

# DISCUSSION PAPER SERIES

No. 4615

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*INTERNATIONAL MACROECONOMICS*



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Discussion Paper No. 4615  
September 2004

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## ABSTRACT

### Towards a Lender of *First Resort*\*

If interest rates (country spreads) rise, debt can rapidly be subject to a snowball effect, which then becomes self-fulfilling with regard to the fundamentals themselves. This is a market imperfection, because we cannot be confident that the unaided market will choose the 'good equilibrium' over the 'bad equilibrium'. We see here a fundamental flaw in the process of market discipline. We propose a policy intervention to deal with this structural weakness in the mechanisms of international capital flows. This is based on a simple taxonomy that enables us to break down the origin of crises into three components: a crisis of confidence (spreads and currency crisis), a crisis of fundamentals (real growth rate), and a crisis of economic policy (primary deficit). Theory then suggests a set of circumstances in which a *lender of first resort* would be desirable. The policy would seek to short-circuit confidence crises, partly by using IMF support to improve *ex ante* incentives. Theory also illuminates the potential role of collective action clauses (CACs) in eliminating the risk of self-fulfilling debt crises.

JEL Classification: F33 and F34

Keywords: country spreads, financial crises, market discipline and sovereign debt

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\*This Paper was completed while Cohen was a visiting scholar at the IMF research department and Portes was visiting Columbia Business School. It draws on material in our report prepared for the Conseil d'Analyse Economique (Cohen and Portes, 2003). We are very grateful to Laurence Bloch, Eduardo Borensztein and Jean Pisani-Ferry for their help and their comments on our work. We have also benefited from comments at a CAE meeting, at the IMF-Bank of Spain conference (Madrid, June 2004), at the 'Reinventing Bretton Woods' Austrian National Bank conference (Vienna, June 2004), and at the 'Reinventing Bretton Woods' World Economic Forum conference (Rome, July 2004).

Submitted 26 August 2004

## Towards a lender of *first* resort

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### 1. Introduction

The discussions on the international financial architecture that followed the Asian crisis of 1997-98 revived the debate over the international financial architecture. Drawing the lessons of the crisis Stanley Fischer (1999) first proposed that the IMF act as international lender of last resort (ILLR). In November 2001, Anne Krueger, his successor as First Deputy Managing Director of the IMF, advocated a Sovereign Debt Restructuring Mechanism (SDRM) to facilitate a declaration of insolvency for an over-indebted country along the lines of Chapter 11 of the US Bankruptcy Code (Krueger, 2001). One institutional manifestation of the Fischer proposal was the Contingent Credit Line (CCL) facility, which would have enabled a country affected by a contagion crisis to draw on additional lines of credit. No country made use of this facility, however, and it was eventually shelved in early 2004. The Krueger proposal has also not been implemented either. Despite subsequent revisions that reduced the role of the IMF (Krueger, 2002), the proposal was also shelved at the April 2003 meetings, specifically because it would have required an amendment to the Articles (IMF, 2003).

Both these proposals (ILLR and SDRM) have proved too ambitious to constitute a realistic agenda for reform. As argued by many commentators (e.g., Wyplosz, 2003) an ILLR must have at its disposal either the resources to inject an indeterminate quantity of fresh liquidity or perfect information regarding solvent and insolvent financial intermediaries. As the latter assumption is virtually ruled out by the very nature of financial crises, the former is tantamount to giving the IMF the means to create liquidity *ex nihilo*. Such a transfer of monetary sovereignty, which was extremely difficult to implement in the European case, seems totally unrealistic on a world scale. If there is to be a world LLR, it is rather for the large central banks (Fed, ECB and BoJ) to play this role.

Anything along the lines of the Fund's SDRM proposal has also appeared to be infeasible for the same political reason. Setting up an international court with authority over the handling of sovereign debt would entail a substantial transfer of sovereignty, in order to give the court the statutory basis for suspending legal procedures against a country. Nevertheless, there is no doubt that the Krueger initiative dramatically changed the terms of the discussion and at the least gave impetus to the adoption of CACs (see our discussion in Cohen and Portes, 2003).

Beyond these political constraints, these policy developments have also been criticized on a more analytical ground. When financial crises erupt, the action taken by the IMF either as a LLR or through an SDRM cannot ignore the underlying causes. It is not appropriate to treat in the same manner a country that is the victim of an unforeseeable loss of market confidence

and a country where the macroeconomic indicators have long been unsatisfactory and which therefore is borrowing at abnormally high interest rates. It is for dealing with situations in which a country is suffering from a lack of confidence unjustified by any major deterioration in its fundamentals that the ILLR approach would be useful. It is for dealing with situations in which the debt no longer bears a relation to the fundamentals that the procedures involving bankruptcy or debt reduction are essential. Correctly applying such a distinction is very difficult under pressure of time, when the crisis erupts. This is partly because there will always be doubts over the motives prompting investors to withdraw their confidence.

The doubt regarding the nature of crises explains the risk of moral hazard. Because it is not always possible to distinguish the "good" debtors which have been unlucky from the "bad" which have continued to implement unsustainable policies, intervention by the IMF has continually swung between too much and too little. It was to circumvent these difficulties that the Meltzer Commission (2000) proposed confining the Fund's scope for action to only those countries that "pre-qualify" based on strict criteria of indebtedness and transparency. But this proposal offers nothing for the countries that would fall outside the scope of such pre-qualification, and this is hardly feasible.

Another key reason why the distinction between confidence crises and crises of fundamentals is difficult to make is that the former often rapidly turn into the latter: if interest rates rise, debt can rapidly be subject to a snowball effect, which then becomes self-fulfilling with regard to the fundamentals themselves. This is the argument used by Williamson (2002) to characterize the Brazilian crisis: the debt is at a level made unsustainable by high interest rates but which would rapidly be brought down to an equilibrium level (recalling the government's primary surpluses) by low interest rates. Economics is familiar with such multiple equilibria: low rates represent one equilibrium, high rates another. In order to see the potential of these theories, we first propose a simple typology making it possible to break down the origin of crises into three components: a crisis of confidence (spreads and currency crisis), a crisis of fundamentals (real growth rate) and a crisis of economic policy (primary deficit). As we shall report, there is no such thing as a "pure" situation in which the confidence crisis explains the debt crisis, as in the multiple-equilibrium model. On the other hand, there are indeed cases (more in line with intuition) where the most indebted countries spend up to 40% of their accrued debt on interest payments and currency crises.

