What factors exacerbate financial crises? Evidence from Indonesia and Malaysia during the 1997-1998 Asian Crisis

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Abstract

Countries with similar economic fundamentals often suffer very different consequences when faced with the same shock, suggesting an important role for crisis-exacerbating factors. The financial crisis that struck Asia in 1997-98 had an especially devastating impact on Indonesia, despite its lack of obvious pre-existing vulnerabilities. This paper finds that borrower-side debt fragmentation made IMF intervention in Indonesia counterproductive, leading to a severe downturn. However, the potential danger posed by similar fragmentation in Malaysia was successfully avoided through the imposition of capital controls.

I

"It is not speed that kills, it is the sudden stop."

The Asian Crisis of 1997-98 ranks among the greatest "sudden stops" of all time, in terms of both its magnitude and its suddenness. Following the devaluation of the Thai baht in July 1997, panic spread unexpectedly and catastrophically to a group of countries – Indonesia, Malaysia, and South Korea – which had been 'miracles' for decades prior, with rapid, sustained growth and legacies of stellar macroeconomic management. Tragically, excellent records allowed

[1] I would like to thank Professor Barry Eichengreen for his aid and feedback in the creation of this thesis. My fascination with economics and economic history would likely have never emerged without his support. All errors and shortcomings are my own.

these countries to acquire incredible levels of foreign currency-denominated debt. When the onset of the Thai panic caused foreign creditors to slam the brakes on their short-term lending, contagion led these three countries' currencies to undergo severe devaluations, and their economies to swing sharply into recession.

The universally unexpected nature of the crisis, as with all unfortunate surprises, led to a great deal of finger-pointing and soul-searching among economists, who were tasked with simultaneously diagnosing, curing, and inoculating economies against such maladies. A serious debate emerged between those who regarded the crisis as having been 'fundamental' – caused by inherent weaknesses in the Asian economies and financial systems – and those who regarded the crisis as having been 'self-fulfilling' – the result of panic causing a shift in creditor sentiments, leading to an unnecessary adverse equilibrium outcome. The outcomes of this debate have had fundamental effects on theory and practice in international finance.

To continue the road-safety metaphor, avoiding 'speeding' is crucial to the safe functioning of an economy, and thus to theoretical exploration. Yet speed is not the *only* factor that affects the severity of injury during a crash: so do safety features[2]. Thailand, the worst speeder of all, suffered only a concussion; Indonesia, regarded as the least endangered, was sent through the windshield, an outcome that has not previously been fully explained.[3]

This paper examines the causes of Indonesia's exceptionally poor crisis performance through a comparison with its physical and economic neighbors, particularly Malaysia, in order

[2] To further abuse the metaphor, this work cannot be done without first coming to an understanding of the nature of the crash itself (was it a rear-end collision? A departure from the road?) and thus which 'safety features' mattered. Thus I delve very deeply into this matter in Section III.

[3] This paper was inspired by a graph in Eichengreen's *Globalizing Capital*'s section on the Asian crisis, in which the rupiah's exchange rate depreciation must be displayed on an entirely different Y-axis in order to keep the fluctuations of the other currencies visible. Yet in the literature, even that which delves significantly into the individual countries' outcomes (e.g. IMF (1999), Radelet and Sachs (2000)), there is little differentiation between Indonesia and the other IMF-intervention countries in discussion, even though Indonesia suffered a vastly greater degree of depreciation and recession as a result of the crisis.

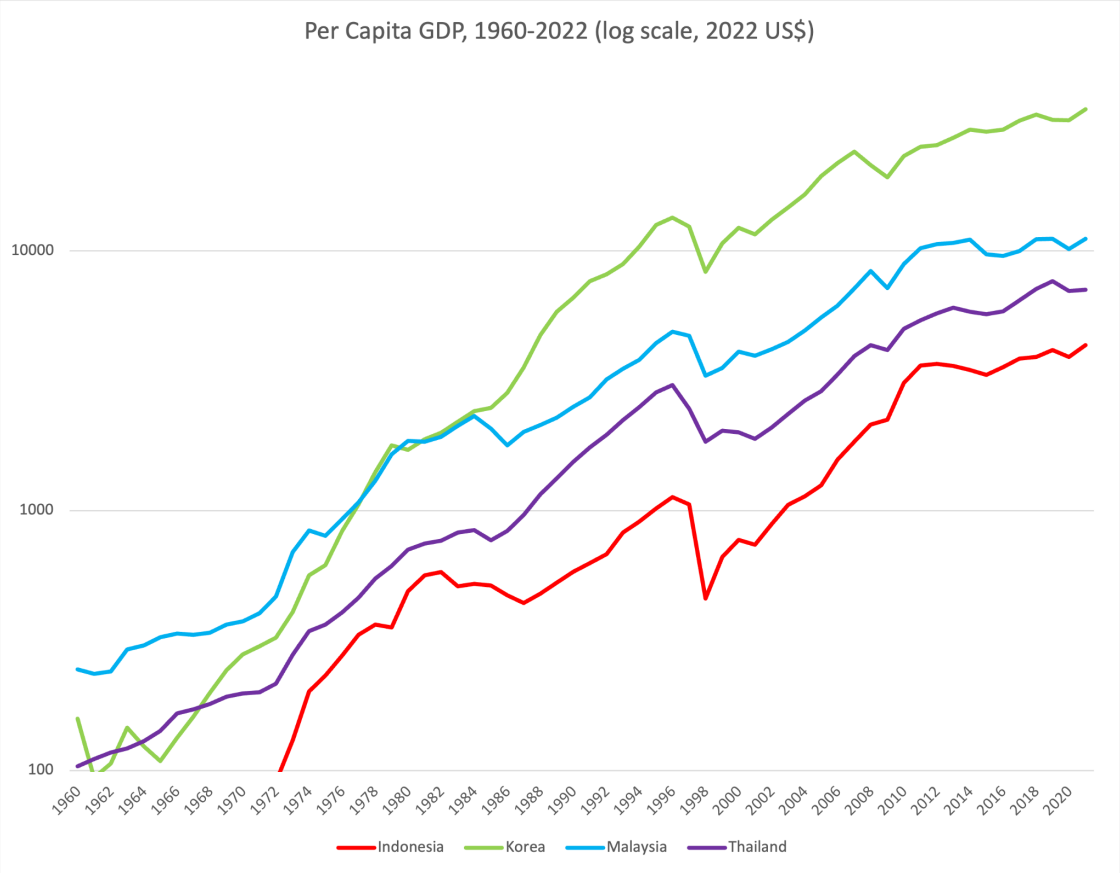
to come to an understanding of what factors might exacerbate the negative effects of financial crises. I find that borrower-side debt fragmentation – the scattering of foreign debt obligations among numerous private corporations, rather than their concentration in large investment banks – played a significant role in exacerbating the crisis by making IMF intervention in Indonesia actively counterproductive. Malaysia, with a similarly fragmented foreign-debt structure, successfully utilized capital controls to escape the Indonesian outcome.

