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A CONSTANT RECONTRACTING
MODEL OF SOVEREIGN DEBT

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A Constant Recontracting Model
Of Sovereign Debt

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Abstract

We present a dynamic model of international lending in which borrowers cannot commit to future repayments, and where debtors can sometimes successfully negotiate partial defaults, or "rescheduling agreements". All parties in a debt rescheduling negotiation realize that today's rescheduling agreement may itself have to be renegotiated in the future. Our bargaining-theoretic approach allows us to handle the effects of uncertainty on sovereign debt contracts in a much more satisfactory way than in earlier analyses. The framework is readily extended to analyze the conflicting interests of different lenders, and of banks and creditor-country taxpayers.

A Constant Recontracting Model of Sovereign Debt*

I. Introduction

Over the past five years, a large number of less developed countries (LDCs) have repeatedly "rescheduled" their payments on loans to Western banks. [1] Bank loans to many countries trade at sizable discounts, [2] and banks have had to take large writedowns on their LDC assets. Still, LDC loans are hardly worthless. Many of the largest debtors have made significant repayments over the past five years, and LDC loans still have an aggregate market value of hundreds of billions of dollars. This paper investigates the bargaining process which governs "rescheduling agreements", or negotiated partial defaults, on LDC debt. [3]

Sovereign lending is distinguished from domestic lending in three ways. First, "ability" to pay is never truly an issue. Aside from Chile, none of the major Latin debtors owes as much as a year's GNP, [4] an amount that could clearly be repaid over the long horizon were there the political will to do so. Second, collateral is irrelevant. Debtor assets that would be accessible to creditors in the event of outright repudiation are worth only a small fraction of outstanding debt. Third, the bargaining between debtors and creditors is ongoing, with contracts constantly subject to renegotiation. By contrast, domestic bankruptcy negotiations have more of a one-time flavor.

This constant renegotiation feature complicates the analysis of sovereign loans. In rescheduling negotiations, the parties bargain over both a current payment and a schedule

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[1] In 1983, 18 countries rescheduled the payments on 61 billion dollars of debt. In 1984, 19 countries rescheduled 136 billion dollars and in 1985, 14 countries rescheduled 51 billion dollars. From 1980-82, there were an average of six reschedulings per year. See Watson *et al* (1986), Tables 36, 37, and 38.

[2] As of July 27, 1987 Salomon Brothers listed the following bid prices for foreign debt (cents per dollar of direct government loans): Argentina,47; Brazil, 55; Chile, 67; Colombia, 81; Mexico, 53; Peru, 11; Phillipines, 67; Poland, 43; Turkey, 97; Venezuela, 67. Ask prices are 1 to 5 cents above bid prices.

[3] For an overview of the earlier literature on sovereign lending and default, see Eaton, Gersovitz and Stiglitz (1986) and Eaton and Taylor(1986).

[4] Based on the 1985-86 and the 1986-87 *World Bank Debt Tables.*

of future repayments. But the present value of future repayments depends on the likelihood and probable outcome of future rescheduling negotiations. While solving this problem in its most general form would be extremely difficult, we are able to solve the case where borrowers and lenders are risk neutral. This analysis yields insights which should carry over to the more general case.

Compared to earlier models of sovereign lending [5], our bargaining-theoretic model produces different and more realistic predictions. Earlier work has argued that when contracts cannot be fully indexed, costly penalties will be invoked whenever countries do not pay. However, these analyses have not allowed for the possibility of renegotiation. When renegotiation is feasible, inefficient penalties are never invoked because a deal can always be made to share the benefits of forbearance. The penalties which lenders can impose on debtors (which we discuss in some detail in section II and the Appendix) are relevant only in determining the threat points for renegotiation. But the possibility of renegotiation, combined with the inability of either party to credibly promise *not* to renegotiate, leads to a different class of inefficiencies.

The analysis also brings into sharp relief the differences between the average market value of existing debt and the marginal value, to creditors as a whole, of new debt. When the market value of a country's debt lies far below its face value, marginal increases in the face value of the debt have little effect on its aggregate market value. The near worthlessness of marginal debt explains why all parties are so concerned with the net level of today's repayments. By the same token, today's "problem" debtors would probably benefit very little from widely-discussed schemes to forgive ten or twenty percent of their debts, or from debt-for-equity swaps which do not include net new foreign investment. Marginal decreases in the debt's face value have only a second-order impact on eventual repayments.

II. Incentives for Repayment

Aside from a sense of moral obligation, there are three reasons why a country makes repayments on its foreign debt, and thus why lenders provide funds. First, as in domestic lending, lenders may be able to appropriate collateral.[6] Second, repayment may hold the

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[5] The seminal paper is Eaton and Gersovitz (1981).

[6] Such power has enabled the creditors who provide aircraft financing to stay aloof from any debt renegotiations. See Stuber (1982).

carrot of a good reputation for the borrower, implying improved ability to borrow in the future. Third, lenders may hold the stick of being able to impose sanctions that will impede trade and financial market transactions. However, military invasions to enforce debt claims are presumably a thing of the past [7] and the vulnerable assets held abroad by most LDCs are trivial relative to the amount they owe. [8] Assuming that collateral is insignificant, we are really left with two explanations for repayments, each probably with some validity.

The reputational approach is discussed in Eaton and Gersovitz (1981), and has been adopted by Grossman and Van Huyck (1987) and others. In its pure form, the reputational approach assumes that all legal sanctions are irrelevant. A debtor's sole incentive to make repayments is to preserve its reputation as a good borrower. The debtor believes that if it loses its reputation, it will lose its ability to go to the world capital markets for income-insurance contracts and consumption-smoothing loans. [9] However, for the reputational approach to be valid, one must assume that no one will *sell* financial assets such as stocks, bonds, and insurance contracts to a debtor in default. [10] If creditors have no legal rights at all, it is hard to understand why creditor-country institutions, other than perhaps the angry banks holding the bad debts, should ever be unwilling to provide insurance to an LDC that will pay cash up front. If the LDC can buy insurance, then any reputational "equilibrium" involving a positive level of debt will unravel. The debtor will repudiate, and use some of the cash earmarked for debt repayments to purchase insurance contracts. [11]

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[7] The U.S. did intervene in debt crises in Venezuela, the Dominican Republic, Haiti, Honduras and Nicaragua between 1902 and 1930 before abandoning the Roosevelt Corollary. (Under the Roosevelt Corollary, the U.S. barred European military intervention to collect debts in South America, but undertook responsibility for enforcing creditors' claims.) The best known nineteenth century military interventions were in Egypt and Turkey by England and France respectively. For details see Dammers(1984), Winkler (1933), and Borchard and Wynne(1951).

