Analytical Issues on LDC Debt: A Survey

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1. INTRODUCTION

This paper surveys the theoretical literature on the 1980s debt crisis. The extent of this literature forces us to choose, from the numerous analytical issues raised by the crisis, the following four which appear to be particularly important.

First, the issues related to the absence of bankruptcy laws in international debt contracts. Since such laws do not exist, why did the commercial banks in the industrialised countries lend so massively to the less developed countries (LDCs) in the 1970s?

Second, the issue of the optimal lending (or debt rescheduling) strategy at the onset of the crisis in 1982. What is the rationale behind this strategy and what are the main difficulties encountered when trying to implement it?

Third, the question regarding the so-called debt overhang. What is involved in the claim that LDC's poor economic performance can be explained by such countries' high levels of external indebtedness, and how can debt relief help to improve such performance?

Fourth, the issues raised by the so-called market-based debt-reduction schemes. Should a debtor country spend foreign reserves to retire its own debt at market prices? Who benefits from such market operations, the debtor country, its foreign creditors, or both? Should foreign aid be provided for LDCs to retire their debts at market prices?

The paper is structured as follows: the first two sets of questions, namely the theory of credit markets where bankruptcy laws are absent, and the analysis of debt reschedulings are contained in Sections 2, 3 and 4. Section 5 is on the debt...
overhang, Section 6 describes market-based debt-reduction schemes, and Section 7 concludes.

2. INTERNATIONAL CREDIT MARKETS WHERE BANKRUPTCY LAWS ARE ABSENT

A distinctive characteristic of international credit markets is the lack of legal mechanisms to enforce loan contracts. However, when borrowers and lenders are engaged in a long-term relationship an international debt agreement can be implicitly enforced. This can be demonstrated by means of the following Repeated Prisoner’s Dilemma argument from implicit contract theory.\(^1\)

\[\text{a. Avoiding Defaults can be Welfare-Improving for both Creditors and Debtor Countries: The Repeated Prisoner’s Dilemma}\]

The implicit contracts approach was first developed in a simple example, namely the Repeated Prisoner’s Dilemma made up of a series of one-stage Prisoner’s Dilemmas played between the same two parties. The parties can identify each other and recall exactly what happened each time the game was played in the past. They may therefore use strategies in which current actions are governed by their past experience.

To see how such strategies can enforce cooperation, it is worth analysing the one-stage Prisoner’s Dilemma first (Crawford, 1987). Let two parties have the ability to choose between two actions called responsible behaviour (\(R\)) and cheating (\(C\)), and consider the following payoff matrix:

\[
\begin{array}{c|cc}
 & R & C \\
\hline
R & 5,5 & 1,6 \\
C & 6,1 & 2,2 \\
\end{array}
\]

In this figure, the party that chooses between rows has its payoffs listed first in each cell of the payoff matrix, and the payoffs of the party who chooses between columns are listed second. The game is designed so that cooperation (i.e., both parties behaving responsibly) Pareto-dominates cheating by both parties. It is nevertheless in any party’s individual interest to deviate unilaterally from cooperation (i.e., to cheat) no matter what he expects his partner to do (because \(6 > 5\), and \(2 > 1\)).

\(^1\) See Crawford (1987) for an extensive survey on implicit contracts and international debt.
Thus, when the two parties involved cannot make binding contracts before they play the game, cheating by both of them is the unique Nash equilibrium even though it leads to an outcome that is collectively irrational, i.e., inefficient.

Let us now look at the case where the two parties are engaged in a long-term relationship. Then, repeating the one-shot Prisoner’s Dilemma opens the scope for cooperation when the time horizon is infinite and when both parties discount the future at constant, equal rates. In particular, in the infinitely repeated Prisoner’s Dilemma, cooperation in all periods can be sustained by the threat of the other party cheating in all subsequent periods \( t' > t \), if one deviates from cooperation at a given time \( t \). More formally, the pair of strategies \((S, S)\) — where \( S \) is defined as: ‘I cooperate until I detect cheating by the other party, in which case I cheat in all subsequent periods’ — is a Nash equilibrium. Indeed, given that the second party follows that strategy, the first party must compare at any time between \( S/1 - a \) (where \( a \) denotes the discount factor) if it sticks to cooperation (i.e., if it plays \( S \) itself), and \( 6 + 2a/1 - a \) if it deviates from cooperation at that time. Responsible behaviour is thus preferred by the first party if, and only if, \( a > 1/4 \). In words, as long as the discount factor is high enough the strategy \((S, S)\) supports cooperation in the Repeated Prisoner’s Dilemma.

