is the number of non-performing loans (NPL). Table 7 shows NPLs from 1990 to 1996. In all the Asian economies NPLs fell up to the crisis. However these are probably underestimates as banks underreport NPLs and many bad loans do not show up until credit conditions tighten.

The incremental capital-output ratio (ICOR) is an indicator of the quality of investment (Table 8). This ratio increases as the quality of investment decreases. Whilst there are also many problems with this measure the overall trend appears to support the hypothesis that investment quality declined. However similar increases in ICORs were recorded for other emerging markets that didn't experience a crisis (e. g. Chile) and much larger increases recorded for those countries that did such as Mexico and Turkey (Radelet and Sachs 1998).

Overall these data do not show that banks were lending recklessly to real estate or that investment quality had decreased sharply, but knowing that loans did increase rapidly over the period suggests that these factors contributed to the crisis. However weakness in the financial system alone cannot fully explain what happened. Radelet and Sachs (1998) suggest that financial instability exposed the East Asian economies to a dramatic swing in creditor expectations about the behaviour of other creditors, thereby creating a self-fulfilling panic. This work draws on the theory of banks runs by Diamond and Dybvig (1983) where the individual investor may be making a rational decision to withdrawal funds which when performed en masse will cause the collapse of the financial institutions. As the panic ensues all the depositors lose money, hence their motivation to withdrawal in the first place

is confirmed. A simple probit analysis is used to test the relative strength of alternative risk indicators in predicting the onset of a financial crisis 11.

The risk indicators include the ratio of short-term debt to short term assets and the ratio of total foreign debt to reserves. A high ratio of short-term debt to reserves is a good indicator of the vulnerability of an economy to financial panic. The third indicator is the private credit to GDP ratio, this captures the rate of build up of bank credit. The hypothesis that a large current account deficit leads to a crisis is tested with the variable ' current account ratio to GDP'. Due to the focus on capital flows as an indicator the capital account ratio to GDP is also tested. Other indicators are real exchange rate appreciation (RER) and the corruption index.

The results are shown in Table 9. A high ratio of short-term debt to reserves is strongly asscociated with crises. The coefficient is positive and significant at the 5% level. The ratio averages 1.

82 in the crisis countries but only 0. 99 in non-crisis countries (Table 10). Whilst it is possible to have a high ratio and escape a crisis (the Asian economies escaped contagion from Mexico in 1995) it is an indicator of vulnerability. The level of long-term debt is not statistically associated with a crisis and the difference between the average ratio of long term debt to reserves in crisis and non-crisis countries is small. These results suggest that the crises are due to problems with liquidity not solvency where the countries did not lack the net worth to pay back the debts from future earnings but lacked the ready cash to maintain debt payments in the present.

As expected a rapid build up of credit is statistically associated with crises. The estimated coefficient is positive and significant at the 5% level. The increase in claims to GDP increased by 17 percentage points in the crisis countries but by only 4 points in the non-crisis countries (Table 11). In contrast a larger current account deficit is only weakly associated with a crisis, the coefficient is of the right sign but not significant at the 10% level. There is a stronger relationship between the capital account and crises. Intuitively this seems reasonable, as it is the capital inflows that build up pressure rather than the current account per se (Sachs 1998).

Surprisingly for a ' currency crisis' the RER does not appear to be associated with a financial crisis. The coefficient is close to zero and insignificant. The corruption index also has little explanatory power, whilst there is extensive corruption in East Asia it exists to the same extent in other emerging economies that have not experienced crises. In conclusion the traditional currency crisis models do not seem to explain the Asian crisis. Krugman's model of weakness in the financial systems due to financial intermediaries subject to moral hazard goes some way to explaining the cause of the crisis.

However empirical evidence shows that some of the assumptions of the model were not present to the extent Krugman suggested, especially the boom bust cycle in asset prices. Econometric tests by Sachs and Radelet show that the ratio of short-term debt to reserves and the rapid build up of bank credit are important factors in crises and it is clear that in East Asia both of these factors were present. The cause was a combination of factors that coincided to provoke the sudden reversal of capital flows leading to the collapse of financial institutions and businesses. This triggered further

withdrawals ultimately leaving the governments unable to reconcile monetary and fiscal policy and rendering the fixed exchange rates unsustainable. Whilst each individual investor may have been acting rationally the overall effect was extremely damaging, however, the speculative attack on the currencies was not the cause of the crisis.

The withdrawal of capital exposing the insolvency of banks and financial institutions put the economies in a position vulnerable to attack.