

From Asian Miracle to Asian Crisis: Why Vulnerability, Why Collapse?

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1. Introduction

The east Asian financial crisis has been truly remarkable: suddenly the ‘Asian miracle’ became the ‘Asian crisis’.

Existing models of *currency* crisis were powerless to explain what happened. This was not a ‘first generation’ currency crisis brought about by excess budget deficits, as in Krugman (1979). Nor was the crisis caused by a conflict between the austerity needed to defend a fixed exchange and the expansion needed to remove high unemployment, as in Britain’s forced exit from the ERM in 1992 (Eichengreen and Wyplosz 1993). To understand whatever happened to Asia, a new ‘third generation’ analysis has been needed, one which puts crisis in the financial system at centre-stage.

In the immediate aftermath of the crisis, debate raged about whether this third-generation crisis was a problem of panic and collapse, resulting from a shift from a ‘good’ equilibrium to a ‘bad’ one (Radelet and Sachs 1998), or, instead, a problem resulting from a worsening of fundamentals (Krugman 1998a). Krugman has generously conceded defeat:¹ ‘I was wrong’ (Krugman 1999a, p. 1). But a panic-and-collapse account of the Asian crisis needs to be underpinned by a story which

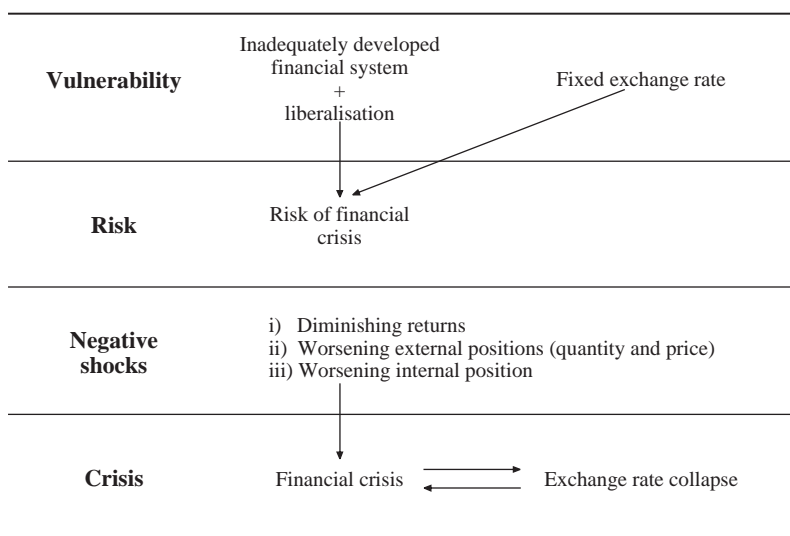
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1. It is interesting that Michael Dooley was once an implacable opponent of multiple-equilibrium reasoning; one can read the paper which he wrote with Carl Walsh for this volume as a stimulating, and equally generous, recantation. Dooley’s previous views are well summed up as follows. ‘The absence of clear thinking on [the Asian crisis], and the failure to develop fundamentals-based models which illuminate it, ha[s] led to the growth of a plethora of multiple equilibrium models, of which there are too many, none of which are properly testable, not least because they do not ‘model’ the data. A return to fundamentals-based models really is advisable, partly in order to re-check whether any model exists which will actually fit the data. The modelling challenge now is to try to construct a new generation of ‘first generation’ fundamentals-based models which will meet this test. Multiple equilibrium models may be mathematically interesting. However they are almost certainly unnecessary’ (Global Economic Institutions 1998, p. 14).

explains both why the economies were *vulnerable* to a bad equilibrium and why that equilibrium was *so bad*. This paper sketches our own candidate for such a story.²

The broad argument advanced here takes forward ideas put forward in Corbett and Vines (1999a; 1999b), in Irwin and Vines (1999), and in forthcoming work with Peter Warr (Vines and Warr 1999). It is still work-in-progress. In essence the idea is that the Asian vulnerability to crisis was the *consequence* of the Asian miracle. We believe that it was the consequence of insufficient institutional development in the region during the ‘miracle’ boom period – an almost inevitable outcome of the flawed process of financial liberalisation which the miracle involved.³ Two key flaws were, we believe, important. The first was the continuation, into the era of liberalisation, of a financial system containing implicit guarantees. The second kind was the continuation, into the era of liberalisation, of a pegged exchange rate regime. The argument proceeds in two stages, and is illustrated in Figure 1.

Figure 1



- We argue that vulnerability was created by liberalisation in the presence of a bank-based financial regime. In such systems there were implicit promises of a government bailout of the financial sector in the event of bad out-turns. Vulnerability meant that negative shocks were capable of precipitating a financial crisis, by creating obligations for the government to bailout the financial sector which were too large for the government to meet. This financial crisis precipitated a collapse of investment. The consequence of this was – in a way to be explained below – a large currency devaluation.

2. Dooley and Walsh (this volume) provide a fascinating picture of the ‘expanding universe’ of such stories; Krugman (1999a) provides a very particular version of one such story which we will use as a key piece of our own account.

3. We owe this argument, in such a stark form, to Peter Warr. See Warr (1999).

- We argue that vulnerability was *also* created by liberalisation in the presence of a pegged exchange rate regime. This regime led to an overhang of unhedged foreign-currency borrowing, because of the implicit promise that the exchange rate would not be devalued. As a result countries were exposed to the risk of a financial crisis whose key aspects were a large fall in investment, a collapse in the exchange rate, a large increase in the value of the overhang of unhedged foreign borrowing, and thus, through this additional route, bailout obligations for governments which they could not meet.

The layout of the paper is as follows. Section 2 clarifies the term ‘vulnerability’, and then sets out in detail the two stages of the argument summarised above. Section 3 summarises the negative shocks experienced by the region. Section 4 uses the material of Sections 2 and 3 to give a stylised account of the crisis. Section 5 briefly examines macroeconomic policy in the region, describing why policy both before and during the crisis increased vulnerability. A conclusion places the analysis in historical perspective.

2. Asian Vulnerabilities

The concept of ‘vulnerability’ is central to what follows. Dornbusch makes the meaning of this term vividly, if imprecisely, clear when he says ‘[v]ulnerability means that if something goes wrong, then suddenly a lot goes wrong’ (Dornbusch 1997, p. 21). In general terms the idea is bound up with non-linearity: a state of affairs is vulnerable when, even if there are only small changes in fundamentals, there can be a big shift to some sort of bad outcome.

There are many ways of making this general idea specific, as Dooley and Walsh (this volume) make clear.⁴ In the next section we adopt a multiple-equilibrium interpretation. Seminal multiple-equilibrium analyses are to be found in Diamond and Dybvig (1983) and Obstfeld (1986; 1991; 1994; 1995). These papers analyse, respectively, bank runs and exchange rate crises,⁵ and use very different kinds of analysis to analyse these two different problems. But they share the generic idea that one can locate vulnerability in multiple equilibria. Both papers present the following

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4. The vulnerability issue has been examined in an important pair of papers by Morris and Shin (1998; 1999). In the Morris and Shin models, strategic interactions between speculators can give rise to ‘break-points’: on one side of a particular level of the ‘fundamentals’ a system is safe, but immediately beyond this level the system spectacularly collapses. The essential insight in their model comes from a strategic complementarity between speculators: the expected profitability to one speculator from selling depends positively on the number of other speculators who are also selling. The onset of a crisis happens when the fundamentals evolve to the point where a ‘break’ happens. Morris and Shin are critical of the multiple-equilibrium analysis of vulnerability which we use; they argue (and they are right) that there is no good theory of why and when flips happen from one equilibrium to the other. They instead want to model vulnerability using their break-point ideas. Our problem with the Morris and Shin approach – with which we have much sympathy – is that so far it has been applied only in a model with very sparsely specified economic features. Including an endogenous risk premium – which is at the centre of our treatment – within the strategic interactions of their model at present looks as if it would be ferociously difficult. But if this could be done, then the resulting analysis could be very useful.
 5. See also Davies and Vines (1998) for the simplest possible multiple-equilibrium currency crisis model.

similar kind of ‘problem’. If participants in some shared activity (being bank depositors, or holders of a currency) expect a good outcome (no bank run, no currency crisis) then they may do things which bring this good outcome about. But if they expect a bad outcome (bank run, currency collapse) then they may do things which bring that bad outcome about. In these generically similar accounts, vulnerability consists of the possibility that the economy may flip from the good equilibrium to the bad one without *any* change in fundamentals. In what follows we are going to use the term vulnerability rather precisely to describe this possibility.