With regard to international debt, the Repeated Prisoner’s Dilemma can be viewed as a highly stylised model of a long-term loan agreement (see, for example, Sachs, 1982). Cooperation in this context means that the borrowing country does not repudiate its external debt, and that the creditors do not stop providing new loans when the country is in need of continued refinancing.

Note, however, that the cooperative outcome just described relies on punishment schemes (like the one specified in the above strategy \( S \)) which are not renegotiation proof. In particular, in the above example both parties could obtain more by renegotiating whenever one party unilaterally deviates from \( S \) than by behaving irresponsibly forever. Thus, allowing for renegotiation opens the scope for the default risk to be positive in the above Repeated Prisoner’s Dilemma.

\[ b. \text{Creditors' Behaviour in the Presence of Default Risk: Credit Rationing, Time Inconsistency, and Debt Rescheduling} \]

Since Hellwig (1977), we have been able to identify some of the crucial features

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2 If the time horizon were finite, a standard argument shows that rationality would require cheating in every period. If both parties knew that they are in the last period, and know that they both know, and so on. Then, by the same argument as in the one-shot Prisoner’s Dilemma, they would both cheat in that period. This, in turn, implies that there are no gains for any party to behave responsibly in the previous period when this party rationally anticipates the last period cheating. And so on, back to period \( t = 1 \).

3 Or, more precisely, a subgame perfect equilibrium.

4 In particular, the risk of default would be positive when the two parties involved cannot credibly precommit themselves not to renegotiate.

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that characterise the creditors' behaviour in the presence of default risk.\(^5\) He formalises the problem of a creditor who seeks to avoid bankruptcy costs by imposing credit ceilings — when, in particular, the creditor realises that the borrower's debt burden is already 'too high'. Such ceilings, set \textit{ex ante} by the creditor, will in turn affect the consumption decisions taken by the debtor; and, in particular, the debtor will adopt a more conservative consumption behaviour. However, the credit ceiling is itself time inconsistent: such a ceiling, although optimal \textit{ex ante}, may become non-optimal \textit{ex post} (i.e., after the consumption decisions of the debtor have been taken), since at this time it can be in the creditors' own benefit to avoid bankruptcy costs by offering a relaxation of the credit ceiling (i.e., by offering debt rescheduling or new lending). But, then, if the debtor correctly anticipates this time inconsistency, his consumption behaviour will be 'less conservative'. Hence, a moral hazard problem.

A different view on the creditors' behaviour in the presence of default risk is taken by Eaton and Gersovitz in their (1981a) seminal paper. In this paper, unlike Hellwig's (1977) which is inspired by the corporate case, Eaton and Gersovitz consider the case where a debtor country derives utility from consumption (out of its national income and the debt contracted abroad each period).\(^6\) The crucial assumption they make is that in case of default the only penalty the creditors can impose consists of excluding the debtor from further borrowing in the international credit markets. They first show that for the case where the debtor country's future income is certain, rational creditors will always set \textit{ex ante} credit ceilings to ensure that the threat of denying future access to credit to the debtor is sufficient to deter defaults. Then, by extending their basic framework to the case where the debtor's income is uncertain, they are able to account for the more interesting case where the debtor countries can default with positive probability.\(^7\) They show that in their attempts to lower the default risk, creditors will find it in their interest to relax the credit ceilings. The reason is that this way creditors succeed on making it very costly for the debtor country to default (i.e., a defaulting country's loss by being excluded from access to borrowing becomes larger the more the credit ceilings are relaxed). Note that this framework provides a rationale not only to the massive lending observed in the 1970s, but also to the debt rescheduling strategy that the creditors followed at the start of the crisis in 1982 and after. Further insights on debt rescheduling will be outlined below. But first we analyse in greater detail the massive lending of the 1970s, and the risk of default issue from the debtors' perspective.

