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The Political Economy
of the International Debt Crisis

by

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THE POLITICAL ECONOMY OF THE INTERNATIONAL DEBT CRISIS

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1. INTRODUCTION

The international debt crisis has challenged economists to formulate theories that may shed light on its various facets. Thus Krugman (1988), Helpman (1988), Froot (1989), Sachs (1988a, 1988b) among others, studied the benefits of voluntary debt reduction, Kenen (1989), Eaton and Gersovitz (1981) examined the incentive for debt repudiation, Bulow and Rogoff (1989), Gale and Hellwig (1989) developed game-theoretic models of renegotiation. Surprisingly, there has been little attempt to consider the debt problem from a political economy perspective. [1]

In this paper, we argue that the recent rounds of debt negotiations (with diverse features such as conditionality provisions [2], swap programs with side payments in kind [3], etc.), the involvement of the World Bank and the IMF, the active role played by the U.S. Treasury, can be given a coherent explanation in terms of the theory of rent seeking. Of course it has been long recognised that a substantial part of government activities involves the transfer of income from one group to another, and that the interaction between market mechanisms, which allocate resources in response to price signals, and political mechanisms, which transfer income according to influences [4],determines the final distribution of real income (broadly defined to include social status etc.). What is interesting in the recent international debt crisis experience is the global character of the interplay amongst participants of the game : private banks, debtor country governments, creditor country governments, international institutions, and interest groups (rent defenders and rent opposers) in the countries concerned.

Was it rational for private banks to provide, as they did, additional loans to troubled debtor countries when every dollar of additional lending was immediately discounted by the market ? Why did creditor country governments intervene in the negotiations ? Why did the IMF and the World Bank seek an expansion of their scope of activities and require dozens of countries to adopt economic reforms as a condition for financial aid ? Why was there strong

resistance to policy reforms on the part of key actors within debtor country governments ?

A simple model is formulated in an attempt to provide a coherent framework for the analysis of the above questions. We envision the formation of a coalition encompassing the private banks, the creditor country governments and the international institutions. The coalition negotiates with each troubled debtor country government that itself reacts to pressure groups within the country. The outcome of the game is shown to depend on the rates of time preferences of various actors, the extent to which actions of individual players can be monitored, and the historical distribution of rents within the debtor country. Higher concentration of rents tends to reduce the likelihood of a settlement involving new lending, while lower rates of time preference would increase it.

2. THE BASIC MODEL

For simplicity, we consider only one troubled debtor country. Let B denote its outstanding debt. This amount was borrowed at the beginning of period one to finance an investment project. [5] The country was supposed to pay rB at the end of period one and (1+r)B at the end of period two. Investment took place in period one, but the resulting output was zero, perhaps because of inefficient management. [6] We assume that rB has been paid and that there is no prospect that (1+r)B will be paid in period two. In the absence of active intervention from international institutions and creditor country governments, one would still expect that a negotiated settlement can be achieved. Complete default is unlikely, for two reasons. Firstly, the debtor country may want to maintain a good reputation, because it would want to borrow again in the future. (The theoretical argument that "reputation matters" has been advanced by Eaton and Gertsovitz (1981) and has been disputed by Bulow and Rogoff (1989).) A second reason for the debtor country to make a partial repayment is that legal remedies are available to creditors. [7] Thus Bugow and Rogoff (1989, p.161) argued that debtor countries would not unilaterally cancelled the debts, because ... "the nuisance value (to the defaulting debtor country) of having its goods and trading accounts tied up in legal actions may be quite high". Private banks, on the other hand, may want to adopt a "partial forgiveness" policy, because a lower debt overhang may increase investment incentives in the debtor country. Thus Krugman (1989) argued that the debt may be so high that countries are on the wrong side of the "debt-relief Laffer curve". [8] For these reasons, we may safely presume that a negotiated settlement would be obtained, and that such an outcome

would be Pareto optimal, provided that banks overcome the free-rider problem. [9]

THE BANKS

In what follows, unless otherwise stated, we assume that banks form a syndicate in their dealing with the troubled debtor country, thus abstracting from the free-rider problem. We take it that the negotiated outcome is either a voluntary debt relief (the debtor country is to pay banks, at the end of period two, an amount bB where $b < 1+r$) or new lending. (This is only to simplify matters, and there are no reasons why a combination of the two is not possible.)

Assume that with debt relief, the creditors can be certain that bB will be paid (perhaps through taxation). In the case of new lending, we take it that it will be used to complete the unfinished project. Consider for the moment the simple case where exactly L dollars are needed, and that the resulting output is given by :

$$Q = \theta F(L) \qquad (1)$$

where θ is a random variable, $0 < \theta_1 \leq \theta \leq \theta_2$, with distribution $G(\theta, R)$ where R denotes the extent of economic reforms to be undertaken by the debtor country government. Since

$$G(\theta', R) = \text{Prob}(\theta \leq \theta' \mid R) \qquad (2)$$

we assume that $G(\theta, R) > 0$ for $\theta > \theta_1$, and

$$G_R < 0 \quad \text{for} \quad \theta_1 < \theta < \theta_2 \qquad (3a)$$

$$G_R = 0 \quad \text{for} \quad \theta = \theta_1 \quad \text{and for} \quad \theta = \theta_2 \qquad (3b)$$

Thus a distribution with a higher R represents a first order stochastic dominance over distributions with lower R .

Given L , the implicit contractual payment to the banks, P , is specified as follows :

$$P = (1+r)B + (1+r)L \qquad \text{if} \quad \theta \geq \theta_c \ , \qquad (4)$$

$$P = \theta F(L) \qquad \text{if} \quad \theta < \theta_c \,, \tag{5}$$

where θ_c is defined by :

$$\theta_c F(L) = (1+r)B + (1+r)L \tag{6}$$

Let s represent the banks' opportunity cost of funds ($s \leq r$). Clearly, as long as the following condition holds,

$$EP \geq (1+s)L + bB \tag{7}$$

banks will find new lending preferable to voluntary debt relief. If (7) holds with equality, then banks will be indifferent between the two alternatives, and in this case,

$$[\,(EP)\,(1+s)^{-1}\,] \;/\; [\,L + (bB)\,(1+s)^{-1}\,] \;=\; 1 \tag{8}$$

Notice that if $b < (1+s)$ (and we assume this) then V, the value (in the secondary market) of a dollar of new loan, is strictly less than 1 :

$$V = (EP)\,(1+s)^{-1} \;/\; (L+B) \;<\; 1 \tag{9}$$

That banks are willing to advance new loans even if $V < 1$ is explained [10] by the fact that this raises the market value of a dollar of old loan from $b(1+s)^{-1}$ to

$$[\,L + bB(1+s)^{-1}\,] \;/\; [\,(L+B)\,] \;=\; V \;>\; b(1+s)^{-1} \tag{10}$$

There is of course a strong incentive for individual banks to free ride : by not providing new funds, they can receive the benefit of increased asset value without paying the cost. We assume for the moment that syndication and implicit penalty provision make this problem negligible.