[8] The one substantial seizure of assets in recent years was the 1979 freezing of Iranian assets; see e.g. Field and Adam (1980).

[9] We mean to include loans "for investment" that enable the country to smooth consumption while still taking advantage of profitable domestic investment projects.

[10] It is possible that the country might not be able to purchase insurance contracts because, say, it is difficult to legally verify its output (see section V below). Still, as long as the country can construct a portfolio of foreign assets which is highly correlated with its output, the role for reputation is limited.

[11] The technical difficulty with reputation models can be most readily explained in an example where the LDC has a certain but variable income stream. (It has no investment technology and there is no long-run growth.) The LDC cannot make binding commitments to repay borrowings whereas financial institutions in developed countries can make such

The empirical case for the pure reputation aproach is also weak. Eichengreen (1987) [12] and Lindert and Morton (1987) [13] both show that historically, past repayment records have had little bearing on a country's ability to borrow.

We believe that the primary motivation for repayment is the threat of direct sanctions that lenders can impose, by going to creditor-country courts and by influencing their domestic legislators. Such sanctions can cost defaulting debtor countries their ability to transact freely in the financial and goods markets. For example, if a country repudiates its foreign loans it will be forced to conduct its trade in roundabout ways to avoid seizure. To compound this problem, the country will also be blocked from normal access to trade credits. [14] Very short-term trade credits, such as bankers' acceptances and letters of credit, are enormously important in reducing transactions costs in international trade. International banks can exploit economies of scale in monitoring costs to facilitate transactions between importers and exporters who sometimes know very little about one another. In the model we develop, a country is willing to make some repayments on its debts in order to enjoy its full gains from trade. Legal sanctions can also make consumption smoothing more difficult by preventing LDCs from openly holding assets in the industrialized countries for fear of

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commitments. Then in any candidate reputational equilibrium, there must come a point in the cycle when the amount the country is allowed to borrow reaches a maximum, D_{max}. By construction, the present value of the country's repayments over the following s periods must be greater than or equal to $D_{max}(1 - \frac{1}{(1+r)^s})$, which is always positive for any $s > 0$. At this point, it is always in the country's interest to defect from the 'equilibrium' by repudiating its debt and forfeiting its good reputation. It then opens a bank account abroad, and makes payments into the account instead of to its creditors. One can easily see that the country can thereby enjoy the same consumption stream it would have had by sticking to the reputational equilibrium path, and still have money left over. In fact, it will have at least $D_{max}(1 - \frac{1}{(1+r)^s})(1+r)^s$ after s periods. Since this argument holds for any $D_{max} > 0$, no lending based on reputation alone is possible.

[12] "In the raw data, no relationship between default in the 1930's and borrowing after 1945 is apparent. But reputational factors are only a subset of the factors affecting a government's willingness and ability to borrow abroad. The United Nations, when discussing external borrowing in this period, cited country size and relative importance of imports in domestic consumption as factors positively associated with borrowing." Eichengreen (1987, p.39).

[13] "Investors seem to pay little attention to the past repayment record of the borrowing government." Lindert and Morton (1987, p.3). Eichengreen's study covers the period 1920-55 and Lindert and Morton examine the record from the middle of the nineteenth century until the 1980's.

[14] Bolivia and Peru were the first to try confrontational approaches with their foreign creditors; both countries suffered a severe reduction in their access to short-term trade credits; see Cline (1987, p.4).

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seizure, and this cost is consistent with the spirit of our paper. However, our model is much easier to solve when agents are risk neutral (and so uninterested in consumption smoothing); we therefore ignore the costs of lost access to the capital markets in our technical analysis.

Trade sanctions may be small for most countries relative to GNP. However, they are probably of sufficient order of magnitude to explain observed levels of debt repayments. For many developing countries, reschedulings were initiated when debts equaled only a few months' GNP. Because the real interest on such debts is relatively small, Enders and Mattione argue that "Even if one assumes that the costs do not exceed five percent of trade, only a few countries would gain"(from repudiation).[15] Peruvian officials have estimated the cost to their country of circumventing trade sanctions in the wake of a total default to lie between ten and fifteen percent of the value of trade. [16] Larger, more complex economies like Argentina, Brazil, and Mexico would not necessarily find things easier. Of course, since both lenders and borrowers can be made much better off if a negotiated settlement is reached, sanctions are generally averted. So there are few cases where countries actually have been forced to move trade underground.

In the Appendix, we discuss some of the legal remedies available to creditors, and some evidence on the efficacy of trade sanctions. [17] Finally, through their domestic political influence, bank creditors may be able to gain the assistance of their legislators in imposing trade penalties. These political sanctions are analytically indistinguishable from legal sanctions in sections III to V, but can be examined separately in the more disaggregated model referred to in section VI.

III. The Model

We model a small country which cannot affect the world prices of traded goods or world interest rates. In the next two sections we will consider the nonstochastic case, and in section V we introduce uncertainty.

The Country's Objective Function

The country is governed by leaders who seek to maximize the expected utility function

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[15] Enders and Mattione (1984,p.4)
[16] *The Andean Report*, March 1986, p. 27, cited in Alexander (1987).
[17] See also Alexander (1987) and Kaletsky (1985).

$$\Psi_t = E_t \sum_{i=0}^{\infty} (C_{t+hi}^D + C_{t+hi}^F)/(1 + \delta h)^i, \qquad \delta, C^D, C^F \geq 0, \tag{1}$$

where C^D and C^F are domestic consumption of good D and good F respectively, δ is the country's (leaders') rate of time preference, h is the time interval between periods, and E_t is the expectations operator, based on time t information. The country's leaders' preferences do not necessarily coincide with those of its citizens, though henceforth we will not make any distinction.

Technology and Trading Opportunities

Production is exogenous. Each period, the country produces $\bar{y}h$ units of good D. This output can either be consumed domestically, stored, or traded abroad in exchange for P units of good F. There are gains from trade because $P > 1$. If S_t denotes the amount of good D the country has in storage entering period t, $S_t \geq 0$, then

$$S_{t+h} = (1 - \gamma h)S_t + \bar{y}h - C_t^D - T_t, \quad \forall t, \tag{2}$$

where γh is the deterioration rate, and T_t denotes the country's exports in period t.

