Lecture Note on Asia Crisis

Barry W. Ickes

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Abstract

What happened in Asia? Why did Tigers succumb? Why did it spread? What lessons can be learned?

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1. Introduction

Several big mysteries about Asia. First, why did it strike such apparently successful economies? Second, why did it spread? Third, why so severe? Something seems different about this crisis.

2. Background

GDP growth rates were very high in Asia – in 1996 almost 8% in Indonesia, over 6% in Thailand. These were Tigers. They grew fast by saving a lot and investing a lot, and big export growth.

Of course they also had big current account deficits – almost 7% of GDP for Thailand from 1990-95. But was this not a sign of capital inflows that rewarded success? In Thailand, however, export growth also slowed, as pegging to the dollar (which was appreciating) raised costs. Equity prices fell and the real estate bubble burst. Thailand devalued on July 2, 1997. There had been warnings by the IMF,[1] but Thailand did not heed, though some fund managers did.[2] Thailand instead bought baht on the forward market (during the period prior to devaluation), and engaged in swaps to formally prop up reserves (though this actually meant that their dollar holdings were actually committed to future transactions),[3] – which

[1] The IMF was asking for devaluation – broadening the band – for almost a year, but Thailand refused.

[2] Short selling by hedge funds, such as Quantum, were one of the singals that the IMF found ominous.

[3] The Central Bank swaps baht for dollars now and commits to swap them back in the future. So currently it looks like the CB holds lots of dollars. But actually their reserves are smaller since they have already committed to swap them for baht in the near term. It is a ruse to make the markets believe they can

was very costly for them when the baht did not recover.[4] Eventually, Thailand prevented its banks from lending to foreigners (reversing its liberalization) to end short selling of the baht. But this did not stop the problem (though it badly hurt hedge funds) as domestic banks and corporations were frantically selling baht to obtain dollars to repay their unhedged loans. Flight by the domestic residents eventually forced the devaluation.

At first the crisis spread only to Indonesia, Malaysia and Philippines. But then Taiwan devalued and this led to speculation against Hong Kong. Then it reached South Korea. During early 1998 Indonesia imploded, politically as well as economically. And then it spread to Russia in the summer.

2.1. Trigger and Spread

The trigger was clearly the devaluation of the baht, but that could be seen as an isolated event. After all, it was foreseen by investors. But as Thailand was unable to implement a strong plan, the baht continued to fall in the summer. By the end of the year it had lost 50% of its value despite a new government pledged to uphold the IMF plan.

The spread to the other countries was the real surprise. Some of the countries traded negligibly with Thailand, some hardly at all. South Korea was forced to accept a strong IMF program, a real shock for an OECD country. Debts were rescheduled as a bail-in took place with long-term bonds replacing bank loans. IN the first quarter of 1998 GDP fell 4% in South Korea.

Indonesia was perhaps a bigger surprise. From a seemingly healthy start, the rupiah fell from a pre-crisis level of Rp2,434 to Rp17,000 by January 22 (down more than 80%). The economy ground to a halt. For a while Suharto thought about a currency board. Eventually he resigned after street protests. By the summer it reached Russia, where the ruble was devalued and domestic debt suspended. The flight to quality from that led to LTCM.

withstand speculation.

[4] It is not just obstinacy. Devaluation would increase the problems for domestic financial institututions that had borrowed dollars. And they feared devaluation would trigger further speculation. Hence, they chose to act tough.

3. Causes

How to think about this? Clearly, they were financial crises that had some self-fulfilling features, primarily because weak governments were too weak politically and economically to defend. What were the sources of weakness. Three are important

3.1. Macroeconomic Imbalances

Here the key problem were the current account imbalances. Real appreciation was not strong, but the dependence on capital inflows meant that severe costs would be associated with sudden stops.[5]

3.2. Financial Sector Weaknesses

Many had been recently liberalized. All were poorly monitored and regulated. But the real problem was currency mismatch. They borrowed dollars and lent in domestic currency. This was promoted by fixed rates, and plentiful capital flows. But as currencies came under speculation, raising interest rates to attract foreign capital put them in trouble. If they raised domestic interest rates domestic liquidity was drained and defaults more frequent. If they did not they would be in trouble. As Dornbusch put it:

> To keep the money coming in to finance the Ponzi game and hold the exchange rate, interest rates had to go up to reward foreign lenders for the risk, but that made real estate and banks even worse. To keep banks alive interest rates had to go down. The government could not have it both ways. They cut rates, made it free to speculate against the currency and that is what happened (1998: 16).