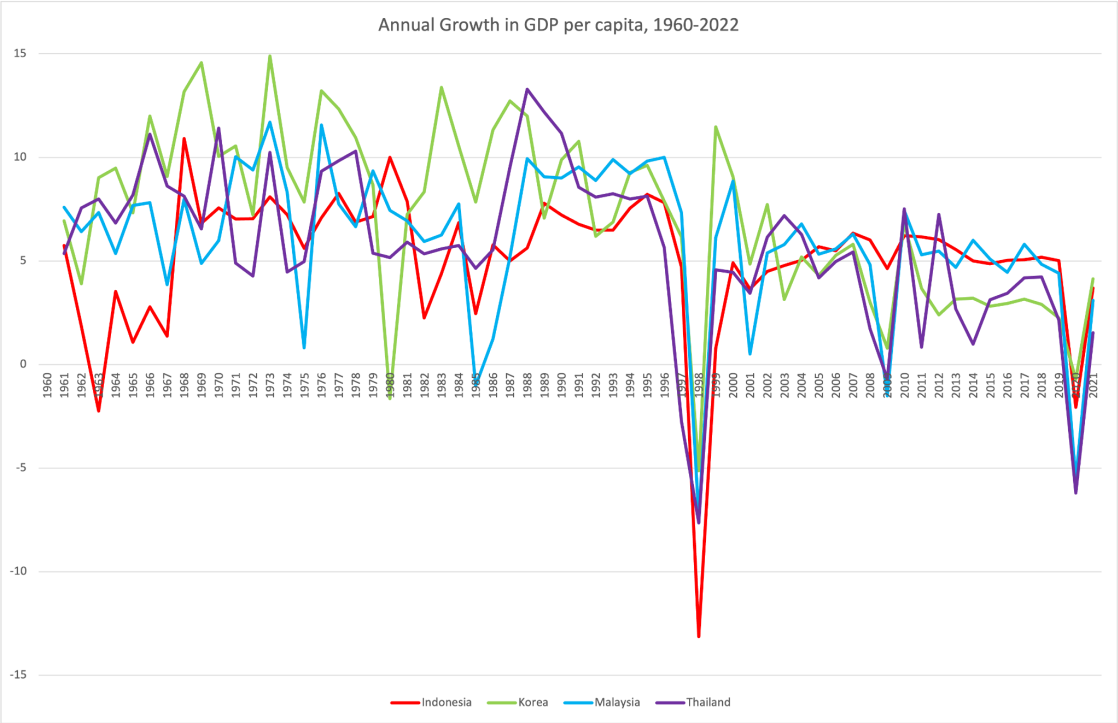
Section II gives an account of the Indonesian and Malaysian economies before and during the crisis, and establishes their comparability. Section III reviews existing literature in order to diagnose the root of the crisis and develop a theoretical framework for how a given factor might affect macroeconomic performance during an Asian-style crisis. Section IV examines IMF intervention, fragmentation, and capital controls in order to explain Indonesia and Malaysia's divergent crisis performance. Section V derives theoretical and policy lessons from my findings.

II

The Asian Miracle in Indonesia and Malaysia

Asia was (and remains) the fastest-growing region in the world. Beginning in the 1950s, developmentalist governments across Asia succeeded unprecedentedly in producing catch-up growth with "Asian Capitalism" – an idiosyncratic yet happy marriage of trade openness, high savings/investment rates, and a close (and frequently corrupt) partnership between government, banks, and corporations to pursue aggressive industrialization.





Source: World Bank.

In the half-decade prior to the crisis, the four crisis countries discussed in this paper averaged growth rates of 8% per annum, while government budgets remained in surplus and inflation stayed low. The listing of pre-crisis fundamentals in Table 1 gives little sign of any fundamental weaknesses, with practically every indicator (other than short-term external debt) being significantly superior to the developing-country average. Even the short-term external debt levels, though indeed high, were not significantly out of line (there were other developing nations, such as South Africa, with significantly greater vulnerability). However, such finance, drawn from the same pool of international lenders, served as a channel for contagion once the crisis began.

Table 1: Macroeconomic and financial indicators

	Indonesia	Korea	Malaysia	Thailand
Debt/GDP (%, average 1992-96)	50	59	82	87
Inflation (%, 1996)	6.6	4.9	3.3	4.9
Government balance (% of GDP, 1996)	1.2	0.3	5.0	2.8
ICOR (1993-96)[4]	4	5	5	5
Short-Term External Debt (1996, % of GDP)	14.3	13.5	11.2	20.3
Foreign Debt Owed by Banks (% of Total Foreign Debt, Year-End 1995)[5]	20.0	64.5	26.2	41.1[6]
Balance of trade (1990-96, % of GDP)	4.5	-1.2	3.2	-4.7
Credit growth rate, 1995	22.6	19.2	29.7	26.0

Source: Radelet and Sachs (1998), IMF (1999), author calculations.

The Crisis in Indonesia

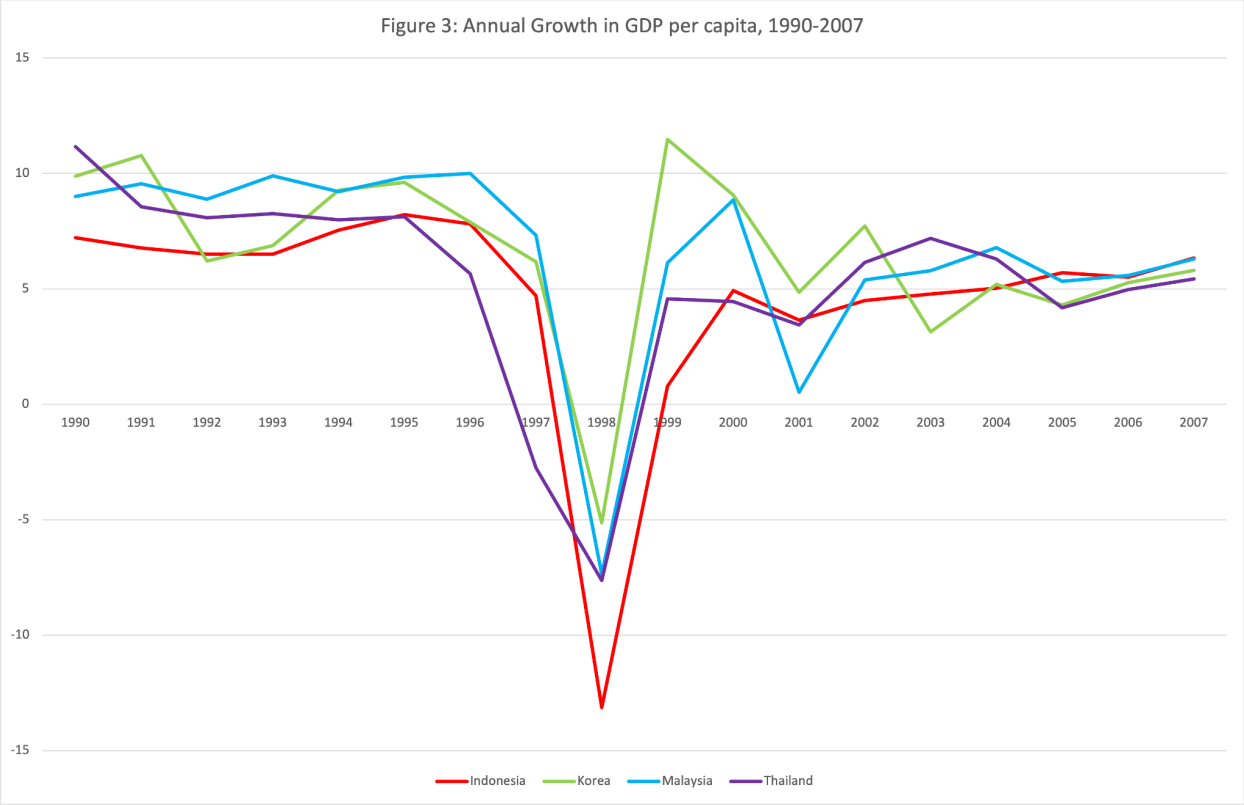
Thailand devalued the baht in July of 1997, the culmination of a long period of sustained pressure on the currency and domestic corporations. Unexpectedly, however, pressure spread contagiously to the other economies in the region: as Radelet and Sachs (2000) note, investors seemed to treat all the economies of the region as essentially identical. The devaluation of the

[4] Incremental Capital-to-Output ratio, a crude measurement of investment productivity. These numbers were gradually increasing, as is expected given decreasing marginal productivity of capital, but remained low by developing-country standards – significantly lower than other crisis countries like Mexico and Turkey, where such capital was clearly being used inefficiently.