As noted above, the country will experience difficulties in trading abroad if it ever unilaterally repudiates its debt. Specifically, we assume that a debtor country's net revenues per unit of exports is 100β percent lower, whenever it is in default ($0 \leq \beta \leq 1$). Let X be a dummy variable which is zero whenever the country is current on its debt obligations, and equal to one whenever it falls into arrears without reaching a rescheduling agreement. Then

$$C_t^F = T_t P(1 - \beta X_t) - R_t, \tag{3}$$

where R denotes net repayments to foreign creditors in units of good F; R can be negative.

Banks' Objective Function

The country can borrow abroad from competitive risk-neutral lenders ("banks"). The world interest rate is rh, which for now we will assume is nonstochastic and constant. Banks will lend to a country as long as the present value of repayments plus seizures yields the market rate of return. In the event the country repudiates its debt without signing a rescheduling agreement, bank creditors are able to "seize" a portion of exports for a net

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benefit of 100α percent of gross exports, $0 < \alpha \leq \beta$. [18] The difference between the country's losses in default, βPT_t, and the banks' returns, αPT_t, represents the resources expended on averting and enforcing the banks' seizure claims.

Rational lenders will, of course, require some type of seniority clause to be written into the contracts. Here we will assume that the contracts have "negative seniority" clauses, which state that no future lender may be senior. In section IV, we will confirm that a negative seniority clause is indeed sufficient to prevent the country from joining forces with new lenders to game existing ones. Obviously a strict seniority clause would also be sufficient, but we want to emphasize that in our analysis it is not necessary. In practice, most lending contracts between private banks and LDC debtors provide the lender only with a negative seniority clause. [19]

We will assume that in any given period, the country borrows from one of a large number of competitive lending consortiums. Through cross-default clauses, banks within a consortium are later able to bargain with the country over repayments as a single unified entity. [20] Because the country is risk neutral, it is reasonable to temporarily conjecture that *in equilibrium* the country will do all its borrowing in the initial period. Competition among consortiums then insures that

$$E_0 \sum_{i=0}^{\infty} (R_{hi} + \alpha T_{hi} X_{hi})/(1 + rh)^i = 0, \qquad (4)$$

Note that the initial lending consortium will never gain any ex-post monopoly power over the country, as long as the country is always allowed to repay its outstanding loans by replacing them with loans from a new consortium.

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[18] The creditors' profit from "seizure" activities can be the result of a negotiated settlement in the subgame where the country tries to trade while in arrears on its debt. That banks might incur legal expenses would not deter them from going to court if they know they have enough bargaining power to force a negotiated settlement. The nuisance value to the country of having its goods and trading accounts tied up in legal action may be quite high.

[19] For a discussion of negative seniority clauses (the legal term is *"pari pasu"* or equal sharing) in international loan contracts, see Soliven (1983), Gurria-Trevino (1983), and Nurick (1983).

[20] In an earlier version of this paper, Bulow and Rogoff (1986), we extend the results here to the case of several conflicting lenders. For a discussion of some of the practical issues involved, see Brau and Williams (1983) and Lipson (1984).

IV. The Equilibrium Loan Contract

The country's motivation for borrowing is that its discount rate exceeds the world interest rate, i.e., $\delta > r$.[21] Given this assumption, it is obvious that if the risk-neutral country could commit to any feasible future repayment stream, it would immediately borrow and consume $P\bar{y}/r$ units of good F. This amounts to entire present discounted value of its future income (in the limit as $h \to 0$). Future generations would be left to serve as slaves to foreign lenders.[22] Of course, the country cannot make such a commitment so rational lenders would never let it borrow more than it can later be forced to repay. Foreign lenders know that their only leverage over the country is the threat to harass its trade. Since the country always has the option of consuming its output domestically, it can never be forced to make repayments in excess of its gains from trade. Moreover, if $\beta < (P-1)/P$, the country can do better still by trading and letting the creditors seize part of its shipments. Thus the country's credit limit certainly cannot exceed

$$\Re \le \min[\beta, (P-1)/P]P\bar{y}/r. \tag{5}$$

In previous analyses of international lending and default[23], it is typically assumed that a country's credit limit is given by the penalty it would suffer if it were to totally and finally repudiate its debts. In the present model, this penalty is given by expression (5) above. But this credit limit may be much too high, since it does take into account a country's ability to bargain with its creditors.

If bargaining were limited to the banks making take-it-or-leave-it offers, then banks could indeed extract repayments up to the full amount of a country's costs of seizure. This is easily shown to be true even though the country has the ability to refuse such an offer

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[21] One reason δ might be high is if the country's leaders are uncertain about the length of their tenure in office or, equivalently in an unstable country, their life expectancy. For convenience, we assume that if removed from office, the old leaders are replaced by new leaders with identical utility functions.

[22] In a more general setting in which the country is risk averse, it will want to borrow enough to equate the ratio of the present discounted marginal utilities of consumption between any two periods with the world interest rate. If, however, the country's ability to commit to repayments is limited, it may have to shift consumption into future periods; see, for example, Sachs (1984). This case is in most important respects qualitatively equivalent. A significant difference is that in the risk-averse case, the country will take time to run up its debt instead of doing it all at once.

[23] See *e.g.*, Eaton and Gersovitz (1981), Sachs (1984) or Cohen and Sachs (1986).

and store any output of good D for future sale or consumption. If, however, rescheduling negotiations are more realistically viewed as bilateral, repayments can be less. Following Rubinstein (1982), we will employ an alternating offers framework to model negotiations.

As a device for calculating the equilibrium of the model, it is useful to proceed by asking how much creditor banks could bargain out of the country if it owed them an infinite amount of debt. This amount will determine how much the country is initially allowed to borrow.

What does a rescheduling agreement look like in the infinite debt case? In a rescheduling agreement, the banks commit not to harass the country's trade, as long as the country keeps current on a rescheduled payments stream. The banks can make binding commitments by signing a legal contract. The country, of course, cannot commit and retains the option of seeking a new rescheduling contract at some future date. In return for agreeing to new conditions under which they will not harass the country's trade, the banks get a current payment and, possibly, the promise of higher future payments. Marginal debt is worthless in the infinite debt case, so of course the current payment is the focus of the bargaining.