Consider the case where (7) does not hold, so that banks prefer not to advance new loans. Now enter the international institutions (the IMF and the World Bank). If these institutions can provide part of the new funds at subsidized interest rates, the private banks will have an incentive to join in. To see this, suppose the IMF proposes to lend αL to the debtor, at the rate of interest $i < s$, provided that the private banks lend $(1-\alpha)L$, and that the debtor country government's scope of economic reform is R^*. Assume, for simplicity only,

that i is so low that

$$\theta_1 F(L) > (1+i)L$$

The payment received by the private banks is :

$$P = (1+r)[B + (1-\alpha)L] \quad \text{if} \quad \theta \geq \theta(\alpha) \tag{11}$$

$$P = \theta F(L) - (1+i)\alpha L \quad \text{if} \quad \theta \leq \theta(\alpha) \tag{12}$$

where $\theta(\alpha)$ is defined by :

$$\theta(\alpha) F(L) = (1+r)[B + (1-\alpha)L] + (1+i)\alpha L \tag{13}$$

Clearly the banks would accept the deal if and only if

$$EP(\alpha) \geq (1+s)(1-\alpha) L + bB \tag{14}$$

where

$$EP(\alpha) = (1+r)[B + (1-\alpha)L] \int_{\theta(\alpha)}^{\theta_2} g(\theta, R)\, d\theta +$$

$$\int_{\theta_1}^{\theta(\alpha)} [\theta F(L) - (1+i)\alpha L]\, g(\theta, R)\, d\theta \tag{15a}$$

and

$$g(\theta, R) = G_1(\theta, R) \tag{15b}$$

Define the banks' profit as

$$\pi(\alpha) = EP(\alpha) - [(1+s)(1-\alpha) L] - bB \tag{16}$$

It can be verified that π is strictly concave α. Thus

$$\pi'(\alpha) = -(1+r)L \text{ Prob}[\theta \geq \theta(\alpha)] - (1+i)L \text{ Prob}[\theta \leq \theta(\alpha)] + (1-s)L$$

and

$$\pi''(\alpha) = L(r-i)\, d\theta(\alpha) / d\alpha = -1 / F(L) < 0$$

Let

$$\beta(\alpha) = \text{Prob}[\theta \geq \theta(\alpha)] \qquad (17a)$$

Then β is an increasing function of α, and

$$\beta(0) = \text{Prob}(\theta \geq \theta_c) \qquad (17b)$$

It follows that $\pi'(0) > 0$ if and only if

$$(1+r)\,\beta(0) + (1+i)\,[1-\beta(0)] < 1+s \qquad (18)$$

Thus we can state the following result :

PROPOSITION 1 : If (18) holds then the banks would welcome intervention (in the form of subsidized loan) from the international institutions. From the banks' point of view, the best α is positive but less than unity if and only if, in addition to (18),

$$(1+r)\,\beta(1) + (1+i)\,[1 - \beta(1)] > 1+s \qquad (19)$$

If (19) does not hold, then the best α is unity.

REMARK : Proposition 1 says that under certain conditions the banks may want the international institutions to inject some new lending, but beyond a certain point the probability of recovering the existing debt is so high that banks would want to have a positive share in the new loans. Thus we have obtained a Laffer curve (from the banks' point of view) with respect to the degree of participation of the international institutions. Figure 1 illustrates this.

We now relax the assumption that L is fixed. With L allowed to be a variable of choice, we have to modify (13) - (17). The main change is that $\theta(\alpha)$ must now be replaced by $\theta(\alpha, L)$, where

$$\theta(\alpha, L) = \{ (1+r)[B + (1-\alpha)L] + (1+i)L \} / F(L) \qquad (20)$$

Also, in order to explicitly consider the effect of a change in R on banks'

profits, we write :

$$EP(\alpha, L, R) = (1+r)[B + (1-\alpha)L] \int_{\theta(\alpha, L)}^{\theta_2} g(\theta, R)\, d\theta +$$

$$\int_{\theta_1}^{\theta(\alpha, L)} [\theta F(L) - (1+i)\alpha L]\, g(\theta, R)\, d\theta \qquad (21)$$

and

$$\pi(\alpha, L, R) = EP(\alpha, L) - (1+s)(1+\alpha)L - bD \qquad (22)$$

We assume that $F'(0) = \infty$ and $F'(\infty) = 0$.

For given α, the optimal L (from the banks' point of view) must satisfy the condition :

$$\partial\pi / \partial L = -\alpha(1+r)\ \beta(\alpha, L) +$$

$$\int_{\theta_1}^{\theta(\alpha, L)} [\theta F'(L) - (1+i)\alpha]\, g(\theta, R)\, d\theta = 0 \qquad (23)$$

Note that $\partial\pi / \partial L$ is negative if L is very large [because $F(L)$ is assumed to exhibit diminishing returns for large L]. On the other hand, first order stochastic dominance implies :

$$\partial\pi / \partial R > 0 \qquad (24)$$

Thus, for each α, we can derive a set of iso-profit curves for the banks. It is illustrated in Figure 2. The set of points to the right of the curve

$\pi(\alpha, L, R) = 0$ will be called the banks' acceptance set.

In what follows, we shall assume for simplicity that α is a positive constant.

THE INTERNATIONAL INSTITUTIONS

We have seen that the international institutions, by their ability to provide loans at subsidized rates, may convert an equilibrium with privately negotiated debt relief into one with new lending. Do these institutions have an incentive to do so ?

Anna Schwartz (1989, p.14) pointed out that with the collapse of the Bretton Woods system, the initial functions of the IMF evaporated. "To find a new function, the IMF expanded its activities, principally the Compensatory Financing Facilities (introduced in February 1963) that provides financing in the event of export shortfalls. It also establishes a new upper tranche Extended Fund Facility, covering a three-year period ... The IMF's expanded activities enables it to extend loans with conditionality provisions to dozens of countries, when previously (under Bretton Woods) it made such loans to only one or two countries a year".

The World Bank also sought to enlarge the scope of its activities. Both institutions continually applied for increases in resources.

The motives for any institution to seek expansion are well understood. We propose to present a simplified picture by postulating a utility function which has, among its arguments, the size of its budget, B, and the number of staff, N. To maintain a given pair (B,N) in an economic environment where threats of funding cuts are frequent, the organization has to expend lobbying effort, $E(B,N)$. The utility function is increasing in B and N and decreasing in E.

In the context of the intervention in the debt crisis, we postulate that B is an increasing function of L, and N is increasing in R. This is because if a debtor country government promises to undertake economic reforms, these activities would be monitored (to some extent) by personnel of the lending institution.

The reduced form's utility function, in the (L,R) space, is

$$W^I = U^I(L,R) - C^I(E) \qquad (25)$$

where

$$E = E(L,R) \qquad (26)$$

and $C^I(E)$ is the cost of expending lobbying effort to achieve the levels (L,R). The isoquants for W^I are like ellipses ; these are depicted in Figure 3.