3.3. Short Maturity

Too much short-term borrowing made it worse. This has to be rolled over and makes them more vulnerable. During the 1990's the share of bank lending increased, and maturities

[5] "It is not the high speed that kills you but the sudden stop."

shortened. 62% of net capital inflows into South Korea consisted of short-term borrowing in 1994-97 compared with 37% in 1990-93. More than two-thirds of the loans matured in less than a year.

So these economies had not just a flow problem (the need for capital inflows to finance CA deficits) but a stock problem, the large stocks of short-term debt that had to be rolled over regularly.

Notice that in these circumstances, if confidence is disturbed it may be necessary to raise rates to preserve capital inflows. But with weak banks governments may be loathe to do so. Rather governments may feel compelled to help the banks by guaranteeing foreign liabilities – as occurred in South Korea – further stretching reserves, and ensuring that a banking crisis also provokes a currency crisis.[6]

To get out of this mess governments would need to undertake painful policies to assure investors. But weak governments find it difficult to do so. Once Thailand was struck the shock to confidence raised the costs to everybody else.

4. Vulnerability Sources

What put governments in such weak positions? Clearly one big error was financial liberalization that made it impossible to raise interest rates to protect currencies. Lax regulation led to over-borrowing, currency mismatch, and short-term debt. But why were the authorities prone to make these mistakes?

One part was bank-led industrial policies. Banks that followed instructions got franchises not encumbered with competition from other sources of intermediation.[7] They lent where told and grew large on implicit guarantees. This increased their risky lending. Moral hazard from too-big and too-connected to fail.

Of course it takes two to tango. Where did the capital come from? The point is that

[6] Even the Fund did not know. In the South Korea case they found out only in December of 1997 that foreign branches of Korean banks which held Central Bank reserves had pledged these for their own obligations. Hence, South Korean reserves were much smaller than thought.

[7] In South Korea FDI was limited, and corporations could not borrow in foreign markets. So capital inflows were channeled through the banking system.

someone had to lend to the Tigers. Capital inflows were the result of increased global capital flows, generated by European deregulation and low interest rates in the US and Japan. Expansionary monetary policy in the former, the aftermath of the bubble in Japan. Combined with exchange rate pegs, this caused capital to flow to Asia. The commitment to pegs meant that perceived exchange rate risk was low. This induced capital to flow to these economies. While the inflows were large the problems with financial systems were covered up. It is when the system is stressed that problems show up.

Notice the problem. The US and Japan chose low interest rates. Exchange rate pegs and capital mobility meant that Tigers got low interest rates, even if they really needed higher interest rates to curb borrowing. Instead, low interest rates fueled an asset bubble. Why did Asia choose exchange rate stability? The desire for export-led growth induced the peg to the dollar – part of the bargain with export-oriented firms.

5. Why was the Crisis So Severe?

The severity of the crisis is one crucial question. Why so large?

One factor was unhedged foreign exposure. The issue is currency mismatch. Notice that in the Tequila crisis Mexico had unhedged foreign exposure in the form of Tesobonos. But these were liabilities of the government. When the peso began to flag the government felt the pressure. In Asia, on the other hand, the liabilities were of the private sector, especially the banks. Why is this important?

- With governments, there is no coordination problem. Being the sole debtor confers some leverage.
- With the private sector there is no effective mechanism for coordinating debtor-creditor negotiations.

Moreover, the exposure was unhedged. This was partly due to the success at pegging. Why bother with expensive currency futures and forwards?

The stock of unhedged debt meant that devaluation had a devastating effect on balance sheets. The debt denominated in foreign currency became more expensive to finance. This made domestic residents poorer as more output had to be shifted to servicing debt, restricting demand further, which further depressed output. A debt-deflation spiral ensued. Now that pegs were no longer credible, banks sought cover for foreign exchange exposure, further depreciating the domestic currency. Exchange rates were subject to self-fulfilling prophecies.