[5] This is the usual measure of (inverse) borrower financial fragmentation, e.g. in Radelet and Sachs (1998). Banks borrowing abroad tended to be quite large.

[6] This number is misleadingly small: IMF (1999) remarks that a large portion of the 'non-bank' debt was the product of foreign banks based in Thailand – often Japanese institutions borrowing from their own headquarters. Such institutions would have little incentive to panic-call loans on themselves.

baht thus undermined the credibility of governments' exchange rate commitments, even those not facing the same sort of macroeconomic pressure. Contagion was thus decisive in the onset of the crisis in both Indonesia and Malaysia.



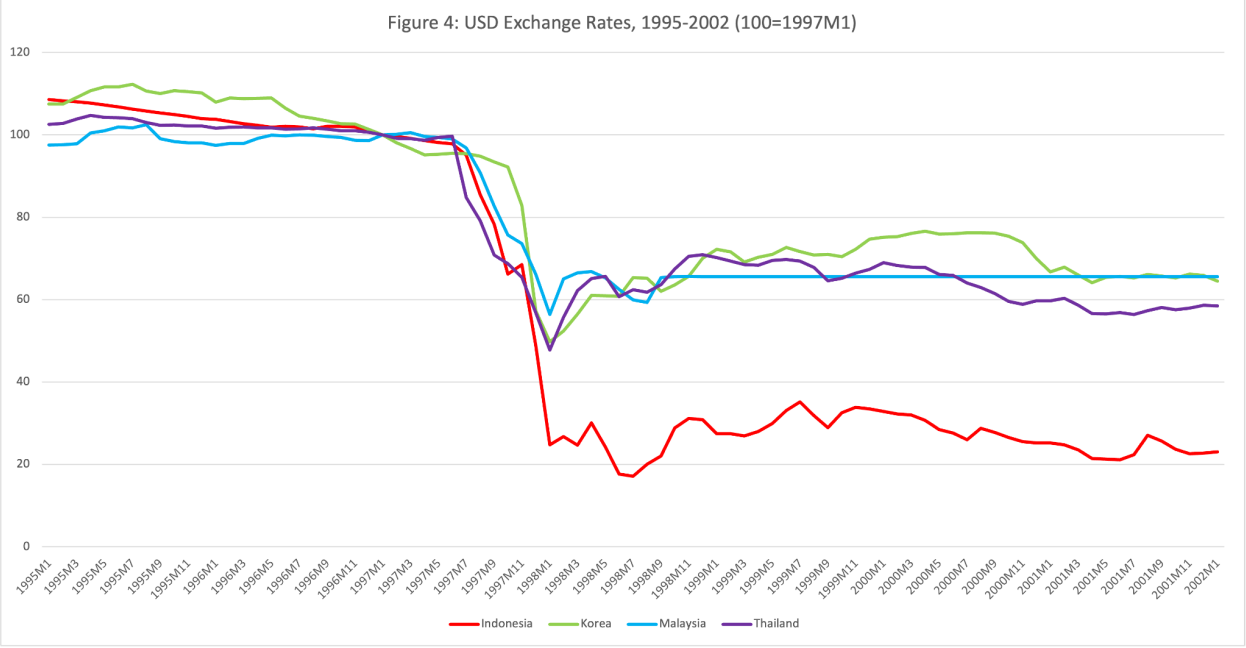
Source: World Bank.

Indonesia, under the military dictatorship of Suharto since 1968, was praised for taking quick and concerted action early on in the crisis, such as floating the rupiah almost immediately in order to defend its reserves and committing to structural reform. But contagion and uncertainty proved stronger than such measures, and the currency began to depreciate. A brief recovery occurred when, on 31 October 1997, the first IMF program was signed and targeted intervention began (see Figure 4). Observers remained relatively optimistic: Indonesia retained strong reserves and received the largest IMF commitment (as a share of GDP) of any of the crisis

countries (see Table 2). Unremarkably or even encouragingly[7] to observers at the time, Indonesia had a highly fragmented debt structure, with most borrowing being directly through private corporations, rather than centralized in financial intermediaries[8].

Table 2: IMF Commitments and Disbursements

	Indonesia	**Korea**	**Malaysia**	**Thailand**
Total Commitments ($BN)	40.0	57.0	0.0 (no program)	17.2
Commitments as a % of 1996 GDP	17.6	9.3	0.0	9.3
Disbursed as of Dec. 31 1997 ($BN)	3.0	13.2	0.0	7.3
Disbursed as of Dec. 31 1998 ($BN)	3.0	21.7	0.0	10.2

