Conditionality and Selectivity in Lending by International Financial Institutions

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I. Introduction

During his years at the World Bank, Michael Bruno argued consistently for greater selectivity in Bank lending. This view was probably based on the fact that many countries had been in Bank (and also IMF) programs for many years, with little sign of progress; evidence that the amounts of Bank lending to individual countries seemed insensitive to economic performance; his belief that countries do not attempt to reform seriously unless they are in crisis -- and that it is at that time that the IFIs should lend to them; and the closely-related argument that countries that "own" their reform programs are more likely to reform successfully than those who are persuaded to say they will do so by the availability of financing from the international financial institutions (IFIs). What is meant by ownership of a program is that a country is strongly committed to carrying it out, a commitment that is likely to be stronger if the program has been substantially designed by the country's economic policymakers rather than the IFI, and/or is one for which they accept responsibility, rather than attributing it to the IFI.

The argument for selectivity is appealing, but not conclusive. For instance, it could be argued that the IFIs should lend to very poor countries for distributional reasons, even if rates of return on these loans are lower than those that could be earned in other countries. Alternatively, it may be that the payoff to a successful reform program, in the form of a return to sustainable growth, is so high as to justify even loans that have a small chance of a major success while facing a large chance of moderate failure. Or it could be that conditionality, restrictions included in the loan agreement on the uses of the loan, or on government policies, could help ensure the success of the loans.

There has been a considerable amount of research on conditionality in IFI lending, but less on the question of selectivity.[2] Included in the literature on conditionality are several formal models, including those by Fernandez-Arias (1997), Mosley (1992), Sachs (1989), and Svensson (1997). Killick (1996) suggests that there is in general an overreliance on conditionality (too many conditions per loan) by the IFIs, arguing that too much conditionality undermines the country's ownership of its economic program--and that ownership has been demonstrated to be the critical element in the success of a reform effort. These views are consistent with the position taken by Michael Bruno that IFI lending should be more selective.

In this paper we attempt to develop the analysis of selectivity in IFI lending. We start with a simple model of social welfare maximization, which points towards a redistributive role of lending. However, we argue that simple welfare maximization by an IFI may have perverse incentive effects. Next we turn to the question of conditionality, and the possible reasons it might not work. Finally we develop a model in which the IFI exercises selectivity in its lending, in the sense that for some time it does not lend at all to a country, which later will, under certain circumstances, receive loans.

II. A Model of Redistribution

a. Objective Functions

We start by defining the maximization problems of countries and the IFI. Membership of the IFI consists of J countries, indexed by j. Country j maximizes:

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[2] On conditionality, *see inter alia* Bird (1992), Dhonte (1997), Diwan and Rodrik (1992), Gilbert *et al* (1996), Guitian (1995), Killick (1995 and 1996), Marchesi and Thomas (1997), Mosley (1992, especially Chapter 7), Nelson and Eglinton (1993), Polak (1991), Sachs (1988), Spraos (1986), Svensson (1997), and Williamson (1983).

$$\Omega_j = \sum_{s=t}^{\infty} \beta^{s-t}\left(\gamma_j U(C_{js}) + (1-\gamma_j) W(X_{js})\right), \tag{1}$$

where C_{js} is consumption of the representative individual in the economy at time s ("consumption"), X_{hs} is transfers by the government to special interests, including itself ("transfers"), and γ_h represents the weight the government places on consumptin of the representative individual relative to transfers to special interests. The discount factor β is assumed to be the same for all countries. The utility functions $U(\cdot)$ and $W(\cdot)$ have the standard properties; they will later be specialized to log form

To simplify, we assume that the government of country j cannot borrow in the financial markets, and has access only to IFI lending (in amounts decided by the IFI).[3] The government in country j chooses C_{js} and X_{js} subject to its budget constraint

$$B_{t-1} = RB_t + C_t + X_t - Y(Z_t) - Z_t, \tag{2}$$

where Z_t is the amount of loans (that is, aid) it receives from the IFI in period t. Y, the level of output, is written as a function of Z, since conditionality of lending may increase output.[4]

The IFI's problem is to design an optimal loan program over all loan recipients, where the IFI seeks to maximize:

$$\Psi_t = \sum_j \left(\sum_{s=t} \beta^{s-t} U(C_{js}) \right) . \tag{3}$$

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[3] Alternatively we could assume that the interest rate charged on IFI lending is below the rate the country would have to pay if it borrowed in the market. This would complicate the model without much affecting the conclusions.