Effectively what we are going to describe for the Asian crisis countries is the following vulnerability: the possibility of a bad equilibrium in which there is a ‘bank-run’ on the country of which currency crisis is a constituent part.

2.1 Vulnerability in the financial system due to under-regulating and over-guaranteeing

Vulnerability was created in Asia by liberalisation of both trade and finance in the presence of an unreformed financial system.

The previous financial system in Asia was designed for the channelling of domestic savings into particular forms of investment and growth, largely through the banking system. Domestic credit was channelled to particular privileged domestic sectors and firms, in the pursuit of various types (and degrees) of export-promoting industrial policy.⁶ It appears that much of the investment was covered by guarantees, either implicit or explicit. The process of credit allocation appears to have involved extension of bank loans, often under state direction, the collateral for which often appears to have been little more than expected revenue growth, or even just the name of the borrower. Many firms were thus very highly geared; they, and the banks which lent to them, were thus highly exposed to the effects to a revenue downturn; in aggregate the whole of the financial system was thus exposed. In countries experiencing very rapid growth the possibility of such a downturn was probably seriously underestimated. But also – importantly here – it appears that both the firms, and the financial system which lent to them, were implicitly guaranteed against such bad outcomes, as a quid pro quo for participating in this system of industrial policy.

Liberalisation had two effects on this financial system.

First, it increased the risk-adjusted return on capital, and led to an investment boom.⁷ Pre-liberalisation economies can be characterised as capital-scarce, low-wage economies in which the risk-adjusted productivity of capital is initially low, even although capital is scarce. As a result, investment and returns to investment are low. But opening and reforming can change this. The process of trade liberalisation can lead to an increase in the rate of return on capital – even though the economy specialises in exports of labour intensive manufactures – as a result of achieving economies of scale in production for world markets, and as a result of technology transfer into the liberalising economy. Inflows of foreign investment in search of such high returns can then lead to stimulus to domestic investment, if foreign and

6. Both Stiglitz (1996) and Rodrik (1999) discuss the ways in which such systems worked in Asia, and caution against forgetting just how well they worked.

7. See the similar discussions of this issue in Portes and Vines (1997), Dooley (1999) and Grenville and Gruen (this volume).

domestic capital are substitutes in the production function (see Vines and Warr (1999) for evidence on this). In addition, reform involves putting in place sound macroeconomic policies. These provide a guarantee of stability (or at least they are supposed to provide one, but see below) and this reduces the risk premium on investment.⁸

Second, liberalisation meant that this higher risk, lower-return, investment could be financed from abroad.

2.2 The risk of financial crisis

The key mistake, which led to the vulnerability of the financial system, appears to be that the old-style financial system continued into the new era of liberalisation. Accounts of what happened in the region suggest that financial intermediaries systematically downplayed the risks associated in the expansion of their balance sheets in the investment-led boom; they also suggest that implicit guarantees of the old-style financial system continued to be extended to much of the foreign-financed investment. This had the implication that the stock of implicit guarantees to the financial system rose markedly.⁹

8. McKibbin (1994) estimated the implicit reduction in the risk premium when Mexico joined NAFTA and showed that it was large enough to cause a significant boom.

9. There was much criticism at the RBA conference, questioning whether this characterisation of extensive guarantees is an accurate one. In response to this questioning we quote extensively from Krugman's anecdotal – but analytically precise – account of what we have in mind. (Krugman 1999b, pp. 85–89). Krugman considers 'a typical transaction [in which] a Japanese bank makes a loan to a Thai "finance company" for onlending for investment in Thailand. [As many such] loans [were intermediated by ... finance companies] the result was a massive expansion of credit, which fuelled a wave of ... investment...

What exactly were these finance companies? They were not, as it happens, ordinary banks: by and large they had few if any depositors. Nor were they like Western investment banks, repositories of specialized information that could help direct funds to their most profitable uses. So what was their reason for existence? What did they bring to the table? The answer, basically, was political connections – often, indeed, the owner of the finance company was a relative of some government official. And so the claim that the decisions about how much to borrow and invest represented private-sector judgements, not to be second-guessed, ring more than a bit hollow. True, loans to finance companies were not subject to the kind of formal guarantees that backed deposits in the US savings and loans. But foreign banks that lent money to the minister's nephew's finance company can be forgiven for believing that they had a little extra protection, that the minister would find a way to rescue the company if its investments did not work out as planned. And the foreign lenders would have been right: in roughly nine out of ten cases, foreign lenders to finance companies did indeed get bailed out by the Thai government when the time came.

Now look at the position from the point of view of the minister's nephew, the owner of the finance company. Basically he was in a position to borrow money at low rates, no questions asked. What could be more natural than to lend money at a high rate of interest to his friend the real estate developer, whose speculative new office tower might just make a killing – but then might not. If all went well, fine: both men would make a lot of money. If things did not turn out as hoped, well not so terrible: the minister would find a way to save the finance company. Heads the nephew wins, tails the taxpayer loses.

One way or another, similar games were being played in all the countries that would soon be caught up in the crisis. In Indonesia, middlemen played less of a role: there the typical dubious transaction was a direct loan from a foreign bank to a company directly controlled by one of the president's cronies... In Korea the big borrowers were banks effectively controlled by chaebol, the huge conglomerates that effectively dominated the nation's economy and – until very recently – its politics.'

This is the world which Krugman first analysed for the world in his by-now-famous early account of the Asian crisis (Krugman 1998a). He suggested that we think of a representative Asian country as having a downward-sloping demand curve for capital, and facing a given world interest rate, and that we model Asian ‘crony capitalism’ as implicit government guarantees¹⁰ which ensure bailouts for investments that make losses. In the absence of such guarantees, risk neutral investors would add to the capital stock to the point where the expected value of the marginal product of capital had fallen to the given world interest rate. But in the presence of guarantees, investors would over-invest, to the point where the marginal product of capital *in the best state of the world* had fallen to the world interest rate.¹¹ The reason for this is that unexploited profit opportunities would remain if investment was not pushed this far: in a bad state of the world investors would stand to lose nothing (because of the bailout provision), but in a good state investors would make profits in excess of their interest obligations.

The trouble with Krugman’s story is that it is not necessarily a story of crisis: if taxpayers can be persuaded to go on paying for the bailouts then such a set-up can go on repeating itself. It certainly does not provide the basis of a story of panic and collapse. Michael Dooley’s prescient paper, presented originally in late 1993, provides the missing link.¹² Dooley argued that the Asian miracle, was, in effect, organised theft; and that it might well end in a crisis. He suggested that Asian governments had essentially set themselves up to pay out on the kind of guarantees which Krugman was to later describe (although he did not specify the downward-sloping demand for capital as Krugman would). But – in the crucial addition – he suggested that the amount available for such payouts was limited. Adjustment costs would mean that investors could not steal the money immediately. But in the end – he thought – they would set up enough projects with negative expected returns to walk away with the state’s capacity to pay out rewards. When that happened, there would be a crisis.

In a companion paper to this one, Irwin and Vines (1999), henceforth IV, show that when Dooley’s insight is added to Krugman’s analysis, the result can be the kind of multiple-equilibrium outcome which Radelet and Sachs focused on. Here we set out the argument of that paper informally.¹³

To get the essential idea across, IV set the story up as a series of static, one-shot games played over time. We model stochastic shocks in the environment, like

10. In what follows we will normally omit the word ‘implicit’ in front of the word ‘guarantee’ but it is nevertheless to be normally understood as implied, in the manner of the previous footnote.

