

# Managing financial crises in emerging markets: new developments in review

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## Abstract

We begin with a summary of the current debate on sovereign debt restructuring, including the idea of inserting collective action clauses (CACs) into sovereign bond contracts and the IMF's proposal for a Sovereign Debt Restructuring Mechanism (SDRM). We compare these two proposals in a context where problems of creditor coordination interact with those of debtor incentives – “debtor moral hazard.” This is followed by a formal section, where the focus is on CACs and how they reduce the risk of crises. Finally, we turn to matters of political-economy and the recent confidence crisis in Brazil. We discuss how and why orthodox IMF policies of partial bailout combined with policy support can restore confidence and reduce sovereign spreads in circumstances when an untried Left-wing candidate spooks financial markets.

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## Introduction and outline

Section 1 provides a summary of the debate on Sovereign Debt Restructuring. To this end, we report on a recent conference in Paris, on March 9, 2003 sponsored by Institut Français des Relations Internationales (IFRI) and the Institute for International Economics (IIE) to air the principal issues before the Spring Meetings of the IMF and World Bank<sup>1</sup>. In the light of Mexico's issue of debt that includes Collective Action Clauses (CACs) – and of cool market reception accorded to the IMF own proposal by the market – we focus on the current prospects for **CACs**; for **Code of Good Conduct**; and for IMF's own “bankruptcy” proposal, a **Sovereign Debt Restructuring Mechanism** (SDRM). After surveying these three proposals, we consider the incentives for continued reform.

In section 2, we discuss a model of sovereign debt crises that combines problems of creditor coordination failure and debtor's incentives. It involves a canonical two-player game of *creditor coordination* with multiple equilibria, where the choice of equilibrium is subject to the *moral hazard* constraint that the sovereign debtor must retain the incentive to service its debt. It is quite likely that this incentive constraint rules out the “no-crisis equilibrium.” Instead, the equilibrium following debt default may be one in which creditors randomise between quitting and staying; or even one in which they all quit, depending on how severe the incentive problem is. In general, there are too many crises. We go on to discuss briefly how interest rates will depend on the equilibrium selected and how the model might be calibrated to the data, with parameters chosen so as to generate sovereign spreads that vary over a range running from 300 to 7000 basis points . The possible perverse effects of unregulated financial liberalisation are also discussed using this framework.

In section 3, we discuss how the incidence of crises might be reduced by international sovereign bankruptcy procedures, involving ‘contractibility’ of sovereign debtor's payoffs, suspension of convertibility in a ‘discovery’ phase and penalties in case of malfeasance. In relation to the current debate, this is more akin to the IMF's Sovereign Debt Restructuring Mechanism than the Collective Action Clauses which some promote as an alternative. But the decision taken at the IMF Spring Meeting to put the SDRM on the back burner together with the recent developments in the market for sovereign debt suggest that Collective Action Clauses are far more likely to go ahead than the IMF's SDRM. In the light of Mexico's issuance of sovereign debt in NY in February 2003 containing Collective Action Clauses, we study the impact of such clauses on creditor coordination. We begin by extending the two creditor model studied in previous sections to the case with  $n$  creditors, allowing for the possibility that creditors have asymmetric information about future project net worth. We then study a special case of this model with three agents. From the Bayesian equilibria of this game we derive the probability of uncoordinated sovereign debt crises without collective action clauses and show that introducing Collective Action Clauses lowers this probability.

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<sup>1</sup>The relative merits of *statutory change* backed by the IMF and *voluntary contractual change* promoted by the US Treasury were discussed in a similar IIE forum a year before, see Miller (2002).

Section 4 turns to political economy matters. After a brief outline of general issues, we examine “political contagion” in Latin America. We argue that wide-spread support for debt default in Argentina may have led to the high sovereign spreads seen in Brazil as Lula surged ahead in the polls. We analyse how a self-fulfilling crisis has been avoided by a combination of short-term IMF financing in exchange for the incoming president’s commitment fiscal prudence together with a process of “learning to trust Lula” on the part of creditors.

# 1 Sovereign Debt Restructuring : where things stand

## 1.1 Introduction and summary

### 1.1.1 The trigger for change

Why change the current international financial architecture? Has it not served the world well since the Bretton Woods System established at the end of World War II gave way to floating rates in the early 1970s? These questions deserve some response, however brief, before turning to the sometimes arcane details of the current debate.

The single most striking piece of evidence of the inadequacy of the status quo is the high incidence of financial crises, particularly since 1973. As indicated by data provided by Bordo(2002) and Eichengreen (2002), the frequency of crises since 1973 was about 10% per annum for a each country in a sample of 21 mainly developed economies (for which data is available since 1880) and about 12% for a wider sample of 56 countries including emerging market economies, see right hand bars in Figure 1 below.

This frequency (of about one in ten) is **approximately double what it was under the Gold Standard** 1880 -1913, the earlier period of financial globalization (when each country faced a one in twenty risk of crisis in any year). It is higher than in the Bretton Woods era of pegged-but-adjustable exchange rates and limited capital mobility running 1945-73<sup>2</sup> . With the exception of the interwar period, 1919-1939, which includes the Great Depression, it is the highest incidence of crises since 1880.

As Rogoff (2003) has recently noted: “private flows to emerging markets are remarkable for their unpleasant side effects - wild booms, spectacular crashes, over-indebtedness, excessive reliance on short-term and foreign-currency denominated debt, and protracted stagnation following a debt crisis. [There] is an excessive reliance on “dangerous” forms of debt, such as foreign-currency denominated debt and short-term debt, which aggravate the pain of crises when they occur.”

Though increasing world trade and the scope of market forces more generally has undoubtedly raised per capita incomes dramatically, the same claims cannot be made for the growth of international markets in sovereign debt<sup>3</sup>. Has the growth of debt markets enhanced growth? Has it reduced the volatility of consumption? It is hardly surprising that the answer as to the social value of emerging market debt flows provided by in-house research at the IMF is at best ambiguous, Prasad et al. (2003).

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<sup>2</sup> As Rogoff (1999) had earlier put it: “The 1990s financial crises have brought a sharp contraction of lending to the developing world, and there is a serious concern that the fallout will continue to inhibit international capital markets for some time to come. The exact timing and nature of speculative attacks on emerging market economies is a topic of great debate [b]ut in the majority of cases, there is little question that the attacks were exacerbated by the way that many developing country governments chose to open their capital markets radically to the rest of the world during the early 1990s.”

<sup>3</sup> Kenneth Rogoff is not the only one speaking out against too much sovereign borrowing by emerging markets in the form of bonds and bank loans, and relying too much on foreign-currency-denominated (or foreign-currency-indexed) debt; in this regard, see Goldstein (2003).

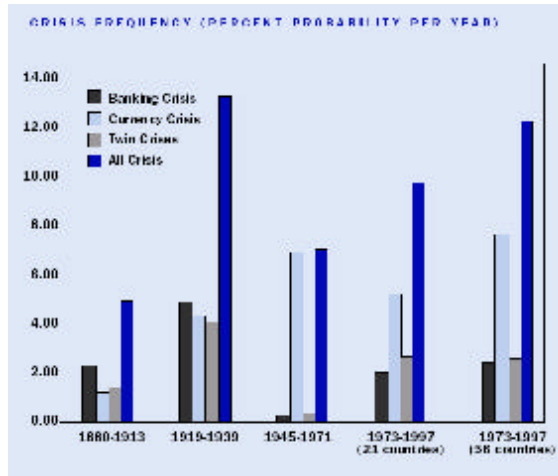


Figure 1: from Michael Bordo (2002)

### 1.1.2 A summary of the debate.

What goes wrong with sovereign bond markets? and what can be done about it? A recent paper by Nouriel Roubini and Brad Setser(2003) addresses just these questions. It is with some trepidation that one seeks to summarize this synthesis. Nevertheless Figure 2 may prove a useful guide to the cut and thrust of the debate that follows. On the left hand side are the potential problems affecting markets in sovereign debt - a veritable catalogue of disaster. In the columns of the table are the various solutions offered to mitigate these problems, beginning with that labelled the Status Quo<sup>4</sup>, i.e. how things have evolved without fundamental reform of the system. This phrase, used by Roubini and Sedser, should not be taken to imply situation of stasis, as there has in fact been a good deal of evolutionary development in the last few years - the use of exit consents swaps as a form of “Private Sector Involvement”, to give but one example.

The Status Quo has proved crisis prone, as we have seen above: and, as Daniel Cohen and Richard Portes(2003, p.1) argue in their elegant study of “IMF Reform”, it also shows signs of unsustainability: “The absence of a framework for orderly workouts increases the pressure on the IMF and G7 to step in with bailout packages, because a disorderly workout appears too unpalatable”. The IMF faces what has been called a “time consistency trap”<sup>5</sup>: it would like to “Just say No” when member countries in crisis call for liquidity support;

<sup>4</sup>When augmented by the three items in the column headed (Plus), this yields the Status Quo Plus.

<sup>5</sup>This is discussed in more detail in Miller (2002), for example.

