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## The Political Economy of Conditional and Unconditional Foreign Assistance: Grants Versus Loan Rollovers

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**The Political Economy of Conditional and Unconditional Foreign Assistance:  
Grants Versus Loan Rollovers**

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**Abstract**

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Improving the effectiveness of financial assistance programs is a priority of international financial institutions (IFIs). This paper examines the effectiveness of alternative assistance instruments in a dynamic political economy framework. Economic policies of the receiving country are distorted by the influence of a domestic interest group. The assistance-providing IFI aims at reducing these distortions. The IFI provides assistance either as grants or loans, and either conditionally on reducing policy distortions or unconditionally. The paper shows that, other things constant, one-time grants are more effective than loan rollovers when assistance is unconditional, but that the opposite is true when assistance is conditional.

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## I. INTRODUCTION

Developing countries have received large amounts of international financial assistance over the last fifty years. Much of this assistance has been channeled through international financial institutions (IFIs). In some instances, resource transfers have brought lasting benefits to the recipient countries. In many other cases, however, enduring success has eluded successive IFI-supported policy programs. Hence, it comes as no surprise that IFIs have considered redesigning their assistance programs to achieve better results. A general goal of this paper is to gain new insights into the effectiveness of different forms of assistance.

Two important policy concerns in the design of IFI-supported programs are the duration of IFI financial involvement in recipient countries and its “payback provisions.” Specifically at issue is whether assistance ought to continue in the form of (often concessional) loans or be converted to grants that do not have to be repaid. The duration of IFI financial involvement has a direct bearing on the issue of inappropriate “prolonged use” of IFI resources. Countries making such prolonged use are transition or developing countries whose economic reform and adjustment programs have been supported extensively by the IFIs through successive conditional loans that have often spanned two decades or more.<sup>2</sup> While prolonged financial association with IFIs has been beneficial to low-income developing and transition countries in some cases, in other cases the succession of low-interest IFI loans has failed to yield lasting improvements in policies and economic performance.<sup>3</sup> Better ex post monitoring of reform programs, with identification of prolonged users and their graduation or “exit” from financial engagement in cases of inappropriate prolonged use, is now an explicit IMF goal.<sup>4</sup>

The repayment terms of assistance are a second major policy issue in the design of both bilateral and multilateral assistance programs. Several decades ago, Milton Friedman (1958, p. 515) proposed to substantially increase U.S. development assistance and turn it into a “final terminal grant...[that] should be something like two to three times the annual grants we have been making to the country.” This issue of grants versus loans resurfaced again recently after U.S. President George W. Bush proposed to turn into grants one half of the assistance provided through the International Development Association (IDA), the arm of the World Bank that provides assistance to qualified low-income countries. Although the President of the World Bank welcomed the proposal, it was met with fierce resistance elsewhere. Some bilateral donors expressed concerns that, in the absence of additional funds to replenish its capital, a switch to grants would deplete IDA capital and compromise its ability to provide assistance to poor countries in the future. Eventually the Group of Seven (G-7) agreed, in a June 2002 meeting of their finance ministers in Halifax, to increase the

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<sup>2</sup> See IMF (2002) for a detailed definition of prolonged use and for the list of countries identified as prolonged users of IMF resources.

<sup>3</sup> Bird, Hussain, and Joyce (2000); and IMF (2002, 2003a) contain detailed discussions of the drawbacks of prolonged use. IMF (2003b) offers guidance on how to avoid inappropriate prolonged use of IMF resources.

<sup>4</sup> See, for instance, IMF (2002, p. 328).

proportion of IDA funding that is provided in the form of grants to between 18 and 21 percent, as Cunningham (2002) points out.