11. For our purposes we actually need to say less than this, merely that continuation of this form of financial system created guarantees which, if optimistic expectations were not fulfilled, would need to be honoured. It is often quite difficult to disentangle moral hazard from over-optimism.

12. This is forthcoming as Dooley (1999). It is discussed briefly at the end of the Dooley and Walsh paper for this conference.

13. The exposition which follows contains an exposition of a version of our model which we have not yet fully written out formally. We need to assume some informational asymmetry such that there is some possibility that the government will always pay out on its guarantees.

Krugman implicitly suggested that we need to. We do this because we think that the arrival of a negative external shock is an essential part of the story of the Asian crisis.¹⁴ There are Krugman-style investors – financial intermediaries – who raise funds by borrowing from abroad. There is an unregulated financial system in which financial intermediaries can walk away from projects at no cost to themselves, if things go bad. There is a government which guarantees the loans that financial intermediaries receive from abroad.

In IV, we first clarify the way in which Pangloss outcomes depend *both* on an unregulated financial system – which leads to the ability of financial intermediaries to walk away from losses when things go wrong – *and* on the provision by the government of guarantees to lenders to cover the risk of financial intermediaries walking away. Obviously, if the government always fully honoured then they could prevent the interest rate charged by foreign lenders from rising, even although there is a risk of non-repayment. But we can also explore the consequences of the government having a limited capacity (or willingness, see below) to pay up on its guarantees if things go bad. Our lenders – foreign banks – have rational expectations, and so they build a risk premium into the price at which they are to lend to the country. They do this because, as Dooley suggests, there is a probability that the government will not be able or willing to bail them out.

We analyse the evolution of a crisis-prone ‘Asian’ economy as follows. Initially there are no guarantees, and lending by foreign banks is risky. This is because there is the possibility of productivity shocks to the economy which impact on the ability of financial intermediaries to repay their loans and the interest due; this is the only risk which we explicitly identify. As a result, the interest rate which they charge is high and the initial level of the capital stock is low. One day the government sets up shop offering to bailout people whose investments go wrong and to guarantee repayments to foreign banks. This means that at the given world interest rate there are now investment opportunities with positive expected profits, after allowing for the payment of guarantees. As a result capital gradually accumulates, moving towards the ‘Pangloss’ equilibrium, at which point the marginal product in the best state of the world would be equal to the world interest rate.

It is possible that this Pangloss equilibrium is the long-run equilibrium of the system: if the government was able – and willing – to afford all of the losses which would be incurred in bad states, and this is the case which we consider.¹⁵ In our paper we characterise this long-run ‘Krugman equilibrium’ of the system and other parameters, and we show that it is unique.

14. By doing this we answer in the affirmative the question posed by Kletzer (1999) in his comment on the Dooley paper. Kletzer called for formalisation of the paper in order to see if the Dooley story requires, for completeness, to be located in a stochastic world. We think that it does.

15. Alternatively if this implicit fiscal obligation were to become too large relative to the willingness-to-bailout, then rational foreign banks would build a premium into the interest rate which they demanded over and above the world interest rate; as a result the long-run equilibrium of the capital stock would be less high.

We are also able to explore the vulnerability of such an economy; i.e. to show that there is the possibility of a bad equilibrium as well as a good equilibrium. We make the realistic assumption that there is a 'short run' in this model, a period in which the stock of capital is fixed, due to adjustment costs, and we show that it is within this short run that this vulnerability applies. To fix ideas, first consider the good equilibrium at any level of the capital stock 'on the way' to the Krugman long run. Suppose that there is no risk of default and that the equilibrium interest rate is equal to the world rate. Let there be a productivity shock to the economy. Then, because we are in the good equilibrium, the government can afford to pay the guarantees, even if the shock is a bad one. This is why the interest rate can be in equilibrium at the low world level. It is possible that this good equilibrium is the only equilibrium, even in the short run. This will be the case if (i) the government is highly credible; and (ii) capital has not accumulated too far towards the Pangloss equilibrium, so that the stock of capital in this short run is still small, and so that the stock of outstanding guarantees is 'not too large'.¹⁶

We then show that, if these two conditions do not hold, then there is also the possibility of another bad, crisis, equilibrium. If foreign banks believe that there is a range of productivity shocks sufficiently bad that the government might renege on its guarantees if such bad shocks materialise, then they will raise the interest rate (to an extent dependent, of course, on the probability of these bad shocks). But by doing so they increase the cost to the government of meeting its guarantees. It might be the case that if they do this there is a range of shocks sufficiently bad that the government has no choice but to renege on its promises. This validates the fear of the foreign banks, meaning that the crisis is an equilibrium.

In this set-up there is clearly, in the short run, a bad equilibrium analogous to the bad equilibrium in the bank-run models discussed at the beginning of this section. With low interest rates no productivity shock can be bad enough to cause the government to renege on its guarantees. But with sufficiently high interest rates it might become impossible for the government to pay up, thus validating the risk premium which is the reason for the high interest rates. In this model the crisis-equilibrium possibility results from the endogeneity of the risk premium on loans to the country. This risk premium enters non-linearly into the model, in such a way as to give the possibility of multiple equilibria, in exactly the same way that expectations of exchange rate collapse enter into the multiple-equilibrium currency crisis models.¹⁷

We can now give a stylised dynamic account of the evolution of a crisis-prone economy. Initially there are no guarantees; lending by foreign banks is risky; the

16. These statements are true in the version of our model which we have not yet fully written up, in which there is some possibility that the government will always pay out on its guarantees.

17. Interestingly, this multiple-equilibrium feature of the model is a feature of the short run, but not of the long run. In the long run, high interest rates mean that much less capital is invested in the country, and this effect is strong enough to mean that the costs of paying out on the guarantees in the high interest case would be no higher than in the low interest rate case, thus removing the problem. But the realistic assumption that there is a 'short run' – in which risk premia can be instantly adjusted, but in which the capital stock is effectively predetermined – means that the model is one which is vulnerable to a multiple-equilibrium problem.

interest rate is high to cover the risk of non-repayment; and the level of the capital stock is low. After the introduction of the guarantee, the interest rate will fall to the world rate and the capital stock, and the level of debt, will begin to rise. Initially, if the government is at all credible, the stock of guarantees will be too low for the possibility of multiple equilibria to arise, and the economy will not be vulnerable to crisis. But, after a while, capital may accumulate enough for this.¹⁸ Thereafter the evolution of the economy becomes contingent. If the economy remains at the good equilibrium each period then the debt stock will gradually increase and the economy will converge to the Pangloss-over-investment equilibrium. But at any point in time it can flip to the collapse equilibrium, which will create a financial crisis, whose key features are set out below. In this model, we cannot say whether the economy will, at any point in time, remain at a good equilibrium or flip to the collapse equilibrium. But the probability of such a flip can plausibly be asserted to be non-zero at any point in time, if such a flip has not already happened.

In this model, a financial crisis is not inevitable if the credibility of the government is great enough. If, however, the government is not credible enough, then crisis becomes inevitable, although the timing of crisis is unpredictable. Immediately following the introduction of the bailout policy the interest rate falls to the world rate, borrowing starts to rise, driven by Pangloss over-investment. If the good equilibrium continues to be selected then the debt stock will continue to rise towards the long-run equilibrium level. Both during this transition, and at the long-run equilibrium itself, multiple equilibria exist, with the possibility of a switch to the collapse equilibrium. Even though at any point in time the good equilibrium may be the most likely, we can never rule out the possibility of a switch to the collapse equilibrium.¹⁹ The crisis is inevitable because, even if the probability of crisis at any particular time is low, a crisis must occur eventually with probability equal to one.

2.3 Understanding financial crisis

We can now clarify what we mean by a financial crisis in this model. A crisis occurs when the government is forced to renege on its commitment to bailout financial intermediaries. We may legitimately call this a ‘crisis’ for the following reason. The high-capital, high-debt, level of the economy has been driven by a reduction in the interest rate, as foreign banks expect a lower default rate on interest payments, given the government guarantee. But if the government ever reneges, one can argue that no such guarantees will in the future be credible. The consequence of this is that, following the renegeing, the equilibrium capital stock falls to a lower level. The consequence of this will be a collapse in investment.