It is this dual dimension – ambiguity regarding crisis situations, partially self-fulfilling capacity of negative judgments on a country's situation – that leads us to propose a policy intervention to deal with this structural weakness in the mechanisms of international capital flows. IMF Members should be able, we argue, to commit themselves *ex ante*, should they so wish, to an "indebtedness regime" (similar to the "fixed exchange rate regime" to which they subscribed for many years) making it possible for them to carry out preventive action regarding the evolution of debt. The idea is to give them the means to act before the snowball effect comes into play, since analysis of the debt build-up mechanism shows that it takes time, and therefore provides time, before the situation becomes explosive. This "indebtedness regime" would be based on the spreads paid. For the sake of simplicity, let us suppose that a country undertakes never to borrow at spreads greater than 400 basis points. The "indebtedness regime" signifies that the country will take all necessary steps to hold its indebtedness down to a level compatible with this level of interest rates. If the regime is "credible", in other words if investors are convinced that rates will never go above this level, multiple equilibrium is ruled out, in that the mechanism "coordinates" expectations on a low level. Moreover, and in our view more importantly, this indebtedness regime has the merit of

committing the country to a prudent strategy. It would avoid the widespread temptation to allow problems to accumulate before tackling them and in so doing to become vulnerable to a crisis of confidence, which it is then too late to circumvent.

An indebtedness regime of this kind implies active commitment, not only on the part of the country, but also of the IMF. Let us suppose that the country is subjected to an unforeseen shock that widens the offered spreads beyond the maximum to which the country has committed itself. The mechanism we propose is that the IMF should act as a substitute for the markets and lend at the rates to which the country had committed itself (400 basis points in our example) and immediately launch an adjustment program with the country. By hypothesis, any program will be milder if applied before the crisis rather than after. The debt is lower and the country will have "demonstrated" its resolve to act promptly. The preventive measures will avoid questions being posed when it becomes too late, when the only remedies are extreme shock treatment or default.

Obviously, these preventive measures will not solve all the problems. *Ex post*, if a country fails to avert the crisis, steps have to be taken. The resolution of the crisis, through a restructuring of the debt in the case where it is unsustainable, or its consolidation in the case of a liquidity crisis, would take place under the aegis of the IMF, which would be able to make a judgement regarding the nature of the crisis and provide, in appropriate cases, the liquidity enabling the country to maintain a normal level of activity (a procedure akin to the "lending into arrears" of the 1980s). On the side of the creditors, the Collective Action Clauses (CACs) are the essential instrument making it possible to reach rapid agreement. We propose two simple innovations in this respect: first, if the markets themselves do not implement CACs comprehensively, then the principal financial sectors (in particular, New York and London) should adopt a coordinated measure prohibiting debt issues that do not contain CACs; second, we propose the creation, alongside the Paris Club (dealing with sovereign debt) and the London Club (dealing with bank debt) of a new club to handle bond debt, that might be called the New York Club. A slim-line committee to coordinate these three clubs could also be set up.

The rest of the paper proceeds as follows. We first examine the differences between the debt crises of the 80s and the debt crises of the 90s. We show that confidence (i.e. lack of it) plays in the 90s a substantial role in explaining the debt dynamics of a number of countries. We then present a theoretical model in which we show that self-fulfilling debt crises (à la Calvo or Cole and Kehoe) can happen only when debt restructuring is expected to be inefficient, *ex post*. In our model, a country whose fundamentals are not affected by debt dynamics is indeed immune to confidence crises. In cases where this is not the case, in practice the most likely scenario, we then show the benefit of a commitment device on debt dynamics in order to avoid confidence crises. In the last section of the paper, we draw the policy implications of our analysis: CACs to facilitate efficient debt restructuring and an international lender of first resort (implemented by the IMF) to provide the commitment device that precludes self-fulfilling crises.

## 2. The financial crises of the 1990s were different from those of the 1980s

In the period leading up to 1982, when Mexico suspended payment on its debt, spreads were very low, rarely exceeding 200-250 basis points, as most bankers at the time thought that countries do not default. Spreads on both Mexican and Brazilian debt did rise in the few months before the debt moratoria, but the syndicated bank lending of the 1970s and early 1980s showed no signs of recollection of the 1930s. Although spreads did vary somewhat with the characteristics of the borrower, there was no perceptible market discipline. The bulk of the financial crises involved syndicated loans with very low spreads, and the average real rate of interest on sovereign borrowing in the 1970s was negative. The debt crisis of the 1980s was not anticipated by the lenders. The resolution of the crisis took several painful years, during which Latin American economies stagnated – to the point where income per capita returned to the late 1960s level, in what has often been called a lost decade.

The nature of the debt crises changed in the 1990s. The agents are now different. Corporate borrowers have joined sovereign debtors. Lenders are different, too: bondholders rather than bank loan syndicates. The 1980s story, according to which high public deficits created high debt and eventually interest rate rises brought major crises, is not the only one at hand. Confidence crises, through exchange rates or through interest rates, create new scenarios. Crises are more complex: the Asian crises, the Mexican crisis, the Russian crisis give a range of cases that are difficult to subsume under one story. Some crises were expected, some were unexpected, and quite often, in each case, for good reasons.

As examples of "foretold" crises, take the cases of Argentina and Ecuador; at the other extreme, take Korea or Mexico.