This paper assesses the merits of different forms of IFI financial involvement, including their duration (maturity) and repayment terms (whether grants or loans), with the help of a dynamic version of the political-economy model developed by Mayer and Mourmouras (2002). In this paper, we apply the common-agency framework of Grossman and Helpman (1994) and Dixit, Grossman, and Helpman (1997) to study the effects of conditional IFI assistance programs in the presence of domestic interest groups. Interest groups resist reforms when their privileges (rents) are reduced by the implementation of efficiency-enhancing policy measures. The IFI uses its financial leverage to steer member governments toward policies that promote domestic and international prosperity, an assumption that is consistent with the IFIs' stated purposes.<sup>5</sup> For assistance programs to succeed, IFIs must fully account for the influence of domestic interest groups on the policy choices of assistance-receiving governments. IFI assistance helps shift the political equilibrium in recipient countries and improve the quality of policies selected, thus providing a countervailing influence to the power of domestic special interests.<sup>6</sup>

In this framework, we compare a one-time "final" grant with a succession of one-period IFI loans of the same size that, for simplicity, are assumed to be interest-free. Whereas the grant cannot be recalled once its conditionality is met and the IFI has released its funds, assistance that takes the form of loans can be cut off (not be renewed) if the recipient government does not adhere to the agreed conditions. The effectiveness of assistance is judged from the IFI's point of view. The IFI acts on behalf of the world community, with the objective of maximizing world welfare. It can raise world welfare in two ways: one is to transfer resources from the rest of the world (ROW) to the developing country; the other is to create incentives for the assistance-receiving country to reduce its policy-created distortions. The developing country's incumbent government chooses economic policies under the influence of a domestic interest group. Its objective is to maximize political support that comes from both the interest group and the general public.

On the one hand, an advantage of assistance through loan rollovers is that the IFI can adjust its assistance package as economic and political circumstances change over time. The amount of a loan depends on its benefit in the receiving country and its cost to the ROW, as well as on the recipient government's concern for its general public. If, at the time of

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<sup>5</sup> See, for instance, the IMF's Articles of Agreement, especially Article I (v).

<sup>6</sup> The experience with reforms in some countries of the Commonwealth of Independent States in the 1990s is a particularly good example of the resistance of special interests to reforms. During the early years of transition, "red directors" and other special interests used their political influence to evade taxes, obtain subsidies, strip the assets of state enterprises, and extract other special privileges. The international financial institutions provided assistance to pro-reform governments while being aware of the need of reformers to stay in power.

repayment, any of these influences has changed, the IFI can replace the repaid loan with a new one that differs in size. Should all economic and political parameters remain unchanged, the IFI's interests are best served by simply reissuing the repaid loan. A grant, on the other hand, cannot be adjusted *ex post*. Once made, all transferred resources are permanently shifted from the ROW to the developing country. No matter how the IFI's incentives to support a developing country might have changed, the grant cannot be recalled.

An advantage of assistance provided through a grant is that the set of projects for which transferred resources can be employed is larger than for loans. The need to repay a loan after a specified time interval limits loan-financed investments to short-term projects. In contrast, knowing that assistance through grants cannot be reversed enables the receiving country to invest in both short- and long-term projects.

The specific purpose of this paper is to highlight the implications of a third difference between loan rollovers and a one-time "final" grant, namely in their "commitment value." The interactions between an aid-providing IFI, an aid-receiving government, and an interest group unfold in a multiperiod game. Assistance provided through loans can be periodically revised; assistance through grants cannot. Accordingly, the grant represents a stronger commitment on the part of the IFI. At issue is whether this difference in commitment value introduces a bias in favor of either the policy of loan rollovers or a one-time grant, judged from the perspective of the assistance-giving IFI. Stated differently, is world welfare higher when the IFI provides assistance through loan rollovers or provides it through a one-time grant, assuming away all other advantages and disadvantages of the two instruments?

Our answer to the above question is clear cut: the IFI is better off assisting countries through a final grant than through loan rollovers when assistance is unconditional; but the IFI is better off assisting countries through loan rollovers than a final grant when assistance is conditional. These conclusions are derived from a model in which the IFI compares the present value of world welfare resulting from a grant with the present value of welfare resulting from a succession of loans.<sup>7</sup> The model captures the influence of an interest group on the developing country's government by adopting the Dixit, Grossman, and Helpman (1997) formulation of a truthful equilibrium. The interest-group-influenced government plays a game with the IFI both when assistance is *unconditional* and when it is provided conditionally. When assistance is unconditional and takes the form of loans that are being rolled over, the government chooses its economics policies and the IFI chooses its loan specifications at the same time, namely at the beginning of each period. In the case of a "final" grant, the government still chooses its policies at the beginning of each period, but the IFI can choose the grant value only once, namely at the beginning of the initial period.