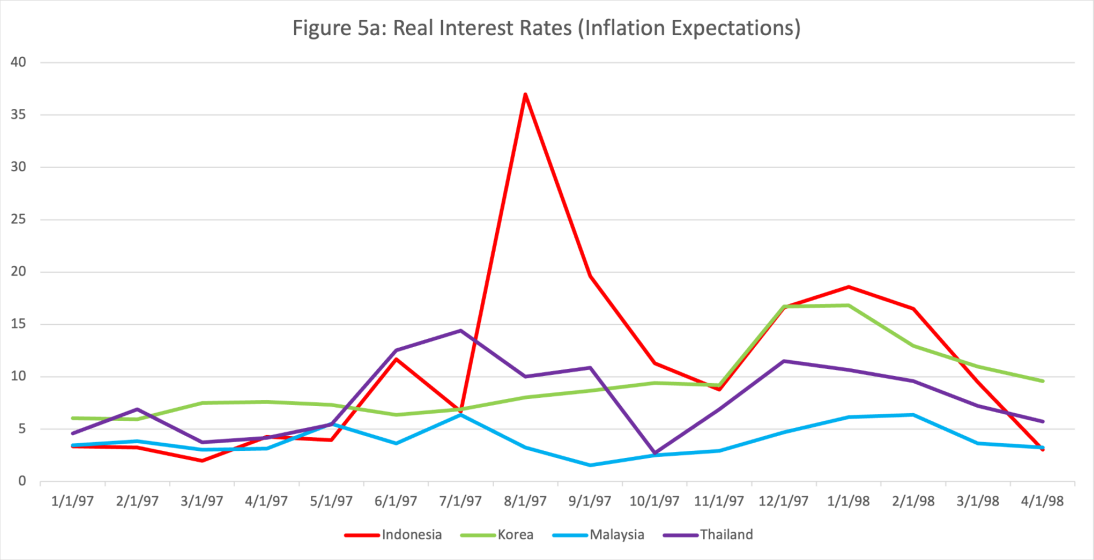


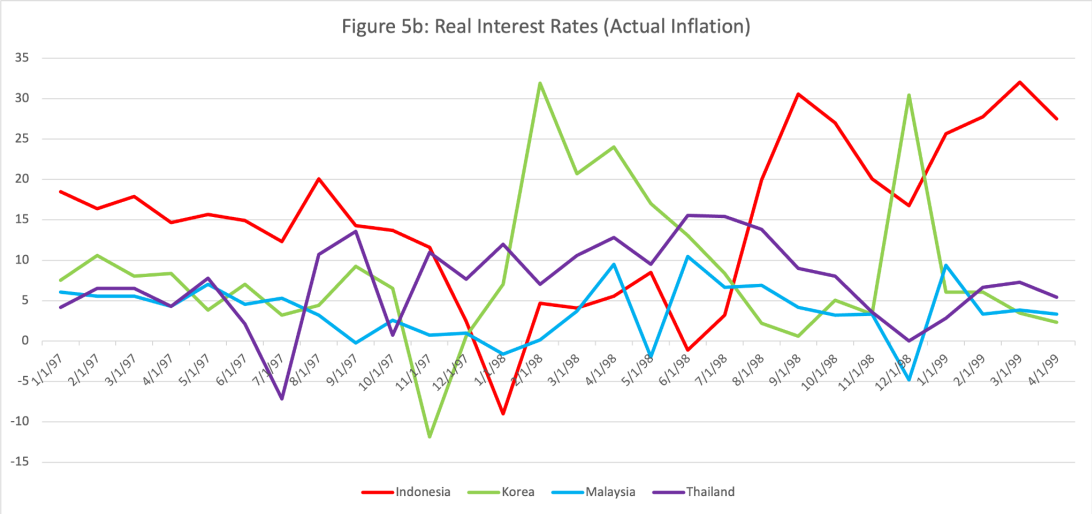
Source: Radelet and Sachs (1998), World Bank, author calculations.

[7] Given the initial characterization of the Asian Crisis as having been driven by large, irresponsible banks, Indonesia's private, smaller-scale debts were viewed in a positive light.
[8] See Table 1.

However, bank closures – many IMF-induced – and the continuing macroeconomic distress made this recovery short-lived. Investors, already spooked by the economic damage wrought by devaluation and high interest rates, were further unsettled by drought, the signing of the Korean IMF program, and – most devastatingly – revelations that Suharto was ill. The IMF added to the panic by issuing a harsh and misleading criticism of the Indonesian budget on January 6, 1998 (which was later withdrawn) and presenting another package, which was simply an intensification of the previous policy of contractionary stabilization. Only a unilateral suspension of debt payments and the reelection of Suharto in late January halted the steep plunge. However, the damage was done: the currency was by far the most devalued of any of the crisis countries (and continued to fluctuate sharply, see Figure 4), despite having mounted the strongest interest-rate defense in expected inflation-adjusted terms[9], and Indonesia suffered the sharpest and most prolonged economic downturn of any of the crisis countries (Figure 3).

[9] See figure 5a. Figure 5b, depreciated by actual one-month ahead inflation, is included because it is cited by several papers, such as Goldfajn and Baig (1998) and IMF (1999). The difference between these measures is discussed in Section IV.





Source: IMF (1999). Note the different axes.

The Crisis in Malaysia

As in Indonesia, the Malaysian crisis was set off by contagion and political problems. Malaysia, though technically democratic, lacked strong democratic institutions, and was widely criticized for authoritarianism: the bombastic, authoritarian, and anti-Western prime minister, Mahathir bin Mohamad, had been in office since 1981 and had arrested numerous political opponents and dissidents under the catch-all Internal Security Act. Prior to the crisis, he had been

in partial conflict with his deputy and Finance Minister, Anwar Ibrahim, who had spearheaded liberalization efforts in the early 1990s and was well-liked by international financial institutions.

Upon the onset of the crisis, Anwar instituted an orthodox stabilization policy, including a sharp (18%) reduction in the government budget; this policy is frequently described as IMF-like, though it came without the official stamp of the IMF or its associated funding[10]. However, these measures failed to halt continued depreciation, and markets were further spooked by Mahathir's aggressive remarks, including death threats towards currency speculators and accusations that the financial crisis was a Jewish conspiracy. Malaysia was also hit by the same drought and general decline in investor sentiment as Indonesia and also had a high level of financial fragmentation[11].

As Kaplan and Rodrik (2001) note, Malaysia thus remained under intense pressure until significantly later than Thailand and Korea – their crises peaked in late 1997 and early 1998, respectively, while Malaysia's crisis peaked in August 1998. In September of 1998, Mahathir acted decisively, firing and jailing Anwar on false sodomy charges and, uniquely in the region, imposing strict capital controls to limit the outflows of foreign capital. Both measures were widely condemned internationally; surprisingly, however, they led to an abatement of financial pressure and a turnaround in macroeconomic conditions.

Summary

The Asian Crisis was made possible, but certainly not inevitable, by high levels of short-term external financing; though falsely regarded as essentially impossible *ex ante*, it appears *ex post* to be an unfortunate but easily explained event: high levels of short-term external

[10] Chin (1997) notes that this refusal came from Mahathir's anti-Western ideological orientation and the commitment to pro-ethnic Malay policy, which made aid impossible.
[11] Table 1.

debt, and investors' belief that Thai weakness would be replicated in the other Asian countries, led to contagion and a financial crisis.

However, all the crisis countries shared the same vulnerabilities; some, such as Thailand, had more. There seems to be no *a priori* reason for Indonesia to have performed so poorly relative to Malaysia, with which it shared an island, political chaos, drought, and contagion: Malaysia had less productive investments (higher ICOR), no external aid, and a leader who aggressively fulminated against the international markets that they needed to reassure.

An important similarity between Indonesia and Malaysia, unremarked upon even in papers that mention Indonesian debt fragmentation[12], is that Malaysia also had a highly fragmented foreign-borrowing structure. These similarities make Malaysia very appealing as a policy foil for Indonesia. The main difference between the two is that Indonesia underwent IMF contractionary intervention, while Malaysia attempted unsupported contraction before enacting capital controls.

III

What are the types of financial crises?

Radelet and Sachs (2000) identify five types of financial crises, which often appear similar in their immediate macroeconomic effects and are frequently intertwined, but have different causes, characteristics, and consequences, and thus different cures. First is the classic *Macroeconomic Policy-Induced Crisis*, in which domestic fiscal and monetary priorities are incompatible with the maintenance of a currency peg; the result is a balance-of-payments crisis and devaluation. The second is a *Financial Panic*: following the Diamond-Dybvig (1983) model of a bank run, creditors withdraw (or refuse to roll over) their short-term loans, bankrupting

[12] For example, Radelet and Sachs (1998, 2000) and IMF (1999).

otherwise solvent borrowers and making it rational for other creditors to withdraw. The third is a *Bubble Collapse*: expectations of future appreciation lead to the price of assets rising above their fundamental value, validating expectations of growth and thus driving further growth beyond the fundamental price; the bubble eventually pops, and prices return to equilibrium. The fourth is a *Moral Hazard Crisis*, in which banks given implicit or explicit state guarantees engage in large amounts of risky lending. The fifth is a *Disorderly Workout*, where a lack of creditor coordination makes it rational for creditors to engage in a value-destroying 'grab race' on an otherwise solvent debtor.

It is crucial to correctly diagnose a crisis in order to solve it. For example, a bubble that is incorrectly identified as a financial panic will be 'treated' by lender-of-last resort faculties meant to preserve real economic activity, preserving and furthering its allocative inefficiency and potentially leading to another, larger crisis later. Conversely, a financial panic wrongly regarded as a bubble would result in central banks (or international institutions) being unwilling to serve as lenders of last resort, resulting in severe and unnecessary damage to the real economy.