	(1) Status Quo (Plus)		(2) CACs	(3) Codes (numbers refer to Figure 4)	(4) SDRM
	a) Rush to the exit	IMF/G7 Bailouts	Stand-stills with capital controls		CGC # 1
b) Rush to the courthouse	Acceleration Clauses		Acceleration Clauses	CGC # 1	STAY on legal action
c) DIP finance	IMF/G7 "Lending into arrears"		Seniority for new lending		SENIORITY for new lending
d) Holdouts or Free-riders	Exit/consent swaps		Supermajority voting (SMV)		Supermajority voting (SMV)
e) Aggregation Problem between creditors	Paris and London Clubs + IMF Programme	2-stage swaps: NY Club		CGC # 5	FORUM for Dispute Resolution
f) Coordination between creditors, debtors and IFIs	Paris and London Clubs + IMF Programme	Linking of 3 Clubs		Roadmap CGC # 6	IMF Programme with conditionality
g) Debtor moral hazard	IMF Programme			CGC #. 7	IMF Programme

← Cohen and Portes →

IMF Endorsement →

Figure 2: Roubini and Sedser’s Catalogue of Woe: and Four Modes of Resolution

but because the alternatives are so dire this is not credible. There is concern that investors, knowing that their lending is underwritten by the implicit promise of IMF-led bailouts, may lend recklessly<sup>6</sup>. But there comes a time when the sheer size and speed of capital flows must overwhelm the efforts of well-intentioned personnel manning the pumps<sup>7</sup>. What then? The various alternatives listed in the next three columns may be considered in turn.

## 1.2 Collective Action Clauses (CACs) [see column (2) of Figure 2]

An answer proposed much earlier, shortly after the Mexican crisis of 1994/5 in fact, is that of inserting collective action clauses (CACs) into private bond contracts so that they can be restructured when a super-majority of say 75% of creditors agree to do so, see Eichengreen and Portes (1995) and the Rey Report (1996). In this respect bonds are made more like equities, as their pay-outs can, at the discretion of the creditors, be made state-contingent. Indeed, as Roubini and Setser (2003, pp. 20-21) point out, “Bonds governed by English law typically allow a qualified majority to amend key financial terms. [But] those emerging markets that typically issue dollar bonds governed by New York law were reluctant to change

<sup>6</sup> “[T]he availability of IFI support gives a false sense of security to investors, which magnifies booms in the run-up to the crisis (as in Russia in 1998)”, Rogoff, 2003 para 1

<sup>7</sup> Perhaps December 1997 was the defining moment, when the market failed and the money ran out. The IMF could not find sufficient funds from IFI and G7 sources to prevent default by Korea, an OECD member. Default was only averted by a coordinated rollover of banks short-term investments orchestrated by G10 finance ministers and central banks- a form of government-induced suspension of convertibility.

the documentation they use in New York or to shift their dollar issuance to London". They go on conclude that "the challenge is actually quite simple: changing market practice in bonds governed by 'New York law'".

Until February 2003, when Mexico issued a billion dollars of twelve-year debt in New York containing CACs at a very respectable 3 1/8th percentage point spread over US treasuries, there seemed to be an insoluble problem – what Cohen and Portes (2003, p.23) call the "CACs 22", another manifestation of the time-consistency trap. In their words:

"Both issuers and underwriters [in New York] are trying to sell bonds and fear the chilling effect of 'prenuptial agreements'. Most important, however, is that lenders expect bailouts as long as there is no alternative, established procedure for Private Sector Involvement. As long as the official sector provides bailout packages, there is no incentive for the markets to want CACs; but there must be bailouts in the absence of an alternative that would limit the costs of default."

Not surprisingly, the Mexican initiative commanded great attention at the Paris meeting. Somehow Mexico had boldly escaped from CACs 22. Was this a signal of hope for emerging markets? Or was it proof that Mexico has grown to be the very Houdini of the emerging economy bond markets? The message was mixed. Mexico currently has strong balance of payments, high foreign exchange reserves, buoyant oil revenues and investment-grade rating: so it seemed a good time to go to the market. But this may be cold comfort for those not so well placed.

Three innovative aspects of the Mexican CACs were indicated: (a) a 75% super majority vote to change financial terms (b) an increase from 50 to 75% of the vote needed to change non-financial terms and (c) a minimum requirement of 25% of the outstanding principal for acceleration (with a 50% requirement to de-accelerate). These clauses, whose significance we further analyse below, may be just what the doctor ordered ; but the circumstances needed for a propitious launch seem daunting.

Roubini and Setser (2003) and some London market participants argued for standardization of CACs "to minimize the number of moving parts". But, in a subsequent Newsletter, Michael Gavin (2003, p.5) of UBS Warburg commended the Mexican initiative on the grounds that "the covenants in the recent issue were not meant as a final, take-it-or-leave-it offer on a template that would be applied rigidly to its future issues."

The response of discussants, faced with a checklist of key questions by the chair, are summarised in Figure 3.

Note that the position taken by Cohen and Portes, who argued for standardised contracts of mandatory issue in key financial sectors, contrasted sharply with the more flexible and

	<b>F. Bergsten's questions</b>	<b>Market players (including Mexico)</b>	<b>Academic (cf. Cohen/Portes paper)</b>
Q1.	Should CACs be standardized?	London argued for standard contracts, NY and Mexico preferred flexibility (on, for example, engagement clauses)	Standardization recommended
Q2.	How much official pressure needed?	No comment	History suggests pressure needed to enforce CACs
	Moral suasion or regulation?	Moral suasion perhaps, but no more	Key financial centers to prohibit issues without CACs.
Q3.	Implications of CACs for Bail-outs?	None	Will ease the pressure for IMF Bailouts

Figure 3: Bergsten's checklist of key issues: and the variety of replies

voluntary position taken by the market<sup>8</sup>. Roubini and Setser (2003, p 14) propose a step-by-step compromise, beginning with encouragement and moving further if necessary: “If other New York law issuers do not follow Mexico's lead, the official [sector] should be prepared to go beyond jawboning to arm-twisting, and eventually to seek regulation or legislation that would require the use of clauses. This really does not require G-7 coordination, or changes in IMF policies. It does require a willingness on the part of U.S. authorities to impose change on the market if those countries that typically issue in dollars using New York law do not move on their own”.

### 1.3 Code of Good Conduct [see column (3) of Figure 2]

Jean-Claude Trichet of the Banque de France presented a proposal that found considerable support, namely the formulation of rules of good conduct together with a “road map” to guide debtors, creditors and others involved in debt restructuring<sup>9</sup>.

The stated objective of the Code of Good Conduct (CGC) is to develop a comprehensive non-statutory framework, which seeks to address debt-servicing problems while preserving to the maximum extent possible contractual agreements. Indeed, a Code carefully listing what is expected from all parties concerned in times of sovereign financial distress could provide a pragmatic way for stakeholders to optimise their behaviour. This framework is intended to incorporate “best practices” which are not mandatory but rather of a contractual or voluntary nature.

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<sup>8</sup>The point was made that, to provide the right incentives such voluntarism might need to be matched with a “cap” on official finance, as proposed by the Bank of Canada and the Bank of England.

<sup>9</sup>Richard Portes suggested that such a code is more in the French tradition, while the NY Club for sovereign debt restructuring debt he proposed is more accord with the Anglo-Saxon custom and practice.



<b>Code of Best Practices for Sovereign Restructuring: Nine main principles and best practices</b>	
1.	Early engagement with creditors
2.	Fair information sharing among all interested parties
3.	Fair representation of creditors
4.	An expeditious and cooperative process
5.	Comparable treatment among creditors
6.	Fair Burden Sharing between debtor and creditor
7.	Good-faith negotiation
8.	Preservation of the debtor's financial situation
9.	Rapid restoration of debt sustainability

Figure 4:

#### Banque de France's Code of Good Conduct

A warm welcome for this proposal on behalf of the creditors has been provided by Michael Gavin (2003, p.6), who also drew out the implications it might have for the debate in general: "The code would not of course be legally enforceable, but that doesn't mean that the norms that are laid out in such a code would not provide some useful guidance (and moral suasion) going forward. [Indeed] the combination of CACs and Code would probably solve so many of the political and substantive problems that now plague the restructuring process, that the case for an SDRM to solve the few remaining problems would be tough to sustain."

Others such as Roubini and Setser (2003, pp. 10-11) are more sceptical:

"No matter what the Code aims to do, particular attention needs to be given to the set of incentives that will lead all parties to have an interest in abiding by a non-binding Code. In theory, adherence to the Code during the restructuring could be a condition for creditors' final agreement on restructuring terms. However, this raises obvious problems of time consistency. If the debtor dithers for a few years before [it] finally gets its act together and then puts forward an acceptable proposal, creditors are unlikely to turn the proposal down just to punish the debtor for failing to live up to a code immediately after its default. A code of conduct potentially could help to facilitate a restructuring well before most bond contracts contain collective action clauses. Most proposals are not intended to substitute for efforts to introduce of new clauses into bond documentation."

Something like the Code of Good Behaviour is surely needed to promote more efficient coordination between the parties involved - debtors, creditors and IFI's: but a voluntary code has no power to enforce decisions on minority creditors. This is the main reason why it was seen as complementary with CACs.

#### 1.4 The IMF’s Proposal for a Sovereign Debt Restructuring Mechanism- see [see column (4) of Figure 2]

Finally IMF economists had the opportunity to describe and defend the statutory innovations<sup>10</sup> they had been pursuing for many years - much more actively since they were encouraged by Paul O’Neill to look for a “better way” than simply providing bailouts.