18. Where this point comes depends, of course, on the credibility of the government.

19. The good equilibrium will be more likely than the collapse equilibrium if we assume that discrete jumps in the interest rate are less likely than its continuation at the same level.

2.4 Vulnerability in the financial system due to the pegged exchange rate regime

Additional vulnerability was, we believe, created in the Asian financial system by liberalisation in the presence of a monetary policy regime based on pegged exchange rates. The important thing for the argument being advanced here is that it left the economy with a large outstanding stock of unhedged foreign debt.

It is easy to see why private investors should have failed to hedge; they were continually being reassured that the exchange rate quasi-peg was a core part of the macroeconomic strategy.²⁰ The effect of this failure to hedge should be obvious in the context of the story of crisis which has been told in the previous section. If for some reason the currency were to depreciate in the bad, crisis, equilibrium then this would raise the domestic-currency value of the stock of outstanding government guarantees to the financial system. That would make the meeting of those guarantees more onerous. The risk of the depreciation which would come if there were a crisis would thus increase the likelihood that the government would, in fact be forced to renege. The fact that the currency depreciates in the bad equilibrium thus make that bad equilibrium outcome more likely. It thus raises the vulnerability of the economy to financial crisis.

2.5 Interaction between currency depreciation and financial crisis

Why, and how much, does the currency depreciate in the bad crisis equilibrium?

We have described the crisis as an outcome in which investment collapses. This leads to a severe fall in aggregate demand. It seems natural to assume that the (real) exchange rate falls enough to restore aggregate demand into equality with aggregate supply, by promoting a sufficient increase in net exports to replace the collapsed investment. This is the assumption that Krugman (1999a) makes to close his model, and it is the assumption that Ozkan and Sutherland (1993; 1994; 1995) make in a series of papers. It is also what the Mundell-Fleming and Dornbusch models would suggest as the outcome of a 'neutral' monetary policy. Because there is a large fall (a 'collapse') in investment, this will lead to a large fall (a 'collapse') in the real exchange rate. Thus this assumption, taken in conjunction with the rest of the model, enables us to understand the very large currency depreciations which happened in the crisis countries.²¹

The effect of this depreciation, in the crisis outcome, is to modify the model described in the previous section in a crucial way. In that previous model, if the

20. See Section 5 below.

21. This assumption clearly oversimplifies, and does not enable us to fully understand either the exchange rate fall that actually happened, or the fall in output which happened because time was required for net exports to replace investment. We will take up modifications of it in Section 5 below.

accumulated stock of guarantees is sufficiently small, or if the government is sufficiently credible, then no bad, crisis, equilibrium might exist. The economy is then not vulnerable – it is ‘safe from crisis’. But if all participants know that the currency will collapse if there was to be a bad outcome then this will make the cost of meeting outstanding guarantees that much larger (because it would increase the domestic-currency cost of these guarantees). That in itself might make the government unable to meet the cost of the guarantees. That is, it might mean that an economy which would have been safe is no longer safe.

This, it seems to us, is to get to the core of the interaction of currency and financial crisis in Asia.

Notice an implication of the assumption that we have made about the behaviour of the real exchange rate. By making this assumption, we have effectively removed monetary and exchange rate policy from the strategic choice-set of the government; it is not, we suppose, possible for the government to continue to hold the line with the fixed exchange rate. This is to oversimplify.²² It certainly does not describe what happened in Hong Kong. Formally, it may be the case that holding the line on the exchange rate – although costly – might make it possible to prevent financial crisis.²³ But what we are assuming here, for simplicity, is that this is not a realistic possibility. Thus the only strategic choice for the government in our analysis is whether to pay up on its guarantees.

3. Negative Shocks

The financial crisis model just surveyed gives an important role to negative external shocks. We now provide a general review of such shocks for the Asian economies.

3.1 Diminishing returns to investment

Well before the signs of crisis in the east Asian economies there had been a debate about their productivity growth record and whether there had been ‘too much’ investment. Krugman (1994) likened their capital-intensive growth to that of the Soviet Union.²⁴ He pointed out that ‘if growth in East Asia has been primarily investment driven’ then it was likely that ‘capital piling up there is beginning to yield

22. We are thus abstracting from what is the focus of attention in second-generation currency crisis models.

23. It might also be the case that there is no half-way house. Once a financial crisis has broken, there may be no realistic alternative but to let the (real) exchange rate go. An understanding by investors of this fact may be the extra rod that breaks the camel’s back. This does *not* mean letting the nominal exchange rate fall without limit. See below.

24. In this he was quoting the work of Young (1995).

diminishing returns'.²⁵ Notice that such falls in the rate of return will not explain crisis, since response to them could have been smooth and gradual. But they do constitute a negative shock, albeit a slow-acting one.

3.2 Worsening external position

Current account deficits had increased in all the countries except Singapore, but the degree of problem varied. Thailand was the only country with a really large deficit (–8 per cent of GDP). Malaysia, at –6 per cent of GDP, had reversed a worsening trend. However it is impossible to read much from *ex post* current account deficits because it is not possible to determine whether these were the consequence of benign inward foreign direct investment, or high domestic absorption, or a negative external shock. In the face of this lack of conclusiveness about causality it is important to look for more direct signs of external weakness.

One explanation of this story notes that competitiveness, measured by real exchange rates, worsened in most countries. There are a number of possible reasons for this. It may have been a result of changes in nominal exchange rates, and in particular an appreciation of the dollar – to which most of these countries' currencies were pegged – relative to the yen. Or it may have been due to a fall in dollar export prices. Or it may actually have been due to rises in domestic costs and prices of the kinds discussed above. Also the evidence is itself inconclusive. Thus for many countries the amounts appear to have been small. The only countries where competitiveness appeared to have declined by more than 10 per cent from 1990 were Indonesia, the Philippines, and Hong Kong. In Singapore, Malaysia and Thailand the declines appear to have been close to 10 per cent. Korea and Taiwan appear to have had virtually no decline.²⁶ However these figures – which use relative prices in computing the real exchange rate – appear to miss the rise in domestic costs described above for Thailand (and there is a suspicion that they may do so for other countries too).²⁷

25. That interpretation is challenged by (among others) Radelet and Sachs (1997). 'Good economic policies and a favourable economic structure raise the returns to capital and thereby stimulate rapid investments in capital. Without [these] ... the returns to capital would be much less, so that capital accumulation would be much lower, and overall growth would be much slower as a result.' However they agree that, 'If ... most ... growth is the result of capital accumulation ... growth will slow down as capital deepening takes place (that is, as the capital-labour ratio rises sharply in the economy) since capital deepening will be associated with a declining rate of return to new investments. This is in fact the case in East Asia: as capital accumulation has progressed, rates of return on capital have declined, suggesting that indeed both capital accumulation and growth will taper off in the future'. Radelet and Sachs (1997) cite OECD data that the 'rate of return on capital in Korea declined gradually from around 22 percent in the mid 1980s to about 14 percent in 1994. In Singapore, a comparable indicator – the rates of return on US foreign direct investment – fell from 27 percent in the late 1980s to 19 percent in the mid 1990s. In Hong Kong and Taipei, China rates of return fell from around 21 percent to 15 percent. While these declines do confirm the neoclassical prediction of declining returns to investment, and are consistent with the rapid accumulation of capital documented by Young ... the important point is that they are still well above the world-wide average returns on US foreign direct investment of 11 percent'.

26. These figures are taken from IMF (1997).

27. See Warr (1999).

Other versions of the story seek more specific explanations. One of these looks to the weakness of the market for electronic goods, perhaps due to large increases in supply from the countries under consideration. Another version of the negative shock story attributes it to market crowding as a result of increased exports from China. Here the idea is that, until the mid 1990s, China had internal difficulties (and perhaps also an overvalued exchange rate) which held back export expansion. The resolution of those difficulties (and the devaluation of the yuan in 1994) enabled China to increase exports of manufactures competitive with those produced in the Asian economies. This had effects equivalent to a negative productivity shock in the other Asian tigers, which faced falling quantity demand and/or a falling price for their exports. Yet another variety of this story notes the prolonged recession in Japan, and the shock caused by the devaluation of the yen. Japan acts not as an export competitor with these countries but as an import market, and so recession in Japan has acted as a significant export-market shock for these countries.