\(^5\) Although Hellwig's (1977) paper is inspired by the corporate finance case, its main insights equally apply to the international debt case. See, for example, Cohen (1988).

\(^6\) Debt is assumed to be contracted for consumption smoothing reasons only.

\(^7\) The reason is that, in contrast with the certainty case, the creditors can no longer set \textit{ex ante} credit limits which can reduce the default risk to zero.
c. Debtors’ Behaviour in the Presence of Default Risk: Domestic Investment Policies and Macroeconomic Policies

Much of the blame for the crisis fell on the LDCs because of their failure to use loan disbursements productively, and because of their conduct of ‘counterproductive’ macroeconomic policies.

Glick and Kharas (1983), and Sachs and Cohen (1982) have pointed out that debtor countries could have used domestic investment policies more effectively. Suppose an investment involves sunk costs so that the debtor country cannot costlessly withdraw capital after a loan is approved and use the proceeds for consumption. Then, a multi-period loan contract may call for partial completion of the investment before additional loan disbursements are made. Such a commitment to invest should raise the debtors’ ability to pay and thus reduce default risk.

Sound macroeconomic policies could also have helped to control the default risk more effectively. Dornbusch (1985), for example, points out that by keeping exchange rates overvalued, a large volume of the debt contracted abroad by several Latin American governments did not finance productive investments. He shows that, because policy makers kept exchange rates overvalued, a large portion of the external debt contracted in the late 1970s translated into capital flight in Argentina, consumption of durables in Chile, and domestic deficit finance in Brazil.

The very extensive literature on macroeconomic adjustment after the crisis started in 1982 is beyond the scope of this survey. However, most observers share the view that LDCs were slow at adjusting. In particular, that LDC’s slow rates of growth and unimpressive trade surpluses explain the systematic defaults and debt renegotiations observed throughout the 1980s. Some analytical issues raised by such renegotiations are surveyed next.

3. RENEGOTIATIONS OVER DEBT REPAYMENTS UNDER SYMMETRIC AND ASYMMETRIC INFORMATION

Having explained the rationale for debt rescheduling (or the provision of new loans), we now turn to the issue regarding the way such loans are renegotiated. In particular, further insights can be gained by bringing bargaining and reputational considerations into the analysis.

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9 There are several reasons why countries did not adjust, at least not as quickly as expected. Berg and Sachs (1988), for example, provide several structural explanations, and highlight the huge political costs that adjustment may imply, particularly for the import substitution countries.

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a. A Bargaining Model

Bulow and Rogoff (1989) build on Rubinstein’s (1982) bargaining model to address the debt rescheduling or new lending issue. In their model there is a debtor country and a creditor who are engaged in a repeated bargaining process over a sequence of goods (i.e., exportable goods which represent potential debt repayments). The time preference of both the creditor and the debtor are represented by their discount factors, \(r\) and \(\delta\), respectively. Symmetric information is assumed in the sense that both \(r\) and \(\delta\) can be observed by both parties. They also assume that the exportable good deteriorates at a rate \(\gamma\), and that this is also observed by both parties.

Under the above basic assumptions, it is shown that the relative shares of the two parties on the exportable good will depend on the rate of impatience in reaching a settlement, \(\delta + \gamma\) for the country, and \(r + \gamma\) for the creditor.

To illustrate their results, they show that an unanticipated increase in the world interest rate, \(r\), is bad for the creditors. This is because as \(r\) increases the creditor’s opportunity cost from not investing in high-yielding projects elsewhere is higher. Debtor countries can then exploit the creditor’s increased impatience to their advantage and repay less than otherwise.¹⁰

b. Reputational Models

By building on Stiglitz and Weiss (1983), Suarez (1987) presents a two-period reputational model of international debt. In his model, creditors and debtor countries interact in a competitive market. He assumes asymmetric information, namely creditors cannot observe the income of the debtors. Creditors’ decisions with regard to credit ceilings and interest rates depend on the default history of the country. A country that never defaults will have better access to credit and will be charged a lower risk premium in the future.