Jack Boorman, head of PDR during the Asian crisis and now special advisor to the Managing Director, welcomed the incorporation of CACs into sovereign bond contracts and the promotion of a Code of Good Conduct. Worthy as they may be, however, he judged them inadequate to handle sovereign debt restructuring on their own<sup>11</sup>. To start with, the clauses incorporated in Mexican sovereign debt are not nearly as ambitious as those proposed by John Taylor (2002) when the US Treasury backed contractual changes a year before: and the code advocated by the Bank of France and groups of bond traders have not yet been agreed. More fundamentally, he asserted that, in handling problems of aggregation across creditors, “synthesising by contract” is not possible – thus challenging the view of New York financiers Morgan Chase who claim that two-stage swaps can do the job. Finally he concluded that CACs are a complement, but not an effective substitute, for SDRM; and made it clear he thought the IMF needed extra statutory powers to do its job properly.

Conceding that the original SDRM proposal may have been “Fund-centric”, he claimed that current proposals are “creditor-centric”. Figure 5 below provides a schematic comparison of the original proposal of November 2001, SDRM-1 with the revision provided in 2002, SDRM-2; it also indicates how these plans attempt to replicate key features of corporate bankruptcy procedures under Chapter 11 of the US Code. As indicated by the asterisks in the table, under the revised plan creditors can specifically decide: a) on extending the temporary stay on debt service, b) on the provision of seniority for DIP finance, c) on the restructuring of each class of debt. In addition, Mr Boorman said, creditors can terminate proceedings.

Michael Mussa, head of IMF Research till mid-2001 offered scant support. He reiterated a point made by his IIE colleague Ted Truman (2002) to effect that, of the last eight crises handled by the IMF, Argentina is the only case for which the SDRM is directly relevant. In any case, he argued against the ex-post revision of private contracts as the right way to proceed. The IMF, he argued, should “Just say No!” But, as Jack Boorman was quick to point out, “You have to ask what is going to happen then” (i.e. if you say no). “If there is not a reasonable process”, he noted, “then your answer is affected.”

The implication that the IMF simply said yes was promptly challenged by Matthew Fisher. The failure to achieve a pre-default deal in Argentina was not for lack of trying, he said: Mr. Cavallo was talking of administering a ‘haircut’ in late 2001, for example. But

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<sup>10</sup>The major features of the SDRM have been indicated in the summary Figure 2. They include a stay on debt payments; seniority status for new creditors; Super Majority Voting by creditors in each class of debt; the prospects for aggregation across classes; and last of all a Dispute Resolution Forum.

<sup>11</sup>For more details on his position see Boorman (2003)

	Features	Chapter 11 bankruptcy	SDRM	
			Original SDRM (2001)	Revised SDRM (2002/3)
(a)	<b>Stopping a grab race</b>	Payments standstill <i>plus</i> automatic legal stay	Payments standstill <i>plus</i> automatic stay	No stay but hotchpot remedy
(b)	<b>Financing reorganisation</b>	Preferred status for new money (DIP finance)		Preferred creditor status for new money* <i>plus</i> limited IMF lending
(c)	<b>Restraining holdouts</b>	Supermajority voting <i>plus</i> cramdown	Supermajority voting <i>plus</i> arbitration	Supermajority voting by the unsecured creditors
(d)	<b>Restructuring debt</b>	Negotiations under court supervision	Negotiations supervised by IMF <i>plus</i> IMF programme	Negotiations supervised by neutral agency <i>plus</i> IMF programme

\* to be decided by creditors.

Figure 5: Chapter 11 and Sovereign Debt Restructuring Mechanism (SDRM)

how could one secure collective action without CACs? The only solution was the use of exit consent swaps: but there was a risk that these might lead to a collapse of banking system. If a prior default could have been done it would have been great: but it was not possible.

Kenneth Rogoff, Michael Mussa's successor in the IMF Research Department, dismissed the view that the status quo is just fine. He tried to shift the whole perspective of discussion, noting that "It's not the asset class (sovereign debt) we want to secure - it's resources for Emerging Market Economies." He argued that the current system is unduly biased towards debt flows<sup>12</sup> and spoke persuasively of the need to rechannel capital flows into other instruments. (This was an echo of what he had earlier called My Plan in Rogoff (1999), where he proposed a short term run-down of bond markets, see Addendum below.)

## 1.5 Strategic considerations

### 1.5.1 The IMF and its critics

Key points made on each side are outlined in what follows. In conclusion, however, we argue that the situation is in reality one of fine balance: in reshaping the architecture as in restructuring debt, blocking minorities can play a key strategic role. If SDRM is put on the back burner, it is important that PSI be revived as a threat to keep CACs coming.

On one side of the final debate were the protagonists for market voluntarism, backing CACs without an SDRM, happy to make common cause with the Banque de France and its

<sup>12</sup>For further details see Rogoff (2003) "Emerging Market Debt. What is the Problem?"

voluntary Code of Good Conduct. Market participants took this view. On the other side was the IMF, willing to endorse these changes, but fighting still for fundamental statutory reform along the lines charted by Anne Krueger. A compromise was offered by Daniel Cohen and Richard Portes. Drawing on the history of sovereign debt restructuring before the IMF was created, they proposed non-voluntary CACs, together with institutional changes to promote creditor co-ordination - a New York Club, for example.

Speaking for the debtors, Agustín Carstens of Mexico noted that fears of moral hazard had led to IMF to encourage private sector involvement. With the suspension of automatic bailouts, he claimed reckless investors have been excluded from emerging markets. But capital flows have declined; and Mexico alone had received 70% of capital flows to Latin America last year. To bring other countries back to the market, creditors wanted CACs plus Codes. He criticised the SDRM for what he termed insurmountable problems of unconstitutionality and unpredictability, and recommended that the IMF - “the best working international institution” - should not put itself at risk in pursuing this initiative any further.

Michael Dooley (Deutsche Bank) speaking for the creditors, acknowledged that the status quo is very costly and argued that CACs are useful particularly if supplemented by the Code of Good Practice and a Forum for negotiations. But he was highly critical of the SRDM, which he described as a radical change where the debtor plus the IMF determine “when bond contract become equity contracts” and the IMF reserves the right to get out before private creditors!

In response, Kenneth Rogoff (IMF) reiterated his view that capital flows in the form of equity played an important and stabilising role in world capital markets. He also pointed out that the IMF typically commits itself to supplying loans at times when no one else is willing to do so: stripping the IMF of seniority would reduce funding to zero, he said, “But how would that help?”

Finally, Michael Mussa (IIE) observed that efforts to promote the SDRM are ‘premature’ - but argued that the proposal should not be dropped. To put it into action, however, there needs to be a demonstrable case - maybe Argentina if private negotiations fail.

### 1.5.2 Strategic Considerations

If proposing SDRM was premature, as Michael Mussa suggests, was the whole exercise a waste of time? If it is put on the back burner, will this affect incentives for reform? Some insights may be gleaned from a strategic analysis where one treats the evolution of the IFA as the outcome of a game between the IMF and the creditors. A rudimentary version is outlined in Figure 6 that follows, designed to capture the game as it first appeared in the Fall of 2001 when Paul O’Neill asked the IMF to look into creating an SDRM. Note that payoffs for either player are ranked with letter grades where  $\alpha > \beta > \gamma > \delta$ .

As formulated here, the IMF simply chooses whether to push the SDRM or not, while the creditors decide whether or not to implement CACs. The payoffs are shown in the Table, with that for the IMF shown first and for the creditors second. It is assumed that the IMF rates the achievement of SDRM as an  $\alpha$ , the adoption of CACs without an SDRM as  $\alpha \beta$ , and the Status Quo without either, as  $\alpha \delta$ . But the creditors take the opposite view: for them the status quo is just fine,  $\alpha$ ; CACs are acceptable,  $\beta$ ; but the SDRM is a monster from

		<b>Creditors</b>	
		NO CACs	CACs
<b>IMF*</b>	No SDRM	$\delta, \alpha$	$\beta, \beta$
	SDRM	$\alpha, \delta$	<b>a, b</b>

\* Assuming no veto of the SDRM

Figure 6: The situation in the Fall of 2001: IMF leads "twin-track" reform

another planet,  $\delta$ . (So it is pretty much a zero-sum game.) For the IMF with a green light for reform, as in the Fall of 2001, it is evident that pursuing the SDRM is the dominant strategy (always yields  $\alpha$ ). This leaves creditors choosing whether or not to add CACs; which they do as this gives them some more control of proceedings<sup>13</sup>. The Nash equilibrium of this game, shown in bold in the bottom right cell, predicts major developments in the international financial architecture, with the changes both to private contracts and statutory procedures.

This may be how things appeared to the IMF early in the process, but neither the market nor many borrowers have supported SDRM; and if they don't want it, the US Congress is unlikely to approve<sup>14</sup>. [It takes 85% of the vote to change the IMF's Articles of Agreement and the US has the power to block such changes on its own: other major debtors countries like Mexico and Brazil would doubtless have joined a blocking coalition<sup>15</sup>.] On the other hand, Mexico has incorporated CACs in its latest NY bond issue. An interesting feature of the clauses incorporated was that, while the Super-Majority Vote for changing financial terms was cut from unanimity to 75%, the required vote to change non-financial terms was increased from 50% to 75%. Why so? Because creditors who accept such CACs thus reduce their exposure to exit consent swaps, i.e. avoid involuntary Private Sector Involvement [PSI].

This is important if we assume that reform efforts in the near future will focus on CACs, together with the option of using exit consent swaps acting a credible threat. In Figure 7, where the IMF now chooses whether or not to use PSI, the payoffs are as the previous Figure 6 except that we change the IMF 'payoff' in the bottom right hand corner from  $\alpha$  to  $\gamma$  to reflect the difficulty of implementing PSI with Mexican-style CACs.

