

Boon-Chye Lee

THE ECONOMICS OF INTERNATIONAL DEBT RENEGOTIATION

*The Role of Bargaining
and Information*

Westview Press

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Boon-Chye Lee

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Background and Overview

Introduction

Breakdowns in debt contracts are an important feature of financial markets, in both the domestic and the international context. But the international case, especially if it involves a sovereign state, is more complicated than the domestic one. Part of the reason is that there is no established legal procedure providing for an orderly liquidation of any portion of the Borrower's assets to meet the Creditors' claims. While in the domestic context bankruptcy procedures provide for control of the Borrower to pass into the hands of an official liquidator who ensures an equitable distribution of whatever assets remain, there is no corresponding procedure in the case of an international sovereign loan.¹ An implicit assumption is often made that because, unlike companies, countries do not cease to exist ("countries never go bankrupt"²) it is therefore unlikely that loans extended to them will never be repaid.

The critical factor which tends to render this assumption false in the present context of international relations is that there is little chance that control of a country's resources will ever pass into the hands of external parties. The most common means by which this was accomplished in the past (e.g., Egypt in 1879, Mexico in 1859-61) was armed force by Creditor governments—the so-called "gunboat diplomacy". In the present-day context the adoption of this avenue by any Creditor (and especially Western democratic) government is extremely unlikely because the probable response of the international community (widespread condemnation both at home and abroad, backed up possibly by trade and other sanctions) makes it too costly to be regarded as a realistic option.

But neither is it true that countries have their Creditors at their mercy, otherwise we would have a situation in which no loans were ever extended to sovereign states. Countries value continued access to both the international capital markets as a source of credit and the

international payments system as a means of facilitating their international trade, and these are major factors dissuading them from repudiating their debts.³

At the same time, a significant feature of debt contracts involving sovereign Borrowers is their incompleteness. In large part this can be traced to two root causes: the fact that Borrowers cannot credibly commit themselves to a particular course of action subsequent to the granting of the loans (and it is extremely difficult to monitor their actions); and the fact that such contracts are, short of military intervention, effectively directly unenforceable. Together with these observations, the fact that for many countries the existence of a large external debt (with the attendant requirement to service it) is a major source of economic difficulties implies that these contracts are almost inherently subject to breakdown.

It is clear that there is also cost to the rest of the world associated with such breakdowns, particularly if they are widespread. One feature of the international economy today is the high degree of interdependence among countries (Cooper [1986]). *Ceteris paribus*, the consequences following the economic collapse of a country for the rest of the world are likely to be more severe the more the country has borrowed from the rest of the world. The main source of risk for the international economy lies in the fact that a large proportion of loans currently outstanding to Third World countries (the group whose economies are most in danger of failing) are owed to banks in the developed world, and the amounts owed are large relative to bank capital—in some cases several multiples of it. Cline [1984: 22] reports, for example, that at end-1982 exposure for all US banks in Non-oil Developing Countries was 146 percent of capital.⁴ The corresponding figures for the larger banks were even higher than those in the aggregated data: the exposure of the nine largest US banks in the same countries was 221 percent of capital.

The risk this poses is that economic failure in one or more Third World countries will lead to loan default, which in turn could lead to the insolvency of banks which are highly exposed. Because of the size of many of these banks and their importance in their national economies, their bankruptcy would threaten their domestic financial systems and possibly much more besides. The worst-case scenario has been described as follows:

More dramatically, a single default could create a domino effect, leading other states to default on their external debts. The avalanche of defaults could cause several banks to fail, setting off stock market crashes and ultimately leading to a world-wide depression.⁵

The absence of an international enforcement mechanism which imposes a *direct* penalty is what makes default a feasible option for sovereign borrowers. As we shall see in Chapter 2, however, several features of the institutional structure of international lending, in particular the commercial-bank practice of lending in syndicates and the inclusion of cross-default clauses in standard loan contracts, make it potentially very costly for a country to explicitly repudiate its debt.⁶

On the other hand, Cline [1984: 26-29] argues that even an "extended moratorium"—whereby debt service payments are suspended for a period of perhaps more than six months—for a number of major debtor countries would have widespread negative consequences. These include a sharp reduction in loans which, together with increased risk premiums, would lead to an increase in interest rates and resultant recessionary pressure, with repercussions in the rest of the world. Thus the "international debt crisis", as it is commonly called, has been widely perceived to be a problem involving all nations, with system-wide ramifications.