When assistance is *conditional*, the nature of the political game changes dramatically as the IFI joins the interest group as a principal in a common-agency game. The implications for

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<sup>7</sup> In an alternative political-economy model formulated in Drazen (2002), the government contends with veto players—that is, with constitutional actors that influence policymaking from *within* the government.

welfare of the IFI are drawn from the conditions of a truthful equilibrium. For loan rollovers, government, interest group, and IFI play a two-stage game at the beginning of each period. The IFI is thus engaged in a prolonged financial association with the recipient country. For a grant, on the other hand, the three players engage in a two-stage game only at the beginning of the initial period. Although the IFI accounts for government responses in succeeding periods, it can act only during the initial period. For all periods beyond the initial one, only the government and the interest group can take actions. By definition, the policy of providing a final grant does not lead to a prolonged financial association between the IFI and the recipient country.

The conclusion that a final grant is superior, from the IFI's point of view, to an indefinite rollover of a loan of the same amount is not surprising for the case of *unconditional assistance*. The higher commitment value of the one-time grant conveys a benefit to the IFI. Since it chooses the grant level before government chooses its policies beyond the initial period, the IFI has some first-mover advantages in the unconditional assistance game. Under *conditional assistance*, loan rollovers are superior to a grant because they enable the IFI to enforce conditionality in each period. A critical feature of the political equilibrium under conditional assistance is that it results in Pareto optimality. The outcome is a combination of assistance and interest-group-influenced economic policies that maximizes the joint welfare of the three players, namely government, interest group, and IFI. On the one hand, when assistance takes the form of one-period renewable loans, the IFI's ability to enforce its conditions on economic policies ensures Pareto optimality. When assistance takes the form of a one-time grant, on the other hand, the government must adopt distortion-reducing policies only during the initial period in order to receive the grant. The IFI's ability to enforce economic policy conditions disappears after the initial period, since the grant results in an irreversible transfer of resources. After the initial period, the grant-receiving government takes the value of the grant as given and views it as unconditional assistance. The choices of assistance made by the IFI and of economic policies by the government are then no longer Pareto optimal. Furthermore, this departure from Pareto optimality under a conditional grant, when contrasted with the Pareto optimal outcome under conditional loan rollovers, comes at the cost of reduced IFI welfare. The IFI is worse off under a conditional grant than under conditional loan rollovers.

## II. THE COMMON-AGENCY MODEL

### A. Decision Makers and Their Objectives

Consider a developing country whose economic policies are shaped by the interactions of three different decision makers. First, an incumbent domestic government chooses the country's economic policies. Second, a domestic interest group that benefits from policies that distort the economy attempts to influence the policy maker. Third, an international financial institution, that acts as gatekeeper of the world's welfare, provides economic assistance. This assistance benefits the developing country directly as it increases its capital stock, as well as indirectly as it lowers the level of economic-policy-generated distortions.

Welfare of the developing country is measured by its national income. Given the country's endowment with labor and capital, national income depends on the amount of economic

assistance received,  $A$ , and the degree of economic distortions generated by economic policies. The economic assistance enables the country to expand its capital stock. The degree of distortions is measured by an index  $0 \leq \omega < 1$ , and it is assumed that the distortion-caused loss in national income rises linearly with the distortion index. The developing country's welfare,  $W$ , therefore, is:

$$W = (1-\omega)y(A) \quad (1)$$

where  $y(0)$  measures potential national income in the absence of distortions and with no assistance, and where  $y'(A) > 0$  and  $y''(A) < 0$  for  $A \geq 0$ .