We now turn to a different interest group : the rent defenders in the debtor country.

THE RENT DEFENDERS IN THE DEBTOR COUNTRY

We have seen that the banks and the international institutions have an interest in economic reforms in the debtor country. Reforms, however, are painful to many groups of individuals. Privatization of public enterprises means job loss to many employees. Reduction of budget deficit means either higher taxes or expenditure cuts. Those who are likely to lose because of reforms will try to defend their rents by political actions. For example, since expenditure cuts are not normally across the board, one interest group may try to shift the burden to another group. This may be achieved by calling for public support for the campaign against a particular proposed cutback.

A simple model of rent defending can be formulated in the spirit of the rent seeking model of Long and Vousden (1987). Thus we assume that initially the total rent is K and agent i has a share S_{io}. The government announces a cut in total rent by a fraction $(1-\lambda)$, and the new total rent is λK. The cut is not necessarily across the board, and agent i's new share is S_i which may be smaller or larger than the original S_{io}. The agent has two options : either he resigns from his position and joins the private sector, in which he earns an income W and his total utility is $U(W)$; alternatively he may stay in his position and fight for his share of the reduced total rent. The outcome of the fight is uncertain. Let $H(t, X_i, X_{-i}, S_{io})$ denote the probability that his new share, S_i, exceeds (or at least equals) t, given that his original share is S_{io}, his fighting effort is X_i, and aggregate fighting effort of his opponents is X_{-i}. It

is natural to assume that, for all $0 < t < 1$,

$$H_2 > 0 \tag{27a}$$

$$H_3 < 0 \tag{27b}$$

$$H_4 \geq 0 \ , \quad H_{42} \geq 0 \tag{27c}$$

$$H_{23} < 0 \tag{27d}$$

and, in the case $S_{io} = S_{jo}$ for all (i, j), H is homogeneous of degree zero in (X_i, X_{-i}) and

$$\lim_{q \to \infty} \ H_2 (t, 1, q, S_{io}) = 0 \tag{27e}$$

where $q = (X_{-i}) / X_i$,

and

$$\lim_{n \to \infty} \ H_2 (t, 1, n-1, 1/n) = 0 \tag{27f}$$

where n is the number of rent defenders.

These restrictions imply that (a) increased fighting effort by agent i has a favorable effect on the probability that his new share exceeds t; (b) increased aggregate fighting effort by i's opponent reduces that probability; (c) an agent's effort is more productive if his original share is large; (d) other agents' effort reduces the marginal product of agent i's effort; and an agent's marginal product of effort becomes negligible if (e) his effort share is insignificant or (f) his initial share is small.

Let $f(t, X_i, X_{-i}, S_{io})$ denote the probability density function obtained from H. The expected utility of agent who stays to fight is

$$V_i = \int_0^1 U(t \lambda K) \ f(t, X_i, X_{-i}, S_{io}) \, dt - C(X_i) \tag{28}$$

where U is the utility of income and C is the cost of effort. We assume that U is strictly concave and C is strictly convex. An agent will decide to take part in the game if and only if the Nash equilibrium outcome, V^*_i , is not less than the utility obtained from the outside opportunity, U(W) .

Notice that in this simple model, each agent takes the size of the cut in total rent as given. Assuming Nash behaviour, each agent's first order condition is

$$\int_0^1 U(t\lambda K)\, f_2(t, X_i, X_{i-1}, S_{io})\, dt = C'(X_i) \qquad (29)$$

Upon integration by parts, (29) becomes

$$\lambda K \int_0^1 U'(t\lambda K)\, H_2(t, X_i, X_{-i}, S_{io})\, dt = C'(X_i) \qquad (30)$$

Consider the simple case where there are n identical agents. In this case, since H is homogeneous of degree zero, H_2 is homogeneous of degree minus in (X_i, X_{-i}) , and (30) can be rewritten as

$$A(X, \lambda K, n) \equiv$$

$$\lambda K \int_0^1 U'(t\lambda K)\, H_2(t, 1, n-1, 1/n)\, dt - X\, C'(X) = 0 \qquad (31)$$

where X has replaced X_i because of the assumption of symmetry.

LEMMA 1 : A larger cut in total rent (i.e. a decrease in λ) will cause the equilibrium fighting effort of each agent to increase [respectively, decrease] if the coefficient of relative risk aversion of U is greater than [respectively, smaller than] unity, provided that the cut is not so large that the equilibrium V_i falls short of the outside utility U(W) .

PROOF : See Long and Vousden (1987, Proposition 1).

Next, we want to show that, under certain conditions, total fighting effort tends to be small if the initial rent is widely dispersed.

PROPOSITION 2 : Aggregate fighting effort will be smaller the larger is the number of isolated rent defenders, provided that

$$n^{-1} H_{24}(t, 1, n-1, 1/n) - n H_{23}(t, 1, n-1, 1/n) >$$

$$[(C' + XC'') / C'] H_2(t, 1, n-1, 1/n) \qquad (32)$$

PROOF :

$$d(nX) / dn = X + n (dX / dn) \qquad (33)$$

From (31),

$$X = [1 / C'(X)] \lambda K \int_0^1 U'(t \lambda K) H_2 \, dt \qquad (34)$$

and

$$n \, dX / dn = n [C'(X) + XC'']^{-1} \lambda K \int_0^1 (U') [H_{23} - (1/n^2) H_{24}] \, dt$$

$$< 0 \qquad (35)$$

Substituting (34) and (35) into (33), we see that the latter is negative if (32) holds. This completes the proof.

REMARK : From (27e) and (27f) as n tends to infinity, (34) approaches zero and, (35) tends to minus infinity. Hence (32) definitely holds for large n .

It is clear, then, that if the debtor country government contemplates extensive economic reforms (large R), it should expect a great deal of opposition from rent defenders if they are strongly risk averse, and that the aggregate magnitude of opposition will be very large if rents are highly concentrated. We now turn to the utility function of the debtor country government.

THE DEBTOR COUNTRY GOVERNMENT

We take it that the government wants to maximize its probability of survival. To do so, it must balance the interests of rent defenders with those of rent opposers. In most cases rent opposers tend to be relatively ineffective. However even the most passive tax payer would revolt if economic conditions deteriorate badly. We suppose that the government derives political support from the average tax payer if the latter expects that his living standard will improve as a consequent of government policies. Let $\Phi(L,R)$ denote the expected economic improvement. It is an increasing and concave function of new lending, L, and of the extent of economic reforms, R. It is assumed that

$$\Phi_{21} = 0 \quad , \quad \Phi(0,0) = 0$$

Since the improvement is not in the immediate future, a discount factor $(1-\delta)$ will be applied. The government must balance the gains in popularity in one section of the community with the discontent of another section stirred up by the effort of the rent defenders.