[4] Alternatively, or in addition, capital accumulation could be modeled explicitly in (2), and Y() would also be a function of K.

Here we assume the IFI's discount factor is the same as that of the countries, thereby excluding one reason the IFI may want to impose conditionality on its members.[5] This formulation assumes countries are weighted equally in the IFI's objective function; for convenience we can assume all countries have the same population.[6]

The IFI objective function differs from that of individual countries because it attaches no value to transfers, *i.e.*, for the IFI γ is one. Without the difference between the two objective functions, there would be no need for either selectivity or conditionality.

b. Constraint on total lending

The IFI's allocation of its loans may be different, depending on the constraint on its lending. Assume first that it has a specific amount to lend each period, so that:

$$\sum_j Z_{jt} \leq \bar{Z}_t \,, \tag{4}$$

where (4) includes the assumption that assistance Z_t at each date is not fungible over time.

One necessary condition for an interior maximum is that:

$$U'(C_{js}) = U'(C_{ks}) \tag{5}$$

for any pair of countries, j and k, in any period s. The immediate implication is that the IFI should, if it has enough resources, distribute its lending in such a way as to equalize the consumption of the representative individual in each country each period.

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[5] Specifically, if a country has a higher discount rate than the IFI--for instance because the IFI believes the government is myopic--the IFI may seek ways of ensuring that the country invests more than it would like to.

[6] We thus preclude discussion of the impact of population size on *per capita* lending to a country. As a matter of fact, smaller countries appear to receive more aid or loans *per capita*, *ceteris paribus*, than larger countries.

This is a relentlessly redistributive result, implying for instance that countries with a lower γ (*i.e.*, whose governments place a relatively low weight on the consumption of the representative individual) *ceteris paribus* receive more loans than those with high γ. Similarly, countries in which lending is relatively more productive (for which $Y'(Z)$ is higher at a given level of Z) would receive less assistance.

Although the redistributionist implications of this approach appear unrealistic, the model does produce one feature of World Bank lending selectivity. Specifically, the World Bank has an income cutoff for eligibility to borrow from it. If the solution to the maximization of (3) subject to (4) is not interior, then loans would not be made to high consumption countries (for which $U'(C_{is})$ would be low), while they would be made to lower consumption, poorer, countries.

c. Rate of return constraint

In its project lending, the World Bank applies a rate of return constraint. In the present model, such a constraint could for instance take the form:

$$Y'(Z_{is}) = r(s) \qquad (6)$$

where $r(s)$ is the hurdle rate in period s. In the form (6), such a constraint would penalize governments that use loans inefficiently, and thus go some way towards selectivity.

However such a constraint presents several difficulties. First, although rates of return on a project--even weighted rates of return that take account of the distribution of the benefits within a country--can be calculated, it would in practice be much more difficult to calculate

rates of return on adjustment (policy) lending.[7] Second, the constraint (6) does not penalize governments with a low γ--the rate of return on the loan may be high but misapplied. The World Bank has long attempted to calculate *social* (weighted) rates of return on projects, and the constraint (6) could be reformulated as requiring that:

$$U'(C_{fs})Y'(Z_{ks}) \geq \lambda(s)r(s) \qquad \textbf{(6a)}$$

where λ is a relevant average marginal utility of consumption. A constraint of the form (6a) would still leave an important redistributionist element in the allocation of lending, and would not get around the difficulty that countries with a relatively low γ tend to receive more loans.