Was the Asian Crisis a Policy Crisis?

Other than in Thailand, numerous papers (for example: Furman and Stiglitz (1998), Krugman (1999a), Radelet and Sachs (1998, 2000), and IMF (1999)) reject the idea that there were major imbalances in the Asian economies that necessitated a crisis. Growth rates were stellar, fiscal policy was restrained (Indonesia and Malaysia had run surpluses in previous years), exchange rates weren't overvalued, current account deficits were small (but increasing), and in general the credibility and prudence of Asian governments were highly regarded. Additionally, as recounted by Radelet and Sachs (1998, 2000), markets did not foresee any sort of impending

crisis (as is typically the case in policy crises): bond spreads *fell* prior to the crisis, implying that, much like economists, investors regarded a growth slowdown as possible, but a crisis or bubble-burst as a deeply unlikely event.[13]

Was the Asian Crisis a Financial Panic?

According to Radelet and Sachs (2000), in order for a Diamond-Dybvig-type financial panic to occur, three conditions must be met: first, that short-term debts exceed short-term assets, secondly, that no single private market creditor is large enough to support all short-term debts, and lastly, that there is no lender of last resort. The result is a credit crunch that wipes out large solvent segments of the real economy. All three factors held in the impacted countries: short-term[14] foreign-currency debts massively outstripped reserves; they were large enough to be double-digit shares of GDP, far greater than any creditor could support; and they were foreign-currency denominated, precluding domestic central banks from serving as lenders of last resort (LLRs) since they could not print the relevant currency. Therefore, we must seriously consider this sort of crisis to be a culprit.

Essentially all 'self-fulfillers' believe financial panic to be the primary cause of the crisis.[15] The timing of the crisis, as Krugman (1999a) notes, is a major point in favor of this explanation: while Asian economies had been heavily leveraged and "crony" for decades, only after 1990 did these economies begin to extensively borrow in foreign currencies, with the aforementioned effects on LLR provision. Next, financial panic is a good explanation for the contagion that was observed, where creditors to otherwise healthy economies were spooked.

[13] However, Eichengreen and Mody (2000) find that at least some of this decline was simply "irrational exuberance" not predicted by fundamentals. In parallel, much of the massive spread increase during the crisis was also unjustified by fundamentals.
[14] Though Krugman (1999a) makes the point that the tenor of the debt hardly matters.
[15] See Krugman (1999a, 1999b), Radelet and Sachs (1998, 2000), Rodrik (1998), and Furman and Stiglitz (1998).

Additionally, a predicted symptom, the credit crunch, occurred with great severity: Radelet and Sachs (1998) recount that exporters – who benefited significantly from devaluation, and who had existing orders that essentially guaranteed future profits – nevertheless were unable to complete these orders for want of working capital. Lastly, upon the cessation of the credit crunch, growth resumed at a brisk pace, with investment remaining high, suggesting that the crisis had primarily impacted productive firms and investments, another point in favor of the financial panic explanation.

Was the Asian Crisis a burst bubble?

This was one of the initial claims made by the 'fundamentalists'[16]: "Asian Capitalism" had featured extremely high investment rates, often state-directed; it seemed inevitable that at some point, a mistake would be made. The accuracy of this story with regard to Thailand's infamous real-estate bubble naturally led to generalizations of the pattern. Yet much less of a run-up occurred in Indonesia or Malaysia; in particular, Indonesia, hardest-hit, had flat real estate prices and stock indexes that lagged growth in the half-decade prior to the crisis (IMF (1999), Radelet and Sachs (1998)). Radelet and Sachs (1998) note that in other crisis countries, unlike in Thailand, investors did not perceive any impending risk of a 'burst'; furthermore, large portions of investment were clearly productive (e.g. the aforementioned exports). Lastly, the resumption of rapid (albeit slower) growth post-crisis does not suggest that the strong pre-crisis growth was simply an unproductive illusion.

[16] For example, by Krugman (1998). His interpretation meshes bubbles and moral-hazard explanations.

Was the Asian Crisis a moral hazard crisis?

In the wake of the crisis, this was another charge raised by 'fundamentalists'[17]: that a large part of the aforementioned bubble had been enabled by the implicit and explicit guarantees extended to banks and financial institutions by the government – another result of Asian Capitalism's overreliance on state-associated banks. The result, in this explanation, is that banks would take excessive risk, driving up asset bubbles and wasting considerable resources; investors lent to these banks with such vigor due to these very same guarantees. Further evidence for this claim was given by the immense quantity of nonperforming loans observed in the wake of the crisis. Indeed, Indonesia, hardest hit, had the highest non-performing loan share and was the most corrupt of all the involved countries.

Yet several key facts do not accord with this explanation. Firstly, as Krugman (1998a) himself notes, this bad-loan problem was primarily the consequence of the crisis; given that the crisis was almost totally unforeseen, one cannot extrapolate backwards and conclude that these were bad loans *ex ante*, rather than simply caused by the crisis[18]. Additionally, as noted by Radelet and Sachs (1998), much of the booming foreign investment went to equity and other sectors that were clearly unprotected by such guarantees; Radelet and Sachs (2000) note that Indonesia's largely private (rather than bank-based) foreign borrowing meant that guarantees could not be plausibly expected – and yet Indonesia was hardest hit, while Korea, the most aggressive[19] bank-user, performed the best of the four. The weak bankruptcy and legal systems of Asia further reduced the odds that bad loans would be compensated, and thus further reduced

[17] Krugman (1998). It should be noted that he recanted in Krugman (1999a, 1999b), rejecting moral hazard as a primary explanation.
[18] Consider lenders who responsibly lend to borrowers who are making a good investment (e.g. building export goods). An exogenous crisis hits, bankrupting a certain portion of borrowers and thus making their loans bad. In this example, the percentage of bad loans is determined primarily by shock severity; the trend is also self-reinforcing, since the additional damage caused by shutting down productive business furthers the shock.
[19] Table 1.

incentives to attempt to exploit bad loans for profit[20]. Finally, as previously mentioned, bond spreads declined, indicating that markets did not view their investments as increasingly risky.

Was the Asian Crisis a creditor grab-race?

Another 'self-fulfilling explanation': the creditors of a firm have an incentive to liquidate its assets as soon as a panic begins, despite illiquidity often meaning that such liquidation causes large and unnecessary real losses, in order to beat other creditors to the same punch. This outcome is the result of a coordination problem between creditors: it is Pareto-improving, and avoids economic destruction, for creditors to either keep the firm alive or liquidate it in an orderly fashion, but such coordination is only provided by strong bankruptcy law and legal systems. As Radelet and Sachs (2000) note, Asian countries were notorious among investors for their legal weakness in bankruptcy cases[21], and thus the incentive to avoid being 'late' to a grab-race could have been a source of the unexpected contagion. Additionally, markets reacted positively to efforts to bring about orderly workouts (as with the successful Korean negotiations), indicating that losses were being incurred during disorderly workouts. If this was indeed a source of distress, then one would expect factors that impeded cooperation to worsen the economic damage.

Implications

From the above five factors, the notion of the Asian crisis as a 'first-generation' policy crisis is rejected by practically all authors. The preferred explanations of the 'fundamentalists', moral hazard and the formation of a bubble, accorded well with popular knowledge of Asian

[20] In ironic contrast, the stronger bankruptcy protections of the US made the deliberate extension of risky loans profitable, as in the S&L crisis.
[21] Also see Radelet and Sachs (1998).

capitalism and with the Thai bubble, but were ill fits for other countries, such as Malaysia and Indonesia.