For a given proposed cut in total rent announced by the government, the rent defenders get more public support in their fight if the economic environment is not too tight. Thus the level of discontent, D, associated with the extent of reforms R depends on L (which may be taken as an indicator of the "tightness" of economic conditions) and on J, an index of concentration of rents. From the above discussion, it is reasonable to assume that:

$$D_1(L,R,J) > 0 \quad , \quad D_{12} > 0 \qquad (36a)$$

$$D_2 > 0 \quad , \quad D_{22} > 0 \qquad (36b)$$

$$D_3 > 0 \quad , \quad D_{23} > 0 \qquad (36c)$$

The debtor country government seeks to maximize :

$$W^D = (1-\delta)\,\Phi(L, R) - D(L, R, J) \qquad (37)$$

For a given L, the optimal extent of reforms is characterized by the first order condition :

$$(1-\delta)\,\Phi_2(L,R) - D_2(L,R,J) = 0 \qquad (38)$$

Equation (38) implicitly defines the reaction function $R = R(L,J,\delta)$. For a given J and δ, this function has a negative slope in the (R,L) space :

$$\partial R / \partial L = -[(1-\delta)\,\Phi_{21} - D_{21}] / [(1-\delta)\,\Phi_{22} - D_{22}] < 0 \qquad (39)$$

This result seems to accord with common sense. Thus Ann Kruger (1988, p.39) has remarked that "...in instances where immediate economic difficulties have subsided because of increased export prices or other reasons, politicians have suddenly lost their previously-held convictions as to the desirability of reforms".

The debtor country government 's reaction curve and indifferent map is depicted in Figure 4. Higher values of L give rise to higher utility levels. At points such as A and A', the slope of the indifferent curve is zero. These points (and hence the reaction curve) move to the left if the concentration index J rises. (This can be seen by differentiating the first order condition (38) with respect to J, treating R as a function of J and keeping L constant.) Again this seems to be a sensible result : governments are more reluctant to carry out reforms if rents are concentrated in a few powerful hands. We also note that an increase in δ has a similar effect to an increase in J.

Finally, we turn our attention to the creditor country governments.

THE CREDITOR COUNTRY GOVERNMENTS

One of the frequently raised arguments for intervention by creditor country governments is that the solvency of creditor banks is a public good. Another

reason is the aid motive. To quote Vernon Ruttan (1989, p.411), "...two arguments have typically been used in support of transfers that include a grant component. One set is based on the economic and strategic self-interest of the donor country. The second is based on ethical or moral responsibility of the residents of wealthy countries toward the residents of the poor countries".

In the U.S. , it seems that, at least initially, solvency was the main concern. According to Anna Schwartz (1989, p.13) " ... in the 1980s international debt crisis, intervention undertaken by the U.S. , the dominant creditor country, was a decision of the monetary authorities. They determined that, to preserve financial stability in the domestic banking system , it was essential to create the façade that foreign borrowers were faced only with a liquidity problem ... " Schwartz 's thesis is that the U.S. authorities deliberately engaged in public deception in order to save the U.S. banks. In support of this thesis, she refers to accounting practices that regulators permit the banks to use apparently to " ... hide the fact..." that loans to troubled debtor countries are " ... bad debts " (p.19) . In her opinion, the whole show was coordinated at first by the Federal Reserve System, and more recently by the U.S. Treasury, with the help of the World Bank and the IMF .

Without necessarily embracing Schwartz 's thesis of public deception, it is clear that the U.S. government has an interest in active intervention in the debt crisis. We have mentioned earlier (see the paragraph following equation (10)) that there is the risk of free riding by individual banks, unless they are faced with implicit or explicit threats of penalty. The U.S. government had to take the lead in providing new lending to the hard-pressed debtors, via the IMF and other international institutions (these are ultimately supported to a significant extent, by revenues raised from U.S. taxpayers).

The creditor country governments are assumed to have the utility function :

$$W^C = \beta (1-\rho) \Phi (L,R) - \gamma T(L) \qquad (40)$$

where $\Phi (L,R)$ is the economic benefits accrued to the debtor country (the same Φ that appears in (37)), $\beta > 0$ is the weight the creditor country governments attached to these benefits, and $\rho > 0$ is the discount rate (because the benefits are not immediate), and $\gamma T(L)$ is the tax burden of financing the subsidized loan.

3. STACKELBERG EQUILIBRIUM, COMPARATIVE STATICS AND BARGAINING POSSIBILITIES

For the moment, let us abstract from the possibility of bargaining and focus of Stackelberg equilibrium. We assume that the coalition of creditor country governments maximize their utility W^C, subject to the banks being in their acceptance set, and subject to a constraint on the utility level of the international institutions. The debtor country government 's reaction function

$$R = R(L,J,\delta)$$

is taken as datum. Figure 5 depicts a Stackelberg equilibrium E, with the constraints on the banks and the international institutions holding with strict inequality. At this point, the equilibrium satisfies the first order condition,

$$\beta(1-\rho)[\Phi_1 + \Phi_2(\partial R / \partial L)] - \gamma T'(L) = 0 \qquad (41)$$

From (41), it is easy to see that an increase in the rate of discount of the creditor country governments will reduce L and move E to E' (south-west of E):

$$\text{Sign}(\partial L / \partial \rho) = \text{Sign}[-\beta\{\Phi_1 + \Phi_2(\partial R / \partial L)\}]$$

$$= \text{Sign}[-\gamma T'(L)] < 0 \qquad (42)$$

Similarly, an increase in the rate of discount of the debtor country government shifts its reaction curve to the left and reduces the equilibrium new lending. This is illustrated in Figure 6, where E is shifted to E''.

To obtain comparative static results with respect to the index of rent concentration J, we assume that $D(L,R,J)$ is multiplicatively separable with respect to J:

$$D(L,R,J) = M(J)\ \bar{D}(L,R) \qquad (43)$$

where both M and $\bar{D}$ are positive valued functions. It can then be shown that an increase in J will reduce the Stackelberg equilibrium level of new lending.

PROPOSITION 3: The Stackelberg equilibrium level of new lending is a decreasing function of the two rates of discount and of the degree of

concentration of rents in the debtor country.

So far we have assumed that the Stackelberg point E is inside the banks' acceptance set and is thus feasible. However if E is to the left of the banks' acceptance set, then side-payments must be made to the banks to induce them to accept the deal.

Instead of choosing the Stackelberg equilibrium point, the creditor country governments may want to improve its utility by offering the debtor country government an opportunity to bargain over possible combination of (L,R), with the credible threat that if bargaining fails they will revert to the Stackelberg point. Figure 7 depicts the set S of points that dominate the Stackelberg outcome, from the point of view of both parties. S is the area enclosed between the two indifference curves $\overline{W}^C$ and $\overline{W}^D$. Within S, the curve CC' is the contract curve, representing the set of all efficient bargaining outcomes.