Perhaps most persuasively, it does appear that almost all countries in the region experienced significant declines in both export revenues and in export volumes in 1996. (IMF *World Economic Outlook*, October 1997, Figures 7 and 8.) This does appear to be significant evidence of a negative external shock in that year, although it does not discriminate between the origins of this shock.

4. Financial Collapse Throughout Asia in 1997

It appears that, for all of the Asian economies, the negative shocks which were described in the previous section led to problems for the financial system. The negative shocks reduced the value of the assets of the banking system, requiring government bailouts for the financial system. This clearly led to an onset of financial crisis in all countries, long before the summer of 1997. In both Thailand and Korea, the stock market had begun to fall by 1995 and by 1996 large swathes of the economy were in trouble.

It is our interpretation, that but for one feature of the circumstances, all the Asia-Pacific economies might have withstood the need for these bailouts without the financial crisis turning into a financial collapse. We argue that it was the interconnection of currency and financial crisis that led to this.

We begin with Thailand. There, particular vulnerability appears to have resulted from a real appreciation which was a feature of the boom phase. (See Warr (1998; 1999)) and also the discussion in the next section.) The negative shocks were already, by 1996, causing recession. The government was committed to a fixed exchange rate, departure from which, through a more expansionary monetary policy, would have involved a loss of credibility. Implicit in our discussion in the previous section is the argument that the costs of holding onto the peg became completely prohibitive. The chain of reasoning is as follows. Foreign investors came to foresee the possibility of a bad equilibrium in which the currency would devalue and so in which the burden of the foreign debt would become crippling. As a result, they imposed a risk premium which made the guarantees too costly to honour. That made investment collapse, which made it inevitable that the currency would have to collapse too, for,

otherwise the fall in output would be too great. This in turn validated investors' fears. This is a story about a 'flip to a bad equilibrium' happening in the financial system; a flip which is intrinsically entangled with the currency depreciation.

It is thus possible to argue that even in Thailand – where the Asian crisis first hit – the situation was quite different to Britain's exit from the ERM in 1992. A second generation analysis of that other crisis locates it in a choice by the government between two evils: the loss of credibility due to the collapse of the currency peg versus the unemployment consequences of continuing with the peg. Here the key choice was, we argue, between whether to pay the guarantees to the financial sector or not; the fall in the exchange rate fall was 'collateral damage' from the decision not to do so.

In the other crisis economies the negative shock in 1996 does not appear to have been as serious as that to the Thai economy. But our analysis suggests that of more importance than the size of negative shocks was the vulnerability to a bad equilibrium. One can then locate the onset of crisis in Korea, Indonesia, Malaysia, and the Philippines in a process of contagion: a flip to the bad equilibrium to which the economies were vulnerable, in response to the 'wake-up call' (i.e. signal) from Thailand that this was a possible outcome. (See the paper by Masson, in Agenor *et al.* (1999), and the discussion of that paper by Weber, both of which argue this point persuasively.)

Notice that the effect of currency depreciation in this situation, in which there are large foreign borrowings denominated in foreign currency, appears to be inherently non-linear. If it is small enough it acts in an 'orthodox way' – helping to relieve the macroeconomic downturn created by vulnerability and negative shocks. But if the devaluation is large enough to trigger the need for bailouts which cannot be honoured, then the effect is clearly, and potentially massively, negative. It is possible to argue that the critical policy mistake in the handling of the crises was to allow a currency depreciation which became sufficiently large to breach this non-linear threshold. But our view is that it was not at all well understood where this threshold was, or even that it existed. And for the Indonesian, Korean, Philippines and Malaysian economies hit by contagion it became almost impossible to prevent degrees of currency depreciation which, *ex post*, appear to have breached this threshold.

There is some circumstantial evidence in favour of this interpretation for Korea. Private conversations with one of the major rating agencies suggest that in rating, for example, Korean banks, the agencies knew that the banks were in financial difficulty but did not downgrade ratings because they still regarded the government commitment to bailout banks as firm. But in making this judgment they took into account the growing cost of the bailouts only so far as it concerned the cost of injecting enough capital to shore up the banks' adequacy ratios. This they considered to be well within the government's budget capacity. It appears that if the rating agencies had been aware of the possibility of a large currency depreciation and had had to factor in the cost to the government of honouring all of the banks' foreign liabilities in depreciated currencies then they would have considered that the budget deficit could not have

stood that. That binding budget constraint would, it appears, have led to a revision of their estimate of the likelihood of support for the banks and a consequent down-grading of bank ratings.

The above argument suggests the following tentative hypothesis about the Asian crisis. Estimates of the financial fragility of the banking sector in the absence of (before) the currency crisis appear not to have been enough to trigger a crisis. Markets (or at least the rating agencies which supply them with information) do appear to calculate the probabilities of banks' rescue and consider government budget constraints important in that. These probabilities change when budget constraints change. Estimates of sovereign risk may well take into account the likelihood of bank failure, but in this case it appears that the currency crisis had to come first before the failures became so large as to threaten the guarantees to the financial sector and create financial collapse. We might be able to assume that the style of analysis was similar in the markets themselves. Information about how one aspect of crisis – the currency crisis – is likely to affect another aspect of crisis – the financial crisis – may not have been perfect, and understanding this may play a crucial role in explaining how the crisis developed.

Notice how complex the contagion process becomes when there is the possibility of collapse of both the financial system and the currency. The mere fear of financial crisis and its consequences may be enough to provoke an expectation of currency depreciation. If that is strong enough to make the currency peg unsustainable then the currency depreciation can trigger the financial collapse which had been feared. This effect is *additional* to the way, discussed in Section 2, in which the fear of financial crisis can lead to a rise of the risk premium which in turn causes the financial crisis.

5. Macroeconomic Policy and the Crisis

5.1 Pre-crisis macroeconomic policy, the fixed exchange rate peg

We have not yet discussed macroeconomic policy, other than the fact of the fixed exchange rate peg. We agree with Grenville and Gruen (this volume) that the problems of the Asian crisis countries were *real* problems, and cannot just be put down to mistakes in *monetary* policy, or even to macroeconomic policy more generally. Nevertheless serious mistakes were made. The mistakes were most serious in Thailand, and we will discuss the Thai case, which is the one with which we are most familiar. The aim is to show that these mistakes increased the vulnerability which we have been discussing.

At the time the dangers involved were not understood. This is illustrated by a paper on Thailand published by the IMF in 1990 (Robinson *et al.* 1990) which described – with admiration – how Thailand's macroeconomic framework had been jointly based upon a fixed nominal exchange rate (to provide the necessary nominal anchor) and fiscal prudence (to make room for its export-led expansion). Such a

strategy, it was said, had served Thailand very well through to the late 1980s, and had formed the basis for behaviour which was regarded as little short of miraculous. Praise for this strategy was strongly echoed in a Fund paper published *as late as December 1996* (Kochar *et al.* 1996).

In retrospect it seems that there were two key mistakes.

The first mistake was to base the conduct of monetary policy around a pegged exchange rate regime. We have already seen how this created the time bomb of a debt overhang. But it also threw macroeconomic policy off course. The textbook Mundell-Fleming model shows that the trilogy of fixed exchange rates, autonomous national monetary policy, and open international capital markets is inconsistent.²⁸ What had happened in the decade between 1985 and 1995 was the opening of Thai capital markets to capital inflows, of a kind discussed in the previous section. Nevertheless, the Thai authorities tried to damp the boom in the first part of the 1990s by raising interest rates, even though the Thai baht was pegged to the dollar. The effect was to stimulate the unhedged foreign currency borrowing which created such a problem, as Thai companies and banks borrowed abroad at lower interest rates in dollars, without succeeding in successfully dampening the boom in the economy. Similar errors appear to have been made in Indonesian and Korean macroeconomic policy, although to a much smaller extent. It appears that policy authorities were continuing to use an approach to monetary policy which was only appropriate to the earlier period of much lower capital mobility.