### CASE 1

#### FORETOLD CRISES: ARGENTINA, ECUADOR

(data two years before the crisis)

	Argentina	Ecuador
D/X	380%	250%
D/GDP	36%	85%
Spreads (basis points)	623	597
Current account (% of GDP)	-5%	-11%



CASE 2  
 UNEXPECTED CRISES: MEXICO, KOREA  
 (data two years before the crisis)

	Mexico	Korea
D/X	180%	76%
D/GDP	35%	25%
Spreads (basis points)	367	106
Current account (% of GDP)	-7.2%	-1.9%

From the comparison of these two cases, it is fairly clear that Argentina and Ecuador were fundamentally insolvent, at least with respect to one of the two criteria which are commonly used: debt-to-export ratio above 200% and/or debt-to GDP ratio above 50% (note, however, that it takes both indicators to anticipate a crisis, on which more later). Huge spreads were paid, and at the time when the crisis erupted, no lender could claim that it was taken by surprise. Yet despite this apparent market discipline, many lenders were taken by surprise; and the discipline of higher spreads had little perceptible effect on the policies of Argentina or its creditors. Argentina was able to borrow at excessive spreads, which simply worsened its fiscal position and exacerbated the crisis and its consequences. This is a case where a write-down of the debt is needed, in order to return as soon as possible to sustainable growth.

Case 2 is exactly the opposite. No major macroeconomic disequilibria were observable, insofar as the outstanding stocks were concerned; spreads were correspondingly low. In the case of Mexico, however, it is clear that the large current-account deficit was creating liquidity pressures. On the other hand, Korea failed by none of these criteria. Indeed, its weakness came from elsewhere, i.e. the short-term nature of its debt. As the current account demonstrates, however, there was no particular need for a major exchange rate adjustment.

CASE 3  
 FORETOLD CRISES WITHOUT APPARENT MACROECONOMIC DISEQUILIBRIA  
 (data two years before the crisis)

	Turkey	Russia
D/X	194%	121%
D/GDP	54%	26%
Spreads	738	800
Current Account	-0.7%	+0.7%

In Case 3, the sovereign risk pertains to the nature of the debtor. Despite good macroeconomic performance, creditors could examine the macroeconomics and perceive the risk of defaults that the shaky government or the shaky banking system could create. The spreads were correspondingly high.

Let us summarize the discussion so far with the following table.

	High Debt	Low Debt
Low Spread	None	Case 2
High Spread	Case 1	Case 3

Compared to the 1980s, then, it does not appear to be the case that large disequilibria went unnoticed by the markets. As we now discuss, the high-debt/low-spread cell is empty. In this sense, market discipline improved.

### 3. Debt crises of the 1990s: a taxonomy

We present in the Appendix the list of countries which signed a program with the IMF during the nineties. We distinguish three groups of countries according to the nature of the program. Group A ("hard crises") includes all countries which have experienced one EFF (Extended Fund Facility); Group B includes all (other) countries which have experienced more than one SBA (Standby Agreement) in a row (intermediate crises); Group C includes all countries which have experienced only one SBA (short crisis).

Except for a few cases to which we shall return, the three groups behave as one would expect. Debt is high in group A, moderate in group B, low in group C. More specifically, the debt-to-GDP ratio is significantly higher in group A, where it stands at 75%, on average. In both groups B and C it is a little over 50%, which is the conventional wisdom threshold for a risk of debt crisis (see Cohen, 2002). While the debt-to-GDP ratio is a good predictor for being in A rather than in B or C, the debt-to-export ratio is instead a discriminating factor for being in B or C: it stands at 200% for group B (again, 200% is the conventional wisdom number); it stands well below on average for group C, at about 150%.

There are a few exceptions to this broad pattern. In group A we find Russia, which despite good macroeconomic data had to resort to an EFF, in the face of its inability to raise foreign funds (as reflected by the huge spread paid on the debt). Another similar story comes from Colombia, a country where internal politics and the sheer stability of the state are the critical problem, more than any macroeconomic imbalance. In group B there are a few exceptions to the rule that debt-to-GDP is high, but this is often the case with countries such as Brazil or India where it is the debt-to-export ratio which is very high (well above the 200% threshold); again this is the not-so-surprising case of relatively closed countries for which both indicators are needed to assess the overall solvency of the country. The only exception in group B is Uruguay, where both ratios are relatively low and which appears to be a *prima facie* case of contagion from the two risky neighbors. In group C Nigeria is a mirror image of Brazil or India: high debt-to-GDP but low debt-to-export, which is easily explained by the outward orientation determined by oil exports.

An additional statistic shows the share of public debt in GDP for each of the three sub groups. Public debt represents 90%, 80% or 70% in groups A, B or C.

The key to our story is the spread paid on the debt. All countries in group A and B paid high spreads well before (at least two years before) the crisis occurred. At the other extreme all countries in group C were paying low spreads even one month before the crisis exploded. Their crises were basically unpredictable, or if predicted, not expected to last very long.

We can summarize these findings so far as follows: *Major crises (types A and B) are old-style crises: high debt (in the sense of either  $D/GDP$  above 50% or  $D/X$  above 200%) and mostly public. They are predictable at least two years ahead of time.*

#### *The high-spread/high-debt crisis*

Let us now shed some light on the nature of the debt dynamics. The self-fulfilling story is one in which a high spread causes high debt rather than the other way around. Although this phenomenon is theoretically plausible, it is not easy to show empirically that it is indeed convincing. In order to shed some light on this debate, we have decomposed the debt dynamics into the following identity:

$$\begin{aligned} \text{Increase of the Debt-to-GDP ratio} = & \\ & \text{real interest rate} * \text{Debt-to-GDP ratio} \\ & - \text{Growth rate of the economy} * \text{Debt-to-GDP ratio} \\ & - \text{Primary Surplus/GDP} \end{aligned}$$

The real interest rate is the nominal rate (risk free rate + spread) adjusted for the deviation of the exchange rate from PPP. The dynamics are computed up to the year of the debt crisis itself. We present this decomposition below by dividing each of the three terms of the right-hand side by the sum of their absolute values (the sum of absolute value then adds to one). We reach the following results.