The incumbent government chooses the economic policies of the developing country. Its objective is to adopt policies, and a corresponding distortion index  $\omega$ , to maximize its political support from the country's interest group and general public. As in Grossman and Helpman (1994), the government receives political support from the interest group in form of financial contributions,  $C$ , and from the general public in form of 'approval'. The latter depends on the country's overall welfare,  $W$ . In making policy choices, the government faces conflicting attitudes of interest group and general public; the interest group benefits from policies that are more distorting – such as tariffs, quotas, monopolies, subsidies, etc. – while the general public is hurt by distortions. To pursue its goals, the interest group tenders a financial contribution schedule,  $C(\omega)$ , to the government. This schedule makes the amount of financial support contingent on the government's choice of distorting policies that favor the interest group. The government's political support function, therefore, is written as:

$$G = C(\omega) + \alpha(1-\omega)y(A) \quad (2)$$

where  $\alpha \geq 0$  is a parameter that reflects the government's concern for welfare of the general public. Its value depends on the government's dependence on the goodwill of the public. When the developing country's political institutions are weak, the value of  $\alpha$  tends to be small.

There is only one *interest group* in the developing country. It benefits from certain policies that are distorting and, therefore, pressures the government to adopt them. The interest group's net welfare,  $V$ , equals utility obtained from the distorting policies,  $U(\omega)$ , minus its financial contribution to the government,  $C(\omega)$ ; that is,

$$V = U(\omega) - C(\omega) \quad (3)$$

where the group's welfare without contributing is assumed to rise with the distortion index at a decreasing rate. Hence,  $U'(\omega) > 0$  and  $U''(\omega) < 0$ . We also assume that  $\lim_{\omega \rightarrow 0} U'(\omega) = \infty$  and  $\lim_{\omega \rightarrow 1} U'(\omega) = 0$ . These assumptions assure that the economy is always riddled with distorting policy choices as long as there is an interest group.

Finally, there exists an *international financial institution* (IFI). It is an institution that was set up in the past by the entire world community. Its intended mission is to serve as a public-

interest institution and to maximize world welfare by channeling assistance from the *ROW* to a developing country. Welfare of the *ROW* is also measured by its national income. In contrast to the developing country, however, distorting economic policies have a negligible impact on the *ROW*'s total output. Given the *ROW*'s factor endowments, its welfare,  $W^*$ , solely depends on the amount of assistance provided, such that

$$W^* = y^*(-A), \quad (4)$$

where  $y^*(0)$  is the *ROW*'s output in the absence of assistance,  $y^{*'}(-A) > 0$  and  $y^{*''}(-A) < 0$  for all  $A \geq 0$ . Given the welfare measures of the developing country and *ROW*, the *IFI*'s objective function is:

$$I = (1-\omega)y(A) + y^*(-A). \quad (5)$$

### B. Political Equilibrium with Unconditional Assistance

The nature of the developing country's political equilibrium critically depends on whether the *IFI* provides assistance conditionally or unconditionally. Assistance is *conditional* if the *IFI* makes the amount of aid contingent on the adoption of distortion-reducing economic policies. As explained in Mayer and Mourmouras (2002), the conditional assistance scenario can be conveniently modeled within the political-economy, common-agency framework of Grossman and Helpman (1994) and Dixit, Grossman, and Helpman (1997). The government acts as the common agent of domestic interest group and *IFI*. The latter present the government with a contribution and assistance schedule respectively to press for their opposing interests in economic policies. Assistance is *unconditional* if its provision by the *IFI* is not contingent on the government's adoption of distortion-reducing policies. Although the *IFI* does not impose conditions, it is fully aware that world welfare depends on the assistance-receiving country's policy distortions. The *IFI*, therefore, reacts to the government's policy choices even though there is no contractual agreement between *IFI* and government. Accordingly, the political game itself involves only the developing country's government and its interest group when assistance is unconditional.