The second mistake is less well understood and is to do with fiscal policy. In Thailand the fiscal stance appeared, by conventional deficit measures, to be very tight. A budgetary law, which constrained any year's fiscal expenditure to lie within a small margin above the previous year's tax revenue, prevented the emergence of fiscal deficits, and from the late 1980s produced small surpluses of 2 or 3 per cent of GDP because revenue was growing so rapidly. (See Warr and Nidhiprabha (1996)). Yet fiscal balance, or even surpluses of this size, may be an insufficiently restrictive policy when a country experiences a large boom, if monetary policy is immobilised by a fixed exchange rate.

The experience of Thailand, and of other Asian countries, in the past decade has shown that a macroeconomic boom is precisely what one would expect at a time of liberalisation.²⁹ We have already discussed the likelihood of an investment boom in Section 2. In addition, this is likely to be accompanied by a consumption boom,

28. Many other countries have, before the recent experience in Asia, failed to learn this lesson. For example, monetary policy in the United Kingdom in the late 1980s and early 1990s contained contradictions of a very similar kind. An attempt was made both to control inflation and to peg the exchange rate at a low level in the mid 1980s. Then an attempt was made both to promote a recovery from recession and to maintain a fixed exchange rate within the ERM link in the early 1990s. Both attempts ended in fiasco.

29. Portes and Vines (1997) argued strongly, in a paper written during 1996, that this was the lesson to learn from the Mexican experience of 1994/95. Jeffrey Sachs had been saying this since immediately after the Mexico crisis. (See Sachs (1995; 1996).) See also the similar discussions of this issue in Dooley (1999) and Grenville and Gruen (this volume).

because liberalisation characteristically involves the removal of liquidity constraints.³⁰ Thus an overall boom in demand is the particular problem which macroeconomic management is likely to face in an emerging, liberalising, economy. It is our view that the inflexibility of monetary policy imposed by a fixed exchange rate is dangerous in these circumstances, unless fiscal policy can be extraordinarily contractionary.

The way in which this is dangerous has been documented by Warr (1998; 1999) and Vines and Warr (1999) for the case of Thailand. Warr shows how the boom which preceded the crisis was not choked off by an appreciating exchange rate precisely because of the exchange rate peg. He then argues that the consequence of this boom was that cost price increases were unchecked, making the export sector increasingly uncompetitive. This is an intrinsically sequential story. It suggests that, under fixed exchange rates and inflexible monetary policy, there will be an excessive investment boom (and perhaps also consumption boom) in an initial phase, and that the consequences will be an erosion of the profitability of the investment projects in a subsequent phase.³¹ In this phase difficulties will emerge if there are negative external shocks.

With a commitment to a fixed exchange rate the problems which emerge in the period following the boom cannot be alleviated by means of subsequent currency depreciation if the value of the currency peg is to be maintained. In this subsequent phase there is an increased risk of financial crisis, in the face of exogenous shocks. Thus it is possible to say that the maintenance of a fixed exchange rate increased the vulnerability of the Asia-Pacific economies, and particularly of Thailand, in the face of any significant worsening of the external environment.³²

30. In addition, the investment boom is likely be associated with an increase in stock market valuations, and that can add to the forces causing a consumption boom, as consumers who are more wealthy spend some of their gains.

31. This sequential argument makes two realistic assumptions. The first of these is that wage and price adjustment lags behind output, with the dual implication that wage and price adjustment fails to choke off the boom in the first period, and that wages and prices rise so far in the second period as to throw the boom into reverse. The second assumption is that investors are not sufficiently forward-looking as to see what is coming and so damp investment in the first period. Irwin and Vines (1995) developed this argument in some detail in an unpublished paper on the Mexican crisis.

32. Notice that financial crisis could also be precipitated simply by the downturn which follows the ending of the boom itself, for example as the stock market falls, without the 'trigger of a negative external shock'. It is thus also possible to argue that the fixed exchange rate rendered these economies macroeconomically vulnerable in a different way: leaving them exposed to a process of boom and bust, in which the bust caused financial crisis. That is the story proposed by Aghion *et al.* (1999). (That paper has flexible prices; the stickiness comes from 'time-to-build' in the supply-side effects of capital investment. For a while, increases in investment lead to increases in supply which can go hand-in-hand, sequentially, with increases in collateral and so further increases in investment. But eventually rises in non-traded-goods prices squeeze profitability and cause a reverse.) Edison, Luangaram and Miller (1998) have also produced a model to analyse this issue, concentrating on the possibilities for boom, and subsequent bust, in the price of a non-traded asset, namely land.

5.2 Macroeconomic policy during the crisis, and the interest rate defence

Our theme in this paper has been vulnerability, and the interconnection between this and the exchange rate collapse which was associated with a shift to a bad equilibrium. In this section we ask whether vulnerability was increased by a macroeconomic policy which led to larger currency depreciations than were warranted, or conversely whether, in the crisis countries, post-crisis exchange rate collapse could have been smaller and thus vulnerability lessened.³³

A starting point is the observation that, when the crisis set in, it appears that markets had no clear idea what would replace the exchange rate peg as the nominal anchor, nor how this replacement anchor would work. Vines (1999) characterises this as a circumstance in which markets had no clear idea whether, after the crisis set in, the authorities were attempting to stabilise prices around the level which would involve little or no ultimate slippage of the price level or whether, instead, the authorities had become reconciled to having 'let prices go'. If this was so, Vines argued, then markets had no clear idea whether the long-run equilibrium exchange rate was that consistent with no slippage or that consistent with huge slippage. Without that guidance, it seems that markets took the view that what they were being offered was – on average – something in between, namely large slippage. That is why, we argue, we had such large nominal currency depreciations – an outcome larger than would have been sufficient to bring about the change in the real exchange rate discussed in the previous section without any rise in the domestic price level.

Here we ask whether there might have been ways of avoiding this.

One candidate for this is the strategy of inflation targeting. The important thing about such a strategy is that it effectively operates in two dimensions. The instrument of monetary control is the interest rate. But there is also an announced target trajectory for prices which it is the intention of monetary policy to achieve; it is the task of interest rate manipulations to steer prices onto this trajectory. The target trajectory is a critical part of this strategy. It is useful for domestic price and wage setters. It is also crucially important for the foreign exchange market in that it provides a partial anchor for the long-run nominal exchange rate.³⁴

The more quickly something like this second element of the strategy can be put in place, the more quickly can overshooting of the exchange rate be avoided.

Eichengreen *et al.* (1999) have examined the conditions necessary for the introduction of such a strategy. Institutional conditions include the creation of an independent, or quasi-independent, central bank with the remit to pursue price stability as its central objective. There must be good data for a chosen measure of

33. This point has been pressed vigorously by Stiglitz. (See Furman and Stiglitz (1998) and Stiglitz (1999).)

34. Such a target cannot entirely remove uncertainty about the long-run nominal exchange rate. This is because it does not remove uncertainty about the long-run real exchange rate, but only uncertainty about the price level at which this real exchange rate will be reached.

inflation, and also there must be the analytical capacity to make forecasts of this, and to project the difference that interest rate changes would make to out-turns for it. There must be operational capacity to manipulate the discount rate in a financial system which has been structured – through the terms of access of commercial banks to the discount window – so that this manipulation sets the base of the structure of market interest rates. And finally, the central bank must be widely believed to be accountable for the achieving of the inflation target, and the way in which it makes its decisions – feeding back from gaps between the inflation forecast and the inflation target to changes in the discount rate – must be transparent and must be believed to be so.

Of course all of this takes time to achieve. The idea that it could have been quickly available as a strategy for the crisis countries is wildly unrealistic.