	Int+Change	Growth	Deficit
Argentina	0,16	-0,51	0,33
Brazil	0,47	-0,51	0,02
Colombia	0,01	-0,98	-0,01
Korea	0,22	-0,26	0,52
Ecuador	0,42	-0,54	-0,04
India	0,35	-0,49	0,16
Indonesia	0,10	-0,73	0,17
Malaysia	-0,07	-0,49	0,44
Mexico	-0,45	-0,51	0,04
Pakistan	-0,25	-0,45	0,30
Panama	0,07	-0,40	-0,54
Papoua	0,51	-0,37	0,12
Peru	0,25	-0,73	-0,02
Philippines	-0,46	-0,07	-0,47
Russia	+0.50	-0.50	0
Thailand	-0,06	-0,33	0,61
Turkey	0,52	-0,10	-0,39
Uruguay	-0,85	0,00	0,14
Venezuela	-0,41	-0,08	-0,51
Zimbabwe	0,29	-0,50	-0,20

Each item expressed as a fraction of the sum of absolute value

The first term is roughly interpreted as a *confidence premium*, the second term as a measure of the underlying fundamentals and the third term as a measure of the policy choices. We see that on average, the growth component (second column) is the critical factor behind the dynamics of debt. The confidence premium factor (first column) is the second important item, while the deficit itself appears to play the least important role. Some countries are heavily burdened by the confidence crisis term: Brazil, Ecuador, Turkey, Russia are all instances where it almost entirely cancels the growth factor.

This decomposition suggests two policy implications. Given the fact that bad “fundamentals” are also a major part of the story, we conclude that debt write-off may also be needed. Finally, the role of the confidence term suggests that efficient measures (taken ex ante and ex post) could alleviate the importance of that term.

#### 4. Confidence crisis and crisis of the fundamentals: A theoretical benchmark

Self-fulfilling debt crises are a phenomenon whose theoretical rationale has been pointed out by Calvo (1988), Cole and Kehoe (1996, 2001) and others. The intuition is quite simple: perception of high risk raises the spread, which in turn raises the debt service burden, which in turn provokes the crisis. Beliefs are self-fulfilling because the fundamentals are themselves partly endogenous to the beliefs. If default reduces the amount that a country pays to its creditors below what it would normally pay (say down to nothing in the case of outright default) then lenders' perceptions do change how much a country will eventually pay. This is less likely in the case of corporate debt if default simply amounts, say, to changing the management of the firm. As we now demonstrate in a simple model, by avoiding outright default and, say, making, debt repayment contingent on a country's income, orderly debt workouts have the potential to avoid self-fulfilling debt crises. We view this as a major argument in favour of orderly workouts ex post.

The model also touches upon another aspect of self-fulfilling crises. Cole and Kehoe (2001) have shown that debtors which are in the midst of a confidence crisis may want to take drastic corrective action in order to escape from it. We draw upon this result to demonstrate how an ex ante commitment device can reduce the scope of confidence crises. If a country is willing to commit itself not to borrow at high spreads, then under certain circumstances that we explore, this can reduce, indeed sometimes eliminate, the risk of confidence crises.

##### 4.1 A model of sovereign debt

Consider a two period model with time  $t \in \{1,2\}$ . At the beginning of period 1, the country inherits a stock of financial obligation  $D_1$ . From the beginning to the end of the period, the debt has grown from  $D_1$  to  $V_1$  out of sheer interest rate dynamics. At the end of period 1 the country is endowed with  $Q_1$  units of output and then decides on making a repayment  $R_1$  to its creditor. At the beginning of time  $t=2$  the country then inherits a new stock of debt  $D_2$  which is itself turned into future debt obligation  $V_2$  at the end of the period. At the end of period 2, a new endowment of resources and the amount of repayment is made. In period 2, we assume that output,  $\tilde{Q}$ , is stochastic and can take two values :

$$\tilde{Q} = Q_+ \text{ with probability } p.$$

$$\tilde{Q} = Q_- \text{ with probability } (1-p).$$

and we call  $R_2^+$  and  $R_2^-$  the repayments that will be made in period 2 in each of the two states of nature.

Let us finally write debt dynamics as follows :

$$V_1 = D_1(1 + x_0)$$

$$D_2 = V_1 - R_1$$

$$V_2 = D_2(1 + x)$$

in which  $x$  is the interest rate at which the debt is rolled over. Finally, call  $r$  the riskless rate of interest. Assuming here competitive risk-neutral lenders, we have:

$$D_2(1 + r) = pR_2^+ + (1 - p)R_2^- \quad (1)$$

In order to determine how  $R_2^+$  and  $R_2^-$  are determined, let us now introduce the risk of default.

#### 4.2 Default risk

Assume that the country can always decide to renege on its debt and then pay a penalty which amounts to a fraction  $\lambda$  of its income. The analysis will now depend on what happens to the creditors in case of default. We shall examine two cases. In the first instance, we assume that a default involves an outright loss of  $\lambda Q$  that no one can capture, so that default creates a panic. In the second instance, we shall assume that default is efficiently managed by a combination of contractual and institutional measures, so that the debt due is scaled down appropriately in an orderly workout.

##### 1) Case 1: outright default

Default will happen in the bad state if

$$D_2(1 + x) > \lambda Q_-$$

Assume also, for the time being, that

$$D_2(1 + x) < \lambda Q_+$$

(otherwise the country would default in all cases and would then find no lenders at time 1). In that case, we can write (1) as:

$$p(1 + x) = 1 + r$$

so that default (in the bad state of period 2) occurs if:

$$\frac{1}{p}D_2(1 + r) > \lambda Q_-$$

## 2) Case 2: orderly workout

Assume that default is not just a deadweight loss, but instead the trigger for renegotiation. In the context of our model, let us then assume that large debt can be written down in case of a bad shock. Again call  $x$  the interest due in period 2. Restructuring the debt means that the repayments will be scaled down to what the country can afford, namely

$R_2 = \text{Min}[\lambda \tilde{Q}, D_2(1+x)]$ . In that case, the competitive equilibrium for the banks imposes the following no-profit condition:

$$D_2(1+r) = pD_2(1+x) + (1-p)\lambda Q_- \quad (1')$$

### 4.3 *Equilibrium strategies*

For simplicity we shall assume that the debtor attempts to

$$\text{Maximize : } u(C_1) + \beta E_1 \tilde{C}_2$$

in which  $u(\cdot)$  is a concave function and  $\tilde{C}_2$  is consumption in period 2, a stochastic variable that depends on the state of nature. (The simplicity of choosing a linear function in period 2 is aimed at mimicking long run dynamics, see e.g., Fischer 1980).