The crucial problem is that of the ability to commit oneself to a given deal. For example, the debtor country government strictly prefers C' to E. But if both parties agree on C', and L has to be delivered before R is observed, then there is no guarantee that the debtor will stay at C'. In fact it will prefer C" (the intersection between the debtor 's reaction function and the horizontal line passing through C'). To enforce C', lending and reforms must be carried out simultaneously. In practice this is quite difficult to achieve because it takes a good deal of time for reform measures to be implemented, while lending cannot be spread too thinly over time without reducing its effectiveness.

4. FINAL REMARKS

The model developed in this paper is an attempt to study some aspects of the international debt crisis from a political economy perspective. A great deal of simplifying assumptions had to be made in order to present a basic picture. Certain aspects that we have chosen to neglect deserve some comments. Firstly, we concentrated on lending (at subsidized rate) as the policy instrument. But surely the troubled debtor countries may benefit more if the big Western economies adopt a more liberal approach to trade : the removal of tariff barriers and quotas may be the most efficient method of solving the debt problem. (On the relative merit between trade liberalization and aid, see Kemp and Shimomura (1989).) The advanced countries, however, may find it politically easier to give aid (possibly in the form of subsidized lending) than to liberalize trade : the

burden of the first measure is born by the dispersed tax payers, while the second measure would be fiercely opposed to by concentrated interest groups (see Hillman (1988) for a comprehensive account of the political economy of protection).

A second weakness of our model is its static nature. A multi-period framework would provide scope for richer results. [11] (See Kenen (1989) and Bulow and Rogoff (1989) for some attempts in this direction.)

Thirdly, our model is a partial equilibrium one, neglecting aspects such as terms of trade and endogenous interest rates. This weakness is a common feature of all models on the international debt crisis. Some pure aid models (abstracting from debts) have been formulated using a general equilibrium framework (see Kemp, Long and Shimomura (1988), for example), and progress on these models may one day help to build a debt crisis model in general equilibrium.

FOOTNOTES

1. The lack of attention to the political economy element has been acknowledged by Helpman (1988, p.1) : ... " In order to rigorously deal with policy responses it is necessary to employ an explicit model of government behavior. But no accepted model is available for this purpose. For this reason I focus instead on market outcomes and investment-driven adjustments ". Anna Schwartz (1989) drew attention to the role of self-interest politicians (p.8), and hinted at empire-building motives of those who run international institutions (p.13). For a discussion of the role of domestic politics on trade policy, see Hillman and Ursprung (1988).

2. For example, in return for an IMF loan of $3.6 billion in 1982, Mexico had to agree to cut its budget deficit and increase its trade surplus. Nigeria was reportedly asked to privatize ninety-six government controlled enterprises and to devalue its currency when it approached the IMF for a loan of $540 million. Dozens of countries were asked to reform their internal economic policies.

3. According to the Bank of International Settlements (BIS), U.S. regulators allowed banks that took part in the Mexican swap scheme not to show other claims on Mexico at a lower value. See BIS (1988,p.137).

4. See Becker (1983), Demsetz (1982) and Borcherding (1985), for example, for discussion of the roles of government from a political economy perspective.

5. Thus we assume that all debts are incurred by the public sector. This is an abstraction from reality. According to Sachs and Huizinga (1987, pp. 565-566), in the 1979-1982 period, lending to the LDC 's public sectors was about two-fifths greater than to the private sectors. In the 1982-86 period, lending was more predominantly to the public sectors.

6. In fact, it has been argued that a large part of the funds borrowed before 1982 by the troubled Latin American debtor countries ... " went to finance consumption, including oil and other consumer goods, not to mention extravagant living by corrupt officials. Some funds were invested in inefficient and unprofitable state-owned enterprises producing products at marginal costs in excess of competitive world prices " (Schwartz (1989, p.4)).

7. See Kaletsky (1985), Alexander (1987) and Bulow and Rogoff (1989, Appendix) for details.

8. This argument was also made by Sachs (1988a, 1988b). See also Froot (1989).

9. Each bank, in providing some debt relief, is also helping other banks. Thus debt reduction is a public good, and private provision of public goods are likely to be insufficient. See Cornes and Sandler (1986) for a treatment of voluntary contribution to public goods. For discussion of the free-rider problem, in the context of the debt crisis, see for example Helpman (1988, p.38).

10. Schwartz (1989, p.12) stated that ... " One anomaly that characterizes the position of the banks is that every dollar of additional lending that they have advanced has been immediately discounted by the market, whatever the margin of doubt surrounding the quoted price ". Our simple example shows that this may not be anomalous at all.