Since the debt crisis broke in 1982, however, Western banks in general, and US ones in particular, have built up their loan loss reserves, so that by end-1987 the exposure of all US banks in *all* less-developed countries was down to 78.1 percent of capital, while the exposure of the nine largest US banks in the same countries was 130.9 percent of capital (Sachs [1989c]). This represents a dramatic improvement in the risk profiles of the banks since 1982. Indeed, Sachs [1989c: 13] argues that:

[t]he debt crisis is no longer a systemic banking crisis. To the extent that the debt problem remains a banking crisis at all, it is a crisis of a handful of banks around the world.

While this may be true, the fact remains that a significant proportion of the capital of the banks involved remains at risk. Quite separate from the risk to creditors is the fact that many of the debtors are "quite fragile politically" (Rogoff [1990]), and continued debt service often entails significant hardship for them. As Sachs [1990] argues, the creditors continue to have an important long-run stake in helping the debtors surmount their problems.

Given this, there remains a need for the parties to debt contracts to reach agreement on a new set of terms when the original one breaks down. This book is concerned with a question of fundamental importance, granted this premise: what are the features of the institutional structure(s) which guarantee that the parties will come together to negotiate a new set of terms? There are two related questions

which it also seeks to address. First, once the parties have agreed to negotiate, how is agreement reached in practice? And, second, how is a renegotiation triggered?

At this juncture it is important to distinguish between two significant sets of issues related to the international debt problem which are very different in focus. The first deals largely with macroeconomic and policy concerns, and includes topics such as the appropriate amounts of foreign aid;⁷ the efficacy of different domestic macroeconomic policies in achieving adjustment to external imbalances; whether international macroeconomic policy coordination among the major industrial countries is possible (or even desirable); whether the debt crisis is better tackled by means of sweeping, system-wide reforms or more appropriately dealt with on a case-by-case basis; and issues around IMF conditionality. These issues have loomed large in the literature, but also are of major concern to policy makers, most noticeably in the United States.⁸ Some of these questions lie in the domain of economic and/or political ideology and therefore will probably never be resolved to the satisfaction of all parties. Others show promise of resolution as more data become available for empirical testing.

The focus of this book is not the first set of issues, but the second. This set of issues is relatively unexplored and has featured much less prominently in the literature, although it has rapidly gained ground in recent years. It is concerned with questions of strategy, and draws on advances made in recent years in bargaining/game theory to obtain insights into various aspects of the debt crisis. A problem with many of the models in the international debt literature, which typically assume that a country chooses between the two extreme options of full debt servicing and total default, is that they do not allow for the possibility of intermediate outcomes, precisely because the traditional tools of analysis which they employ would not permit a solution. The analysis has nothing to say about what sorts of outcome might emerge from the bargaining. It is only recently that the literature has begun addressing strategic issues (Eaton and Gersovitz [1981b] represents a well-known early example), and possibly the first study to adopt an explicitly bargaining-theoretic framework to analyze the debt situation was a National Bureau of Economic Research working paper written by Bulow and Rogoff which appeared in December 1986.⁹ More recent studies have addressed a variety of other topics, including issues around reputation (Bulow and Rogoff [1989b]), the effect of bank size on the debt renegotiation process (Fernandez and Kaaret [1988]), as well as long-standing puzzles such as why we do not observe a debtors' cartel (Holler [1989]; Fernandez and Glazer [1989]). It has become increasingly

obvious that many aspects of the debt crisis are amenable to a bargaining-theoretic treatment, and that the approach is capable of furnishing unique insights.

To pinpoint the limitations of the traditional analysis, we look at a simple model in the following section. At the heart of much of the analysis of the book is a simple problem, first described by Edgeworth in 1881, which highlights a major deficiency in traditional economic analysis. This is that, while it is very well-suited to the analysis of perfectly competitive markets in which there is complete information (and complete and perfectly enforceable contracts), the traditional analysis is much less suited to analyzing situations of the sort we are studying, situations which are fraught with problems of information incompleteness, imperfect markets, and incomplete contracts.

A Simple Two-Period Model with Uncertain Default Penalty

Consider a simple two-period model (after Krugman [1985]) in the traditional mould.¹⁰ There are two parties, a Borrower and a Creditor. In the first period, the Borrower obtains a loan. In the second period, he either repays the loan, or defaults. We can say a number of things about this.

First, the larger the size of the loan, the larger the potential benefit to the Borrower from defaulting; and hence the greater the probability of default, other things equal. This means that the Creditor will incorporate in the rate of interest charged on the loan a risk premium which increases with the size of the loan. Second, since the probability of default increases with the size of the loan, there will be some critical loan size beyond which the Creditor will not lend. If the Borrower wants a larger loan, he may offer to pay a higher interest rate on it. But given any size of loan, a higher interest rate implies a heavier debt burden. The result is that the loan supply curve will slope upwards till a certain point is reached, then slope backwards. This is illustrated in Figure 1.1.