There are two types of debtors: honest and dishonest. The honest ones will never find it in their interest to default because it is \textit{a priori} non-profitable and because it can only damage their reputation for obtaining higher access to credit and/or a lower risk premium in the future. The dishonest ones, on the other hand, might find it in their interest not to default, despite the fact that defaulting is profitable for them. This is because the reputational gains from not defaulting (better access to credit and/or a lower risk premium) can offset the short-term benefits from defaulting. As a result, defaults will not be observed in equilibrium. Countries will therefore prefer to sign a debt rescheduling agreement instead of defaulting. But in a rational expectations (perfect Bayesian) equilibrium, creditors will

¹⁰In other words, this model predicts that a larger portion of the country’s debt will be rescheduled due to an unanticipated increase in the world’s interest rate.
internalise the fact that there is a low probability of default and, hence, they will have a tendency to charge a lower risk premium.

Suarez's model sheds some light on the relatively small number of countries that have defaulted and that have chosen to reschedule instead, and on the lower risk premia observed in recent reschedulings.11

In contrast with the above model, Armendariz de Aghion (1990) highlights the reputational considerations on the creditors' side. Her paper attempts to explain the seemingly low levels of new lending after 1982, and it does so by showing that when creditors care for their reputation they tend to provide less new lending than otherwise. In particular, it is shown that whenever a debtor country threatens to default so as to obtain further lending, its creditors face the following tradeoff: they can let the country default and gain the reputation of being tough bargainers for deterring future threats of default on the one hand, and lend more to gain debt repayments but lose reputation on the other. The way this tradeoff is resolved is by letting some small debtors default and providing new lending to the large debtors; this appears to have been the case in 1982–1989.

A common feature of all the models surveyed so far is their reliance on the assumption that a debtor country faces a multiplicity of creditors whose actions are perfectly coordinated and that act as a single entity. This assumption may not be very realistic and we will therefore remove it to gain further insights in the next section.

4. MULTIPlicity OF CREDITORS, FREE-RIDER PROBLEMS AND THE ROLE OF THIRD PARTIES

This section analyses the collective action problems associated with lending by consortia. Sachs (1982), Krugman (1988) and Cline (1985) argue that new lending is like a public good because its benefits are collective. It is in the interest of all creditors to provide new lending because otherwise the debtor countries will inevitably default. But then, because the benefits from new lending are collective, the following free-rider (or 'moral hazard in team') problem will arise: on its attempt to prevent a default by providing new lending, each individual creditor captures only part of the collective benefit and, hence, each creditor in isolation will be unwilling to cooperate unless the other creditors do the same.

For an increased cooperation among creditors, the role of third parties like the IMF and the World Bank was crucial. In particular, such institutions could play the role of coordinating agencies to carry out what came to be known as the

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11 For example, Mexico and Argentina in 1986–87 could obtain new loans at a lower interest premium than in 1982–84.
concerted lending strategy’.\textsuperscript{12}

This strategy was relatively effective in that a massive defaults scenario was not observed in the early 1980s, and this was important for the stability of the world financial system.\textsuperscript{13} Some critics argued in the mid-1980s, however, that concerted lending did not help to promote growth and economic recovery in the LDCs. This criticism is based on an incentive argument which we explain in the next section.

5. THE DEBT OVERHANG

The overhang hypothesis establishes a link between the poor economic performance of most LDCs in the 1980s to the size of such countries’ external debts. According to Sachs (1988) and Krugman (1988), a country has a debt overhang when the size of its debt is so large that existing creditors no longer expect such debt will be repaid in full. Thus, voluntary lending is no longer feasible. Their idea is based on the following incentive argument: at sufficiently large levels of debt a country lacks the incentives to improve its economic performance since it knows that most of the benefits will accrue to its creditors.

Krugman (1988), in particular, shows that by adopting the concerted lending strategy (or by rescheduling the debt of a highly indebted LDC), the creditors will typically face the following tradeoff: they will on the one hand succeed in their attempts to prevent the country from defaulting, but lose on the other because at higher debt levels the country will lack the incentives to adopt the adjustment policies (or to provide the required effort) to improve its economic performance. One way in which the creditors can resolve this tradeoff is by forgiving (instead of rescheduling) portions of the country’s debt.