11. For an intertemporal of debt without default, see Long and Siebert (1989).

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Figure 1

Banks' Laffer Curve

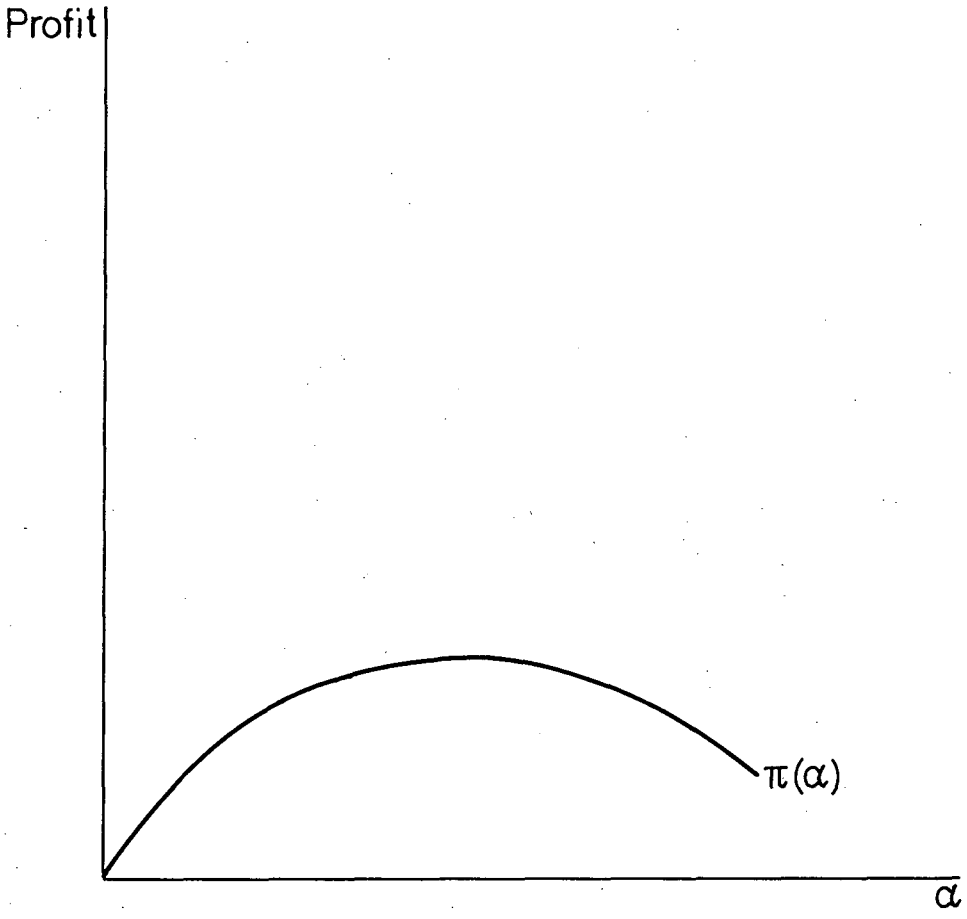

Figure 2

Banks' Isoprofit Curves and Acceptance Set