To close the model, we must still specify the exact nature of the bargaining process. We will assume that the banks and the country take turns making offers. The length of time between offers is h, the same as the length of time between production periods. [24] An offer made in period t specifies the amount of money that the country will pay and the amount of goods that the country will be allowed to trade without the threat of seizure. [25]

We can exploit a special feature of our model to intuit an important characteristic of the optimal rescheduling contract. Because $\delta > r$, it is never efficient to have the country pay out more than is necessary to clear the way for trading its current output and any accumulated stock. In particular, the country will never make a large current payment in exchange for

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[24] We will later focus most of our attention on the limiting case as $h \to 0$. Nothing important hinges on our assumption that the bargaining interval and the production interval are the same.

[25] More specifically, we assume that when it is the country's turn to make an offer, the country must first decide whether or not to consume or ship without a rescheduling agreement. If it decides instead to seek an agreement, then the country makes an offer. The banks then accept or reject this offer immediately, with trade occuring at the same time. However, if the offer is rejected, a period passes before a counteroffer is made. When it is the bank's turn to make an offer, the country immediately decides whether to accept the offer, consume or ship without an agreement, or make a counteroffer. However, if it decides to make a counteroffer, it must wait until a period passes to do so.

being able to trade freely for, say, five periods instead of one. Up-front prepayments are never part of any equilibrium bargain because it is inefficient to have the high-discount-rate country make lump-sum payments to the low discount-rate-banks. Consequently, we can restrict our attention to the case where the banks and country exchange offers over how much the country has to pay today in exchange of being allowed to freely ship its current stock of goods. Rescheduling negotiations are held constantly. [26] Obviously, if there were some transactions cost to negotiating in this model, the optimal contract would involve less frequent negotiations.

To rule out supergame equilibria, we are going to assume that the country can produce good D only until date T, with T arbitrarily large. Bargaining can go on forever. We will solve for the equilibrium of the model recursively from time T, and then let $T \to \infty$.

Our notation for describing the bargaining process is as follows. If it is the banks' turn to make an offer at time t, then they offer themselves $q_t P[\bar{y}h + S_t]$ units of good F, and they offer the country $[1 - q_t]P[\bar{y}h + S_t]$, $0 \leqslant q_t \leqslant 1$. If it is the country's turn to make an offer in period t, it offers banks $q_t' P[\bar{y}h + S_t]$ and offers itself the remainder. When a rescheduling agreement is reached, the country trades and its revenue is divided according to the agreement.

We restrict attention to perfect equilibria. Roughly speaking, in a perfect equilibrium neither side can influence the bargaining by trying to make a threat (such as "take this offer or I'll walk") which it would not carry out if called upon to do so. Formally, in every subgame of a perfect equilibrium, the strategies used by each of the players must constitute a Nash equilibrium. In a perfect equilibrium, either party will agree to a rescheduling proposal if the proposal offers the party at least as much in discounted present value as it can expect to attain by waiting, given the strategies of both parties.

At time T, there is no future production so the two parties are bargaining only over the fate of final-period production, $\bar{y}h$, plus any stored amount of good D which the country has entering period T, S_T. In equilibrium the following conditions will have to hold $\forall t \geq T$:

$$1 - q_t = \max[(1 - q_{t+h}')\frac{(1 - \gamma h)}{(1 + \delta h)}, 1/P, (1 - \beta)] \tag{6}$$

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[26] Equivalently, the parties can sign a one-time rescheduling agreement which brings the country's future payments into line with what it would have to pay if it were to reschedule every period.

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$$q'_t = q_{t+h} \frac{(1 - \gamma h)}{(1 + rh)} \tag{7}$$

Equation (6) states that for the banks' offer in period $t \geq T$ to be acceptable to the country, they must give the country as much (in discounted utility terms) as the maximum of what the country could get if it (a) turned down the offer and made the minimum acceptable counteroffer in the next period; (b) consumed the output domestically; or (c) simply shipped the good without a rescheduling agreement and suffered the losses caused by rerouting and/or seizure. Equation (7) states that if the country makes an offer, it must give the banks as much (in present value) as the banks would get if they turned down the country's offer and made a minimum acceptable counteroffer in the next period.

Rubinstein (1982) showed that this game has a unique perfect equilibrium.[27] It is found by solving the system of difference equations characterized by eqs. (6) and (7) for the unique stationary state:

$$q(h) = \min\left(\frac{(\gamma + \delta)(1 + rh)}{2\gamma + \delta + r + h(\delta r - \gamma^2)}, \frac{P - 1}{P}, \beta \right) \tag{8}$$

if it is the banks' turn to make an offer in period T, and

$$q'(h) = \min\left(\frac{(\gamma + \delta)(1 - \gamma h)}{2\gamma + \delta + r + h(\delta r - \gamma^2)}, \frac{(P - 1)(1 - \gamma h)}{P(1 + rh)}, \beta \frac{1 - \gamma h}{1 + rh} \right) \tag{9}$$

if it is the country's turn to make an offer in period t. Note that the parties always reach an agreement *without delay*. Bargaining always produces an efficient outcome. Hence there will be no trade or debt repayments after period T.[28] Another key result, due to the risk neutrality assumption, is that the percentage shares in any bargain will be independent of the amount at stake. It is this result, which also holds in all periods prior to T, that provides the model with a stationarity that makes it readily solvable.

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[27] By writing each side's offer only as a function of time, we have implicitly ruled out history-dependent strategies. However, as Rubinstein shows, this equilibrium is unique even if history-dependent strategies are allowed. For a very simple and elegant proof of Rubinstein's results, see Shaked and Sutton (1984). For a review of bargaining theory, see Sutton (1986). Note that equations (6) and (7) constitute a system of two first-order difference equations, with both roots outside the unit circle. Hence once we have eliminated history-dependent strategies, the only feasible path is the one which begins at the steady-state (since q is bounded).

[28] Efficiency is a consequence of our assumption of full information. See, for example, Admati and Perry (1987) for a model with asymmetric information and bargaining inefficiencies.

Now consider the bargaining problem in the penultimate production period $T - h$. Both parties know the equilibrium in period T, when all remaining output will be divided up according to (8) or (9). It is straightforward to show that when it is the country's turn to offer in $T - h$, its offer will be exactly equal to $q'(h)$ as given by eq. (9), and if it is the banks' turn, their offer will be $q(h)$ as given by eq. (8). (If it is the country's turn to offer in $T - h$, the condition for perfect equilibrium will be the same as expression (7), except that q'_{T-h} replaces q'_t, and q_{t+h} is replaced by $q(h)$ from eq. (8).) An agreement will be reached in $T - h$, and all inventory in $T - h$, S_{T-h}, plus production, $\bar{y}h$, will be traded immediately. The consequence is that $S_T = 0$, and in the period T the parties will negotiate only over final production $\bar{y}h$.