Under *unconditional* assistance, the government's choice of policies is the outcome of a two-stage game in which the government chooses the distortion index (economic policy) in the second stage given the financial contribution schedule tendered by the interest group in the first stage. We are focusing on equilibria that are truthful; that is, on equilibria for which the contribution schedule of the interest group is truthful relative to the equilibrium welfare level of the players. The general conditions for a truthful political equilibrium are stated in *Proposition 3* of Dixit, Grossman, and Helpman (1997). Adapting these conditions to our situation of a political game in which only one interest group and the government participate, the truthful political equilibrium consists of a truthful financial contribution schedule,  $C^T$ , and a distortion index,  $\omega^o$ , that is characterized by two conditions: First, the government's choice of  $\omega^o$  must be such that  $\omega^o = \operatorname{argmax}_{0 \leq \omega < 1} [C^T(\omega, V^o) + \alpha(1-\omega)y(A)]$ , where  $V^o$  denotes the interest group's net welfare in equilibrium and  $A$  is the amount of unconditional aid received when there is an interest group. Second,  $[C^T(\omega^o, V^o) + \alpha(1-\omega^o)y(A)] = \alpha(1-\omega^V)y(A^V)$ , where  $\omega^V$  is the distortion index the government would choose in the absence of influence-seeking by the interest group and  $A^V$  is the amount of unconditional aid received in the absence of an

interest group. This second condition states that the interest group's truthful contribution is just enough to make political support for the government the same with influence-seeking as it would be without influence-seeking. With no interest group – as expressed by the right-hand side of the equation where  $C$  is set equal to zero – the government would choose distortion-free economic policies such that  $\omega^V = 0$  and the IFI would provide  $A^V$  of aid to this distortion-free economy. One also can see from (3) that  $C^T(\omega, V^o) = U(\omega) - V^o$ . Consequently, the first of the above conditions requires that  $\omega^o$  is chosen to satisfy:

$$U'(\omega^o) - \alpha y(A) = 0, \quad (6)$$

whereas the second condition implies that the interest group's equilibrium contribution equals

$$C^T(\omega^o, V^o) = \alpha[\omega^o y(A) + y(A^V) - y(A)]. \quad (7)$$

Clearly, the degree of distortions,  $\omega^o$  depends on both the amount of unconditional assistance received from the IFI,  $A$ , and the government's concern for the general public's welfare,  $\alpha$ . As can be seen from (6), the more unconditional aid is received and the more the government cares for the public's welfare, the less-distorting policies are adopted. This response of the government to different assistance levels is traced out in Figure 1 of the next subsection as the  $R_G R_G$  curve. Since  $U''(.) < 0$ , the government's policy reaction curve is downward sloping.

### C. Political Equilibrium with Conditional Assistance

Assistance is conditional when the IFI makes its aid to the developing country contingent on the government's adoption of less-distorting policies. The IFI, thereby, becomes a second principal in the economic-policy game. As before, the government chooses economic policies and the corresponding distortion index. But different from the unconditional assistance scenario, the interest group's pressure for more-distorting policies is now counteracted by the IFI that, in the interest of world welfare, pushes for less-distorting policies. We now add an assistance schedule tendered by the IFI to the contribution schedule of the interest group. Although both payment schedules are offered to the government, an important difference between them is that interest group contributions raise the government's political support directly whereas assistance payments benefit the government only indirectly. The interest group contribution goes into the campaign funds or personal pockets of politicians that constitute the government. The assistance payment, on the other hand, goes in its entirety to expand the economy's production potential. The raised production potential enlarges national income that, in turn, leads to stronger approval of the government by the general public.

The *conditional* assistance model again adopts the common-agency approach first developed by Bernheim and Whinston (1986) and later applied and further refined by Grossman and Helpman (1994) and Dixit, Grossman, and Helpman (1997). The government is viewed as the common agent of interest group and IFI. They play a two-stage economic-policy game in which the government chooses policies in the second stage given the contribution schedule of