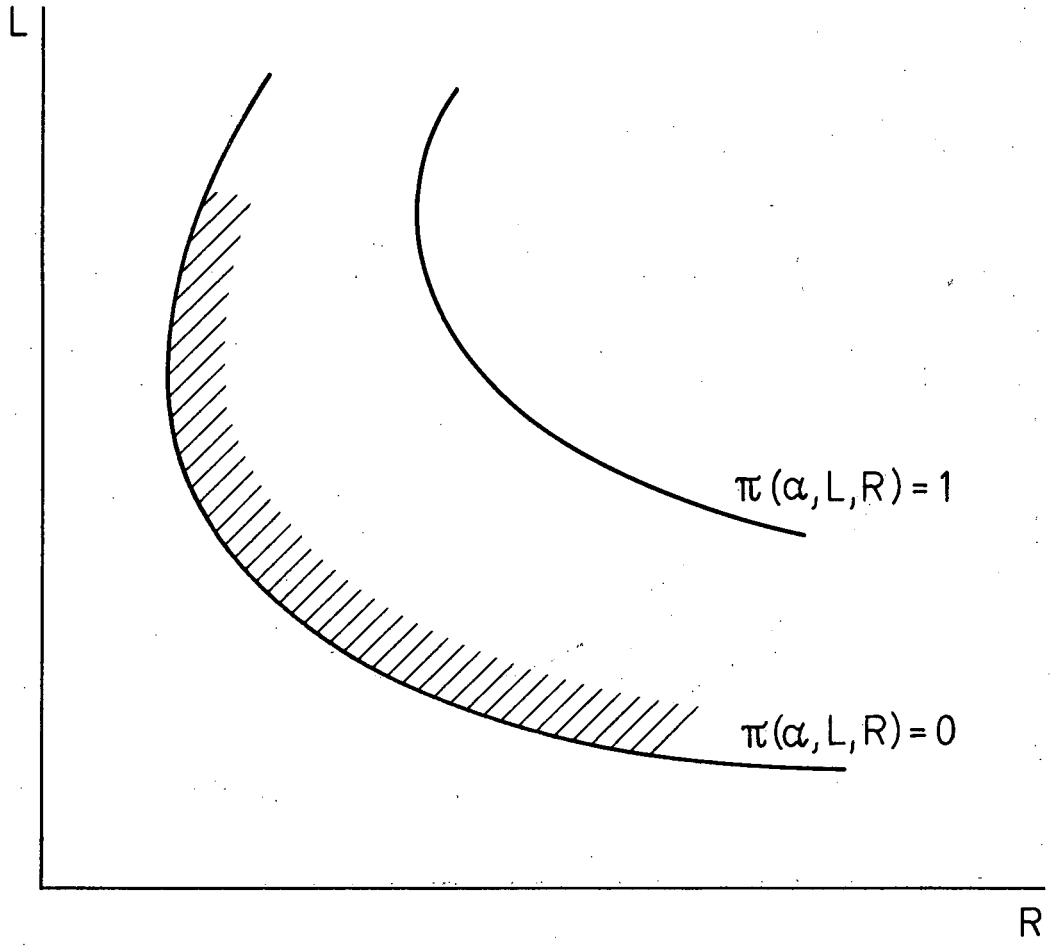

Figure 3

The International Institutions' Indifference Map

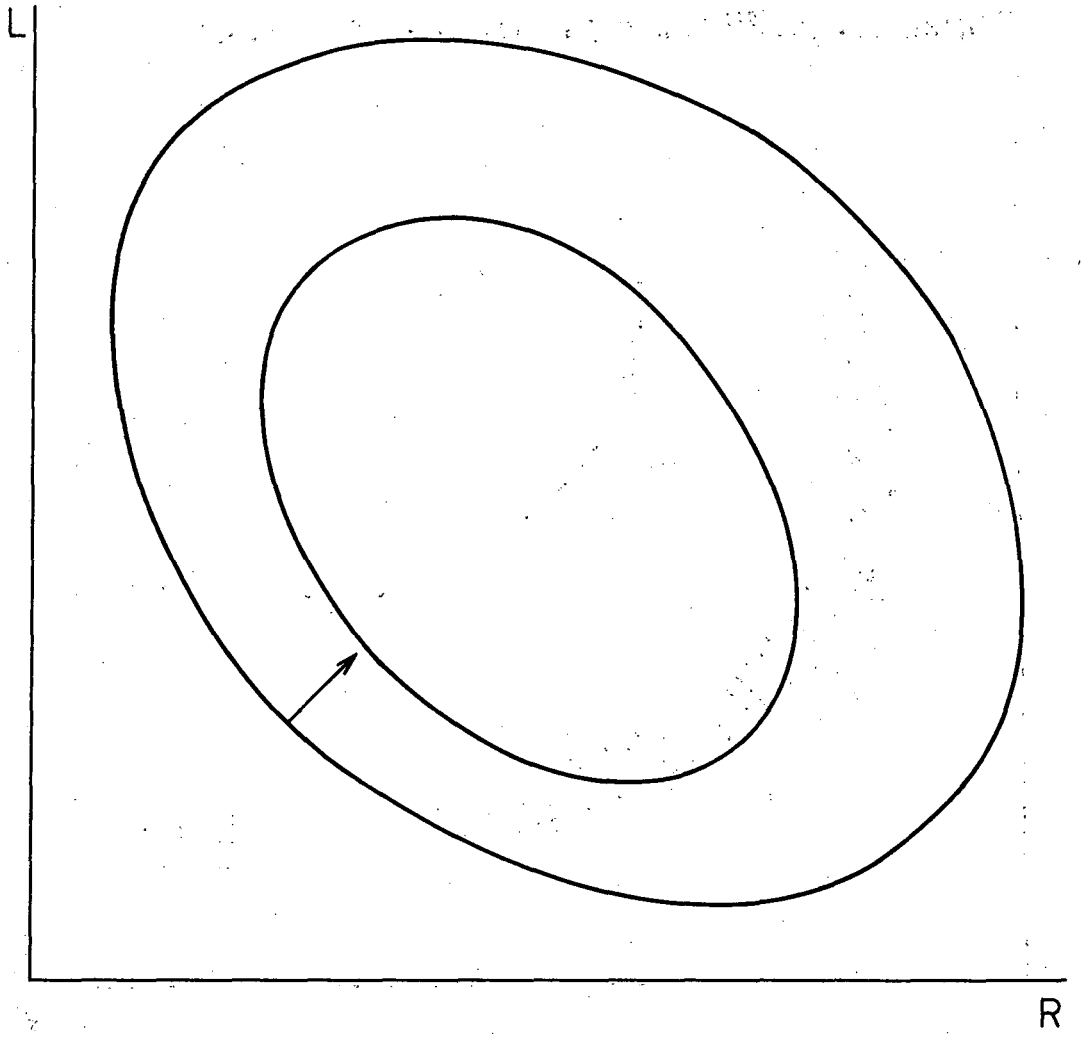

Figure 4

Debtor Country Government's Indifference Map and Reaction Curve