Where CACs are structured in this way, pursuing PSI is not a dominant strategy on the part of the IMF. But it can still function as a threat. This can be seen most clearly with the aid of Figure 8, which shows the options available at different stages, assuming that creditors can implement CACs before the IMF forces PSI.

Starting at the second stage, it is clear that the IMF will not enforce involuntary PSI if CACs have been implemented - thanks to the anti-exit consent swap provisions. It will

<sup>13</sup>In addition, of course they can lobby for changes in the SDRM to give creditors more control.

<sup>14</sup>And of course, Mr. O'Neill is no longer holds office

<sup>15</sup>See Leech (2002, p. 389) Table 1 for an evaluation of voting power on such matters at the IMF.

		Creditors	
		No CACs	CACs
IMF*	No PSI	$\delta, \alpha$	$\beta, \beta$
	PSI (exit consent)	$\alpha, \delta$	$\gamma, \beta$

\*Assuming that PSI becomes less feasible when CACs are implemented

Figure 7: The current situation: IMF backs CACs with threat of PSI

IMF payoff shown first

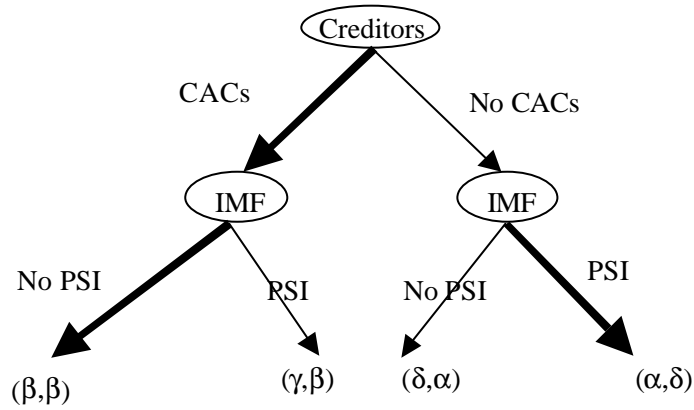


Figure 8: Will the Market continue with CACs to avoid PSI?

do so otherwise, however, to avoid a return to the status quo ante. Faced with this state-contingent IMF response (shown by the dark arrows in the lower part of the figure), how will the creditors behave? With their preferred outcome of No CACs and No PSI ruled out, their best option is to implement CACs - otherwise they get will be faced with exit consent swaps!

## 1.6 Conclusions

Mexico has taken initiative of including CACs in its New York debts; and Brazil has been quick to follow. Or will with SDRM on the back burner and no alternative incentives for change, is there a risk that the whole movement to reform the international financial architecture could go back to square one? Roubini and Setser have proposed a step-by-step process of pro-activism by the US regulatory authorities as one means of providing the right incentives. Reactivating the threat of Private Sector Involvement implemented by exit consent swaps is another.

But the progress of time and the process of learning may also change payoffs and incentives. Thus, up until a few weeks ago, it was widely thought that issuers would only be willing to pay the premium demanded by the market for CACs if they were under the threat of the SDRM. The Mexican placement was made without the need to pay a premium, however, and the bond continues to trade well the buy-side shows growing recognition that CACs are a good idea. (It is notable, for example, that Uruguay has announced that it plans to use CACs in its forthcoming debt operation.) So there is some ground for optimism that the momentum toward CACs can be maintained even if the SDRM is put on the back burner.

We might consider three possible lines of development. First, if creditors in sovereign bond markets - like those in London corporate markets - come sufficiently to appreciate the benefits of CACs, they will be no need for regulatory enforcement nor PSI as a threat. So it will be a world of CACs and Codes.

Second, if the resolution of the Argentine situation drags on for a long time, things may look very different. There could be a loss of confidence in market-driven solutions and all bets will be off- as the need to avoid any repetition re-ignites the search for systemic reform. With demonstrable reason to reconsider the SDRM, for example, the strategic equilibrium might return to what it was in 2001 with renewed pursuit of the twin-track approach. This could lead to a world with new contracts and new Articles for the IMF.

Third and, in our view, most likely, is an evolutionary outcome where CACs *will* be widely adopted (but will not prove to be sufficient to handle solvency crises on their own); where the SDRM *will not* be adopted because it is too ambitious, but CACs will be combined with Codes and with IMF involvement to supply emergency funding and impose conditionality. In practice, this will constitute a mechanism for restructuring sovereign debt in all but name!

## 1.7 Addendum: K. Rogoff (1999) My “Plan”: and a criticism

“The main problem with the present system is that it contains strong biases towards debt finance, especially towards intermediation by banks, and does not adequately support equity

finance and direct investment. If flows to developing countries took the form of equity and direct investment, there would be an automatic device for risk sharing. Country runs could still lead to sharp drops in local stock markets, but there would be no liquidity effects, no need for a lender of last resort or a crisis manager.”

“In Bulow and Rogoff, we recommend restricting countries’ ability to waive sovereign immunity as means of discouraging the mediation of debt contracts in industrialized country courts. Instituting an international bankruptcy court might be an alternative means to the same end. As a result of such a policy change, there could be a significant transition period where capital flows to certain countries were reduced. Lenders would avoid countries lacking either sound legal systems for enforcing commercial contracts, transparent and fair regulatory systems, or favourable histories of treatment towards foreign investors. However, countries that want to draw on world capital markets will have a strong incentive to develop institutions that would support foreign investor confidence. By the same token, they will have an incentive to develop fair, transparent, and well-regulated equity markets to help attract capital flows.”

In the concluding discussion of the Paris meeting, Ricardo Hausmann appeared to criticise such a plan. While he agreed that capital markets have not provided for efficient risk sharing, he argued that for the IMF to walk away violated the Monkey Principle: “Don’t throw away the vine you’re on, before you have another to go to.”



## 2 Co-ordination Failure and Moral Hazard: the full information case

### 2.1 Introduction

In criticising the conventional wisdom – also known as the Washington Consensus - Guillermo Calvo of Inter-American Development Bank has argued that emerging market finance is subject to market failures with potentially disastrous consequences. At the UTDT summer workshop in Buenos Aires in August 2002, indeed, he proposed that whether or not a theory of sovereign debt crisis includes ‘sudden stops’ should be a crucial test of its empirical relevance for emerging market finance, see Calvo et al. (2002). In his recent book on the international monetary system, Tirole (2002, pp. ix-x) evidently takes much the same perspective: he begins by referring to the wide consensus that has emerged among economists that “capital account liberalisation ... was unambiguously good. Good for the debtor countries, good for the world economy” but goes on to note “that consensus has been shattered lately. A number of capital account liberalizations have been followed by spectacular foreign exchange and banking crises.” Following Russia’s partial foreign debt repudiation in August 1998, for example, generous inflows to Latin America came to a standstill; and sovereign interest rate spreads rose to over 1600 basis points on the Emerging Market Bond index (EMBI+).

These developments – together with the collapsing currencies and soaring sovereign spreads facing many Latin American countries in 2001/2 – have put in question traditional explanations for financial crises, based on current account and fiscal deficits. They suggest the need to focus on the intrinsic behaviour of capital markets.

The focus of this section is on how problems of creditor co-ordination interact with debtor’s incentives to generate excessive crises. In the academic literature, these issues are typically treated separately. In explaining ‘bank runs’, for example, the classic paper by Diamond and Dybvig (1983) demonstrates the possibility of multiple equilibria in financial markets, but takes as given the structure of demand deposit contracts ( i.e. the right of depositors to withdraw on demand) and the choice of investments by the bank. To help select the ‘good’ equilibrium, three institutional mechanisms were discussed – provision of liquidity, suspension of convertibility and deposit insurance. Analogous co-ordination problems arise in connection with emerging-market bonds and similar proposals have recently been made with respect to sovereign debt. Stanley Fischer (1999), Radelet and Sachs (1998) and Truman(2001), for example, have emphasised official provision of liquidity; while Krugman (1998) called for capital outflow controls to protect East Asian currencies (i.e. a suspension of convertibility). There has not been much talk of explicit insurance, Soros (1998) and Jeanne (2001) being exceptions: but an additional possibility has been widely discussed, that of revising the nature of sovereign debt contracts themselves. Eichengreen and Portes (1995), Buchheit and Gulati (2000) and Taylor (2002) have advocated the insertion of collective action clauses to assist creditor co-ordination.

Proposals like these, designed to solve creditor coordination problems, have been criticised for failing to take into account their effect on sovereign debtors’ incentives. Barro (1998, p.18), for example, suggested that bail-outs can increase the probability of sovereign default, stating that “bailouts increase ‘moral hazard’ by rewarding and encouraging bad policies

by governments and excessive risk-taking by banks”. With reference to \$42 billion support package for Brazil in 1998, for example, Barro asked: “How did the Brazilians qualify for this support? They did so mostly by not exercising sound fiscal policies. If their policies had been better, they would not be in their current difficulties and would not qualify for IMF money”. After further discussion of the bailouts for Mexico and Russia, he concluded “the IMF might consider changing its name to the IMH– the Institute for Moral Hazard”.

Typically, debtor’s moral hazard has been considered in a separate strand of the literature which focuses on the use of punishment strategies in models of repeated interaction. In Bulow and Rogoff (1989a), for example, trade sanctions are the punishment mechanism to prevent strategic default. But since their bargaining model assumes a single creditor lending to a single debtor, creditor coordination problems are not discussed. Nor are they addressed in Kletzer and Wright (2000), who use a repeated game model to study how restricting access to capital markets can check moral hazard.