A graphic illustration of this type of tradeoff is provided in Krugman (1989b). This paper draws an analogy between the adverse incentive effect stated above with the one which is typically found at high levels of taxation in the public finance literature, namely, the Laffer effect (see Figure 1).

This figure shows on the vertical axis the market value of the debt reflecting the creditors’ expected repayments, and on the horizontal axis the face value or the size of the debt of a particular country. When the size of the debt is relatively low and the creditors reschedule (or extend new lending), the face value of the debt increases and this is reflected by a proportional increase in the market value

\textsuperscript{12} In practice, the US Treasury and the Bank of England played an even more important role to carry out the concerted lending strategy. In particular, the so-called Brady Plan of the US Treasury in 1984, showed an increased support for such a strategy.

\textsuperscript{13} Defaults in the 1980s were largely averted when compared, for example, to the 1930s (see Eichengreen and Portes, 1989).
of the debt (along the 45 degree line). As the face value continues to increase — when, in particular, the creditors systematically reschedule each time the country finds itself in need of further refinancing — the disincentive effects come into play and the market value starts increasing less than proportionally (below the 45 degree line). Finally, on the right-hand side of the curve the disincentive effects are so strong that creditors are better off by granting forgiveness. The reason is that at lower debt levels the country will be encouraged to make the required effort to improve its economic performance, and such increased effort will be reflected in higher market prices.\textsuperscript{14}

\textit{a. Regulations of the Banking System: A Threat to the Debt-Forgiveness Strategy}

Krugman (1989a) argues that regulation of the banking system can bias creditors against offering debt-forgiveness because (a) regulated banks have insured depositors, and (b) regulated banks are subject to legal capital requirements.

To see how the existence of insured depositors can bias the creditors against providing debt-forgiveness, he considers the following example: suppose there are good and bad states of the world where a bank’s expected repayments are high

\textsuperscript{14} Note, however, that the above tradeoff will disappear if debt repayments were made fully state contingent; when, in particular, repayments are made contingent upon a variable that both parties can observe. In this case, the effort that the country puts in is completely dissociated from debt repayments. For more on state contingent repayments, see Krugman (1988) and Cohen (1988 and 1989).
and low, respectively. Now suppose that in a very bad state of nature the bank itself goes bankrupt. As the depositors of the bank are insured, the bank's bankruptcy costs will be partly paid by the insurance companies (and, in the end, by the taxpayers). He then considers the case where the creditors find it in their interest to forgive portions of the country's debt because of the incentive argument mentioned above. Then, the benefits from debt-forgiveness will not go entirely to the creditors but also to the taxpayers. If depositors were not insured, the creditors' stockholders (who are the decision makers) will face higher bankruptcy costs and, therefore, creditors will have a higher incentive to avoid such high costs of bankruptcy by providing debt-forgiveness.

As far as legal capital requirements are concerned, creditors may also be unwilling to grant forgiveness because of the following reason: when forgiveness is granted, banks are forced to reduce the book value of their capital and issue new equity. But this new equity issue can, other things being equal, reduce the value of the existing equity. The desire not to issue more equity will therefore bias the creditors against providing debt-forgiveness, despite the good effect on the creditors' profits such policy may imply (i.e., banks' profits can be higher because of the incentive effects).

6. DEBT EQUITY SWAPS, BUYPACKS, DEBT SECURITISATION AND DEBT FOR NATURE SWAPS

By the mid-1980s most LDC debts were beginning to be sold at a discount from face value in a growing market which came to be known as the secondary market for LDC debt. We have already described in the previous section how the debt overhang argument can account for such discounts, i.e., for the observed differences between face value and market value. We now turn to the analysis of a variety of schemes or solutions to the debt problem which are based on such market discounts.

a. Debt Equity Swaps

A debt equity swap is a transaction whereby creditors sell their LDC debts at some discount from face value in return for the countries' local currencies which must be invested in the countries themselves. This transaction was originally designed to achieve two main goals: (1) to cancel part of the developing countries' foreign debt obligations, and (2) to provide such countries with a source of capital inflow. The extent to which these goals have been achieved since the swaps were implemented in 1983 remains an open question.