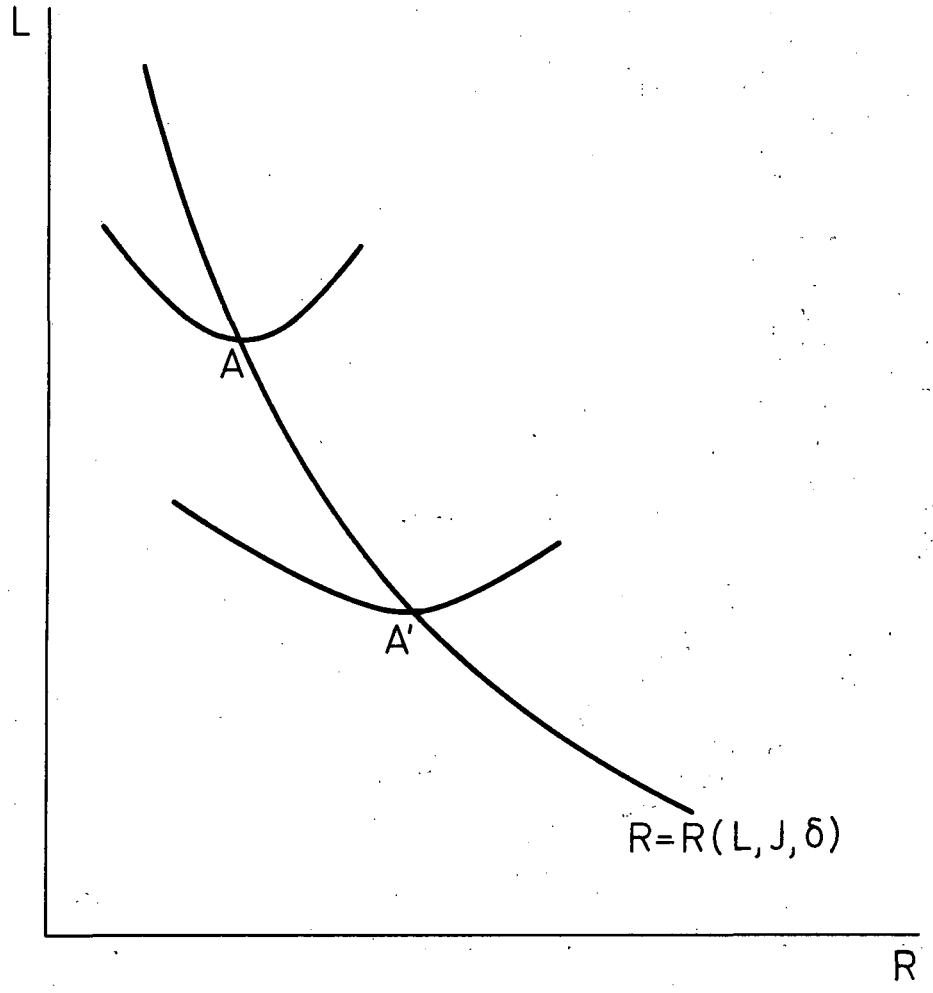

Figure 5

A Stackelberg Equilibrium

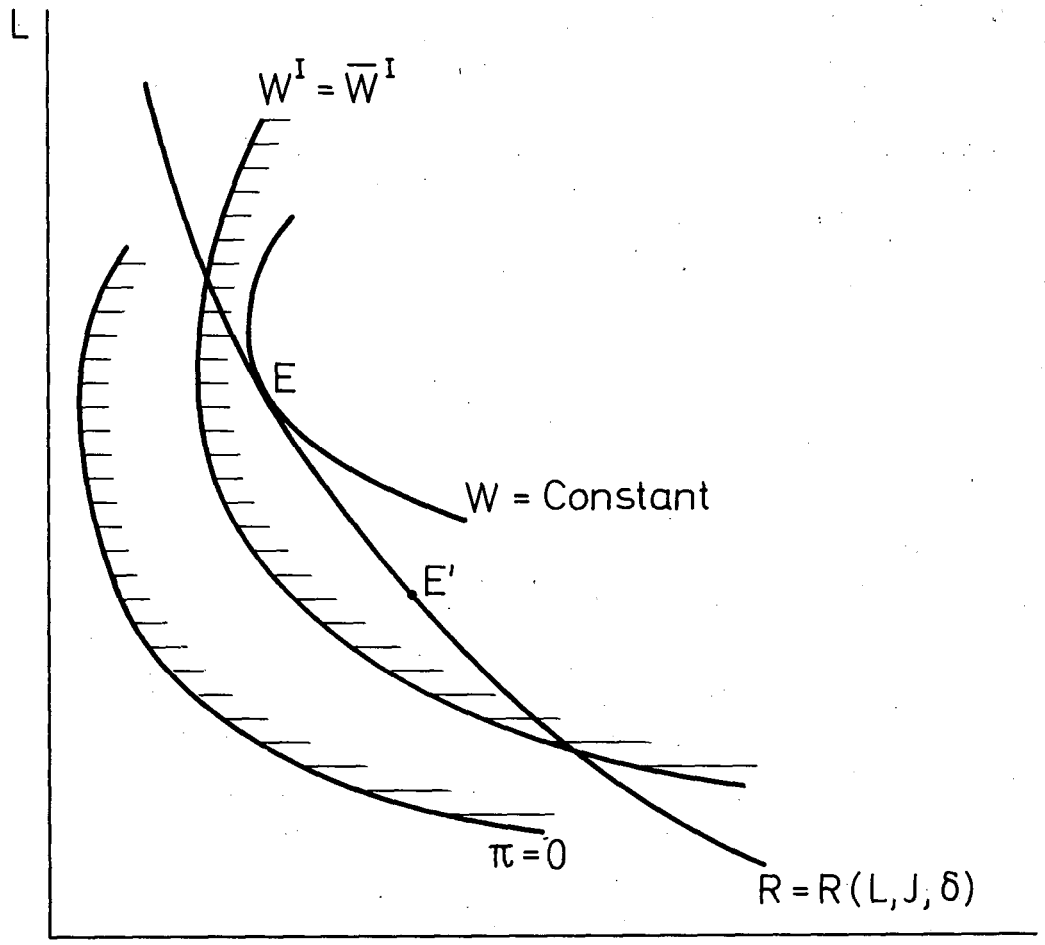

Figure 6

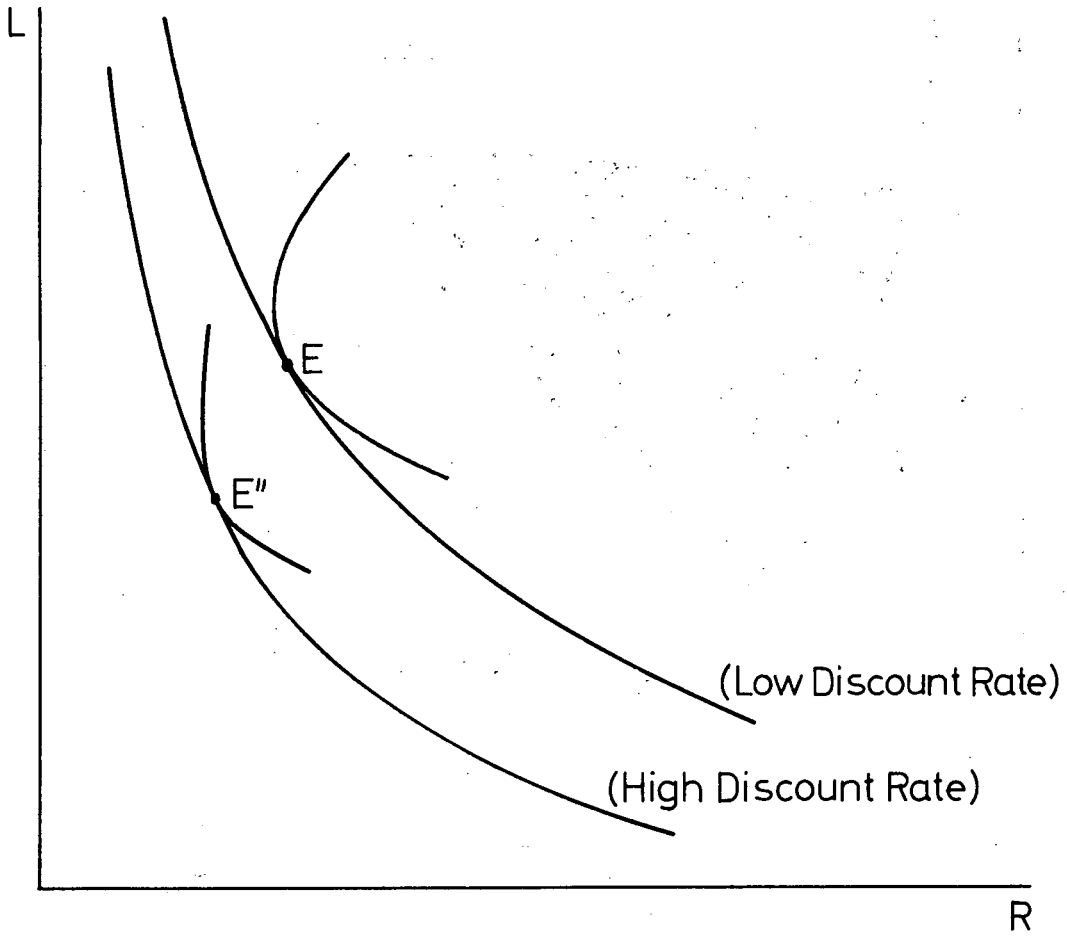

Figure 6

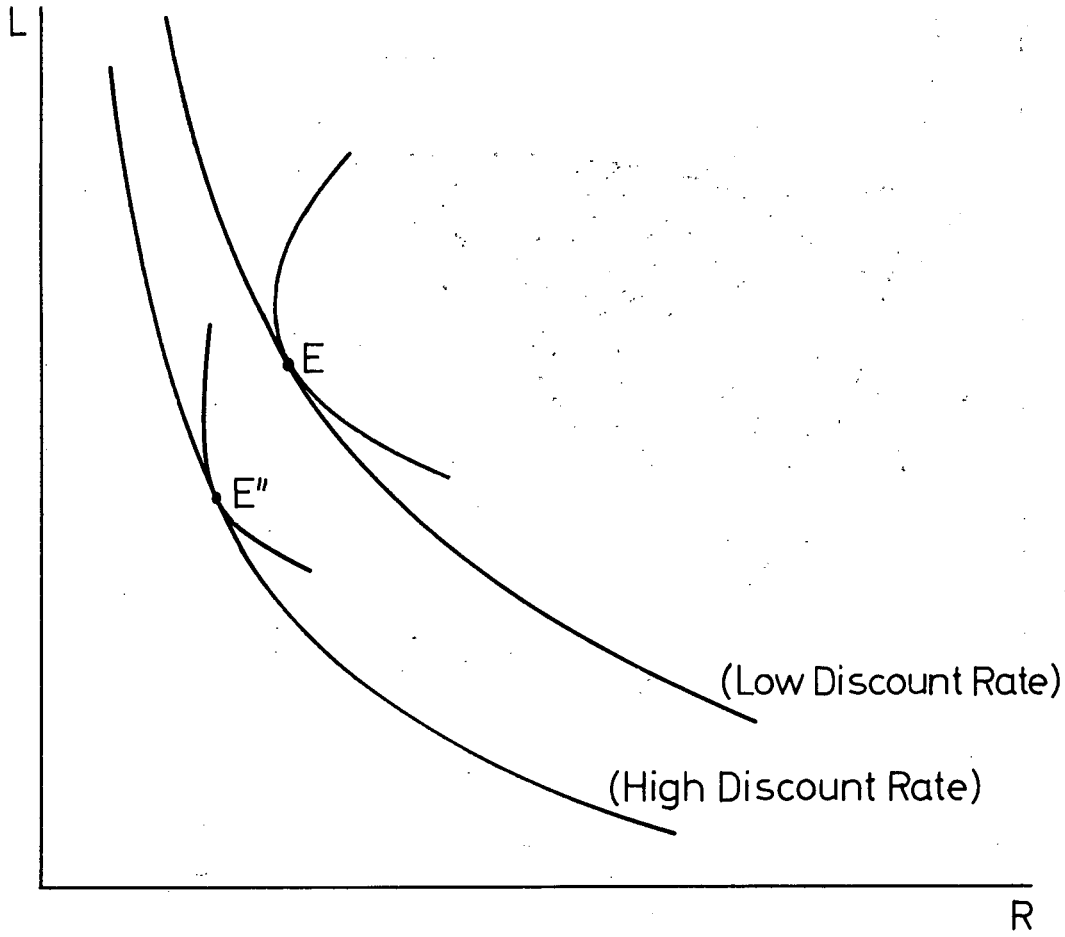

Figure 7

Bargaining Set