Whichever repayment profile will be implemented, we then see that the first period problem, here, will always appear to be equivalent to maximizing:

$$J_x = u(Q_1 - R_1) + \beta E_1 Y_2 - \beta(1+r)[V_1 - R_1] \quad (2)$$

in which  $E_1 Y_2 = pQ_+ + (1-p)(1-k)Q_-$ , in which  $k = \lambda$  in the case of outright default in the bad state of nature in period 2, and  $k=0$  otherwise. This is formally equivalent to:

$$\text{Maximize } u(Q_1 - R_1) + \beta(1+r)R_1 \quad (2')$$

We then see, given the linearity of period 2 utility, that the problem such as it is stated here always has a unique solution:

$$u'(C_1^*) = \beta(1+r)$$

The country seeks to guarantee a certain level of consumption in period 1 and bears the consequences, whatever they may be, in period 2. Since we know that  $Q_1 = C_1 + R_1$  this sets the level  $R_1$  that the country is willing to repay (perhaps borrow if  $R_1$  is negative) and a corresponding level  $D_2^*$  of debt to be borrowed at the end of period 1. For a given value of  $V_1$  this translates one for one into higher values of  $D_2^*$ . In the sequel we assume  $D_2^* > 0$ .

#### 4.4 The potential for multiple equilibria

##### Case 1: outright default

If the amount of debt  $D_2^*$  borrowed by the country is such that:

$$p\lambda Q_- \leq D_2^*(1+r) \leq \lambda Q_-$$

there is a risk of multiple equilibrium, in the case where renegotiations take place in the second period. At the riskless rate the country is safe in both states of nature; at the risk-adjusted rate, it will default in the bad case, justifying the risk premium. All then depends on how lenders expect the country to behave in case of a bad shock.

##### Case 2: orderly workouts

We can now readily see that self-fulfilling crises would be impossible in the second case in which debt renegotiations are possible ex post. As is straightforwardly apparent from

$$D_2(1+r) = pD_2(1+x) + (1-p)\lambda Q_- \quad (1')$$

one sees that :

$$D_2(1+x) > \lambda Q_- \Rightarrow D_2(1+r) > \lambda Q_-$$

In other words, if the country plans to default (i.e. here not to pay the debt in full) at the risk adjusted rate, it would also default at the riskless rate. Contrary to the previous case, here a country *cannot* be drawn into a self-fulfilling debt crisis by worried creditors. This can be summarized as follows:

*Proposition* : An ex-post efficient debt resolution mechanism destroys the risk of self-fulfilling debt crisis.

The intuition behind this proposition and its (lack of) generality is straightforward. A self-fulfilling debt crisis originates from the fact that the fundamentals out of which the debt is repaid may be endogenously shifted in case of outright default. By raising the payment falling due, the debt contract may shut the access to a stream of income that does occur in the bad state of nature. When an efficient debt workout is implemented instead, the fundamentals  $\{\lambda Q_+, \lambda Q_-\}$  are unaffected by the debt contract. One sees that any first period action that would have a bearing on second period output would potentially turn around our results. With debt overhang, even ex post rescheduling could deter investment, although as shown in Cohen (1993) this could also be turned around by an appropriate rescheduling strategy (for an analogue in the area of venture capital, see Chamon, 2002).

#### 4.5 Ex ante devices to avoid self-fulfilling debt crises



Assume however that there is no way to ensure ex-ante that there will exist ex-post an efficient mechanism. In the zone of multiple equilibrium the country *may* want to restrain its debt below the level that is suggested by the myopic optimization of (2'). In order to see why, call  $\bar{R}_1$  the level of repayment for which:

$$\frac{1}{p}(V_1 - \bar{R}_1)(1+r) = \lambda Q_2^- \quad (2)$$

which is *the level of repayment above which the country can avoid the self-fulfilling crisis*. If it happens that:

$$u[Q_1 - \bar{R}_1] + \beta(1+r)(\bar{R}_1 - V_1) + \beta \bar{Q}_2 > J_x(D_2^*)$$

then the country will decide to repay more than it would be rational to do otherwise in order to avoid the risk of multiple equilibrium. Rewriting the condition, this will happen iff

$$\beta(1-p)\bar{Q}_2 \geq [\text{Max}_{R_1} [u(Q_1 - R_1) + \beta(1+r)R_1]] - [u(Q_1 - \bar{R}_1) + \beta(1+r)\bar{R}_1] \quad (3)$$

This is the more likely if (1-p) (the risk of a bad shock) is large. For small risk instead the country will never depart from Program (1). Otherwise the country will accept to “over-repay” its debt in order to avoid the risk of a big interest hike.

#### Lender of first resort

Note that the country would want to implement  $\bar{R}_1$  only in order to get the riskless rate; if it is denied the riskless rate, then the self-fulfilling trap remains. If lenders set the price first before the country decides on how much debt it takes, the incentive to behave prudently disappears. This is where the IMF can step in. By giving the country enough liquidity to settle the terms of new borrowing, giving the market enough time to gather the relevant information on the country's policy (on which we assume the IMF has superior knowledge), the Fund makes it possible for the ex-ante trap to disappear. In the more general setting of Cole and Kehoe, it takes T periods for the country to implement a tough policy that allows the country to escape the bad equilibrium – this would be the time frame where the commitment is needed.

*We refer to this situation as one where a lender of first resort is needed: the country still has access to the financial market, but at a price that does not incorporate its willingness to take appropriate action to restore confidence.*

Of course, this should not keep the lenders inactive. They have to see through the programme to make sure that it is indeed sufficient to bring the country into the safe zone.