Similarly, we can solve all periods prior to $T - h$ recursively. We find that in each period the output of that period is traded, with the banks receiving $q(h)P\bar{y}h$ in periods where they make an offer, and $q'(h)P\bar{y}h$ in periods where it is the country's turn to make an offer.[29] In the limit as $h \to 0+$ (continuous bargaining)

$$\lim_{h \to 0+} q(h) = \lim_{h \to 0+} q'(h) = q = \min\left(\frac{\gamma + \delta}{2\gamma + \delta + r}, \frac{P - 1}{P}, \beta\right) \qquad (10)$$

Whereas equation (10) is substantively identical to eqs. (8) and (9), we will use (10) in our discussion in the rest of the paper, partly because it is slightly simpler, and partly because the limiting case of continuous bargaining seems the most realistic.

Equation (10) indicates that the equilibrium rescheduling agreement will fall into one of three regions, depending on which of the three right-hand side terms in (10) is the minimum. We call these the *bargaining region*, the *autarky-constrained region*, and the *punishment-constrained region* respectively. Note that the three RHS terms in (10) each depend on entirely different parameters, and are monotonic in all their arguments. Therefore, varying any one parameter of the model will only affect the value of one term and will not affect the relative ranking of the other two regions.

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[29] With risk aversion, the problem becomes much more complex. First, the percentage shares at time T are no longer independent of S_t since, (loosely speaking) the more risk averse party will be at a disadvantage when bargaining over relatively large amounts; see Roth (1984). Hence one complication is that storage effects future bargains. Second, it is no longer possible to separate the country's consumption-smoothing problem from the bargaining problem.

In the bargaining region, the bank gets $P\bar{y}(\gamma + \delta)/(2\gamma + \delta + r)$, and the country gets $P\bar{y}(\gamma + r)/(2\gamma + \delta + r)$. An important feature here is that the banks receipts are linear in the world market value of the country's production of tradeables, not just the gains from trade $(P-1)\bar{y}$. The reason that the bank can effectively bargain over the gross value of tradeables and not just the country's gains from trade, is that in the bargaining region, the country's threat to either consume the goods or ship them without a rescheduling agreement is not perfect, and therefore irrelevant.

The relative shares of the two parties in the bargaining region are in inverse proportion to their rate of impatience in reaching a settlement, $\gamma + \delta$ for the country and $\gamma + r$ for the banks. Note that the rate of impatience for each side is determined not just by their respective rates of time preference, but also by the rate at which the good deteriorates in storage, γ. If γ is large, as with nondurable exports, then the shares in the bargaining region are roughly equal. *Note that the assumption of storeability does not prevent us from applying our paradigm to a country which exports perishable goods.* Think of the country as holding bananas in port, awaiting a rescheduling agreement. As long as a series of counteroffers can be exchanged in the time it takes for the bananas to rot, the banks cannot simply make take-it-or-leave-it offers.

The higher the world interest rate, r, the *less* a country (which already owes an infinite amount) will have to pay. When world interest rates rise, the banks become more impatient to get their money out of the country, and into high-yielding investments elsewhere. The country can exploit this impatience to its advantage.[30] This logic underlies our result in section V that an unanticipated rise in world interest rates can actually favor the debtor country. In the non-stochastic model of this section, however, higher world interest rates will always make the country worse off because they are perfectly anticipated.

When the gains from trade are small $[P < (2\gamma + \delta + r)/(\gamma + r)]$ and the potential costs of seizure are relatively high $(1/P > 1 - \beta)$, then the country's threat to consume in the absence of a bargaining agreement becomes credible. In this autarky region, the payments to the banks prescribed in the bargaining region exceed the total gains from trade. However, an agreement is always reached because the banks will find it in their interest to make an

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[30] Given that $\delta > r$ if the spread between the two is a constant, a rise in both rates still hurts the banks' bargaining position.

offer allowing the country to trade for a payment just infinitesimally smaller than the total gains from trade. Within the autarky region, the level of repayments is extremely sensitive to the world market price of the country's output, P. Although in the other regions a fall in P affects the banks and the country proportionately, in the autarky-constrained region the banks bear the whole loss.

If β is the minimum argument on the right-hand side of (10), the country's threat to trade without an agreement is credible. The punishment-constrained region is the relevant one whenever the banks have very little ability to impose damage on the country's trade. Interestingly, in the punishment-constrained region, the bargaining equilibrium is the same as the equilibrium when banks can make take-it-or- leave-it offers.[31] (When one introduces uncertainty, as in the next section, our bargaining-theoretic analysis implies very different results from earlier analyses even if equilibrium is in the punishment-constrained region in all states of nature.) The model thus provides a rationalization for the equilibrium generally considered in earlier non-stochastic models. In the punishment-constrained region, the bank gets $\beta P\bar{y}$ and the country does not have any way to negotiate a lower payment. It cannot credibly commit to refusing an offer which gives it infinitesimally more than $(1 - \beta)P\bar{y}$, the amount it would get from shipping without a rescheduling agreement. The reason is that such an offer is already as good as the country can hope to get through continued bargaining.

Although the banks' ability to inflict damage on the country through seizure sets a ceiling on its repayments, the ability to increase seizures does nothing for the banks outside of the punishment-constrained region. An increase in β has no effect on debt payments in the bargaining region. It also would not help the banks to be able to reduce the deadweight loss involved in the seizure technology. So long as the banks get any positive net revenues from seizure, i.e., $\alpha > 0$, it is completely credible for the banks to threaten maximal seizure activities if the country tries to ship without a rescheduling agreement. On the other hand, if the equilibrium is in the bargaining region, it does not matter if $\alpha P\bar{y} \geq P\bar{y}(\gamma+\delta)/(2\gamma+\delta+r)$, in which case banks obtain less through bargaining than they would if the country traded without a rescheduling agreement. The banks' difficulty is that they cannot initiate seizures

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[31] Obviously, this is also the case in the autarky region.

until the country initiates trade; this is why the size of α does not matter.[32]

The maximum amount the country can borrow is calculated by taking the present value of the maximum repayments it would make if it had a (nominally) infinite liability. Such a loan would give the banks annual payments equal to what is prescribed by (10), discounted by the interest rate r:

$$\Re = P\bar{y}q/r. \tag{11}$$

The market value of the country's debt can never exceed the amount given by (11). Once the country has borrowed $P\bar{y}q/r$, *marginal debt is worthless*. Note that a higher value of r can reduce the maximum loan in two ways. First, a higher discount rate makes the present value of any given stream of repayments less valuable to the bank. Second, if equilibrium is in the bargaining region, an increase in the discount rate of the banks makes them worse bargainers and thus decreases the level of repayments in every period. Since we have assumed that banks are competitive and earn zero profits on their initial loans, both factors will necessarily imply a loss of utility to the country's leaders. Of course, we have been assuming that the country's output is not growing. If its output grows at rate g, then $\Re = P\bar{y}q/(r - g)$. [33] If the country's growth rate exceeds the relevant interest rate, it can borrow as much as it wants.