the interest group and the assistance schedule of the IFI. Both payment schedules are offered to the government in the first stage. Again we are in search of an equilibrium in which both contribution schedule,  $C^T$ , and assistance schedule,  $A^T$ , are truthful. And again we employ the conditions of *Proposition 3* of Dixit, Grossman, and Helpman (1997) to characterize this *truthful equilibrium*. The first condition now is that the government's policy choice,  $\omega^I$ , is such that  $\omega^I = \operatorname{argmax}_{0 \leq \omega < 1} \{C^T(\omega, V^I) + \alpha(1-\omega)y[A^T(\omega, I^I)]\}$ , where  $V^I$  and  $I^I$  respectively denote the interest group's net welfare and the entire world's (IFI's) welfare evaluated at the conditional assistance equilibrium. Second, the truthful contribution schedule of the interest group in equilibrium must satisfy  $\{C^T(\omega^I, V^I) + \alpha(1-\omega^I)y[A^T(\omega^I, I^I)]\} = \alpha(1-\omega^V)y[A^T(\omega^V, I^I)]$ , where  $\omega^V$  is again the government's choice of the distortion index when the interest group does not contribute. As was the case in the unconditional assistance model,  $\omega^V = 0$ . Third, the truthful assistance schedule of the IFI must satisfy  $\{C^T(\omega^I, V^I) + \alpha(1-\omega^I)y[A^T(\omega^I, I^I)]\} = \{C^T(\omega^I, V^I) + \alpha(1-\omega^I)y(0)\}$ , where  $\omega^I > 0$  would be the government's choice of the distortion index if the IFI did not offer any conditional assistance. The first condition states that the government chooses a policy that, given the truthful contribution schedule of the interest group and the truthful assistance schedule of the IFI, maximizes its political support. The second and third conditions spell out how much interest group and IFI, respectively, contribute. The interest group's truthful equilibrium contribution must be such that political support for the government is as strong when it contributes as it would be if it did not contribute, whereby the government-adopted policies entail distortion index  $\omega^V = 0$  and the IFI is just as well off as in equilibrium. The IFI's truthful equilibrium assistance payment must be such that political support for the government is as strong when the IFI assists as it would be if it made no conditional assistance payment, whereby the government chooses distortion index  $\omega^I$ , and the interest group is just as well off as in equilibrium.

Recalling again that  $C^T(\omega, V^I) = U(\omega) - V^I$ , the first condition for a truthful equilibrium requires that  $\omega^I$  is chosen such that:

$$\frac{U'(\omega^I) - \alpha y[A^T(\omega^I, I^I)]}{\alpha(1-\omega^I)y'[A^T(\omega^I, I^I)]} = \frac{-y[A^T(\omega^I, I^I)]}{y^*[-A^T(\omega^I, I^I)] - (1-\omega^I)y'[A^T(\omega^I, I^I)]}. \quad (8)$$

The left-hand side of (8) reflects the slope of the government's political-support indifference curve,  $\partial A(\cdot)/\partial \omega$ , derived from (2) after substitution of  $C(\omega) = U(\omega) - V$ . It states the rate at which the government is willing to accept more economic assistance for fewer distortions. The right-hand side of (8), on the other hand, expresses the slope of the IFI's world-welfare indifference curve,  $\partial A(\cdot)/\partial \omega$ , derived from (5). It states the rate at which the IFI is willing to offer more assistance for reduced policy distortions. Consequently, the political-support-maximizing choice of the distortion index,  $\omega^I$ , implies that joint welfare of domestic government and IFI are maximized.

The second condition for a truthful equilibrium requires that the interest group's financial contribution is such that:

$$U(\omega^I) - V^I + \alpha(1-\omega^I)y[A^T(\omega^I, I^I)] = \alpha y[A^T(0, I^I)] \quad (9)$$

where we substituted for  $\omega^V = 0$ . Correspondingly, the third truthful equilibrium condition requires that the IFI's assistance payment is such that:

$$U(\omega^I) + \alpha(1-\omega^I)y[A^T(\omega^I, I^I)] = U(\omega^I) + \alpha(1-\omega^I)y(0) \quad (10)$$

where  $\omega^I$  is the government's choice of distortions when  $A = 0$ .