That raises the question of whether lending could not be conditional on γ, which manifests itself in the amount of transfers relative to consumption. We turn next to conditionality.

III. Conditionality

Many of the concerns that probably led Michael Bruno to argue for greater selectivity in Bank lending seem to point in the direction of *conditionality*, meaning the use of conditions placed on the recipient's behavior, including the use of resources, designed to ensure that the loan achieves its policy or project purposes. We believe that conditionality does go a long way towards ensuring that loans are used for the agreed purposes. Conditionality sometimes takes the form of *prior actions*, actions that are taken before the loan is disbursed. But it the goals of the program, for instance, maintaining macroeconomic stability, are to be secured,

[7] Kanbur (199x) presents an argument in favor of this approach, and sets out a conceptual framework for calculating the rate of return on adjustment loans.

these policies have to continue after the loan is disbursed. Given that actions relevant to the success of the loan have to be implemented after the loan has been agreed, the lender needs some sort of enforcement strategy.

This generally takes the form of *tranching* of loans, making the loan payments in installments, so that payments can be kept conditional on actions for longer, with later tranches not being disbursed if the necessary conditions have not been met. Further, it should take some time after a country has been cut off before it becomes eligible for another loan. Of course, at this point the IFI faces the problem of dynamic inconsistency, a problem that may be compounded by the inevitable tendency of hope to spring eternal.

This description suggests a key element in our view of ensuring the effectiveness of IFI lending: *conditionality is bound to be imperfect*. In discussing why, we need to consider why IFI loans might fail. One factor is simply bad luck: the outcome of any project or reform program is uncertain, and this particular program might have suffered a bad outcome. A second factor is that governments may have differing degrees of competence, competence that perhaps cannot be readily distinguished *ex ante*. A third is that governments on whom conditionality has been imposed may be able to conceal actions that violate the conditionality. The multiplicity of potential causes for failure means that the cause of any particular failure is not necessarily identifiable. Statistical inference about the causes of failure is further complicated by the complexity and consequent lack of uniformity of reform programs. In short, conditionality cannot be perfect because the government's actions are *imperfectly observable*.

Though the precise reasons for the failure of a project may not fully observable, certain gross indicators of loan performance can be observed, so that the successful lending may

require conditioning on only grosser measures of poor performance, with a cutoff of lending if performance falls below a certain level. When the IFI does observe, for example, that public funds are obviously misappointed (a case that could correspond to a high γ), it will take action and suspend the loan and insist on an appropriate remedy. The increasing emphasis in IMF and World Bank loans on governance can be seen in part as an attempt to deal with this problem by making more careful monitoring of such issues an agreed part of the stipulated conditionality. But even with gross conditionality, the IFI cannot be sure that it will always detect such actions.

These observations suggest some aspects of the distinction between conditionality and selectivity, though distinguishing between selectivity and conditionality is not simple, and may to an extent be semantic. If selectivity means that the IFI should be tougher in cutting off or denying loans, there is little difference between strict conditionality and selectivity. In particular, effective conditionality may require a longer period between the breakdown of one loan and the initiation of another, and this could be the equivalent of selectivity. The problem of some, but less than perfect, observability of the reasons for program failure, suggest the possibility of "coarser" conditionality, including cutoff of lending.

Most likely, though, Michael Bruno had an even more specific notion of selectivity in mind. By providing no loans at all to a country for some time, the IFI may thereby produce an end to socially adverse behavior by the government, and ultimately benefit the average consumer. That is, selectivity is not meant as a permanent cut-off of lending, but to provide an incentive to improved loan management that simple conditionality itself could not provide. Such an approach to selectivity implies that it may be necessary for a country to go through a period in which the IFI does not lend, and the member country is punished by not receiving

loans. Hence, a key element to this view of selectivity is a dynamic process leading to changes in the way a country responds to the provision of aid.