This leaves only the 'self-fulfilling' crisis types. I concur with Radelet and Sachs (2000): the crisis outside of Thailand was primarily a financial panic, and secondarily a grab-race. The explanations are mutually complementary and account for many of the peculiar facts of the Asian Crisis. The obvious prophylactic measure for the avoidance of the crisis in the first place – the avoidance of foreign-currency debt – is widely given[22], and needs little further justification.

What are the implications of this diagnosis? Firstly, the Asian crisis's severe downturn was not an efficiency-improving liquidation of a bubble or bad loans; rather, the victims of credit crunches and creditor grabs were productive (but, sadly, illiquid) firms and assets. Though fundamental issues did exist, they weren't the primary cause of the crisis, and the main casualty of the Asian crisis was real, productive economic activity.

Secondly, this further motivates a search for crisis-exacerbating factors and their solutions. Efforts to minimize the impact of fundamental deficiencies are often criticized, justifiably, by 'liquidationists' for making countries less likely to deal with such deficiencies in the first place, leading to inefficiency and the potential for an even larger failure in the future. In the Asian crisis, however, relatively responsible and productive economies suffered massive, random destruction of real activity. Taking the type and occurrence of the crisis as a given, certain countries had existing conditions and undertook actions that greatly increased the scope of the damage. The successful avoidance of exacerbating factors thus is purely a positive effect.

Finally, a correct crisis diagnosis allows us to look in the right place for exacerbating factors. In this case, we ought to look for factors that increased real economic damage, either by exacerbating and/or failing to alleviate the credit crunch, or by encouraging 'grab-racing'.

[22] For example, Krugman (1999a), Radelet and Sachs (1998), IMF (1999), etc.

IV

Having taken a closer look at the two economies which are the focus of our comparison, and diagnosed the cause of the initial downturn, I now turn to attempting to formally explain Indonesia's exceptionally poor performance. As noted in Section II, three main factors stood out as being potentially relevant: debt fragmentation in Indonesia and Malaysia, IMF intervention in Indonesia, and the imposition of capital controls in Malaysia. The next sections will explore these differences in light of the conclusions of section III: that exacerbating factors would be those that increased the real economic fallout from financial panic (with the resultant credit crunch) and creditor grabs.

IMF intervention in Indonesia

"Generals", it is said, "always fight the last war"; so too do economists. Following the demise of the Bretton Woods system in 1971, the oversight of which had been the IMF's original mission, the IMF moved into a part-reformer, part-firefighter role, cutting its teeth on the Latin American crises of the 1980s. These economies, with troubled histories of distributional conflict, deficit, inflation, and protectionism, stood to gain significantly from tough reforms; IMF intervention was successful in restructuring debt and restoring growth.

The success of this intervention, and of more far-ranging reforms it advised in the former Eastern Bloc, gave the IMF a tried-and-true approach to economic difficulties, one which it immediately began to carry out when summoned to Korea, Thailand, and Indonesia: "toughness", structural reform, fiscal austerity, and the tightening of credit[23]. It announced tens of billions of dollars[24] in support, seeking to temporarily reassure financial markets, while more

[23] Feldstein (1998).
[24] See Table 2.

thorough long-term reforms were undertaken to permanently restore investor confidence. Such efforts were ultimately aimed nobly at defending the rapidly deteriorating exchange rates of the region, which would otherwise bring highly leveraged debtors into bankruptcy.

Yet a pall hangs over IMF intervention in the Asian Crisis[25], even among those who view its previous interventions positively; such authors charge that IMF intervention not only failed to help, but actively worsened the Asian Crisis. Since IMF intervention only took place after the initial downturn began, and was notably severe in Indonesia (while being absent from Malaysia), it is tempting to assign causational power to this factor. However, other IMF-supported countries, such as Korea and Thailand, performed similarly to Malaysia[26]. In order to successfully find the IMF guilty, one needs not only to explain why such programs would have negative effects, but why they would have such uniquely devastating effects on Indonesia.

The IMF's mis-diagnosis

As previously noted, the correct solution to a financial crisis depends entirely on its origin. Following the seemingly telling example of the Thai bubble, prior literature on "Asian Capitalism"'s cronyism and misallocation, and the experience of Latin America, the IMF believed that the crisis was largely a 'bubble' and 'crony' crisis, with elements of the other three types ('policy', 'financial panic', 'creditor grab') being secondary[27].

With the benefit of hindsight, we can conclude that this was not the case. Outside of the misleading example of Thailand, there is good reason to conclude that the Asian Crisis was primarily a financial panic, and secondarily a creditor grab-race. Asia had a dramatically better

[25] For examples, see Radelet and Sachs (1998), Feldstein (1998), and Furman and Stiglitz (1998).
[26] See Figure 4. However, Kaplan and Rodrik (2001) find that Malaysia outperformed Korea and Thailand after enacting capital controls.
[27] IMF (1997).

record of growth, export-orientation, and sound monetary and fiscal policy than Latin America, meaning that attempts to positively change expectations through tough action ironically had negative effects, particularly given the paramount importance of investor confidence during financial panics and creditor grabs.

Direct confidence impacts

The IMF's brusqueness often offends, yet can serve a purpose: a harsh acknowledgement of large structural issues and a strong commitment to solve them, in countries where growth is obviously held back by such problems, can stem capital flight and reduce exchange-rate pressures by raising the prospect of higher future growth. In Asia, however, where there had been little investor concern about future growth (which was indeed justified *ex post*), the IMF's appearance and blaring denunciation of Asian macroeconomic soundness had the opposite effect, adjusting future growth expectations down; to abuse the metaphor of Radelet and Sachs (1998), the appearance of an ambulance outside the door of a seemingly healthy man leads onlookers to revise his expected lifespan downwards, versus upwards for a clearly ill person. In a similar vein, as noted by Radelet and Sachs (1998) the IMF took "tough action" on a "very peculiar hypothesis": that aggressively shutting down banks – even those holding foreign assets, without any guarantees – or forcing them to recapitalize would reinforce, rather than further undermine, investor confidence; they cite Kindleberger (1996) to the effect that "decisive regulatory actions have often triggered panics rather than calm". Such actions thus increased the incentives for creditors to perform 'grab-races' on the banks and firms they had lent to, causing direct economic damage and furthering the credit crunch.

Fiscal contraction

Another ghost of Latin America lay in the IMF's recommendations on fiscal policy, which were strictly[28] contractionary. In countries where fiscal excess had induced excess consumption and inflation, fiscal contraction could plausibly raise expected future returns and decrease current account deficits, and thus help protect the exchange rate. Unfortunately, as Feldstein (1998) observes, these conditions were not met in Asia, where deficits were small and savings were extremely high. As Furman and Stiglitz (1998) note, the probable exchange-rate effect of fiscal contraction on Asia was almost certainly negative: inflation expectations were nonexistent, and thus such policy only furthered macroeconomic contraction that depressed expected future returns[29]. Indeed, it seems likely[30] that fiscal stimulus – through output replacement and liquidity generation – would have had positive effects on both exchange rates and macroeconomic performance.

Monetary contraction

Easily the most contentious point in the literature is the question of IMF influence on monetary policy in the Asian Crisis. Two major points are debated: firstly, whether there was even monetary contraction at all, and secondly, whether high interest rates were successful in defending the exchange rate, and at what cost.