Figure 1. Conditional Assistance Equilibrium

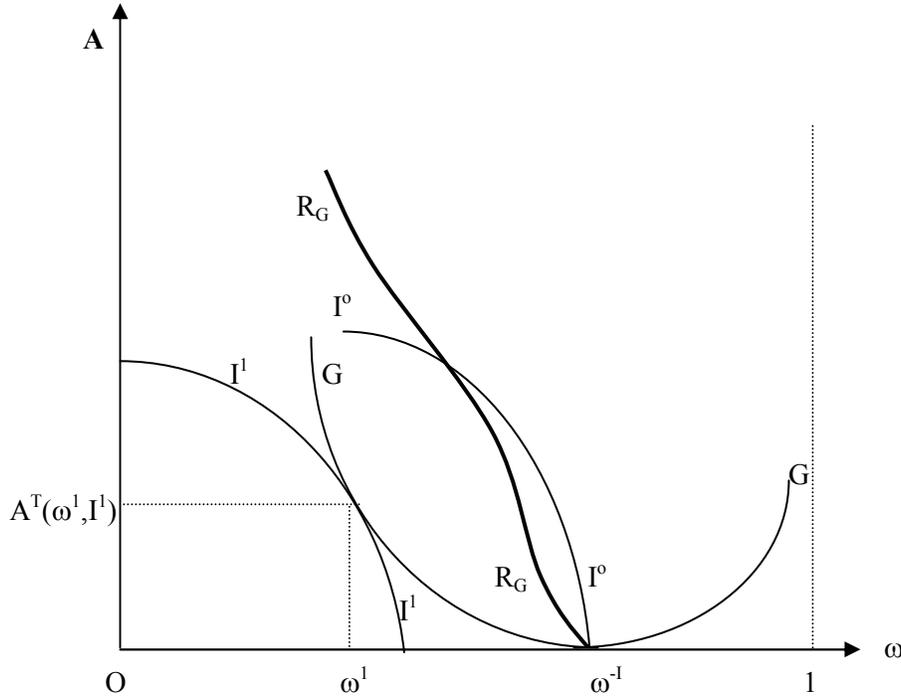


Figure 1 portrays the equilibrium choice of economic assistance,  $A^T(\omega^I, I^I)$ , and economic distortions,  $\omega^I$ , when assistance is conditional. The diagram highlights the interactions between IFI and government while keeping the role of the interest group in the background. It is implicitly assumed that the IFI has no incentive to offer any unconditional assistance; if there is any assistance at all, it is conditional. Concerning the diagram, we first note the already mentioned  $R_G R_G$  locus. It is the government's best-response function to the IFI's provision of assistance. In the absence of IFI assistance, the government pays attention to the wishes of the domestic interest group only and chooses distortion index  $\omega^I$ . The  $GG$  curve traces out those combinations of distortion index and IFI assistance that yield a constant level of political support, given the interest group's contribution function. The reflected level of support is the highest that the government can attain when the IFI does not assist but the interest group contributes to attain net welfare  $V^I$ . The IFI tenders an assistance schedule that makes the government adopt policies such that the chosen assistance-distortion combination  $(\omega^I, A^T)$  lies on the  $GG$  curve. The fact that both  $(\omega^I, A^T)$  and  $(\omega^I, A=0)$  lie on the  $GG$  curve is described by equation (10). The combination  $(\omega^I, A^T)$  is determined by tangency of the  $GG$  - and  $I^I I^I$  curves, where  $I^I$  expresses the IFI's welfare at the conditional assistance equilibrium.

The tangency point reflects equation (8). Clearly, the IFI is better off with conditional assistance than no assistance. Without conditional assistance, the IFI's and, therefore, entire world's welfare would be  $I^0$ .

Equations (8)–(10) can be solved to determine the government's choice of economic policies,  $\omega^I$ , as well as the IFI's and the interest group's welfare, denoted by  $I^I$  and  $V^I$ , respectively. Exogenous to the system are  $\alpha$  and, indirectly,  $\omega^I$ . Since this paper focuses on the efficiency of a one-time grant relative to loan rollovers from the IFI's point of view, this formulation has the special advantage that it enables us to solve directly for the IFI's welfare. Later, when we apply this model to the case of 'loans', we will replace superscript 'I' with superscript 'L'.

### III. INSTRUMENTS OF ASSISTANCE: LOAN ROLLOVERS VERSUS A FINAL GRANT

When the IFI assists a country, it can do so by offering a loan or by making a grant. This choice is available for unconditional, as well as conditional assistance. A loan provides assistance for a limited period of time. Its principal has to be repaid at a specified time in the future. In addition, the assisted country might have to pay interest. At the time of repayment, the IFI evaluates whether conditions that led to the initial loan continue to exist or whether they have changed. A new loan might be offered, whereby the new loan might be larger than, equal to, or smaller than the original loan that is being repaid. Clearly, a major advantage of assisting a country through loans is that it gives the IFI a great deal of flexibility. The IFI is able to respond to changing benefits and opportunity costs of assisting, as well as to a changing political climate in the receiving country.