We have the interest rate on the loan along the vertical axis, and the loan size along the horizontal axis. The riskless¹¹ interest rate is denoted \bar{r} . The curve labelled $\Pi = 0$ represents points of zero expected profit to the Creditor—i.e., points where the probability of default just offsets the premium of the interest rate over the riskless rate \bar{r} . In other words, the curve represents points where each loan, taken in isolation,

earns an expected rate of return equal to \bar{r} . All points to the north-west are points of positive profits; all points to the south-east represent negative profits.

The Borrower's preferences are represented by indifference curves: these slope upwards from left to right to indicate the tradeoff between a higher interest rate and a higher loan amount. The indifference curves represent higher utility levels as we move down and to the right: the Borrower would like a larger loan amount at lower interest rates.

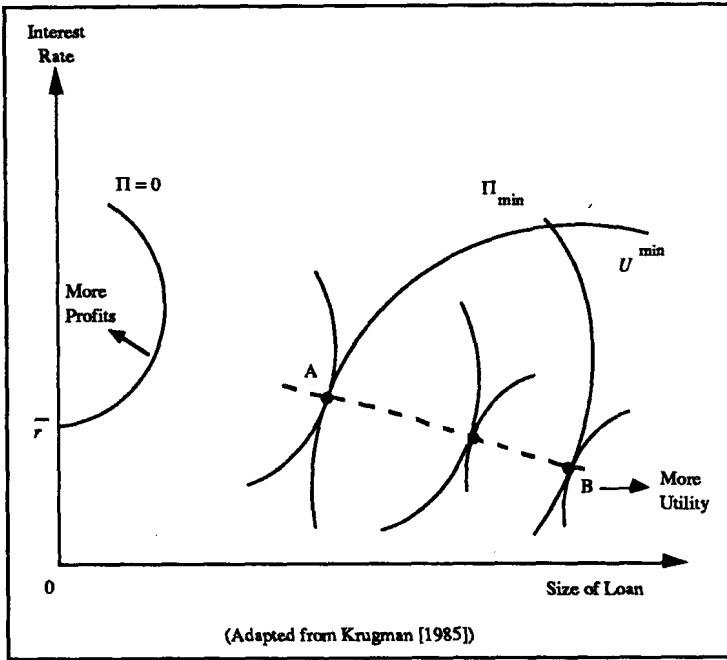
Now assume the Borrower has an inherited debt. This is the critical element which helps us understand why the Creditor might want to extend additional loans. Then even if he does not borrow any more in period 1 he still has to pay interest on this debt (assuming he does not default). The Borrower can assure himself of some minimum level of utility, denoted U^{\min} , simply by defaulting on his outstanding debt.

Note that he may derive utility from getting his current debt rescheduled, or from being granted a new loan, or having the interest rate on his debt reduced—or any combination of these and other things.¹² If the Borrower cannot obtain at least a minimum utility U^{\min} , given the supply schedule of the Creditor, he will default. The important point to realize is that the relevant loan supply schedule is *not* the one labelled $\Pi = 0$. This is because if by lending the Borrower more (bearing in mind that lending more is a catch-all phrase for any form of debt relief) the Creditor can avoid a default on the outstanding debt, he will always be better off granting the new loan, as long as the amount of the new loan does not exceed debt service on the amount outstanding.¹³

Assuming that this condition is met, the Creditor will be prepared to offer a new loan in order to avoid default. The limit of what he is prepared to grant to the Borrower is represented in the diagram by the Π_{\min} schedule. Recall that points to the south-east represent for the Borrower higher levels of utility: this means there is some set of arrangements lying in between points *A* and *B* which both parties will prefer to default. Point *A* is a minimal rescheduling which gives the Borrower just enough to induce him not to default; point *B* is a maximal rescheduling which the Creditor will not exceed if he is not to prefer suffering a default.

We can draw a line between *A* and *B* which joins all the points of tangency between the individual indifference curves of the Borrower and the individual iso-profit curves of the Creditor. This contract line represents points any one of which may turn out to be the final contracted rescheduling agreement.

FIGURE 1.1 Debt Restructuring and the Bargaining Problem



But this is as far as the traditional analysis takes us. What it does not tell us is where exactly on the contract curve the final rescheduling agreement will be located, or what factors might affect the outcome. It casts no light on what sort of institutional arrangements, if any, may be necessary to allow the two parties to reach agreement. In this book we address these and other questions explicitly, using the tools of bargaining theory, as well as those of traditional economic analysis.