#### Lender of last resort

It may however be the case that the country could actually default on its debt in period 1. This will happen if  $D_2(1+x) \geq \lambda Q_+$ . At the risk-adjusted interest rate no new lender will appear in period 1. In the self-fulfilling debt crisis regime, this may happen despite the fact that  $D_2(1+r) \geq \lambda Q_-$ , that is despite the fact that the country might be entirely solvent in the

safe equilibrium. Mathematically, this could happen if  $Q_- \geq pQ_+$ . In that case, failure to coordinate on  $\bar{R}_1$  may have devastating implications. The country may want to implement  $\bar{R}_1$ , but if not trusted has to default immediately.

*We can refer to this situation as the more traditional one where a lender of last resort is needed. The country has lost its access to the financial market and must rely on a lender that trusts it in order to return to solvency.*

We see, however, that there are actually two LLR cases. The first case is one where the country wants to take action to restore confidence and needs to buy time. The LLR that is needed here is a *contingent* LLR, which intervenes under the condition that the country implements the programme. But this is valid only for certain values of the debt stock. Beyond that level, we find a case which is more conventional. This the *big bail out* case, where no action from the country can restore confidence. What is needed to restore confidence is a big window at the riskless rate. This is the pure case of a confidence crisis with no exit unless a confident lender steps in.

#### **4.6 Conclusion of the model**

We then see that the debt of a country can take four critical values.

One value, call it  $D_a$ , above which the country has to pay a risk premium which is justified by an intrinsic risk of default in period 2

One value, call it  $D_b < D_a$ , which is such that within the range  $[D_b, D_a]$ , a multiple equilibrium can occur.

One value  $D_d$  such that  $D_b < D_d < D_a$ , which is such that within  $[D_b, D_d]$  the country will want to shift to the safe zone, through tougher repayment, but would not default if denied the riskless rate. This is a zone for a lender of *first* resort.

One value  $D_c$  such that  $D_d < D_c < D_a$ , which is such that within  $[D_b, D_c]$  the country will want to shift to the safe zone, through tougher repayment, but would default if denied the riskless rate. This is a zone for a *contingent lender of last resort*.

Finally the range  $[D_c, D_a]$  is the large *bail out* case, where only fresh money at the riskless rate can avoid default.

## **5 Our policy implications: a lender of *first* resort and CACs**

### *5.1 Lender of first resort*

Let us now follow the insights of the theoretical model that we have presented to highlight its policy implications. In the case of a “pure” confidence crisis, *market discipline is dysfunctional*: fears of default create high spreads and raise debt to unsustainable levels. If all

creditors could agree on lending at the riskless rate, the country would indeed be safe and the fear of default could be overcome. On the other hand, in the very nature of self-fulfilling crises, if one creditor expects other creditors to lend at punitive rates, then it would have to join the crowd and also charge the high rate. We have seen however that there are two cases at hand: One in which confidence lost can only be restored by big bail outs; and another where the country may be *willing* to act in order to restore confidence, but the markets do not give it the time to do so before raising spreads to levels that lead to a self-fulfilling crisis. In order to cope with this second case, we argued that a lender of first resort might be needed. Let us proceed here to see how it could work in practice.

Assume that a country manages to commit itself *not* to borrow at punitive rates. Think for instance of a kind of "usury law" that the country would apply to itself, forbidding it to borrow above a given interest threshold, say a spread over 400 basis points. In the model of self-fulfilling debt crises of the kind that is analyzed in the model above, a debtor that is the victim of a confidence shock may *want to get out of the danger zone by taking stringent actions*. A country which could have gained credibility in reacting to such fears may buy time to get out of the danger zone.

Let us now investigate what it takes to make such a mechanism credible. Assume that a country initially borrows at low spreads: think of Mexico today, and assume that a new shock (fall in the price of oil...) suddenly lowers the market's assessment of its creditworthiness. The country still has market access, but at terms that may not take account of its willingness to take appropriate action to deal with the shock. If the country accepts higher spreads, it "gambles for resurrection" by taking the chance that things will eventually settle down, or simply buys time in order to make internal adjustments. The problem with this option is that if spreads do not return to sustainable levels, the debt will meanwhile spiral upwards, making it more difficult *ex post* to get the country to act decisively. For a country that is committed to (say) a 400-basis-point spread, the IMF should work with the country on an analysis of the cause of the problem and of the remedies which could resolve it. A programme would then be designed, which, if agreed upon by the country, could grant access to IMF money if needed.

Nothing should be automatic in this process. Countries signal *ex ante* their willingness to avoid the snowball effect of rising spreads and rising debts and seek to avoid it at an early stage. But IMF support remains conditional on taking appropriate measures, so that it is not a free lunch. Furthermore, although the IMF will charge a spread below the (excessive) current market rate, it will still be substantial – indeed, it will be the 'trigger' rate, judged to be just at the limit that the country can 'afford'. But the Fund programme and its implementation will give the country credibility that could soon restore market access at or below the 'trigger' rate. This is, then, an appropriate *catalytic role for IMF lending*. Note that the absence of automaticity avoids the danger of overlending as the country's market rate approaches the 'trigger' – the markets cannot simply assume that this is a ceiling at which an automatic bailout would kick in.

Although there is no automaticity in the mechanism, there is also no requirement that the country or the IMF need distinguish *ex ante* between a potential crisis of fundamentals and a potential self-fulfilling confidence crisis. The country acts and the Fund responds when spreads reach the 'trigger' level, regardless of the fundamentals. Only subsequently, in the formulation of the IMF programme, does the Fund assess the fundamentals.

Note also that there is no question of the country having to ‘tie its hands’ ex ante and then confronting a time-consistency problem. The point is that in the circumstances appropriate for the ILFR mechanism, the country will *want* to utilize it and to take on the appropriate Fund programme. This is incentive-compatible.