IV. Modelling Selectivity

In what follows, we will try to develop a model of selective lending in the sense discussed in the previous section: the IFI provides no loans at all to a country for some time, thereby producing an end to socially adverse behavior by the government. The analytic problem here is to explain why it is necessary to go through a period in which the IFI does not lend, rather than having the country behave appropriately as soon as the lending strategy of the IFI is established. More generally, our approach to selectivity turns out the issue of why reforms are delayed.[8] Empirically, why is deterioration (sometimes significant) in a country's economic situation often necessary to induce reform? Hence, it is necessary to explain both why welfare-improving policies are *not* immediately (or quickly) adopted, and why they eventually *are* adopted.

To model the dynamic process which underlies our approach to selectivity, we adopt a "common property" model, in which interest groups attempt to appropriate a country's resources, this process of appropriation leading to a deterioration in the economy. Specifically we assume that the government has the ability to appropriate the economy's resources, but that some other interest has the ability to appropriate some fraction (say α, where $0 \leq \alpha < 1$) of the economy's resources as well. When the government is the only appropriater ($\gamma < 1$ and $\alpha = 0$), then debt is constant over time and the economy doesn't deteriorate, though only a fraction γ of national income (including aid) goes to consumers.

[8] This literature is summarized by Drazen (1996) and by Tomassi and Velasco (1997).

However, when some other group in the economy has the ability to appropriate resources, even if only a small fraction of national income, total demand on resources will be greater than national income, and the country's indebtedness will grow over time. Hence, as long as some other group has the ability to compete for resources, no matter how small is α, economic deterioration will result from appropriative behavior.

The existence of a possible (though small) competitor to the government for the economy's resources provides a far better explanation for "overconsumption" than does an appeal to irrationality or myopic behavior on the part of the government. Governments who want to appropriate national income for their own purposes should engage in "appropriation smoothing" if they see no threat to their ability to do so. On the other hand, if a government believes that it will lose the ability to appropriate resources if it doesn't act selfishly, it will rationally try to "milk" the economy of its resources as long as they are there. In our model, this results from the existence of another agent who always has the ability to grab resources. Alternatively, one could assume that the government has the sole claim to resources today, but believes it might lose that exclusive ability in the future. The basic results would be the same. To summarize these results: a) aid failure reflects the attempt to appropriate common property; b) "crisis" may stop such appropriation as there are fewer resources to go around, while (largely unconditional) aid may exacerbate it; c) there is a dynamic process whereby rent-seeking impoverishes a country and "sows the seeds of its own destruction" as long as interest groups have some concern about social welfare and as long as the IFIs don't design aid programs which end up encouraging rent-seeking.

We now turn to the details of the model.

a. Objective Functions

We consider possible appropriative behavior in a single country. Key to the dynamics is competition for rents, when in fact there are resources to be appropriated. Appropriation of resources by the government and by other special interest groups reduces general consumption. The government's objective function is as in (1), where it cares about general consumption C_t and the resources it can appropriate at t, X_t^G, specialized to a log-linear form to obtain a closed form solution. Hence, the government's objective is written:

$$\Omega = \sum_{s=t}^{\infty} \beta^{s-t}\left(\gamma \ln C_s + (1-\gamma)\ln X_s^G\right). \tag{7}$$

We henceforth assume that β, the discount factor, equal to $1/R$.

Following the discussion in the previous paragraph, we suppose that there are other interests in the economy which can also appropriate some part of output. For simplicity, we assume only one appropriative agent in addition to the government, this group having access to a fraction α of the economy's resources, where $0 \leq \alpha < 1$. Call the resources that the other group receives X_t^O. The country's budget constraint is modified to:

$$B_{t-1} = RB_t + C_t + X_t^G + X_t^O - Y - Z_t, \tag{2a}$$

It will be useful to work with economy-wide wealth, namely:

$$W_t = \frac{Y+Z}{r} - B_t, \tag{8}$$

where the interest rate $r = R - 1$ and where Z will depend on the aid structure. Suppose, for extreme simplicity that the IFI's aid disbursal may be summarized as follows. In a world with no IFI selectivity, all countries receive $Z_t = Z'$; In a world with IFI selectivity, countries

which act "bad" receive $Z_t = 0$, while countries which act "good" receive $Z_t = Z''$, where $Z'' > Z'$. The magnitudes Z'' and Z' are determined by the IFIs overall resource constraint.