Other forces in the spiral were asset sales to meet margin calls; inadequate bankruptcy procedures which lead to a race for liquidation (when forbearance would be in everybody's interest); and investment downgrades which encourages selling. Moreover, note that with all countries facing similar pressure there would be no way to export out of the problem – depreciating currencies gained no competitive advantage since all Tiger currencies depreciated. Generalized fear of emerging markets further weakened capital flows (partly due to lack of information due to bank financing).

5.1. Contagion

This raises the issue of contagion. Why did it spread so rapidly? Trade links cannot explain this. The magnitude of their trade with each other is not large enough, and some countries like Russia do not even trade in the same industries. One explanation is that Thailand was a wake-up call. But why was it a wake up call? Why was it different?

Calvo-Mendoza argue that globalization of international portfolios played a role. As it became easier to hold global portfolios it was less necessary to study individual economies. Global portfolios held assets in various emerging economies. When the crisis hit Thailand investors did not know enough to discern whether this was specific to that country or a problem for the region. So they ran with the herd. Moreover, as they cut their losses in Thailand they had to rebalance their portfolios across emerging markets generally, so they cut all over. Still one wonders why there was so much information content in the Thai devaluation.

Perhaps the biggest reason was that the predominance of bank-led financing meant that much financial information was proprietary. It was not reflected in exchange-traded prices.

Banks were delegated monitors and they generated sparse price signals compared with bond and equity markets. Lack of transparency of bank balance sheets exacerbated this, especially with reluctant bank regulators. Information about the extent of non-performing loans was revealed only in the midst of the crisis, further worsening events. Hence, bank runs tended to spill over as investors worried if these problems were common and had little way to know.

6. Some Lessons

1. Current account deficits are not always benign
2. How a current account is financed makes a big difference
3. Bank-financing can be problematic
    (a) less effective at information provision
4. Exchange-rate flexibility may be warranted for developing countries.

7. Appendix: Typology of Crises

Economists often speak of three types, or generations, of currency crises.

7.1. Old Style Crises

Cycle of overspending and real appreciation that weakens the current account. This eventually causes reserves to decline. Eventually a crisis ensues. Exchange rate is devalued. Not too much else happens. The finance minister is fired, but not a big crisis in the economy. The big issue is the fall of the real wage. Because finance is repressed there is no change for balance sheets to get in bad shape.

In a world with fixed nominal exchange rates and limited capital mobility, excessive domestic credit creation leads to a trade deficit, the depletion of international reserves and, eventually, a devaluation crisis.

7.2. New Style Crises

Involves doubt about the credit worthiness of the balance sheet and the exchange rate. No matter how it originates, implied capital flight makes it a question about both. Implied capital flight calls into question reserves.

In a world with high capital mobility, even small adjustments in international portfolio allocations to the emerging economies result in very large swings in capital flows. Sudden reductions in these flows, in turn, amplify exchange rate and/or interest rate adjustments and generate overshooting, further bruising credibility and unleashing a vicious circle.[8]

This is the world of speculative attacks.

In the second generation type models, speculative attack is the outcome of a prisoner's

[8] Mendoza begins his discussion by arguing that Sudden Stop (SS) episodes are qualitatively different from standard balance of payments crises. While in the latter the economy experiences a deep collapse – followed by a rather sharp recovery – in a run-of-the-mill BOP crisis the economy suffers a prolonged recession. Mendoza develops a model of an economy subject to excess volatility, which is able to capture the main features of Sudden Stops. In this model, under most states of nature the economy functions in a frictionless fashion. There are some states of nature, however, when the economy becomes subject to a binding credit constraint. More interestingly, the economic frictions and distortions set in motion by this credit constraint can be triggered either by investors' expectations, or by foreign or domestic shocks.

dilemma game (as in the example below), where each speculator sells the currency for fear that he will be left "holding the bag" if he is the only one not to sell. A large trader could matter because he affects the probability that the others will undertake a speculative attack, for any given set of fundamentals.[9]

Example 1

		Investor 1: Stay in	Investor 1: Attack
Investor 2	Stay in	2, 2	−2, 2
	Attack	2, −2	0, 0

Of course, this only matters if the attack is likely to be successful. If not there are better returns from staying in. What causes the likelihood of attack to increase? It is a rise in the cost of maintaining the peg. For example, if it becomes too costly for the government to keep raising rates to preserve capital inflows then it may make sense to attack. Notice that if the domestic banking industry is strong (or unemployment low) then raising interest rates may be feasible. If not, however, the cost is high, and investors may believe that governments will not raise rates to protect the capital inflow. But then attacking the currency is likely to be successful.