V. Stochastic Output and Interest Rates

With uncertainty, the maximum amount the country can be forced to pay fluctuates. Here we derive the optimal incentive-compatible lending contract for the stochastic case, and examine some of its properties. Of course, even when payments fluctuate, there may never be any need to formally recontract. But in general, this is only true if the explicit legal contract is fully state contingent, and never calls for the country to make higher payments than it could get by initiating rescheduling negotiations.

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[32] If $\alpha < 0$, then the banks' threat to seize shipments is not credible and they won't be paid a peso in a perfect equilibrium. In this case, one would need to appeal to a reputational supergame argument to rationalize any equilibrium in which repayments (and also loans) are made. It seems quite plausible to assume $\alpha > 0$ at some level of seizure activity whenever the country trades at the efficient level ($T = \bar{y}$). See also footnote 18.

[33] One possible extension of the model would be to introduce investment along the lines of Cohen and Sachs (1986), and Sachs (1984). If the country can precommit to invest some part of its share of the gains from trade, creditor banks will accept lower current repayments and/or agree to reductions in the face amount of their claims.

The maximum amount the country can initially borrow, $\Re$, depends on the probability distribution of the maximum payments the country will pay. It is simplest to begin with the case where output is stochastic, since the country's payments are linear in output. Assume that output each period is independently and identically distributed on the interval $[y^{\min}, y^{\max}]$, according to the density function $f(y)$. Then the country's borrowing limit is given by:

$$\Re = qP \int_0^\infty e^{-rs} \int_{y^{\min}}^{y^{\max}} yf(y)dyds, \tag{12}$$

or equivalently

$$\Re = qP\frac{E(y)}{r} \tag{13}$$

where $E(y)$ is the expected level of output. Generalization of (12) and (13) to allow for intertemporal correlation in output levels is straightforward. Because $\delta > r$, the country will clearly borrow $\Re$ immediately in return for incurring obligations that will lead to the same stream of repayments as infinite debt.

Stochastic interest rates present slightly more technical problems, since our analysis of bargaining imposed constant interest rates. Whereas it is feasible to extend the model to allow for fairly general stochastic processes for interest rates, we shall only analyze a special simple case, one which nevertheless allows us to bring out some important points.

We shall assume that there will be a one-time permanent change in the world interest rate, occuring at some random time t with the density function $\lambda e^{-\lambda t}$ for $0 < \lambda$, $0 \le t \le \infty$. When the shock occurs, the post-shock interest rate will be $\tilde{r}$, where $\tilde{r}$ is distributed with probability density $g(\tilde{r})$ along the positive interval $[r^{\min}, r^{\max}]$, $r^{\max} < \delta$. In this case, the collateral the country has to offer can be thought of as the sum of two claims, one of which pays $\tilde{q}P\bar{y}$ in all periods *after* the shock (where the banks' share $\tilde{q}$ is a function of the realization of $\tilde{r}$) and one of which pays a fixed amount $q^\Phi P\bar{y}$ in all periods prior to the shock.

The value of the claim which requires payments only in the post-shock period is:

$$\Upsilon = P\bar{y} \int_0^\infty \lambda e^{-(\lambda+r)t} E(\tilde{q}/\tilde{r})dt = P\bar{y}\lambda E(\tilde{q}/\tilde{r})/(r+\lambda). \tag{14}$$

That is, after the shock the banks get a perpetuity with payments at rate $\tilde{q}P\bar{y}$, discounted forever at rate $\tilde{r}$. The likelihood that the perpetuity will begin in year t is $\lambda e^{-\lambda t}$, and the

present discounted value of a dollar in year t is e^{-rt}. Similarly, the value of the loan on which payments are received only before the shock is

$$\Omega = P\bar{y} \int_0^\infty e^{-(\lambda+r)t} q^\Phi dt = P\bar{y}q^\Phi/(r+\lambda). \qquad (15)$$

The maximum amount the country can borrow, $\Re$, is found by summing $\Upsilon + \Omega$.[34]

The anticipation of high future interest rates is bad for the country, just as in the nonstochastic case. If the cumulative density function of interest rates is stochastically decreased, so that the probability that rates will be below any given level $r^\star$ is reduced, then the country will be able to borrow less. First, future repayments will be discounted more heavily. Second, banks anticipate that the country will be a more effective bargainer when their opportunity cost of outside investments is high. However, although *anticipated* interest rate increases are bad for the country, it may benefit by an *unanticipated* interest rate increases. It is a simple matter show that this is the case once the country is "loaned up"; that is when the country has already committed to a stream of repayments greater than it can be forced to repay in any state of nature. In this case, an *unanticipated* interest rate increase will then either reduce or leave unchanged the payments the country can be forced to make.

An unanticipated rise in world interest rates can benefit even a debtor with floating rate debt indexed to the world interest rate. Thus the fact that there are more LDC defaults when world interest rates rise need not be explained solely be debtor countries' inability to handle the excess debt burden. It can also be due to the way in which high world interest rates improve a debtor's bargaining position. Payments can actually go down. One can easily extend the analysis to show that this "bargaining effect" depends on real interest rates, and is not a function of the inflation rate.