One may fear that the informational content of spreads will be reduced as they become a policy variable. It is true that lenders, being aware that countries will take actions against rising spreads, will change their pricing policy. If, as a result, spreads become lower, this is in itself a good thing as it reduces the snowball effect. But it is very unlikely that they could fail to detect a country that becomes insolvent. Indeed, actions to correct imbalances are voluntary, not automatic. Lenders must then keep track of a debtor’s solvency. But the policy may achieve the objective of making self-fulfilling spread crises if not impossible, at least less likely.

The ‘trigger’ rate is similar to a guaranteed price or rate of interest on the country’s debt. Since debt instruments are priced as present values of the expected future stream of payments (allowing for possible default), our proposed facility would result in some distortion of debt prices at any date, regardless of whether on that date the risk premium hits the trigger level or is below it, as long as agents expect that there are possible paths leading to states in which the market country risk rate would exceed the trigger level. That is, the ‘contract’ with the IMF would affect the rate of discount on future debt payments and hence affect the conditional expected present values as of any date (we owe this point to Enrique Mendoza). But this distortion seems a small price to pay for the advantages of the scheme.

It might also be feared that the amount of lending necessary to re-establish confidence could be very large. We do not think this likely, even in the case of a large country, simply because the mechanism would kick in before the debt reached unsustainable levels – indeed, while the markets were still offering access, although at a potentially unsustainable, destabilizing spread. There could be a problem, however, if an exogenous shock (e.g., a rise in US interest rates) hit all debtors simultaneously. Spreads are empirically an increasing function of the overall level of rates, so we might see many countries hitting the ‘trigger’ spread simultaneously. The problem could be avoided by fixing the ‘trigger’ as a margin over the average EMBI spread, but this would not really deal with the possible self-fulfilling crisis – it might well be the case that if the average EMBI spread were to rise sufficiently, indeed many countries could face self-fulfilling confidence crises. We may therefore think that the ILFR mechanism is more appropriate for individual cases – still, it is admittedly not clear how to draw the line, if line there must be.

Nevertheless, the great merit of this approach is that it allows the country to take very early corrective actions, with the support of IMF loans. By acting early the measures should not be daunting. By showing its willingness to act, the country further boosts its reputation, not too late as is often the case, but early on: when the country can still see the benefit of raising its profile in the eyes of international investors.

In our view this mechanism could replace the now defunct Contingent Credit Line Facility, although it is quite different both in intent and design. The CCL was created to help “first-class policy” countries to deal with contagion crises. As Stanley Fischer emphasized, such countries do not need to be “perfect”. They need to obey international standards such as the Basle Committee’s Core Principles for Banking Supervision, the code on Transparency in Monetary and Financial Policies, etc. The country must have enjoyed “constructive relations

with its private creditors and be taking appropriate measures to limit its external vulnerability”, the latter including exchange rate viability and the absence of arrears on sovereign debt. The idea was to create a “first-class” policy straitjacket that discriminates between the implementation of good and bad policies and eradicates the moral hazard risk. The reason why no country ever decided to use the CCL was the fear of sending a wrong signal to the market, despite the quasi-pre-qualification clauses that were attached to it. Our mechanism instead is one which only relies on market signals (spreads), so that it would not run into such a risk. The reason why we attach so much importance to spreads is that they both reveal a problem and contribute to creating it.

## 5.2 CACs

Clearly, this ex ante device does not solve the ex post problem. In the absence of a SDRM, ex post efficient renegotiation remains important. Indeed, an ex post efficient debt resolution mechanism would make superfluous our ex ante mechanism if it could be made fully credible. We therefore support a new institutional framework that would operate in the case of a ‘solvency crisis’, when debt restructuring would be necessary.

There would first be new contractual arrangements: CACs. Debt contracts are incomplete, and as we have seen, the consequent problems are more severe for international lending. The institutional and legal structure for such lending must respond to this fundamental problem. The broad phrase ‘collective action clauses’ has been extended to cover a wide range of proposals. As specified in Eichengreen and Portes (1995) and supplemented recently by Taylor (2002), these would bring into bond contracts (and indeed to bank lending instruments) a range of clauses that would, we believe, promote orderly workouts of international debt, rather than the chaotic sequel to default that we observe now, for example, in the Argentine case. These would include initiation and engagement clauses detailing how negotiations would proceed; a clause permitting changes by a qualified majority in the terms of the debt, including amounts and dates payable; a sharing clause that would require pro-rata distribution to all bondholders of any payment made to any one of them; and a nonacceleration clause to avoid having one missed payment trigger an immediate full repayment obligation. An additional contractual innovation that would facilitate restructurings would be to utilize the trust deed form for bonds (common under UK law but not in New York – see Buchheit and Gulati, 2002). Here the trustee acts for all holders of a given security and centralizes enforcement of any decisions (in particular, the trustee shares among the bondholders the proceeds of any settlement).

In addition to the existing Paris Club and London Club mechanisms, which deal with debt to governments and to banks respectively, there would be a permanent (but ‘light’) bondholders committee – the ‘New York Club’, say. It would look not unlike the previous CFB and FBPC. It would oversee bondholders’ negotiations with the debtor. There might also be a new mediation agency – again, an administratively ‘light’ structure that would coordinate the Paris Club, London Club, and New York Club, primarily ensuring the timely exchange of information and comparison of assumptions. It would verify claims and oversee bondholder voting. It might take on other roles, *e.g.* endorsing (or not) a proposed standstill. The proposal of the Institute for International Finance to bring all creditors into a single negotiating committee seems unnecessarily to override the Paris and London clubs, existing structures that work efficiently.

The markets now seem to be accepting CACs more or less universally, since the Mexican issue of February 2003. But if the process reverses, there is a relatively simple, feasible way of implementing these proposals. The mandates of the American SEC and the British FSA include duties to protect investors and to maintain orderly markets. That is sufficient justification and authority, without new legislation, for them to intervene. It is clear from the case of Argentina that those markets were and are disorderly and that investors have not been adequately protected against the eventuality of default by having adequate post-default procedures in place.