An important implication of the prisoners' dilemma is that if all investors can be persuaded to stay in everybody benefits. This is where the bail-in idea stems from. But this requires some coordination.

Contagion becomes a big issue. A statement by Mexico's Secretary of the Treasury José Angel Gurría vividly captures and frustrations with financial contagion:

> "Ninety percent of Mexicans have never heard of the Duma, and yet the exchange rate and interest rates that they live with every day were being driven by people with names like Kiriyenko and Chernomydrin and Primakov." (Gurría, 1999)

[9] Notice that it is not just information per se about the likelihood of a speculative attack. What is important is how common this information is. Even if agents are informed about fundamentals, they may not be informed about the beliefs of other agents. In that case a speculative attack still may not occur. This reduces the multiplicity of equilibria and can help explain timing. What shifts the expectations so that the attacks occur? Most accounts suggest that there is a window when they could have succeeded, but what explains why they took place when they did?

Capital account plays a key role. In the run-up too much capital flows in. The problem is when it stops. It "is not the speed that kills, it is the sudden stop." Consider Taussig's description:

> The loans from the creditor country...begin with a modest amount, then increase and proceed crescendo. They are likely to be made in exceptionally large amounts toward the culminating stage of a period of activity and speculative upswing...With the advent of crisis, they are at once cut down sharply, even cease entirely. The interest payments on the old loans thereupon are no longer offset by any new loans; they became instantly a net charge to be met by the borrowing country ?, 120.

Because they involve national balance sheets these crises have much bigger impacts on the national economy. This is true even if it is just illiquidity rather than insolvency. Matters a lot what type of capital flows in: FDI inflows are less likely to cause crises.

7.2.1. Third Generation Models

Like Generals, international finance economists fight the last battles. The first generation models were a response to the typical crises under Bretton Woods. The second generation models helped us understand the ERM crisis, where fundamentals were suspect but not certain to cause a crisis. Now we have third generation models.

The Third-Generation approach instead interprets recent crises as illustrations of the perils of moral hazard. Borrowers and lenders are less likely to be careful evaluating the true profitability of investment opportunities if they believe they will be bailed out in the event that the project goes badly.[10] The Third-Generation approach instead interprets recent crises as illustrations of the perils of moral hazard. Borrowers and lenders are less likely to be careful evaluating the true profitability of investment opportunities if they believe they will be bailed out in the event that the project goes badly.

The Third Generation model starts from the assumption that government officials have a pot of resources that can potentially be used to bail out political cronies if they get into

[10] This is especially true with exchange rate pegs and high capital mobility.

financial difficulty. This pot is mainly identified with the central banks' holdings of foreign exchange reserves. Well-connected banks are able to borrow from abroad to finance risky projects – such as real estate development or a new factory in the already-glutted steel industry. They are aware of the risk. But they believe that they will be bailed out by the government if things go badly.

The timing of the attack is straightforward:

- when the level of liabilities that have a claim on bail-out protection rises to the level of reserves available for the bailing out.

Why does the crisis occur when it does? Asian countries did not suddenly develop critical structural flaws in their financial systems for the first time in 1997. The timing of the attack again comes out of the calculations of speculators who worry that if they wait too long, there will not be enough foreign exchange reserves to go around.

- But there is a key difference from the First Generation models, which watched reserves decline steadily over time, and identified the timing of the attack as the point at which reserves sank to a particular critical level.

- The Third Generation models watch liabilities rise steadily over time, artificially encouraged by moral hazard. They identify the timing of the attack with the point at which the liabilities have climbed to the critical level given by the level of reserves. At that point, speculators suddenly cash in their investments. If they waited any longer they might not be able to get their money out.

The speculative attack, as usual, then forces the central bank to abandon the exchange rate.