As with the debate over Friedman and Schwartz's (1963) depiction of the Great Depression, it is surprisingly controversial that monetary policy was actually tight in Asia. While nominal rates certainly did rise spectacularly during the crisis, real rates can, deflating by *ex post*

[28] To excess. The IMF's denouncement (later retracted) of Indonesia's purportedly expansionary budget in January of 1998 misunderstood both the budget and the effects such a denouncement would have on confidence, the critical variable – potentially, again, because they mistakenly viewed 'tough reform' as the solution.
[29] Indeed, as noted by Radelet and Sachs (1998), there is no evidence of a positive response in currency markets to the imposition of fiscal austerity, nor of a negative response to its withdrawal.
[30] As noted by Furman and Stiglitz (1998), Krugman (1999b), and even tacitly by IMF (1999).

inflation, be shown to have remained relatively low, or even negative, during the early stages of the crisis[31]. However, based on the very same data, we also find that real rates – deflated by expected rather than *ex post* inflation rates, the relevant measure for investor decision-making – rose significantly[32], particularly in Indonesia, after the onset of the crisis; this would accord with the aforementioned anecdotes about very tight credit in the midst of the crisis. Following Eichengreen's remarks on the Friedman and Schwartz debate, I thus believe that this would be an example of various parties talking past one another: monetary tightening almost certainly did not *cause* the crisis, but certainly contributed to exacerbating it.

That raising interest rates would contribute to the exchange-rate crisis, rather than help ameliorate it, is another point that requires significant justification, given that interest-rate increases are the classic prescription for countries suffering from exchange rate declines: higher rates should decrease the incentives for capital flight and thus support the exchange rate. Given the fact that higher interest rates negatively affect the domestic macroeconomy by suppressing investment and raising domestic debt repayment costs, however, we can see the "out of the frying pan, into the fire" problem that Krugman (1999a) models: the domestic economy is able to be saved from foreign-debt induced bankruptcy by the stabilization of exchange rates only at the price of then suffering interest-rate induced bankruptcy; thus, he views both outcomes as essentially equally bad.

Furthermore, it is (surprisingly) theoretically and empirically unclear whether interest rate increases have any positive effect on exchange rates; several papers[33] raise the possibility that interest rate increases, under certain conditions, might actually cause *depreciation*. Most

[31] See figure 5a, and IMF (1999), citing Goldfajn and Baig (1998).
[32] See figure 5b. The exception was in Malaysia, an important point to which we will return.
[33] Such as Goldfajn and Baig (1998) and Furman and Stiglitz (1998); the latter paper goes into intense detail about this question, finding no empirical association between interest rate increases and successful exchange rate defenses.

directly, higher interest rates – particularly during a period of macroeconomic distress – will have a decreased positive effect on expected future returns, due to the increased rate of default such rates induce; this extends potentially to the level of actively decreasing expected returns[34]. As Furman and Stiglitz (1998) discuss, many of the positive effects of higher rates come from the signal of commitment that such rates indicate – ironically, as they demonstrate both theoretically and empirically, the higher credibility of Asian central banks (vis-a-vis those of Latin America) meant that such signals had a dramatically reduced, or even negative, effectiveness, since they were regarded as signals of distress rather than of strengthened commitment[35].

This thus raises the problem that the IMF's preferred anti-depreciation tool was actively counterproductive, and was strictly dominated by simple devaluation; indeed, Indonesia, the country which kept rates the highest, actually suffered the greatest depreciation by far[36]. Rather than Krugman's even trade-off, a high interest-rate defense simply caused both negatives to occur, rather than just one.

IMF: Lender of Last Resort?

The IMF did not possess the resources or institutional architecture to serve as a proper lender of last resort, and its efforts to serve as one in Asia could be regarded as both heroic and foolish. At the most basic level, IMF support was insufficient to repay all short-term loans; thus, for its lending to prevent creditor panics, it needed to successfully convince a significant portion of creditors to also roll over their debts[37]. Unfortunately, as noted above, IMF intervention

[34] And thus resulting in the "interest rate Laffer Curve" in Goldfajn and Baig (1998).
[35] And this is yet another instance where IMF experience in Latin America led them astray.
[36] Of course, this is certainly not causational evidence.
[37] As noted by IMF (1999) and Radelet and Sachs (1998). Unfortunately, they mistakenly believed that they would be more successful in this task then they were.

frequently had confidence-undermining effects. Furthermore, the heavily tranched nature of IMF intervention – for which disbursement conditions were initially secret – meant that the promised funds likely had less effect than their face value would indicate: can investors be reassured by loans that might not occur?

Instead, as noted by Feldstein (1998) and IMF (1999), the most effective IMF response for currency stabilization was not lending, but coordination: the IMF's credibility as a somewhat-neutral organization made it a suitable go-between in organizing debt roll-overs. A successful roll-over would be a desirable outcome for creditors as a whole, as they would only suffer delayed repayment rather than a default on a significant portion of loans[38], but one which could not be achieved without coordination. Roll-overs also decreased the level of real macroeconomic damage being caused by preventing illiquid but solvent firms from being wiped out, and thus improving future economic prospects. Thus, markets reacted very positively to successful roll-over negotiations in Korea and Thailand, representing the turn-around point for both countries.

Synthesis: The Indonesian difference – no roll-overs due to fragmentation

Having examined the ways IMF intervention could have had detrimental consequences, we now turn to explaining why Indonesia did so poorly even compared to its fellow IMF-treated economies.

Indonesia stood out among the IMF intervention countries for the deeply fragmented structure of its foreign debt, in contrast to the highly-consolidated Korean and Thai obligations. From a game-theoretical perspective, one can intuit the problems that creditor fragmentation would create for attempts to coordinate a cooperative outcome: with more agents, 'prisoner's

[38] In the Korean case, investors would even receive interest-rate compensation for this.

dilemma' negotiations become naturally more difficult, and individual agents have a greater incentive to defect; a high level of creditor dispersion would thus naturally worsen outcomes. But I am unaware of any evidence that creditors were any more fragmented in Indonesia and Malaysia than in the other countries.

Yet a clear difference between the high- and low-fragmentation countries is the failure and success of debt-rollover negotiations in these respective groups, indicating that fragmentation had some impact on the ability to coordinate the beneficial equilibrium. It thus must be explained why *debtor* issues led to *creditor* non-cooperation: would creditors not retain the same level of incentive and ability to collectively roll over their loans if they lent to a dispersed, rather than a concentrated, group of borrowers?

While the idea of simple face-to-face coordination might be charming, the cooperative outcome in Asia required significant institutional assistance to achieve; thus, the informational difficulties posed by the dispersal of debts had serious negative consequences for the ability for coordination-enhancing institutions to function. In Korea and Thailand, as a core part of the decisive IMF-led rollover negotiations, governments incentivized cooperation by formally guaranteeing[39] liabilities owed abroad, removing the creditor-risk incentive to grab-race[40]. Indonesia, likewise advised by the IMF, nevertheless found extending such a guarantee impossible, which is easily attributed to debtor fragmentation: informational gaps (as IMF (1999) puts it): "what was due to whom, when?") and moral-hazard concerns prevented any large-scale rollover from occurring[41].

[39] Radelet and Sachs (1998), IMF (1999).
[40] Albeit, as Feldstein (1998) notes, at the cost of moral hazard among *creditors*.
[41] I would also speculate that creditors were more aware of a benefit to cooperation when they were all literally 'grab-racing' at the same handful of large commercial banks. Myopically, panicked creditors may have been unaware that liquidating debtor company A would cause downstream damage to debtor company B.