Nevertheless, the question remains as to whether the excessive fall in the exchange rate could have been staunched by some reorientation which involved elements of an inflation target strategy. As it was, in the absence of the preconditions just described, the authorities, with Fund advice, cast their monetary policy strategy explicitly in terms of defending the exchange rate, rather than in terms of stabilising the price level, on the key grounds that the former involved responding to a day-by-day observable variable whereas the latter would have involved responding to developments in a variable which policy could not manipulate in a well-understood way.³⁵ Nevertheless they were unwilling to give any precise hostages to fortune about the exchange rate. As a result they were unwilling to commit themselves to any more than ‘achieving exchange market stability’. This gave market participants very little to base their forecasts on. In the absence of this, as the above example shows, the achieving of exchange stability can come at many different exchange rates. The one chosen depends upon the market’s perception of the authorities’ intentions. During the crisis months, it seems that there was a process of repeated testing of the authorities’ position at lower and lower exchange rates. We believe that there would have been a significant gain in instead revealing the authorities’ intentions to achieve low and stable inflation after the crisis and in describing – in broad terms – how interest rate policy would be constructed so as to achieve this objective. This would have avoided giving the markets the alternative hostage to fortune of trying to defend the current rate in the market. It would have given market participants unhindered freedom to take the spot rate lower as they chose. At the same time market participants would have been given the rough expectation that lower exchange rates would be associated with higher (nominal) interest rates and also with capital gain as the currency returned towards levels more consistent with the inflation strategy.

The argument here is that such a policy could have lessened vulnerability during the crisis.³⁶ In particular if this strategy had succeeded making possible a smaller fall in the exchange rate in some of the crisis economies then this could, arguably, have lessened contagion to the other economies.

35. See Lane *et al.* (1998) for a defence of the IMF’s advice during the crisis, and also Fischer (1998; 1999).

36. McKibbin’s otherwise compelling empirical account of the overshooting of exchange rates in the crisis countries (McKibbin 1998; McKibbin and Martin 1998) does not address this issue.

6. Conclusion – a Historical Context

The present paper has offered a framework for understanding the Asian crisis. It has argued that the crisis was a consequence of vulnerability caused by insufficient institutional development in the region during the ‘miracle’ boom period. We have claimed that two key flaws were important. The first was the continuation, into the era of liberalisation, of a financial system containing implicit guarantees. The second kind was the continuation, into the era of liberalisation, of a pegged exchange rate regime. Of course our account oversimplifies. It would be possible in conclusion to list what was missing from it.³⁷

Instead of doing this we want to step back a little and amplify the insufficient-institution-development point. We do this because we have come to see the crisis as a problem relating to the transition between two types of capitalism.³⁸

There is, one might argue, what might be called ‘Gershenkron-capitalism’: an economy which is largely closed, in which what is produced and consumed is all pretty basic stuff. In such economies the ‘Asian values’ of thrift and hard work are of central importance, and what really matters for rapid growth and development is the mobilisation of domestic savings; efficiency, variety, and quality are all second-order virtues, and a modern financial system is probably unnecessary. This is what the Asian economies looked like in their early growth phase, up to the middle 1980s, before the ‘Asian miracle’ was a household phrase.

Then there is capitalism as we know it in the most advanced OECD countries – open, consumer-oriented, quality conscious, and subject to globalising competition in goods markets, and especially also in capital markets. No two OECD countries are identical, of course. But there is a generic similarity at this level of generality.

How can a country graduate out of the first category and into the second, as the Asian economies attempted to do from the mid 1980s onwards?

Without care, the growth literature can mislead here. It can be read as suggesting that what is involved is merely a process of capital accumulation, leading to ‘catchup’ which is continuous and smooth. Instead we would argue that the transition between these two forms of capitalism is a traverse which is difficult to manage. There are important and deep problems of institution design in the financial sector, and in macroeconomic policy-making, which must be managed to make this traverse go well. Without the necessary reforms, countries are vulnerable to crisis.

Viewed from this broad sweep, we can say that the Asian crisis countries made serious mistakes on the traverse. Others, e.g. in Latin America, have made mistakes before. The warning is that others, in the future, will be at risk of doing so again.

37. Dooley and Walsh (this volume) provides a very good check-list of all the things that are missing.

38. We owe the idea in this conclusion to Crafts (1998). He does not quite use our labels, although they are implicit in what he says.

References

- Agenor, Richard, Marcus Miller, David Vines and Axel Weber (eds)(1999), *The Asian Financial Crises: Causes, Contagion, and Consequences*, Cambridge University Press, Cambridge.
- Aghion, Philippe, Philippe Bacchetta and Abhijit Banerjee (1999), 'Capital Markets and the Instability of Open Economies', in Richard Agenor, Marcus Miller, David Vines and Axel Weber (eds), *The Asian Financial Crises: Causes, Contagion, and Consequences*, Cambridge University Press, Cambridge.
- Corbett, J and D Vines (1999a) 'Asian Currency and Financial Crises: Lessons from Vulnerability, Crisis, and Collapse', *World Economy*, 22(2), March, pp. 155–177.
- Corbett, J and D Vines (1999b), 'The Asian Crisis: Lessons from the Collapse of Financial Systems, Exchange Rates, and Macroeconomic Policy', in Agenor, Miller, Vines and Weber (1999).
- Corden, Max (1997), 'Is there a way out? Are the IMF Prescriptions Right?', Notes from a Lecture given in Singapore, mimeo.
- Corsetti, Giancarlo, Paolo Pesenti and Nouriel Roubini (1998), 'What Caused the Asian Currency and Financial Crisis?', New York University, mimeo.
- Crafts, Nicholas FR (1998), 'East Asian Growth Before and After the Crisis', IMF Working Paper WP/98/137.
- Davies, G and D Vines (1998), 'Ripe for Attack and Attackable: When are Self Fulfilling Currency Crises Possible?', Institute of Economics and Statistics, Oxford, mimeo.
- Diamond, Douglas W and Philip H Dybvig (1983), 'Bank Runs, Deposit Insurance, and Liquidity', *Journal of Political Economy*, 91(3), pp. 401–419.
- Dooley, Michael P (1999), 'Are Recent Capital Inflows to Developing Countries a Vote for or Against Economic Policy Reforms?', reprinted in a revised form in Agenor, Miller, Vines and Weber (1999). Published in William Gruben, David Gould and Carlos Zarazaga (eds) (1997), *Exchange Rates, Capital Flows, and Monetary Policy in a Changing World Economy*, Kluwer Academic Publishers, Boston, pp. 211–221. Working Paper No. 295, University of California, Santa Cruz (1994).
- Dooley, Michael P and Carl E Walsh (1999), 'Academic Views of Capital Flows: An Expanding Universe', this volume.
- Dornbusch, Rudiger (1997), 'A Thai-Mexico Primer', *The International Economy*, 11(5), pp. 20–23, 55.
- Edison, H, P Luangaram and M Miller (1998), 'Asset Bubbles, Domino Effects and "Lifeboats": Elements of the East Asian Crisis', CEPR Discussion Paper No. 1866, April, London.
- Eichengreen, Barry (1999), *Toward a New International Financial Architecture: A Practical Post-Asia Agenda*, Institute for International Economics, Washington, DC.
- Eichengreen, Barry, Paul Masson, Miguel Savastano and Sunil Sharma (1999), 'Transition Strategies and Nominal Anchors on the Road to Greater Exchange-Rate Flexibility', *Princeton Essay in International Finance No 213*, Department of Economics, Princeton.
- Eichengreen, B and C Wyplosz (1993), 'The Unstable EMS', *Brookings Papers on Economic Activity*, 1, pp. 51–143.