A convincing treatment of sovereign debt crises and their resolution needs to combine creditor co-ordination and debtor incentives in a consistent framework. The details of such a framework are provided in Ghosal and Miller (2003). They may be summarised briefly as follows.

Consider a canonical two-player game of creditor coordination where neither creditor can make a credible commitment not to quit where there is a default, even when shocks are temporary. Given default, this coordination game has three Nash equilibria. One in which creditors simply rollover lending (stay, stay); a second in which both creditors pull out (quit, quit), and a third in which they randomise between staying and quitting in a way which is determined by the payoffs of the game. Which of these will be chosen? Assume the best outcome will be selected which is consistent with maintaining debtor’s incentives to service its debts. If guaranteed rollovers (stay,stay) undermine debtor’s incentives, this leaves the choice between randomised quitting or quitting for sure. Whichever of these is selected, however, it is in general true that there is excess quitting. (The reason for this is that the parameters which determines randomised quitting are independent of the debtor’s incentives.) So the termination probability is higher than necessary for incentive purposes and there are too many crises.

Our analysis implies that guaranteed bail-outs will not solve the underlying causes of a sovereign debt crises; and that the market equilibrium needed to provide the right incentives is excessively prone to financial crisis (i.e. to sudden stops in capital flows). How can bond markets be made more efficient? This is considered in Section 3 but first we look at the implications of our framework for sovereign spreads and for unregulated financial liberalisation.

## **2.2 Implications for sovereign spreads**

As discussed in Section 2.1 above, emerging market sovereign spreads over US Treasuries responded sharply to the Russian default. From a level of between 400 and 500 basis points earlier in 1998, they peaked at over 1600 after the Russian default in August and then fell to somewhere between 700 and 800 in 2000. In 2001, Argentine debt suffered spreads of

2000 basis points and above, as did Brazilian debt in the summer of 2002. (After leaving the currency peg, Argentina has recorded even higher spreads of around 7000 basis points.) Ghosal and Miller (2003) show how their framework might be calibrated to fit recent data, using illustrative parameters so as to generate sovereign spreads that vary over a range running from 300 to 7000 bps, depending on which of the equilibria is selected.

There are those who argue that the doubling of sovereign spreads seen in Brazil in 2002 is largely due to contagion from the Argentine crisis. The framework discussed here could also be used to look at contagion. Masson (1999, p. 267), for instance, argues that “pure contagion involves changes in expectations that is not related to country’s macroeconomic fundamentals” and suggests that “by analogy to the literature on bank runs (Diamond and Dybvig, 1983), attacks on countries which involve a simultaneous move from a non-run to a run equilibrium seem to be relevant for recent experience in emerging market countries.” To include contagion on this definition, we need only relax the assumption that the market selects the most efficient incentive compatible equilibrium between creditors: a move from a mixed strategy equilibrium to the pure strategy of quitting unconnected with any change in fundamentals would count as contagion on Masson’s definition; and, as numerical calibration indicates, could double sovereign spreads.

### **2.3 Possible perverse effects of un-regulated financial liberalisation**

Financial liberalisation in the absence of appropriate regulation can increase the risk of financial crisis (Goldstein, 1997; Kaminsky and Reinhart, 1999). It may, for example, make it easier to ship money out of the country to evade taxes<sup>16</sup>. But what if liberalisation also cuts the cost of exit in the co-ordination game? (A fall in legal costs makes quitting more attractive: so, in the mixed strategy equilibrium, the probability of staying must be increased to balance the expected pay-offs of quitting and staying – and this increases the continuation probability of the game.) The new mixed strategy equilibrium could then fall afoul of the no-shirking constraint: hence, in the face of default for any reason, only the threat of certain withdrawal will be sufficient to check debtor’s moral hazard. The results could be dramatic: our calibrations suggest that it could raise the sovereign spread from 800 to 2000 bps.

Is this more than a theoretical curiosity? As Tobin (1999, p.73) notes: “In the ‘bailout’ packages for East Asian economies, further cross-border financial liberalization was one of the conditions imposed by the IMF and the U.S. Treasury for official loans. This was a surprising requirement, given the evident facts that excessive private external short-term debt was, if not a cause of the crisis, a serious aggravation of it, and that banking and financial institutions seemed to need more regulations in several respects as well as fewer in other respects.” Pressure to increase competition in financial markets may also be counter-productive in the absence of appropriate financial regulation (Hellman et al., 2000).

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<sup>16</sup> “The very large measurement error in world current-account positions (a deficit larger than \$100 billion for 1996), with recorded payments of capital income being much greater than recorded receipts, gives credence to the suggestion that a substantial portion of international capital movements is tax-avoiding in motive.” (Cooper, 1998, p.14).

### 3 SDRM and CACs

In this section, we consider a bankruptcy procedure involving temporary stay on creditor litigation and discovery process for determining the underlying causes of default. A key element of the procedure is that when the sovereign debtor in default is found to have made little or no effort, its private payoffs will be reduced ex post. To provide the right incentives, it is crucial that the mechanism for doing this should have been agreed ex ante, as would be true if a ruled-governed public agency is involved. Moreover, we argue that privately issued bond contracts are unlikely to achieve the same result.

The mechanism we describe incorporates features of the bankruptcy procedures advocated by the IMF (Krueger, 2002) – though, unlike the IMF’s proposal, it is not restricted to cases of ‘insolvency’. We conclude, therefore, that the institutional approach to sovereign debt restructuring proposed by the IMF is, in principle, capable of increasing bond market efficiency. What the rules should be – and whether the IMF as currently constituted is the appropriate public agency to implement them – are policy issues that remain to be discussed. In related work, Tirole (2002) has recently emphasised the ‘common agency problems’ affecting sovereign borrowing: the contracting externalities which may lead to over-borrowing and excessive short-term debt, and the collective action problems that prevent efficient roll-over and restructuring. Though our focus is somewhat different – we take both the amount and maturity structure of sovereign debt as given – the analytical approach we use has many features in common, including the assumption that there are debtor payoffs which cannot be secured by creditors (i.e. are not ‘contractible’) and the links that are established between ex-post resolution procedures and ex ante debtor incentives. Our institutional recommendation for increasing the contractibility of the debtor payoffs is not unlike Tirole’s proposal to increase the ‘pledgable income’ of the sovereign debtor. (Like Tirole, we have focused on the problems that can arise from contracts which pose problems of creditor coordination. For simplicity we have assumed that creditors all share the same information: but the information asymmetries stressed by Calvo would greatly enrich the analysis.)

Finally, we extend the complete-information 2-creditor model studied in the previous section to the case of n-creditors and asymmetric information to study the impact of introducing collective action clauses: and we show that introducing CACs always reduces the probability of uncoordinated debt crisis.

#### 3.1 Sovereign bankruptcy procedures as a commitment device

In Section 2.1, we argued that, in the absence of institutional innovation, there will be excessive disorderly default in equilibrium. Could this be reduced by institutional change?

Where creditors can, in event of default, exercise some legal claim over the assets of the sovereign state or its citizens, there is a good case for a bankruptcy procedure. This might involve the following elements. Ex ante, the sovereign agrees to bargaining in good faith after default, and to this end *establishes some ‘contractibility’ on assets in favour of the creditors*. This might involve waiving sovereign immunity and agreeing that some

foreign interest payments and loans<sup>17</sup> could be diverted in favour of creditors as part of the bargaining process. Note that this enhanced ‘contractibility’ must also have the effect of reducing private payoffs to the sovereign; otherwise it will not have the desired incentive effects.

When a default occurs, however, the sovereign debtor is afforded *protection by a temporary stay on creditor litigation*. This legitimises the suspension of payments and also prevents litigation (by ‘vultures’) from inhibiting negotiations, Miller and Zhang (2000). Furthermore, it provides a breathing space for a *‘discovery’ process* where efforts are made to establish the underlying causes of default (and to determine whether it was due to a bad shock or poor effort). If this reveals the debtor to have made appropriate effort and to be suffering from an exogenous shock, bargaining would involve *debt restructuring* – the lengthening of debt maturities for temporary shock, and some write-down for a permanent shock known to be outside the control of the debtor. But if the debtor is revealed to have made little or no effort to arrange its financial and fiscal affairs, then *it will be penalised with payoffs changed ex post in ways that have been agreed ex ante*. (It is to make this possible that the debtor must have agreed to make some private payoffs contractible.)

Along similar lines, Eaton (2002, p.5) observes: “One role that an international bankruptcy court could play is in clarifying the extent of the sovereign’s malfeasance in a default, and applying penalties appropriately.” He goes on to note that: “Tougher sanctions in response to malfeasance that leads to default is ultimately in the interest of sovereign countries, as it enhances their access to credit.”

Before turning to the institutional implications, consider two special cases. First is where the reasons for default are known as soon as it occurs, i.e. *without* a discovery phase. Here, there is no need for an extended bankruptcy procedure. If the default is due to an exogenous shock, liquidity can be provided right away. If the default is due to lack of effort, then the debtor’s payoffs are changed *ex post* in ways that have been agreed *ex ante*. This is perspective taken by Olivier Jeanne (2001) who argues that “the institution that brings the economy the closest to the first-best is a ‘crisis insurance fund’ that bails out all governments with a rollover crisis *conditional on the fiscal adjustment*”, (p.19, italics in the original). Under his proposed scheme, moral hazard is neutralized by denying bailouts to countries that have not implemented the fiscal adjustment. Jeanne notes, however, the crisis fund would probably have to be a rule-based public agency, first because of ‘time to verify’<sup>18</sup> and second because private insurance contract for sovereigns cannot be made contingent on fiscal effort which is under their control.