Thus we propose that the American, British and other major financial center regulatory authorities stipulate that bonds issued or traded in their markets must include CACs and other workout-friendly clauses. The IMF could organize and indeed help to fund a voluntary exchange program (with enhancements) for outstanding stocks of securities without such clauses. And the Fund should make access to the SRF (indeed, any Fund programme) open only to countries that use CACs.

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## Appendix

### Taxonomy of Debt Crises

CRISIS A (crisis = 1 EFF ( <i>Extended Fund Facility</i> ))									
	(t): year of agreement		Debt/ GNP			Debt/EXP			Public debt as share of long -term debt ***
	date of prog.		(t-2)	(t-1)	(t)	(t-2)	(t-1)	(t)	
Algeria	May -95	EFF	54.2	74.3	84	219.5	277	265.6	100
Argentina	Feb-98	EFF	35.8	38.7	48.5	331.2	362.4	380.4	74.8
Colombia	Dec-99	EFF	34.9	34.5	42.1	186.6	225.4	217.2	62.7
Egypt	Sept-93	EFF	100.2	78	67.2	240.4	180.6	181.9	97.8
Gabon	Nov-95	EFF	99.8	113	102.8	144.6	160.6	148.9	100.0
Indonesia*	Aug-98	EFF	58.3	65.3	167.9	219.3	206.9	262	57.6
Jamaica	Dec-92	EFF	122.8	132.9	147.4	189.8	184.9	173.5	99.2
Jordan	Feb-96	EFF	132.4	126.2	121.7	185.7	167.6	151.7	99.6
Pakistan	Oct-97	EFF	49.4	45.7	47.5	252.2	249.7	263.9	92.3
Panama	Dec-97	EFF	68	68.3	65.3	83	76.4	75.4	97.4
Peru	June-99	EFF	50.1	53.8	57.8	321	332.4	320.6	85.6
Philippines	June-94	EFF	61.2	64.9	59.9	187.1	187.3	161	93.2
Russia**	March-96	EFF	37.9	35.3	29.7	156.7	129.6	119.5	100.0
Yemen	Oct-97	EFF	178.1	137.6	76.7	190.5	174.6	103.6	100.0
Zimbabwe	Sept-92	EFF	38.2	41.1	62.9	159.6	172.4	219	91.5
	Average >		74,8	74,0	78,8	204,5	205,9	203,0	90,1
* political and economic consequences of the Asian crisis									
** plus an SRF ( <i>Supplemental Reserve Facility</i> ) component in 07/98									
*** 3-year average									

<b>CRISIS B (crisis = 2 or 3 consecutive SBA)</b>									
	(t): year of agreement		Debt/GNP			Debt/Exp			Public debt as share of long-term debt ***
	date of prog.		(t-2)	(t-1)	(t)	(t-2)	(t-1)	(t)	
Brazil*	Dec-98	2SBA	23.5	24.1	31.4	302.5	291.6	372.8	55.8
Costa Rica	Aug-91	3SBA	91.2	68.8	74.6	236.2	179.4	174.8	91.5
Dominican Rep.	Aug-91	2 SBA	63.3	64.9	61.9	164.9	195.8	197.5	97.3
El Salvador	July-95	3SBA	29.4	27.6	27.7	92.9	83.7	82.7	99.7
Ecuador**	Dec-91	3SBA	97.5	97.5	97.5	291.3	291.3	291.3	97.4
India	Jan-91	2 SBA	26	26.7	32.5	318	330.9	317.2	97.8
Papua N.G.**	July-91	3SBA	69.2	69.2	69.2	119.5	119.5	119.5	60.7
Turkey*	Dec-99	2 SBA	47.1	47.1	54.3	157	155.8	194	67.8
Uruguay *	March-99	3SBA	33.5	34.9	36.8	138.5	159.8	174.9	94.0
	average >		53.4	51.2	54.0	202.3	200.9	213.9	84.7

\* Brazil, Turkey and Uruguay also benefited from SRF combined with SBA (2 for Brazil, 1 for Turkey and Uruguay)  
\*\* 3 SBA spread over the 1990s. Data in (t) are averages for the period 1990-2000

<b>CRISIS C (crisis = 1 SBA)</b>									
	(t): year of agreement		Debt/GNP			Debt/Exp			Public debt as share of long-term debt ***
	date of prog.		(t-2)	(t-1)	(t)	(t-2)	(t-1)	(t)	
Korea	Dec-97		25.4	27.4	32.8	76.1	83.8	84.9	61.6
Indonesia	Nov-97		64.6	58.3	65.3	226.7	219.3	206.9	62.0
Malaysia*	July-97		40.6	41.3	49.8	39.9	41.8	49.3	55.4
Mexico	Feb-95		33.6	34.4	61.1	195.1	179.4	172.5	82.5
Nigeria	Aug-00		103.4	93.4	92.9	257.7	189.9	146.8	99.0
Thailand	Aug-97		50.5	51.3	62.6	112.1	120.2	122.7	37.0
Venezuela	July-96		65.18	47.1	50.18	190.87	157.11	128.58	93.1
	average >		54.7	50.5	59.2	156.9	141.7	130.2	70.1

\* Malaysia has not asked for IMF aid. July 97 is the date of the floating of the currency.

### Pre-crisis spreads

	> -1 m.	> -6 m.	> -6 m. to -1 yr	>-1yr	> -1 to -2 yrs
<b>Crisis A</b>					
Argentina	3413.7	2051.8	795.2	1428.3	622.5
Russia	1399.6	869.0	492.5	682.2	
<b>Crisis B</b>					
Brazil	1030.1	1030.1	444.7	597.5	363.7
Ecuador	2184.9	1527.8	1135.7	1333.3	596.9
Turkey	591.8	503.9	462.9	483.6	737.9
<b>Crisis C</b>					
Indonesia (sov)	253.51	257.64	261.63	259.62	
Korea (corp)	270.5	136.1	74.8	105.7	
Mexico	285.2	263.7	252.1	257.9	366.9