The IFI continues to seek to maximize Ψ as in (3).

b. Behavior under Cooperaton and Selfishness

In a cooperative equilibrium, there is no appropriation by interest groups. If aid is constant, say at level $Z_t = Z$ per period, consumption smoothing implies that consumption should be set at the highest possible constant level, which is given by (2) for constant wealth W_t (and hence constant debt, that is, $B_t = B_{t-1}$). One thus has:

$$\begin{aligned} X_t^h &= 0 \qquad h = G, O \\ C(W_t) &= Y + Z - (R-1)B_t = rW_t \end{aligned} \tag{9}$$

The resultant infinite horizon utility of the government from t onward in a cooperative equilibrium (hence, of a "bad" government acting good) is, from (7):

$$\Omega^C(W_t, Z) = \frac{\gamma}{1-\beta}\ln(Y + Z - (R-1)B_t) = \frac{\gamma}{1-\beta}\ln rW_t \tag{10}$$

In contrast, suppose both interests follow the selfish strategy of appropriating resources to maximize their present discounted welfare, consistent with (7) for the government. With log-linear preferences, it can be shown that if the strategy of interest groups is assumed to depend on time only via the evolution of the state of the economy, optimal consumption C_t and transfers X_t^G are linear in W_t. The non-cooperative strategy (or Nash-Markov strategy, dependent only on a state variable) is:[9]

[9] The mathematical derivation of these results is cumbersome. We relegate that work to a mathematical appendix, giving only the general results and their intuition in the text.

$$X_t^G = (1-\gamma)\phi r W_t$$
$$C_t = \gamma \phi r W_t \,, \tag{11}$$

where ϕ will depend on the ability of the other interest group to appropriate resources. Specifically, If the other interest tries to appropriate all flow resources to which it has access ($X_t^O = \alpha r W_t$), then $\phi = 1 - \alpha/R$). Hence, in the absence of competing appropriative behavior (that is, $\alpha = 0$), $\phi = 1$ and government appropriative behavior plus general consumption exactly exhaust current income rW_t. On the other hand, when the government faces competition in appropriation, optimal appropriation by both interests will imply that total demand for resources will exceed net income of the economy, that is:

$$X_t^G + X_t^O + C_t = (1 + \alpha \frac{R-1}{R}) r W_t > r W_t \,, \tag{12}$$

so that the wealth of the economy will be falling over time. As long as appropriative behavior continues wealth will fall (but at a decreasing rate) until it asymptotes to zero. This will be true under different aid structures and different values of α. As W_t falls, so will C_t and X_t^G, via (11).

The resultant utility of the government may then be denoted by $\Omega^N(B_t)$. Putting (12) into (7), one obtains, after some minor calculation:

$$\Omega^N(W_t, 0) = \sum_{s=t}^{\infty} \beta^{s-t} \ln(r W_s) + \frac{\gamma \ln \gamma + (1-\gamma)\ln(1-\gamma)}{1-\beta} \tag{13}$$

where the 0 indicates that under slectivity, no aid will be given if interests acts appropriatively. Via (12), W_s will, for any level of aid, be falling over time.

Two factors insure that $\Omega^N(W_t) < \Omega^C(W_t)$. First, for a given level of transfers, appropriative behavior implies that W_t is going to zero, so that government flow utility in a period is initially higher in the appropriative equilibrium than in the cooperative equilibrium, but the relative rankings will eventually reverse. With log preferences, discounted welfare over the whole path will be lower under appropriation than under cooperation. Secondly, if aid under cooperative behavior is higher than under appropriative behavior, as our approach to selectivity suggests, this effect will strengthen the inequality.