At the other end of the spectrum is the special case where the discovery phase is completely unrevealing, so the indeterminacy as to the causes of default can never be resolved. In these circumstances, the contractibility over private benefits cannot be exploited, and ‘constructive ambiguity’ appears to be the only solution, the expected costs to creditors with

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<sup>17</sup>Eaton (2002, p. 13) discusses the idea that “a portion of any loan be held in escrow at the time that it is extended. The escrow account would be turned over to the sovereign as it repaid its loan according to schedule. Upon declaration of a standstill, however, funds would be paid instead to creditors.”

<sup>18</sup>“A private insurer would have strong incentives to renege the contract *ex post* (by not lending in the event of bad news). Even if one assumes that the private insurer can be forced by a court to lend later, it would be too late”, (Jeanne, 2001, p. 21).

reflected in sovereign spreads.

### 3.2 Institutional implications

If financing development by issuing bonds exposes emerging markets to excessive crisis, one response is to limit the use of such debt instruments, Rodrik (1998). Some economists (e.g. Stiglitz, 1998; Williamson 1995, 1999) have discussed the use of explicit *inflow controls* such as those used in Chile intended to change the composition of flows in favour of longer term investment rather than hot money.<sup>19</sup> As Cordella (1998) points out, inflow controls which succeed in shifting the structure of external financing may increase rather than decrease the total volume of finance available for development: “taxes on short-term capital flows by avoiding rational panics, can improve the expected returns of investments in emerging markets, and thus increase the total volume of funds entering the country”, (p.6). In time of crisis, however, the use of *outflow controls* may well be considered, both as a way of conserving scarce foreign currency and of lowering domestic interest rates, Krugman (1998).

The debate between John Taylor and Anne Krueger is, of course, premised on the widespread continuation of bond finance for emerging markets countries *without* sovereign immunity, as is our own discussion of the bankruptcy procedure – where we see an important role for a rule-governed public agency to supply a commitment mechanism which makes private payoffs accessible to the creditors *ex post*. It may be that the required control over the *ex post* behaviour of the debtor could be achieved by official “IMF conditionality” which governs the actions of the sovereign whose debt is being restructured. (Applicants for debt restructuring in the Paris Club are required as a matter of course to agree a programme with the IMF before negotiation with creditors begin.) Thus IMF programmes could play an important role in the international bankruptcy procedure described above.<sup>20</sup> To check moral hazard, of course, it would have to be known in advance that ‘conditionality’ would be used to achieve the contractibility of private payoffs, i.e. the ‘rules’ need to be clear.

As an alternative to an SDRM, Collective Action Clauses have the attraction that they are voluntary and market driven. As discussed earlier, however, there are two problems of implementation, first the need to replace outstanding contracts, by swaps for example, and second the need to aggregate across different instruments, possibly by two-stage debt swaps, see Table 1. Even supposing both can be solved, we believe that private bond contracts, which are typically incomplete and involve creditors deciding what to do *ex post*, are unable to deliver the required degree of protection and pre-commitment. Contracts incorporating

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<sup>19</sup> China attracts massive FDI inflows but strictly limits other forms of external finance.

<sup>20</sup> How does this differ from what happens with IMF “bail-outs” where private creditors who wish to exit can do so using emergency official funding and the IMF can impose conditionality so as to secure repayment? (Jeanne and Zettlemeyer, 2000 provide evidence that official funding is almost always repaid.) If this is known *ex ante*, is it not as if creditors can secure commitment from the debtor? Yes but, given the possibility of exit, they do not have the appropriate incentives: there is a problem of investor’s moral hazard where private creditors fail to monitor. The bankruptcy procedures advocated by Anne Krueger explicitly prevent creditor exit so as to avoid this problem.

Collective Action Clauses do not prevent creditors from suing provided there is a blocking minority in favour, Thomas (2002). Moreover, contracts with majority action clauses may fail to be renegotiation proof after a discovery phase in which the debtor is effort level is confirmed to be ‘bad’, as the debtor may renege on commitments to make ex-post transfers. In other words, a hold-up problem may ensue as now the sovereign debtor has all the bargaining power.<sup>21</sup> Anticipating this, even with majority action clauses, creditors may choose to terminate the project.

Table 1: CACs and SDRM: Some key issues

	Problems of Implementation	Problems of Operation
Collective Action Clauses (voluntary, market driven)	(a) ‘Transition’ (b) ‘Aggregation’	Not litigation proof Not renegotiation proof
SDRM (involuntary, statutory)	Change of IMF Articles needed	Subject to geo-political & ideological pressures

An SDRM backed by an international organisation, acting on behalf of the international community, can solve such a hold-up problem by making the sovereign’s payoffs attachable ex-post. In other words, our analysis of the reason for excessive crisis leads us to choose an SDRM mechanism rather than private contracts. The implementation of the SDRM will, however, require a super-majority vote to change the Articles in the IMF, something that United States alone can block. Even assuming that the Articles can be changed, two delicate issues need to be considered: whose private payoffs should be attached ex post; and to whom should responsibility for overseeing such attachment be delegated? Answering the first question involves issues of political economy which we discuss in Section 4 below. As for the second question, Stiglitz (2002b) argues that, being dominated by creditors’ interests and having adopted the ‘free market mantra of 1980s’, the IMF is not well suited to devise and implement strategies for remedying capital market failures. In response to financial crises in East Asia and Latin America, however, the organisation has shown itself willing to contemplate inflow controls and standstills as part of an SDRM. It is true that recommending outflow controls (and enforced capital repatriation) would not be consistent with its normal practices and procedures.

### 3.3 Asymmetric information, creditor coordination and CACs

The widespread adoption of Collective Action Clauses is far more likely than the creation of a formal SDRM. As reported above, Mexico (and subsequently Brazil) have already issued sovereign debt in NY containing Collective Action Clauses. How will this impact on creditor coordination? We begin by extending the two creditor model discussed in Section 2 to the case with  $n$  creditors, allowing for the possibility that creditors have asymmetric information about future project net worth. We then study a special case of this model with three agents.

<sup>21</sup>This situation arises in Kiyotaki and Moore’s (1997) model of credit cycles where the hold-up problem can only be solved by the provision of collateral.

From the Bayesian equilibria of this game we derive the probability of project termination without collective action clauses and show that introducing collective action clauses lowers the probability of uncoordinated sovereign debt crisis.

### 3.3.1 Creditor coordination with asymmetric information

Consider the following variation of the  $n$ -creditor model in Ghosal and Miller (2003) and Ghosal and Thampanishvong (2003). A sovereign is embarking on a bond-financed investment project, costing  $K'$ , which lasts only 2 periods. All finance is now supplied by  $n$  identical creditors each of whom has invested  $b$ . Each creditor is promised a return of  $r$  in period 1 and  $(1+r)$  in period 2. So long as resources available cover these payments, i.e. cash flow in period 1 is great than  $nrb$  and cash flow in period 2 is greater than  $(1+r)nb$ , the project will run to completion. There is an unanticipated, exogenous temporary shock (bad luck) that lowers that sovereign's capacity to pay in the first period the amount that is due to the bondholders under their contract. The failure to comply with the terms of the debt contract constitutes default. However, conditional on default, it is common knowledge that the project net worth is  $P$ ,  $0 \leq P \leq (1+r)b$ . We will assume that there is incomplete information about  $P$  and creditors receive privately observed signals of the true value of  $P$ .

Assume that acceleration requires a minimum of 25 percent of creditors to act. Label an individual creditor by  $i, i = 1, \dots, n$ . Each creditor chooses an action  $a^i \in \{Quit, Stay\}$ . Let  $N_{a,Q} = \{i, a^i = Q\}$  and  $N_{a,S} = \{i, a^i = S\}$  for an action profile  $a = (a^1, \dots, a^n)$ . Let  $N$  be the set of integers between  $\frac{n}{4}$  and  $n$ . Consider function  $\tilde{g} : N \rightarrow R$  such that  $\tilde{g}(x) = \min\{(1+r)b, \frac{\bar{Q}}{x}\} - L$ ,  $x < n$ ,  $\tilde{g}(n) = \frac{\bar{Q}}{n} - L$ , where  $\bar{Q}$  is the recovery amount if the project is terminated in period 1. If  $x$  creditors accelerate their claims, project terminates. The creditors who accelerate when the others  $(n-x)$  do not, reckon to recover either their initial investment  $b$  plus interest  $rb$  or the full quit value  $(\frac{\bar{Q}}{x})$  minus the privately borne legal costs of quitting  $L$ , leaving the rest of creditors with the residual as in a grab race. If  $n$  creditors accelerate their claims, the project terminates, and each creditor receives the recovery amount divided by total number of creditors ( $n$ ) minus the privately borne legal costs of quitting  $L$ . Consider also the function  $\tilde{l} : N \rightarrow R$  such that  $\tilde{l}(n-x) = \max\{\frac{\bar{Q} - (1+r)bx}{n-x}, 0\}$  where  $x < n$ . Here, liquidation (in asset grab race for a firm) allows the first mover to exit without much loss of value but liquidation is costly for other creditors.  $\tilde{l}(n-x)$  is residual payoff for the second mover in the asset grab race. Remark that  $\tilde{l}(n-x)$  is well-defined for all  $x \in N$  as we must have  $(1+r)bn > \bar{Q}$ ; otherwise, the sovereign debtor would have enough resources to service her debt and would not default in the first place.