Overview of the Book

The analytical core of the book consists of three parts, each looking at a different area of importance to the current debate on the international debt crisis. In the last three decades there has been a progressive institutionalization of the procedures culminating in a debt restructuring,¹⁴ with debt restructuring increasingly becoming the accepted way of dealing with such breakdowns. To serve as a backdrop to the analytical core of the book, we first document in detail, in Chapter 2, the institutional structure of the debt renegotiation process.

Then, in Chapter 3, we analyze this structure using a mechanism design approach. Specifically, we are interested in specifying an optimal structure governing debt renegotiations. The approach consists of postulating some social welfare function which we seek to maximize subject to a number of constraints which appear *a priori* to be reasonable. We then look at the resulting structures (or mechanisms) which solve this optimization problem. We draw on the framework outlined by Myerson and Satterthwaite [1983] to study the features of an optimal renegotiation contract between a Borrower and its Creditors.

In terms of the structure we described in the previous section, there is uncertainty around where each party's set of indifference curves lies, and there is a possibility that for certain pairs of Borrower and Creditor no contract curve exists. What are the features of the institutional structure which takes these factors into consideration and at the same time allows the parties to maximize the sum of their expected utilities? This is the problem posed in Chapter 3. Factors determining the sharing of the surplus are ignored.

Our results cast light on the institutional structure documented in Chapter 2. Assuming that the parties are risk neutral, we find that the institutional structure, if it is to be efficient and incentive-compatible,¹⁵ cannot also be structured such that all potential parties can expect to gain by participating in it: in other words, the existence of a contract curve is not guaranteed for all possible combinations of Borrower and Creditor, and the parties are therefore not assured of an improvement in welfare from participation in the renegotiation. If this latter requirement is to be met, a subsidy must be provided to the parties to induce them to participate (in effect shifting the locations of their sets of indifference curves). An expression for the maximum subsidy required is obtained.

Chapter 3 studies the institutional structure using what has been called a "static" structure, in contrast to a "sequential" structure (Cramton [1985]). The choice is deliberate, to allow us to highlight the inefficiencies resulting from the requirements which we impose on the structure. On the other hand, the static framework has the disadvantage that it assumes that the parties to the bargaining process can commit themselves not to proceed with bargaining if agreement is not reached in the very first round of the bargaining process.

In Chapter 4, therefore, we adopt an extensive-form game in a sequential framework which allows us to study the step-by-step process of bargaining between two parties. In this game of one-sided incomplete information, our focus is on the equilibrium time path to agreement, and we study the factors which affect that time path, and the way in which information is conveyed to the party facing incomplete

information. In terms of the structure described earlier, the existence of a contract curve is assumed, but there is uncertainty regarding the actual location of one of the sets of indifference curves, *viz.* the Borrower's. Not surprisingly, we find that the time taken to reach agreement shrinks as more information is made available.¹⁶

In general, an incomplete information setting is a reasonable description of real-life circumstances, not just in the actual bargaining situation, but also in the circumstances leading up to the occurrence of a debt problem. For this reason, a major focus of the literature has been on models which attempt to predict when a debt problem will occur. We look at this question in Chapter 5. We begin with a survey of the variables used in numerous studies attempting to find statistical relationships between these variables and the occurrence of a "debt problem". We note that, although the studies span two decades from 1971 to the present, the results are remarkably consistent in terms of the signs of the variables. What this tells us is that, although some of the reasons given for inclusion of individual variables in particular studies appear not to be firmly grounded in theory, these variables nonetheless yield useful information about the state of the economy they relate to.

These observations are consistent with a signalling interpretation, which may be outlined as follows. Because the monitoring of the (country) Borrower's actions is costly and can be done only imperfectly, and because of the Borrower's inability credibly to precommit himself to a particular course of action, the moral hazard problem is acute. Creditors cannot distinguish perfectly between countries which are "good" risks (and hence more creditworthy) and those which are "bad" risks (less creditworthy). Countries in good economic health therefore have an incentive to differentiate themselves from those which are less robust economically; on the other hand, the latter group will want to try and pass itself off as more healthy than it really is. In both cases the result is an attempt at reducing the informational asymmetry by providing data pertaining to various aspects of their economies. The monitoring by Creditors of the countries' economies and creditworthiness is carried out using these data, which are screened to distinguish the healthy and less risky countries from the more risky ones. Our survey results indicate that it is possible in fact to distinguish to some extent between the good and bad risks on the basis of easily available macroeconomic variables.

If this is the case, then there is no need for Creditors to use costly monitoring systems relying on information much more detailed than represented by the simple monitoring system described above. We interpret the monitoring system used by Creditors as a conditional