The inequality $\Omega^N(W_t) < \Omega^C(W_t)$ does not however imply that a government with appropriative preferences will refrain from appropriation and act "cooperatively", even if it realizes that cooperative behavior will prevent economic deterioration, not to mention be rewarded with higher aid. (This point is the essence of the problem discussed in thev first paragraph of this section.) Cooperation is only prefereed to appropriation if all potential appropriaters coooperate. If a government knew that its non-appropriative behavior would be met by appropriation on the part of other interests, cooperation would notbe in its interests. Something more must be needed to sustain cooperation. We now turn to this issue.

c. When Can IFI Assistance or Economic Deterioration Sustain "Good" Behavior?

On the basis of the results in section b, we can now address the central question of the paper on the possible beneficial effects of IFI lending when governments have a propensity to appropriate resources ($\gamma < 1$). Can the granting of loans in a selective way induce socially optimal behavior on the part of otherwise irresponsible governments, or at least hasten this behavior? Will selective lending programs be integral to appropriative governments adopting social-welfare maximizing behavior? If selective aid can induce socially optimal behavior on

the part of appropriative governments, will it do so only after a period of economic deterioration? We now proceed to give affirmative answers to each of these questions.

Formally, the question may be put as follows. Can the cooperative, no appropriation equilibrium with behavior as in (8) be sustained, so that the government does not find it optimal to unilaterally "defect" from this equilibrium? "Defection" means that an interest group will find it optimal to act selfishly and appropriate resources to itself in a period when other interest groups are refraining from doing so.

Whether or not the government will find it optimal to defect will depend crucially on the "punishment" for defection, that is, on the behavior of other agents in response to unilateral selfish behavior on their part. We make the following, logical assumptions. Starting from a situation in which no appropriation is taking place, and hence aid is being received, appropriative behavior on the part of the government ("defection from the cooperative equilibrium") triggers no change in behavior in the current period t by either other potentially appropriative groups ($X_t^O = 0$) or by the IFI, but a reversion to appropriative behavior by all groups and a cut-off of aid starting in the next period.[10] Hence, appropriative behavior by the government triggers a free-for-all and the appropriate response from the IFI.

The maximization problem faced by the government in choosing whether to deviate from the cooperative equilibrium may thus be represented by:

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[10] This modelling of unilateral deviation from cooperative behavior follows standard game-theoretic assumptions that in the event of a unilateral defection from the cooperative equilibrium by one interest group at a point in time, all other groups "revert" back to appropriative behavior. That is, we consider an equilibrium in which each interest group acts in a cooperative way as long as all others do, but switches to acting selfishly if it sees some other group doing so, that is, an equilibrium where each interest group follows a "trigger strategy".

$$\Omega^D(W_t, Z) = \max_{C_t, X_t^1} \{\gamma \ln C_t + (1-\gamma)\ln X_t^1 + R^{-1}\Omega^N(W_{t+1}, 0)\}. \quad (14)$$

where aid Z will be received in the current period, but not in future periods and where $X_s^Q = 0$ for $s = t$, but positive for $s > t$.

The solution to this problem will be of the form

$$X_t^G = (1-\gamma)\delta r W_t$$
$$C_t = \gamma \delta r W_t, \quad (15)$$

where $\delta > 1$, and where δ will depend on W_t. Intuitively, deviating from the cooperative equilibrium will entail "grabbing" enough current resources to make the defection worthwhile. Using (10) and (15), the value of defecting can be written:

$$\Omega^D(W_t, Z) = \ln \delta r W_t + \frac{\gamma \ln \gamma + (1-\gamma)\ln(1-\gamma)}{1-\beta} + \beta \Omega^N(W_{t+1}, 0) \quad (16)$$