Payoffs of creditors are specified as follows:

Suppose  $a$  is such that  $x = \#N_{a,Q} \geq \frac{n}{4}$  (more than 25 percent of the creditors choose to accelerate their claims or choosing to quit)

Then, if  $a^i = Q$ , the payoff to creditor  $i$  is  $\tilde{g}(x)$ ,

If  $a^i = S$ , the payoff to creditor  $i$  is  $\tilde{l}(x)$ .

Suppose  $a$  is such that  $\#N_{a,Q} < \frac{n}{4}$ ,



if  $a^i = Q$ , the payoff to creditor  $i$  is  $P - L'$ ,  
if  $a^i = S$ , the payoff to creditor  $i$  is  $P$ ,  
where  $L' > 0$  and  $L > L'$ .

The legal cost  $L'$  reflects the fact that an individual creditor, who unsuccessfully tries to accelerate the project, incurs a legal fee for doing so but as the project is not terminated, obtains his continuation payoff  $P$ , net of this cost.

Instead of working directly with these gross payoffs, for computational purposes, it is convenient to work with normalized payoffs specified as follows. Define the function  $g : N \rightarrow R$  such that  $g(x)$  is decreasing in  $x$ ,  $g(x) > 0$  for  $x < n$  and  $g(n) = 0$ . Consider function  $l : N \rightarrow R$  such that  $l(n - x)$  is decreasing in  $x$  and  $l(n - x) < 0$  for all  $x \in N$ . Suppose  $a$  is such that  $x = \#N_{a,Q} \geq \frac{n}{4}$ . Then,

if  $a^i = Q$ , the payoff to creditor  $i$  is  $g(x)$   
if  $a^i = S$ , the payoff to creditor  $i$  is  $l(n - x)$

Suppose  $a$  is such that  $\#N_{a,Q} < \frac{n}{4}$ . Then,

if  $a^i = Q$ , the payoff to creditor  $i$  is  $\gamma - \varphi$   
if  $a^i = S$ , the payoff to creditor  $i$  is  $\gamma$

where  $\varphi > 0$ .  $\varphi$  captures the fact that an individual creditor who unsuccessfully tries to accelerate the project, pays a small but strictly positive cost and therefore receives a continuation payoff of  $\gamma$ , net of this cost and  $\gamma \in [-K, 1]$  and  $0 < K < 1$ , where  $\gamma$  is the continuation payoff if the debt is rolled over/creditor not accelerate her claims and the project continues to the next period. Let  $g(\cdot)$  denote the probability distribution over  $\gamma$ . Each creditor observes a privately observed noisy signal  $\sigma^i$  of  $\gamma$ , where  $\sigma^i \in \{\gamma - \varepsilon, \gamma + \varepsilon\}$ , where  $\varepsilon > 0$  and  $i = 1, 2, \dots, n$ . Conditional on  $\gamma$ , the signals are independently and identically distributed over  $\{\gamma - \varepsilon, \gamma + \varepsilon\}$  according to the distribution  $\{p, 1 - p\}$ , where  $0 \leq p \leq 1$ .

Remark that the strategy profile where all creditors choose to quit irrespective of their signal is a Bayesian equilibrium. There exist other Bayesian equilibrium in threshold strategies. In what follows, for simplicity, we restrict attention to the case with 3 creditors. Consider a threshold strategy where for some  $\bar{\gamma} \in [-K, 1]$ ,  $0 < K < 1$  such that for each creditor  $i$ ,  $i = 1, 2, 3$ , (i) if  $\sigma^i > \bar{\gamma}$  then creditor  $i$  stays (ii) if  $\sigma^i \leq \bar{\gamma}$  then creditor  $i$  quits.

### 3.3.2 Bayesian equilibria with 3 creditors

To consider other Bayesian equilibrium in threshold strategies, one needs to fix an individual  $i$ . Then, from the perspective of this creditor, there are there are 2 other creditors using the threshold strategies. Consider the case when creditor  $i$  observes a signal  $\gamma$ . Assume that conditional on the true states of the world, the probability distribution is independent across creditors. Given that  $\gamma$  is the signal of creditor  $i$ , the posterior distribution over states of the world is  $\gamma - \varepsilon$  with probability  $1 - p$  and  $\gamma + \varepsilon$  with probability  $p$ . Hence, these  $\gamma - \varepsilon$  and  $\gamma + \varepsilon$  are two true states of the world for the other two creditors.

Conditional on  $\gamma - \varepsilon$ ,

The other two creditors observe same signal  $\gamma - 2\varepsilon$  with probability  $p^2$

One creditor observes a signal  $\gamma - 2\varepsilon$  while the other creditor observes a signal  $\gamma$ .

This occurs with probability  $2p(1 - p)$

The other two creditors observe same signal  $\gamma$  with probability  $(1 - p)^2$

Conditional on  $\gamma + \varepsilon$ ,

The other two creditors observe same signal  $\gamma$  with probability  $p^2$

One creditor observes a signal  $\gamma$  and the other creditor observes a signal  $\gamma + 2\varepsilon$ . This occurs with probability  $2p(1-p)$

The other two creditors observe same signal  $\gamma + 2\varepsilon$  with probability  $(1-p)^2$ .

We first establish that creditors will use the Bayesian equilibrium. To this end, suppose that threshold of creditor 1 is given by  $\bar{\gamma}$ . Since in this context, we focus on only the symmetric threshold strategies, the threshold of other two creditors are also given by  $\bar{\gamma}$ , at some Bayesian equilibrium. Then,

Two other creditors quit with probability  $[(1-p)p^2 + (1-p)^2 2p + (1-p)^3 + p^3]$

One creditor quits and the other creditor stays, this occurs with probability  $2p^2(1-p)$

No creditors quit. This occurs with probability  $(1-p)^2 p$

Let's consider the payoffs of creditor  $i$ :

If creditor  $i$  quits ( $a^i = Q$ ), his payoff is  $g(3)[(1-p)p^2 + (1-p)^2 2p + p^3 + (1-p)^3] + g(2)[2p^2(1-p)] + g(1)[(1-p)^2 p]$ ,  $g(3) = 0$

If creditor  $i$  stays ( $a^i = S$ ), his payoff is  $l(1)[(1-p)p^2 + (1-p)^2 2p + p^3 + (1-p)^3] + l(2)[2p^2(1-p)] + (1-p)^2 p[\bar{\gamma} + \varepsilon(2p-1)]$

As  $\bar{\gamma}$  is the switching point (threshold), creditor  $i$  must be indifferent between quitting and staying, i.e. solving for  $\bar{\gamma}$  which satisfies the equation that payoff from staying equals to the payoff from quitting. This implies we must have that

$$\begin{aligned} & g(2)[2p^2(1-p)] + g(1)[(1-p)^2 p] \\ &= l(1)[(1-p)p^2 + (1-p)^2 2p + p^3 + (1-p)^3] + l(2)[2p^2(1-p)] + (1-p)^2 p[\bar{\gamma} + \varepsilon(2p-1)] \\ & [-l(1)][(1-p)p^2 + (1-p)^2 2p + p^3 + (1-p)^3] + [g(2) - l(2)][2p^2(1-p)] = (1-p)^2 p[\bar{\gamma} + \varepsilon(2p-1) - g(1)] \\ & -l(1) \frac{[(1-p)p^2 + 2(1-p)^2 p + p^3 + (1-p)^3]}{(1-p)^2 p} + [g(2) - l(2)] \frac{2p}{(1-p)} = \bar{\gamma} + \varepsilon(2p-1) - g(1) \end{aligned}$$

Solving for  $\bar{\gamma}$  yields,

$$\bar{\gamma} = -l(1) \frac{[(1-p)p^2 + 2(1-p)^2 p + p^3 + (1-p)^3]}{(1-p)^2 p} + [g(2) - l(2)] \frac{2p}{(1-p)} - \varepsilon(2p-1) + g(1).$$

It follows that conditional on default the probability of project termination is given by  $Q(\bar{\gamma}) = \int_{-K}^{\bar{\gamma}} q(\gamma) d\gamma$ .

### 3.3.3 The impact of collective action clauses

What is the effect of introducing collective action clauses in this set-up?

In the bonds issued by Mexico with collective action clauses, three things change. First, the percentage of creditors required to accelerate the debt conditional on default increases. Second, once acceleration occurs, the percentage of creditors required to change the financial terms is lowered to 75% from 100%. Third, the percentage of creditors required to change the non-financial terms is increased from 50% from 75%.

Suppose we still assume that acceleration requires a minimum of 25 percent of creditors to act. The effect of introducing collective action clauses then can be modelled as reducing the absolute value of both  $g(\cdot)$  and  $l(\cdot)$ . By doing so, we see that  $\bar{\gamma}$  falls. As  $Q(\bar{\gamma})$  is increasing function of  $\bar{\gamma}$ , the probability of project termination falls as well.