If we follow the conclusions of the previous sections, we can thus explain why Indonesia did so poorly relative to its IMF brethren: IMF policy intervention was immediately damaging, but its successful role as a coordinator facilitated an eventual turnaround in Korea and Thailand by putting an end to the financial panic and the creditor grab-race[42]. The lack of a roll-over in Indonesia meant that it had inflicted grievous and unnecessary macroeconomic damage upon itself by implementing IMF contractionary policy, but was unable to benefit from the IMF's role in ending the panic. Instead, with its firms continually plagued by debt overhangs and a credit crunch, Indonesia's recession would be far deeper and longer than any other country involved in the Asian Crisis.

Malaysia: the alternative path

Was there a good solution to the Indonesian crisis? The immediate alternative to IMF intervention and a contractionary exchange-rate defense would be to simply let the exchange rate decline. Though my analysis suggests that this would be a better solution, given that such measures were counterproductive and damaging, and the rupiah was ultimately massively devalued anyway, we should not regard devaluation as a "good" choice: a large devaluation would still cause severe macroeconomic damage through the resultant bankruptcy of foreign currency-indebted banks and firms, who would see the nominal value of their debts skyrocket.

The unique Malaysian solution, capital controls, thus appears immediately desirable: by temporarily limiting the outflow of capital during the crisis, they could theoretically allow a country to defend its exchange rate without severe monetary contraction, avoiding either interest

[42] It should be noted that low levels of disbursement, a seemingly obvious target because they were especially low in Indonesia, cannot, *ipso facto*, be said to have contributed to Indonesia's downturn, because if rollovers were not successfully negotiated, then disbursement would be futile. Korea and Thailand utilized and benefited from disbursement because a sufficient proportion of debts had already been rolled over, allowing the rest to be paid off using the loans.

rate- or exchange rate-induced bankruptcy. We can also deduce several, less obvious, benefits from the above analysis. Firstly, they also allow the use of expansionary fiscal policy even under conditions of exchange-rate distress: though the above discussion suggests that fiscal expansion wouldn't be exchange-weakening in Asia, this wasn't immediately obvious at the time of the crisis, and so capital controls could give countries the confidence to be more fiscally aggressive than they would otherwise have been. Additionally, as Krugman (1999b) notes, capital controls also work as a powerful, unilateral forced-coordination mechanism by making creditor 'defection' impossible! Finally, as a consequence of their unilateralism, capital controls can (and should[43]) be imposed with very little time delay, avoiding the long and potentially unsuccessful negotiations necessary to coordinate a voluntary (bilateral) roll-over agreement, during which capital flight and economic damage are allowed to continue.

Yet, as evidenced by the furious reaction of economists and the IMF to the Malaysian *pronunciamento*, there are also potential theoretical downsides to capital controls. It was feared that controls would undermine investor confidence by making them reluctant to hold Malaysian assets, potentially being unable to repatriate them during a crisis. In the short term, this would drive speculation against the ringgit, increasing exchange rate pressures; in the long term, it would depress growth by discouraging FDI and damaging commerce. More broadly, it was feared that capital controls would encourage governmental indiscipline by reducing the check of capital-market discipline.

Malaysia turned to capital controls after attempting an IMF-style contractionary defense. It is immediately obvious why this was failing, given our prior discussion: without IMF aid (lending, coordination), and given that Malaysia had comparable fragmentation to Indonesia, it would be nearly impossible for a contractionary response to have stabilized the currency. Against

[43] Capital controls are most effective when they are imposed without warning!

gloomy predictions, however, capital controls were not only successful[44] in stabilizing the currency and macroeconomy, for the aforementioned reasons, but also did not cause capital flight or negative growth consequences[45]. Why these potential issues did not come to fruition must be explained.

Foundationally, capital mobility was never particularly important to growth in the first place: Rodrik (1998) finds no relationship between capital-account liberalization and economic performance; this conclusion is particularly believable in Asia, where domestic savings and investment were already high, suggesting that FDI had a limited effect on growth rates in the first place. Additionally, Krugman (1999b) notes that when capital controls were lifted, Malaysia did not see serious capital flight, suggesting that investors regarded such controls as temporary; I agree with this interpretation, but would add that capital controls, or the knowledge that a government had them in its arsenal, compensated for lower flexibility by decreasing volatility and greatly reducing the probability of default during crises, thus additionally raising expected returns. Thus, I agree with the conclusion of Kaplan and Rodrik (2001):the main mistake Malaysia made was ever delaying the imposition of capital controls or attempting contractionary stabilization.

V – Conclusion

Other works have examined the broad policy implications of the Asian Crisis: macroprudential limits on capital inflows, even those being used productively; the unsuitability of the IMF as a true LLR; and the value of caution when applying "toughness" or liquidationist principles to a crash, lest the victims be productive output rather than speculative excess.

[44] Kaplan and Rodrik (2001) find that capital controls helped Malaysia recover more quickly than IMF intervention would have, given the timing of the Malaysian crisis.
[45] Krugman (1999b).

Notably, capital controls have seen a strong increase in their popularity. Discussions of financial and economic crises, particularly in the popular sphere, would benefit greatly from coming to an understanding of such work.

This paper focuses on a 'prudential' problem not given its due in the existing crisis literature, which made the Asian Crisis in Indonesia uniquely and unexpectedly devastating. I explain Indonesia's uniquely poor outcome from the Asian Crisis as the result not of pre-existing fundamental weaknesses relative to its neighbors, but as the consequence of an unremarked-upon vulnerability, foreign-debt fragmentation, which turned the IMF programs from the painful, but functional, solution that they were in Thailand and Korea, into a total disaster in Indonesia. Furthermore, Malaysia successfully avoided exacerbating the crisis to the same extent, despite also having deeply fragmented debts, due to its imposition of capital controls. This conclusion has several important theoretical and practical implications.

1. A novel finding of this paper is that foreign-debtor fragmentation can have real repercussions on the course of financial panics, because they can interfere with institutional efforts to overcome coordination problems. Ironically, the large banks of "Asian Capitalism" proved to be more easily stabilized than 'market-disciplined' individual firms borrowing abroad (though obviously neither approach is desirable).
2. Related to 1): knowledge of local conditions is vital to the success of an intervention. In the wake of the Asian Crisis, the IMF was criticized for applying harsh policy to Asia, derived from Latin American interventions, that didn't make sense given local conditions. This paper reinforces that conclusion: it was crucial to understand not just the difference between Asia and Latin America, but also between the various economies within Asia, in order to properly target interventions: mis-generalization of the Thai case was a widely

remarked-upon mistake, while this paper finds that financial fragmentation made it impossible for the IMF program to have ever worked in Indonesia, as it eventually did in Korea and Thailand. It is understandable that the IMF felt the need to take rapid and decisive action, but such hastiness caused Indonesia to suffer the worst possible outcome in the Asian Crisis, undergoing damaging contractionary treatment with no possibility of success.

3. Related to 2): the IMF programs, when successful, did so not because of generous commitments of funds (Indonesia had the most generous commitment!) but because they succeeded in coordinating creditors and debtors and restoring confidence, a significantly more nuanced task. The IMF's role as simultaneous lender, reformer, and coordinator can and did undermine its performance in this important task, suggesting also the danger of multiple mandates.
4. An underappreciated benefit of capital controls is their unilaterality and rapidity. This can prove decisive, as it did in Indonesia and Malaysia, when circumstances make it difficult or impossible to overcome a coordination problem and achieve a cooperative outcome. In a world of imperfect information, institutions, and politics, the case for capital controls is thus even stronger.

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