- Fischer, Stanley (1998), 'The Asian Crisis: A View from the IMF', Address to the Midwinter Conference of the Bankers' Association for Foreign Trade. Available at <<http://www.imf.org/external/np/speeches/1998/012298.htm>>.
- Fischer, Stanley (1999), 'On the need for an International Lender of Last Resort', paper presented to the annual meetings of the American Economic Association. Available at <<http://www.imf.org/external/np/speeches/1999/010399.htm>>.
- Furman, J and J Stiglitz (1998), 'Economic Crises: Evidence and Insights from East Asia', *Brookings Papers on Economic Activity, Macroeconomics 2*, Brookings Institution.
- Global Economic Institutions (1998), 'Financial Crises: Contagion and Volatility: Report of a Conference held in London on 8-9 May 1998', in *Newsletter* of the Global Economic Institutions Research Programme, No 8, Centre for Economic Policy Research, London, October.
- Grenville, Stephen and David Gruen (1999), 'Capital Flows and Exchange Rates', this volume.
- IMF (1997), *World Economic Outlook*, Washington, International Monetary Fund, September.
- IMF (1998), *International Capital Markets*, Washington, International Monetary Fund.
- Irwin, Gregor and David Vines (1995), 'A Model of the Mexico Crisis', Global Economic Institutions Discussion Paper No. 3, Centre for Economic Policy Research, London.
- Irwin, Gregor and David Vines (1999), 'A Krugman-Dooley-Sachs Third Generation Model of the Asian Financial Crisis', Global Economic Institutions Working Paper No. 46, London.
- Kim, Jong-Il and Lawrence J Lau (1994), 'The Sources of Economic Growth of the East Asian Newly Industrialized Countries', *Journal of the Japanese and International Economies*, 8(3), pp. 235–271.
- Kletzer, K (1999), 'Comment' on Dooley (1999a), forthcoming in Agenor, Miller, Weber and Vines (1999).
- Kochhar, Kalpana, Louis Dicks-Mireaux, and Balazs Horvath (1996), 'Thailand: The Road to Sustained Growth', International Monetary Fund Occasional Paper No. 146, Washington, DC.
- Krugman, Paul (1979), 'A Model of Balance-of-Payments Crises', *Journal of Money, Credit and Banking*, 11(3), pp. 311–325.
- Krugman, Paul (1994), 'The Myth of Asia's Miracle', *Foreign Affairs*, 73(6), pp. 62–78.
- Krugman, Paul (1996), 'Are Currency Crises Self-Fulfilling?', in Ben S Bernanke and Julio J Rotemberg (eds), *NBER Macroeconomics Annual 1996*, The MIT Press, Cambridge and London, pp. 345–378.
- Krugman, Paul (1998a), 'Whatever Happened to Asia'. Available at <<http://web.mit.edu/krugman/www/DISINTER.html>>.
- Krugman, Paul (1998b), 'Firesale FDI'. Available at <<http://web.mit.edu/krugman/www/FIRESALE.htm>>.
- Krugman, Paul (1999a), 'Balance Sheets, the Transfer Problem, and Financial Crises'. Available at <<http://web.mit.edu/krugman/www/FLOOD.pdf>>.
- Krugman, Paul (1999b), *The Return of Depression Economics*, Allen Lane, London and Norton, New York.

- Lane, T, A Ghosh, J Hamann, S Phillips, M Schulze-Ghattas and T Tsikata (1999), 'IMF-Supported Programs in Indonesia, Korea and Thailand: A Preliminary Assessment', International Monetary Fund Occasional Paper No. 178.
- McKibbin, W (1994), 'The Macroeconomic Consequences of NAFTA', Australian National University, mimeo.
- McKibbin, W (1998), 'The Economic Crisis in Asia: an Empirical Analysis', Brookings Discussion Paper in International Economics No. 136.
- McKibbin, Warwick and Will Martin (1998), 'East Asian Crisis: Causes and Policy Responses', Asia Pacific School of Economics and Management, Australian National University, Working Papers in Trade Development, 98(2).
- McLeod, Ross H and Ross Garnaut (1998), *East Asia in Crisis: from being a miracle to needing one?*, Routledge, London.
- Masson, Paul R (1999), 'Contagion: Monsoonal Effects, Spillovers, and Jumps between Multiple Equilibria', in Agenor, Miller, Vines and Weber (1999).
- Morris, Stephen and Hyun Song Shin (1998), 'Unique Equilibrium in a Model of Self-Fulfilling Currency Attacks', *American Economic Review*, 88(3), pp. 587–597.
- Morris, Stephen and Hyun Song Shin (1999), 'A Theory of the Onset of Currency Attacks', in Agenor, Miller, Weber and Vines (1999).
- Obstfeld, Maurice (1986), 'Rational and Self-Fulfilling Balance-of-Payments Crises', *American Economic Review*, 76(1), pp. 72–81.
- Obstfeld, Maurice (1991), 'The Destabilising Effects of Exchange-Rate Escape Clauses', NBER Working Paper No. 3603, Cambridge, MA.
- Obstfeld, Maurice (1994), 'The Logic of Currency Crises', NBER Working Paper No. 4640, Cambridge, MA.
- Obstfeld, Maurice (1995), 'Models of Currency Crises with Self-Fulfilling Features', NBER Working Paper No. 5285, Cambridge, MA.
- Ozkan, F Gulcin and Alan Sutherland (1993), 'A Model of the ERM Crisis', University of York, mimeo.
- Ozkan F Gulcin and Alan Sutherland (1994), 'A Currency Crisis Model with an Optimising Government', University of York, mimeo.
- Ozkan F Gulcin and Alan Sutherland (1995), 'Policy Options to Avoid a Currency Crisis', *Economic Journal*, 105, pp. 510–519.
- Portes, R and D Vines (1997), *Coping with International Capital Flows*, Commonwealth Secretariat, London.
- Radelet, Steven and Jeffrey Sachs (1997), 'Asia's Re-emergence', *Foreign Affairs*, 76(6), pp. 44–59.
- Radelet, Steven and Jeffrey Sachs (1998), 'The Onset of the East Asian Crisis', Harvard University, mimeo.
- Robinson, David, Yangho Byeon, Ranjit Teja, and Wanda Tseng (1990), 'Thailand: Adjusting to Success: Current Policy Issues', International Monetary Fund Occasional Paper No. 85, Washington, DC.
- Rodrik, D (1999), 'The New Global Economy and Developing Countries: Making Openness Work', Overseas Development Council, Washington.

- Sachs, J (1995), 'Do we need a Lender of Last Resort?', Frank D Graham Lecture, Princeton University.
- Sachs, J (1996), 'Alternative Approaches to Financial Crises in Emerging Markets', *Revista-de-Economia-Politica*, 16(2), pp. 40–52.
- Sadli, Mohammad (1998), 'The Indonesian Crisis', *ASEAN Economic Bulletin*, 15(3), pp. 272–281.
- Soros, George (1998), *The Crisis of Global Capitalism: Open Society Endangered*, Little Brown, London.
- Stiglitz, Joseph E (1996), 'Some Lessons from the East Asian Miracle', *World Bank Research Observer*, 11(2), pp. 151–177.
- Stiglitz, Joseph E (1999), 'Must Financial Crises be this Frequent and this Painful?', in R Agenor, M Miller, D Vines and A Weber, *The Asian Financial Crises: Causes, Contagion, and Consequences*, Cambridge University Press, Cambridge.
- Vines, D (1999), 'International Policy Advice in the East Asian Crisis: An Interim Assessment', paper prepared for a seminar on *International Capital Mobility and Domestic Economic Stability*, Canberra, 13–16 July, hosted by the Reinventing Bretton Woods Committee, the World Bank and the Australian National University. (Paper prepared in consultation with Ross Garnaut.)
- Vines, D and P Warr (1999), 'How Boom Turned to Bust: A Macroeconometric Analysis of Thailand's Economic Crisis', mimeo, forthcoming.
- Warr, P (1998), 'Thailand', in McLeod and Garnaut (1998).
- Warr, P (1999), 'Thailand', paper prepared for a seminar on *International Capital Mobility and Domestic Economic Stability*, Canberra, 13–16 July, hosted by the Reinventing Bretton Woods Committee, the World Bank and the Australian National University.
- Warr, Peter G and Bhabupong Nidhiprabha (1996), *Thailand's Economic Miracle*, World Bank/Oxford University Press, Washington, DC.
- Young, A (1995), 'The Tyranny of Numbers: Confronting the Statistical Realities of the East Asian Growth Experience', *Quarterly Journal of Economics*, 110(3), pp. 641–680.