What happens when acceleration requires a minimum of 50 percent of creditors to quit? In this case, the payoff structure of the creditor coordination game changes as follows. Define

the function  $g : N \rightarrow R$  such that  $g(x)$  is decreasing in  $x$ ,  $g(x) > 0$  for  $x < n$  and  $g(n) = 0$ , where  $x$  is the number of creditors who accelerate the claims. Consider the function  $l : N \rightarrow R$  such that  $l(n - x)$  is decreasing in  $x$  and  $l(n - x) < 0$  for all  $x \in N$ . Suppose  $a$  is such that  $x = \#N_{a,Q} \geq \frac{2}{3}$

if  $a^i = Q$ , the payoff to creditor  $i$  is  $g(x)$

if  $a^i = S$ , the payoff to creditor  $i$  is  $l(n - x)$

Suppose  $a$  is such that  $x = \#N_{a,Q} < \frac{2}{3}$

if  $a^i = Q$ , the payoff to creditor  $i$  is  $\gamma - \varphi$

if  $a^i = S$ , the payoff to creditor  $i$  is  $\gamma$

where  $\varphi > 0$ ,  $\gamma \in [-K, 1]$  and  $0 < K < 1$ . By computation, it is checked that the Bayesian equilibrium threshold is now given by

$$\bar{\gamma}' = -l(1) \frac{[(1-p)p^2 + 2(1-p)^2p + p^3 + (1-p)^3]}{2p^2(1-p)} + g(2) - \varphi \frac{(1-p)}{2p} - \varepsilon(2p - 1).$$

Note that as  $\varphi > 0$ ,  $l(2) > 0$  and  $g(1) > g(2)$ , and  $\bar{\gamma}' < \bar{\gamma}$  and again the probability of project termination falls.

We summarize the above discussion as the following result:

**Result 1:** *Introducing collective action clauses always reduces the probability of project termination.*

While this result involves three creditors, Ghosal and Thampanishvong (2003) show that the conclusion goes through in the more general case with  $n$ -creditors – and with debtor moral hazard.

## 4 Political economy aspects of sovereign debt crises: the case of Brazil

The source of the debtor’s incentive problems in the model studied in Section 2 lies in the “non-contractible” nature of the payoffs to the sovereign debtor, i.e. the latter gets benefits which cannot be appropriated by creditors in case of default. What determines the non-contractible payoffs of the government – and therefore the probability of default – is often a matter of political economy. In what follows, we first pose a number of key questions; and then focus on a specific issue: “political contagion” in Latin-America.

### 4.1 Key issues for research

How representative are the government’s priorities of the preferences of its own citizens? What are the consequences of political parties with different ideologies being elected? What happens if creditors can anticipate the consequences of regime change? These are some of the questions that need to be tackled: and on which we would very much welcome suggestions.

Consider an issue that has prominent in the current Argentinian crisis, namely that those responsible for managing the economy have exited, leaving debt for others to pay. In extreme cases, sovereign debtors may appeal to the principle of ‘odious debt’ where a state may justifiably repudiate obligations incurred by tyrants no longer in power, Birdsall and Williamson (2002) and Kremer and Jayachandran (2001). (This may currently apply to Iraq which has \$100 billion of foreign debts incurred under the administration of Saddam Hussein.) We assume that this does not apply in the case of Argentina: but nevertheless it appears that rich and well-informed citizens were able to take their capital out of the country, thus avoiding the precipitate depreciation of the peso.<sup>22</sup> If rich private residents have made enormous capital gains in local currency by exporting dollars from the country – now in default for lack of dollars to service its debt – should they not participate in the cost of clearing up the ensuing chaos? Could the state not demand payment of capital gains tax on the assets “marked to market”, for example; or *in extremis* enforce repatriation in order to ensure the realisation of capital gains (and a massive inflow of dollars)?

This question involves issues of legitimacy and fairness which we do not tackle here. Instead, motivated by recent events in Brazil, we consider how a vote of no confidence in the Left-wing candidate can threaten financial crises and how the international financial institutions can help<sup>23</sup>.

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<sup>22</sup> Smallhout (2001) noted that “the net external interest burden is actually quite modest, external debt payments were \$12.5 billion in 2000 or about 4% of GDP... But Argentines earned an estimated \$6.4 billion or just over 2 % of GDP.” In addition, there may have been private capital flight of \$20 billion dollars in 2001 before the collapse of the peso.

<sup>23</sup> Section 4.2 summarises a recent paper, Marcus Miller, Kannika Thampanishvong and Lei Zhang (2003). An earlier version of the paper is available as CSGR Working Paper No. 113/03.

## 4.2 Contagion and Political Risk in Brazil

After the collapse of the Argentine Currency Board in late 2001, capital flows to Latin America dried up; and in Brazil, country risk rose to over 20 percent in summer of 2002. Being the dominant economy of the region, operating with a floating exchange rate, inflation targets and an internationally respected governor, why, then, should Brazil suffer the same borrowing costs as pre-defaulted Argentina?

Some economists believe that the sudden increase in the sovereign spreads in Brazil might be caused by the *regional contagion*, which triggered a shift of equilibrium in a multiple equilibria context. However, this cannot adequately explain why Brazilian spreads went up in line with Mr. da Silva's popularity. We argue instead that the contagion may operate through *domestic politics* in Brazil. We suggest that there was "guilt by association" as the preceding December 2001 default in Argentina on its sovereign debt obligations damaged the reputation of the Left-wing party in Brazil, triggering exaggerated bond spreads before Lula's election.

In their analysis of the pre-election term structure of future rates, Favero and Giavazzi (2002) have noted that the risk spreads showed a marked increase not at but after the election, specifically in Spring 2003 when the Left-wing party takes office and would rise further thereafter. In actual fact, sovereign spreads have fallen steadily since the election. It is as if the markets have been willing to revise their extreme views in the light of the observed behaviour of the incoming administration: the appointments it has made and the commitments it has undertaken with the IMF, for example. In the paper, we use a model of Bayesian learning to show how avoiding default itself and how the IMF acting as lender of last resort and as a pre-commitment device could lead to the restoration of confidence and a fall in post-election sovereign spreads.

### 4.2.1 Sovereign Spreads and Political Risk

Technically, the influence of political factors on sovereign spreads can be analysed by emphasising differences of preference between two political parties: Left-wing and Right-wing party, competing for power along the line of Alesina (1987). Assume, as a polar example, that the Right-wing party is always expected to honour its debts, while the opposing Left-wing is always expected to default and restructure. Then, in the run up to the election, creditors can use the ex-ante probability of each party being elected to form the expected rate of default – with the outcome of the election determining whether or not default actually takes place.

Consequently, with a Right-wing party in power, but an election looming, sovereign spreads will tend to move in line with opinion polls, as in Brazil 2002 where spreads increased as Mr. da Silva's popularity soared. As the polls swung in favour of Mr. da Silva, sovereign spreads increased sharply: from around 7 percent in March 2002, to around 20 percent in September, as Lula moved from under 30 percent to over 40 percent in the public opinion polls.

That the Left-wing party automatically repudiates its debts is an extreme assumption. Nevertheless, it may capture panic in financial markets, when there are exaggerated fears of

an untried Left-wing candidate.

#### **4.2.2 Learning**

In the months following the election of Mr. da Silva as President, sovereign spreads on the country's bonds declined from a peak of 23 percent in the Fall of 2003 to around 13 percent in January, 11 percent in March 2003 and around 8 percent in June 2003. They must fall further if Brazil is to be able to honour its debts in the medium term; but there is evidence that markets are getting over their initial panic at the prospect of a Left-wing administration.

To account for this decline in sovereign spreads after the election, we appeal to a model of learning. In the Alesina-style political-economy model, it is assumed that policy preferences of both parties are well known. In fact, there was considerable uncertainty about what Lula's economic policies might be. Thus, the markets initially expect default with high probability but revise this down if no default takes place. This learning process conditional on observing no defaults cause the sovereign spreads to continually subside much as has been observed.

The prediction of the political-economy approach, together with learning, is that sovereign spreads will widen before the election as the chances of a Left-wing party taking power increase; they will increase momentarily as electoral uncertainty is resolved by a Left-wing victory; but they will decline over time as (conditional on observing no defaults) the markets learn to trust incoming government.

#### **4.2.3 How the IMF handles confidence crises**

The danger that high risk spreads might trigger default by a Left-wing government when it comes to power can apparently be avoided by the IMF acting as a lender of last resort and as a pre-commitment device. By supplying emergency funds, the IMF can help fill the financing gap: and, by signing an appropriate Letter of Declaration to implement sound fiscal policy and eschew default, an incoming Left-wing party might effectively reduce extreme views of its potential behaviour (so increasing the priors that the markets attach to the prospect that the Left-wing government is "strong" and/or reduce the per-period probability for weak government to default.)

#### **4.2.4 Summary and Conclusion**

In the summer of 2002, John Williamson examined Brazilian fundamentals and politics; concluded that markets had panicked; and commended that the IMF for its policy intervention. In Miller et al (2003), we interpret the Sudden Stop and high sovereign spreads as reflecting the "political equilibrium" in a context where the behaviour of the potential Left-wing president is very uncertain contagion may arise as markets and masses unthinkingly transpose events from neighbouring Argentina to Brazil. The IMF, it seems, can – and did – play an important role in combating this contagion. Perceptions of radical repudiation may fade

as candidates of all parties publicly promise to control fiscal deficits and abide by existing debt contracts, signing Letter of Declaration to the IMF as a form of pre-commitment in exchange for a package of immediate financial support. As models of learning suggest, prior probabilities of a radical repudiation will be revised over time if debts are honoured and repudiation resisted. This has, we believe, taken place in Brazil; and if continued, it offers the prospect of real interest rates falling sufficiently to allow for continued growth without default.

Lula probably owes his financial survival to orthodox IMF policies: how far this has compromised his own political agenda is an interesting and open question.

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