Helpman (1990) has pointed out that the swaps do not cancel a country's obliga-
tions since the creditors acquire an equity claim in the country to replace their previous debt claim. To really cancel the countries’ obligations, creditors need to provide debt-forgiveness (i.e., to swap a positive amount of debt for zero equity). Another important point highlighted by Helpman is that a country’s level of investment under a debt equity swaps scheme does not always increase. In particular, investment could decrease if the higher demand for equity (created by the swaps) raises the price of capital in the country in question. (Also, investment effort may decrease for moral hazard reasons — when, in particular, the country is no longer a residual claimant over investment returns.)

Krugman (1988a) discusses the following three problems inherent in the debt equity swaps transactions:

(a) Debt equity swaps can have the same consequences on the timing of repayment as debt reschedulings. This is because a debt equity swap boils down to postponing debt repayments for the following reason: an equity claim will normally provide a stream of repatriated earnings that rises over time both with growth and world inflation, and which is therefore lower at the beginning and higher later. Hence, converting debt into equity boils down to postponing the country’s debt repayments.

(b) Debt equity swaps worsen the foreign exchange problem in LDCs. Typically, this problem arises when, after swapping debt for equity, an investor can sell the equity for local cash and then convert this cash into foreign currencies to be repatriated back to the creditor’s country. Since this operation (known as round-tripping) makes use of foreign currency reserves of the developing country, the whole debt equity swap operation in the presence of ‘round-tripping’ boils down to buying back the foreign currency-denominated debt at a discount. But this can only worsen LDC’s need for foreign exchange. Even in the absence of ‘round-tripping’, the debt equity swap can consume LDC’s foreign exchange when, in particular, the swap is used by foreigners to make investments that they were going to make anyway.

(c) Debt equity swaps aggravate the debtor countries’ fiscal problems. The reason for this is that more internal debt has to be issued for financing the swaps. But high budget deficits in LDCs involve high real costs and, in particular, such countries generally pay higher real interest rates on their internal debt than they do on their external debts. Therefore, swaps aggravate fiscal problems.15

15 For more on this, see Bulow and Rogoff (1988b).
16 For more on debt equity swaps, see Alexander (1987), Rodriguez (1988) for the case of Argentina, and also Armendariz de Aghion (1991b) for the case of Chile.
b. Debt for Nature Swaps

These are like debt for equity swaps except that the foreign investors who buy the debt at a discount in the secondary market are international environmental groups. These groups turn such debt over to debtor governments in exchange for local currency which is used for the creation of national parks.\(^{17}\)

c. Debt Buybacks

As its name indicates, this transaction consists of allowing the debtor country to buy back its own debt directly in the secondary market. This type of transaction has been widely analysed (see, for example, Krugman, 1989b; Froot, 1989; Bulow and Rogoff, 1988; Archana and Diwan, 1989; Dooley, 1989; Cohen and Verdier, 1990; and Armendariz de Aghion, 1991a). In practice, buybacks are rarely observed because debtor countries are legally prohibited from undertaking such transactions.\(^{18}\) The reasons are stated in Krugman (1989a). The first has to do with seniority: the use of foreign exchange reserves to repurchase debt may impair the debtor’s ability to repay its remaining debt, and existing creditors are entitled to the first claim on whatever repayment the country is able to make. The second reason is the following moral hazard problem: allowing the debtors to buy back their debts at a discount rewards the least reliable debtor since they can buy back their own debt at a very low price. As a result, there is an incentive for debtors to be ‘non-reliable’ (i.e., to try to lower their debt prices by defaulting, and then undertake a buyback).

In a debt overhang framework similar to Krugman’s (1989b), Froot (1989) shows that buybacks can be welfare improving for both debtors and creditors provided that the investment incentive effects in the debtor country are sufficiently strong.