Finally, we consider the optimal form of sovereign lending contracts. The issue is how to make best use of the country's only vehicle for legal precommitment, the creditor-country courts. We will continue to assume that the country's discount rate is higher than the world

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[34] In general q^Φ does not equal $\bar{q}$, the level of payments the country could be forced to make if no shock were every anticipated. That is because the bargaining over each unit is affected by the possibility that the banks' opportunity cost of waiting may change at some point. However, our bargaining model can still be solved when uncertainty about interest rates follows a Poisson process, and it is a simple matter to derive $q^\Phi = [\delta + 2\lambda E(\bar{q})]/(\delta + 2\lambda + r)$, (as $h \to 0+$). Hence if $E(\bar{q}) = \bar{q}$, then payments in the preshock period will be $\bar{q}$.

interest rate in all states, so that the country would like to borrow the maximum possible amount. The optimal legal contract gives the banks enough bargaining power to assure that they will be able to collect the maximum possible amount in all states of nature. Whereas such a contract implicitly gives the banks a contingent claim on the country's production, there are at least two closely related reasons (within the scope of the model), why it will be in the interests of the parties to formally label the country's obligation "debt". First, suppose instead that the banks are given equity in the country's export industries. Then if the country later adopts a policy interfering with repatriation of dividends, or if it taxes exports, the banks' share is reduced and they do not have the same legal recourse given to them by a loan default. Second, and perhaps more relevant to uncertainty about production, the variables which determine repayments may be observable, but not verifiable. That is, although both parties may have equal knowledge about developments in the country's productive capacity, it may be difficult to accumulate evidence which will stand up in U.S. courts. Most debtor countries do not publish national GNP accounts and, even if they did, these could be distorted in a way which would be difficult to document. Therefore, it may be impossible to write enforceable contracts which are explicitly contingent on the key repayment variables and there may sometimes be a need to write rescheduling agreements.

We can see, then, why the optimal legal contract might set the face value of the debt so high that the country will partially default in all but the most favorable states of nature. Note that it is irrelevant how the discrepancy between the market value and the face value of the original loan is created. Debt can be sold at an original issue discount, or the banks can impose large service fees on the country, so that the amount of money given the country is less than the face amount of the loan.

The explicit contract between the banks and the country may also deviate from the implicit contract because the countries cannot write sidepayments from creditor-country taxpayers into the contract, an issue we consider next. It may be necessary to have rescheduling negotiations in order to get creditor-country taxpayers to cough up their "share".

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VI. Creditor Country Government Participation

Implicit in our earlier analysis is the assumption that creditor country governments can commit to not making sidepayments to "facilitate" a rescheduling agreement. Unfortunately for them, if such a commitment is not possible, the banks and the debtors may be able to force third-party (creditor country taxpayer) sidepayments.

The problem is that the LDCs would not be the only losers if trade were made more expensive. Their trading partners would lose too, especially if several debtors defaulted simultaneously. [35] Still, from our earlier analysis, it might seem that there is no way for banks and the debtor countries to exploit the vested interests of "innocent" third parties. After all, our model predicts that in bilateral negotiations the banks and the country will come to a rescheduling agreement immediately, with no loss of trading benefits for anyone. However, one can show that if the gains from trade with LDCs are important enough to creditor-country governments, the banks and the LDCs can game other creditor-country citizens into making sidepayments. [36] If these sidepayments are anticipated, they may increase the amounts that banks will lend to the LDCs in the first place. Note that if the country faces competitive lenders, then all the benefits of *perfectly anticipated* taxpayer sidepayments accrue to the borrower. These sidepayments can take many forms, ranging from increased funding for multilateral lending agencies, to tax breaks on bank income from LDC loans. Of course, investors' expectations about creditor-country sidepayments are incorporated in the secondary market prices cited in footnote 2.

VII. Conclusion

In our dynamic bargaining model of sovereign debt, all the players are completely rational and fully anticipate the possibility of reschedulings. However, many observers now think the banks were crazy to lend LDCs so much money in the seventies, at least without charging vastly higher risk premia. Which view is correct? It seems to us that an important

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[35] Fear of a banking crisis, or at least large payments by federal deposit insurance agencies, is also cited by some analysts as a reason why the industrialized countries have a vested interest in successful negotiations. Such concerns give debtors and bank bargaining leverage with creditor-country governments.

[36] See, for example, *Euromoney*, March 1986, p.50: "Unfortunately for Uncle Sam, the commercial banks are well aware that Mexico is too vital to U.S. interests to let go, so will be tempted to be even tougher than usual in the expectation that what they do not provide, the American taxpayer in some form will." Details of our technical analysis are presented in an earlier version of this paper, Bulow and Rogoff (1986).

part of what happened is that the banks just had bad luck. During the early 1980's the terms of trade turned sharply against many, though not all, LDCs. [37] Real interest rates rose to levels far above those which prevailed during most of the sixties and seventies. Our bargaining analysis predicts that an unanticipated interest rate rise has two negative effects on the market value of LDC debt. Not only do higher interest rates reduce the present value of any given stream of debt repayments, but higher interest rates also hurt the bargaining position of bank creditors. In rescheduling negotiations, "loaned up" LDC debtors can exploit banks' impatience to get out their money and place it in high-yielding investments elsewhere. Finally, our analysis suggests the possibility that banks may have rationally anticipated their ability to bargain sidepayments out of creditor-country taxpayers.

The Rubinstein-type model developed here does not endogenize every element of the bargaining process. The exogenous elements are summarized in the alternating offers framework. (A party would benefit if it got to make more than half of the offers, for example.) The model does successfully endogenize some aspects of bargaining, such as the effect of relative discount rates and threat points. Taking account of the basic principles of bargaining theory has also made our treatment of the effect of uncertainty on implicit LDC debt contracts more realistic.

Finally, we note two avenues for future research. Relaxing our risk neutrality assumption would allow one to consider future consumption smoothing loans as a motivation for making debt repayments. Perhaps more significantly, the full information specification of our model implies that no outright repudiations or delays in renegotiations will occur. Adding informational asymmetries, while perhaps requiring some simplifications, should provide a richer framework for examining suspensions of repayments and other breakdowns.

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[37] For example, from 1979-82 Brazil's average export dollar prices fell by 5.9 percent while import dollar prices rose by 36.7 percent; see Diaz-Alejandro (1983, p. 523).

Appendix: The Efficacy of Legal Sanctions*

A crucial assumption of our paper is that industrialized country creditors can impose costs on deadbeat LDC debtors which are significant relative to current debt levels. Here we argue that this assumption is entirely plausible. Real world sovereign debt contracts do provide creditors with binding and enforceable contractual rights, that is, rights which will stand up in *creditor-country* courts. Moreover, the limited evidence suggests that these rights do help banks interfere with the international goods market and capital market transactions of any repudiating debtor.

Since World War II, the rights of creditors have been strengthened as the major creditor countries have changed their policies on foreign sovereign immunity. "Nearly all non-Communist states now adhere to the restrictive theory, which distinguishes between 'governmental activities' *(de jure imperii)* and activities of the kind that may also be carried on by private persons *(de jure gestionis)*", [38] such as commercial activities. In the United States, the policy of restricted foreign sovereign immunity was formally adopted with the Tate letter in 1952, and codified in the Foreign Sovereign Immunities Act (FSIA) of 1976. In Great Britain, the State Immunity Act 1978 accomplished the same thing.