The incentive to deviate will then depend on the value of (16) relative to (10). It is useful to write this difference as:

$$\Omega^C(W_t) - \Omega^D(W_t) = \gamma \ln r W_t - \ln \delta r W_t - \frac{\gamma \ln \gamma + (1-\gamma)\ln(1-\gamma)}{1-\beta} + \beta[\Omega^C(W_{t-1}, Z'') - \Omega^N(W_{t+1}, 0)] \quad (17)$$

On the basis of (17), one can show a number of results. In order to do so, consider first some properties of $\Omega^C(W_t) - \Omega^D(W_t)$. Note that the first line in (17) will be negative for large enough W_t (strongly negative for high W_t, that is, low B_t when γ is low) and positive for

small W_t, while the second line will be unambiguously positive, and increasing in the value of Z. With limits on the amount of aid the IFI can give any country, however, the value of $\Omega^C(W_t) - \Omega^N(W_t)$ will be bounded. One can also show that $\Omega^C(W_t) - \Omega^D(W_t)$ is a continuous, decreasing function of W_t, reflecting the effect of the first term. Hence, $\Omega^C(W_t) - \Omega^D(W_t)$ will be negative for high enough W_t and positive for low W_t, being identically equal at some W^*.[11] It is easy to show that the critical W^* is decreasing in Z".

Combining these characteristics with the evolution of W_t under appropriation, as implied by (12), our main results follow. For a low enough value of debt B_t (high W_t) cooperative behavior is *not* sustainable. There are just too many resources to be appropriated. "Rational" appropriative behavior, however, leads to economic deterioration, that is a steady decline in the economy's wealth W_t. Eventually, wealth becomes low enough that the promise of aid conditional on the government not appropriating the economy's resources is sufficient to induce a potentially appropriative not to engage in appropriative behavior. Such good behavior is sustainable in this environment, in that the government would not revert to appropriative behavior, even though it was not sustainable earlier on. Hence, economic deterioration (that is, "crisis") is crucial to the change in government behavior.

What is the role of selective lending in all this? Socially optimal behavior on the part of the government becomes sustainable because of the influence of the last term in $\Omega^C(W_t) - \Omega^D(W_t)$ in (17), the future benefit from not appropriating today, represented by $\Omega^C(W_t) - \Omega^N(W_t)$. Deterioration of the economy will eventually be sufficient to make such behavior optimal from the government's point of view. However, giving loans selectively, that is, only

[11] Technically, we are considering a state-dependent switching strategies (Benhabib and Radner [1992]), such that interest group behavior depends on the value of W_t, which evolves over time.

when the government acts cooperatively and withholding it otherwise, will raise the value of $\Omega^C(W_t) - \Omega^N(W_t)$ relative to the case where lending is the same across regimes, and hence hasten the shift in government behavior. Moreover, the strength of this effect depends on the difference between the level of lending in the two cases. The larger is the value Z'' when government behavior relative to the value of aid when it is bad, the sooner the government will change its behavior. We think that the conclusions in this and the previous paragraph may capture some of the reasons Michael Bruno argued so strongly for selectivity.

Mathematical Appendix (Incomplete)

1. Derivation of equation (11) in the text: To derive the government's optimal strategy, we begin by assuming that it is a linear strategy of the form:

$$X_t^h = \phi R W_t \,, \tag{A.1}$$

where ϕ is a coefficient to be determined, and then verify this conjecture, when the other group follows the strategy $X_t^O = \alpha R W_t$. The government's optimal decision is to choose sequences of C_t and X_t^G to maximize its infinite-horizon objective (7). Using (A.1) and (2a) for the evolution of B_t, the decision problem may be represented as a dynamic programming problem:

$$\Omega[B_t] = \max \{ \gamma \ln C_t + (1-\gamma)\ln X_t^G + \beta\Omega[RB_t + C_t + X_t^G + \alpha(R-1)(Y + Z - (R-1)B_t)] \tag{A.2}$$