Bulow and Rogoff (1988), on the other hand, have argued strongly against buybacks on the grounds that such transactions would only benefit the creditors. There is a clear distinction, their argument goes, between average debt and marginal debt. In an uncertain world where there are ‘good’ and ‘bad’ states of nature, the market value of each unit of debt would simply reflect what that unit gets on average, whereas the marginal value would reflect what each unit of debt gets in the bad states only. Hence, the average value of the debt is higher than the marginal value. Creditors’ claims are effectively worth their marginal value when, in particular, the country has been making (bad state) transfers to the creditors for a sufficiently long period of time. They then show that the average value of the debt increases

\(^{17}\) This market solution is good for the environment. In practice, however, questions arise with regard to the way such environmental agreements are enforced.

\(^{18}\) For more on this issue, see Cohen and Verdier (1990).
as a result of the buyback and, because the country can only retire its debt at market value (or at average value) and not at marginal value, the country loses out.

Unlike Krugman’s (1988 and 1989) framework, the Bulow and Rogoff (1988) framework assumes away efficiency gains. This, in particular, is a zero-sum game where, if creditors gain, debtors would necessarily have to lose.19

d. Securitisation of the Debt

The idea of securitisation is that a country issues new debt in the form of bonds that are either sold for cash that can then be used to repurchase debt in the secondary market, or are directly exchanged for debt (which was, for example, the case of the Mexican securitisation plan of February 1988). The idea of this type of plan is that if the new bonds — which could be collateralised by US Treasury bonds — can be sold at a smaller discount than the existing debt, then the effect will be to reduce the debt outstanding without the debtor needing to use much of its foreign exchange reserves. The success of this scheme, however, crucially relies on the possibility of making existing debt junior to the new debt. In practice, however, new debt cannot easily be made senior to the old debt because the country cannot credibly commit itself to honour some of its debt more reliably than the other20 (see Bulow and Rogoff, 1988).

7. CONCLUDING REMARKS

Although far from being exhaustive, this survey has tried to show that economic theory has been helpful to the understanding of the main issues raised by the LDC debt crisis. First, we have explained how the absence of explicit penalties for default in an uncertain world may have led international creditors to over lends during the 1970s. Second, we have described why it is in the creditors’ own interest to provide new lending as a way of preventing sovereign defaults, and that such a strategy may be the result of time inconsistencies which embody a moral hazard problem. We have also shown how the amount of new lending may be optimally determined. But that new lending may fail to take place because it involves a multiplicity of creditors who may fail to coordinate their actions effectively. (Third parties can play the role of coordinating agencies for overcoming such free-rider problems.)

Third, we have spelt out the debt overhang idea which states that creditors can,

19 The Bulow and Rogoff (1988) framework accounts for the Bolivian buyback which took place in 1987. However, its policy implications with regard to the provision of financial aid for debt relief purposes are far greater. See below.
20 The disappointing results of the Morgan-Mexico securitisation plan in 1988 illustrate this point (see Bulow and Rogoff, 1988; and Krugman, 1989).
on the one hand, gain by providing new lending, but lose on the other because they can discourage adjustment in LDCs. Fourth and last, we have explained why, according to the debt overhang framework, market solutions may have a positive impact on incentives, and thus be beneficial both for the creditors and the debtor countries. On the other hand, market solutions can hurt the debtor countries when such efficiency gains are assumed away and, for this reason, foreign aid for market solutions may not accrue to the debtor countries but to the creditors.

There remain several outstanding questions, two of which seem particularly important. One regards the overlending issue. We have argued that, in contrast with the corporate case, credit ceilings in international credit markets are expected to be higher, both because of the presence of time inconsistencies and the absence of explicit penalties for default. But these arguments assume away the existence of a multiplicity of creditors. More research on this issue may prove extremely valuable, particularly with regard to the way the banking regulatory system in the industrialised world is designed.

The other is foreign aid. As we have seen above, Bulow and Rogoff (1988) made a case against foreign aid for debt relief by assuming away incentive effects à la Krugman. Yet there are other benefits from debt relief that may still justify foreign aid and that the literature has so far disregarded. A clear example is the sharp fall of interest rates in Mexico which immediately followed the 1989 debt relief operation. 21

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