These legal changes essentially make it easier for prospective sovereign debtors to court creditors, by strengthening creditors' rights in default. [39] A key feature of the FSIA is that it permits countries to waive sovereign immunity in many commercial transactions. In the last ten years, most LDC debt contracts have contained explicit waivers of sovereign immunity, with the details of the waiver a significant bargaining point. [40] Consequently, countries which now try to repudiate their debts find it extremely difficult to obtain letters of credit, and are forced to conduct roundabout, secret transactions even to pay cash in advance.[41]

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* We thank Tom Campbell of Stanford Law School and Harold Koh of Yale Law School for helpful discussions. Of course, all the opinions and any errors in this material are the sole responsibility of the authors.

[38] American Law Institute (1981, pp.177-78).

[39] For more details see Delaume (1984) and Wood (1980).

[40] See,*e.g.*, Soliven (1983), Gurria-Trevino (1983), Nurick (1983), and Bradlow and Jourdan (1984).

[41] See Alexander (1987, p.42).

Examples in recent years where creditors have been able to effectively enforce their legal rights include Kennecott Copper's response to its Chilean nationalization.[42] Kennecott's strategy was so successful that even though it had sold a 51 percent interest in its Chilean operations to the government in 1965, in 1971 it received compensation that was greater than the book value of the operations prior to the sale. [43] Also, the threat of attaching oil exports was sufficient to extract substantial compensation from Algeria, Iraq, and Libya for their nationalization of Western oil companies in the 1970s.[44]

The key point here is the following. Suppose Brazil repudiates its debts to Citicorp. If Citicorp's detectives can track down any bank accounts Brazil holds in the U.S., or even any computers purchased by Brazil that have not yet been shipped, it can attach the assets, arguing they are Brazilian property and subject to foreclosure. Because Brazil owes significant amounts to banks in all the major industrialized countries, it would not have an easier time elsewhere. Indeed, it is no accident that syndicated bank loans generally involve banks from all the borrower's major trading partners, and that the loans contain equal-sharing and cross-default clauses. Brazil also cannot costlessly evade seizure simply by creating dummy "private" corporations through which to conduct its international transactions. Creditors may be able to overcome this ploy if they are able to demonstrate that the dummy corporation is merely a veil which is being used to circumvent their rights. [45] It is very important to note that regardless of whether efforts to attach Brazil's assets eventually hold up in court, they present a credible threat. Creditors know that because of their suits' nuisance value, it will be worthwhile for Brazil to offer a settlement, as in the oil and copper cases.

Estimates of the cost of sanctions are few and necessarily imprecise. [46] However, we do

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[42] Kennecott was able to attach the actual bars of copper exported by Chile after the nationalization. See Keesee(1978, p.345).

[43] Moran (1973,p.284).

[44] Moran (1973, p.286).

[45] In the U.S., the ability of claimants to pierce the corporate veil, called the *Deep Rock* doctrine, was enunciated in Taylor v. Standard Gas & Electric Co., 306 U.S. 307 (1939). See Krotinger (1942).

[46] Hufbauer and Schott (1985,p.414) estimated the cost to Rhodesia of the trade sanctions imposed against it, gross of some gain from debt repudiation, to be just over fifteen percent of GNP per annum. Their back-of-the-envelope estimates for other cases involving sanctions were significantly smaller, but in the vast majority of cases the sender of the sanction was only was only attempting to curtail a small fraction of the receiver's trade. Nevertheless,

know that for many developing countries, most of foreign trade is with their industrialized creditors. In the case of Mexico, industrialized countries account for about 90 percent of imports and exports. For Brazil, the comparable figures are 60 percent of imports and a slightly higher fraction of exports; this despite Brazil's heavy reliance on imported oil.[47] In 1984, the GDPs of Argentina, Brazil, and Mexico totaled $433 billion. Trade disruptions costing less than three percent of GDP, or nine percent of the total value of imports and exports, would be more costly than making payments of five percent of total external debt. [48] Such payments, made consistently, would make commercial bank loans look very solid. Sanctions of half this magnitude could fully support the current market value of these loans, even ignoring the value to creditors of any subsidies they might expect to receive from their home countries. Of course, as we emphasize in the text, the ability of banks to inflict a given amount of damage does not imply they can extract payments of the same magnitude. Nevertheless, trade sanctions can plausibly explain the actual repayments that do occur.

Certainly the statements of a number of prominent debtor country leaders, such as Jesus Silva Herzog [49] and Corazon Aquino [50] have indicated their belief that banks' ability to threaten a country's trade is an important factor in debt rescheduling negotiations.

Finally, our analysis is broadly consistent with evidence from the thirties, when the last great wave of sovereign debt reschedulings occurred. [51] The defaults occurred at a time when LDCs' gains from trade had just plummeted. The U.S.'s infamous Smoot-Hawley tariff act was signed into law in June of 1930, and many other countries then raised their tariff barriers as well. The LDC debt market dried up shortly thereafter,

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they argue that these sanctions have often been successful.

[47] See International Monetary Fund, *Direction of Trade Statistics* (1987).

[48] World Bank, *World Debt Tables* (1986), and *Direction of Trade Statistics, op. cit.*

[49] "We asked ourselves the question what happens if we say 'No dice. We just won't pay.' There are some partisans to that. But it didn't make any sense. We're part of the world. We import thirty percent of our food. We can't just say 'Go to Hell'." (Jesus Silva Herzog, then Mexican Finance Minister, quoted in Kraft (1984, p.4.))

[50] "Under the continued threat of a cut-off in trade credits which would given new vigor to the enemies of democracy, and given them a signal to seize the moment, we had to relent and sign an agreement." (Corazon Aquino, quoted in the July 28, 1987 *Financial Times*, p.1.)

[51] Though, as we have emphasized, creditors' legal rights were more limited during the thirties, and they would have had to rely more heavily on cooperation from their own governments in imposing sanctions.

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and beginning in early 1931, a large number of LDCs, beginning with Bolivia,[52] fell into arrears on their foreign bonds. [53] However, in almost all cases, debtors ultimately entered into rescheduling agreements with bondholders' committees and eventually the two sides arrived at settlements involving at least partial repayments. [54]

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[52] See Sachs (1984).
[53] Prior to the advent of national deposit insurance, most LDC lending was channelled through bonds instead of bank loans.
[54] See Folkerts-Landau (1985).

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