where the maximization is taken over C_t and X_t^G. Taking the first-order conditions for C_t and X_t^h and using the envelope theorem, one obtains:

$$X_{t-1}^G = (1 - \alpha\frac{R-1}{R})X_t^G \tag{A.3}$$

$$C_t = \frac{\gamma}{1-\gamma} X_t^G \,. \tag{A.4}$$

Using (A.1) in (A.3), one obtains:

$$\frac{W_{t+1}}{W_t} = (1 - \alpha\frac{R-1}{R}) \,. \tag{A.5}$$

Using the definition of W_t one may write the government budget constraint (2a) as:

$$W_{t+1} = RW_t - X_t^G - X_t^O - C_t \,. \tag{A.6}$$

Substituting (A.1) and (A.4) into (A.6), one obtains:

$$W_{t+1} = RW_t - \phi(R-1)W_t - \alpha(R-1)W_t \,. \tag{A.7}$$

Equating (A.5) and (A.7) one obtains $\phi = 1 - \alpha/R$, which, together with (A.1) and the definition of W_t, yields (6) in the text.

References

Benhabib, J. and R. Radner (1992), "Joint Exploitation of A Productive Asset: A Game-Theoretic Approach," *Economic Theory* 2, 155-90.

Bird, Graham, 1992, "IMF Lending: The Analytical Issues," Overseas Development Institute Working Paper 64 (London: Overseas Development Institute).

Diwan, Ishac and Dani Rodrik, 1992, "External Debt, Adjustment, and Burden Sharing: a Unified Framework," Princeton Studies in International Finance No. 73 (Princeton: Princeton University).

Dhonte, Pierre, 1997, "Conditionality as an Instrument of Borrower Credibility," IMF Paper on Policy Analysis and Assessment 97/2 (Washington: International Monetary Fund).

Fernández-Arias, Eduardo, 1997, "Crisis, Foreign Aid, and Macroeconomic Reform", mimeo, Inter-American Development Bank, paper presented at the fifteenth meeting of the Latin American Econometric Society, Santiago, Chile, March.

Gilbert, Christopher L., Raul Hopkins, Andrew Powell, and Amlan Roy, 1996, "The World Bank: Its Functions and Its Future," Global Economic Institutions Working Paper Series No. 15 (London: Center for Economic Policy Research).

Guitián, Manuel, 1995, "Conditionality: Past, Present, and Future," *Staff Papers*, International Monetary Fund, Vol. 42, No. 4 (December), pp. 792-835.

Killick, Tony, 1995, *IMF Programmes in Developing Countries: Design and Impact* (London and New York: Routledge and Overseas Development Institute).

Marchesi, Silvia and Jonathan P. Thomas, 1997, "IMF Conditionality as a Screening Device," Global Economic Institutions Working Paper Series No. 23 (London: Center for Economic Policy Research).

Mosley, Paul, ed., 1992, *Development Finance and Policy Reform: Essays in the Theory and Practice of Conditionality in Less Developed Countries* (New York: St. Martin's Press).

Nelson, Joan M. and Stephanie J. Eglinton, 1993, "Global Goals, Contentious Means: Issues of Multiple Aid Conditionality," Overseas Development Council Policy Essay No. 10 (Washington: Overseas Development Council).

Polak, Jacques J., 1991, "The Changing Nature of IMF Conditionality," Essays in International Finance No. 184 (Princeton: Princeton University).

Sachs, Jeffrey D., 1989, "Conditionality, Debt Relief and Developing Country Debt Crisis," in *Developing Country Debt and Economic Performance, Vol. 1. International Financial System*, ed. by Jeffrey Sachs (Chicago: University of Chicago Press).

Spraos, John, 1986, "IMF Conditionality," Essays in International Finance No. 166 (Princeton: Princeton University).

Svensson, Jakob, 1997, "When is Foreign Aid Policy Credible," World Bank Policy Research Working Paper No. 1740 (Washington: World Bank).