A grant represents assistance that does not have to be repaid. Once the recipient country is in possession of the grant, the IFI no longer can make adjustments. Even if the developing country's government changes its concern for the general public's welfare or the IFI's opportunity cost of giving assistance rises, the grant cannot be recalled. Clearly, this inability to adjust represents a drawback of assisting through a grant rather than a loan. There are, however, advantages to assisting through a grant. With no time schedule for repayment, a grant can be utilized to finance both short- and long-term investment projects. Consequently, the IFI's inability to react to changing economic and political circumstances must be weighed against the government's enhanced ability to choose from a larger set of investment projects.

The government's ability to choose among projects and the IFI's ability to adjust the level of assistance are important influences on the IFI's choice between loans and grants. The purpose of this paper is to highlight an important additional aspect in the loans versus grants debate, namely the *commitment* aspect. The provision of both unconditional and conditional assistance is the outcome of interactions among three players: the policy-choosing government, the influence-seeking domestic interest group, and the assistance-providing IFI. The nature of the game these players engage in depends on whether assistance is unconditional or conditional and whether it is given in form of a loan that is being rolled over or a final grant.

This paper highlights the differences in games within the framework of a multi-period version of the model described in Section 2. The government of the assistance-receiving country can adjust its policies only at the beginning of each period. The adopted policy remains in place for the duration of this period. At the beginning of the next period, however, the government can reassess and adjust its policy. The domestic interest group also tenders its financial contribution schedule at the beginning of each period, no matter whether the government receives a loan or a grant. More precisely, at the beginning of each period, the interest group presents its contribution schedule in the first stage of the game and the government adopts a policy in the second stage of the game. The timing of the IFI's assistance decision, on the other hand, depends on the form of assistance. It is assumed that a loan is made available for the duration of one period only and that no interest payments are charged. The value of each loan is determined at the beginning of each period, and its equal-value repayment is required at the end of the same period. In the case of an unconditional loan, the IFI's decision is made at the same (second) stage of the game as the government's policy decision. In the case of a conditional loan, the IFI presents its assistance schedule to the government at the same (first) stage of the game as the interest group tenders its financial contribution schedule.

A final IFI grant, on the other hand, represents a permanent commitment on the part of the IFI not to interfere in the domestic political game after the conditions of the grant have been met and the assistance has been disbursed. The final grant is awarded at the beginning of the initial period only and it cannot be reversed thereafter. If the grant is *unconditional*, the IFI decides at the same stage of the game as the government; namely, in stage two of the initial period. At that time, it does take account of the government's reaction to this choice beyond the initial period. If the final grant is *conditional*, the IFI's grant schedule is tendered in stage one of the initial-period game, but the IFI again takes account of the government's responses in future periods. In particular, the IFI knows that a conditional grant has no teeth beyond the initial period; if the government deviates from the assistance schedule, the IFI has no power to recall the grant.

In order to highlight the commitment dimension of the final grant, we are going to assume away all other distinctions between grants and loans. In other words, we are going to specify a stationary, perfect foresight model in which economic and political conditions are not expected to change from period to period. Accordingly, there is no need for flexibility in awarding assistance over time. Every period is like the initial period. In addition, the model assumes away all distinctions between long- and short-term investments; they yield the same return. Hence, in terms of investment returns, long-term funding through a final grant offers no advantage over short-term funding through a loan rollover.

#### **IV. UNCONDITIONAL ASSISTANCE: THE IFI SHOULD USE A GRANT**

This section demonstrates that a final grant is superior to loan rollovers in pursuing the IFI's goal of maximizing world welfare when assistance is unconditional. This conclusion is based on an evaluation of the impact of a loan that is being rolled over indefinitely relative to a one-time grant when all players have perfect foresight and no changes in political and economic conditions are foreseen. At the beginning of each period, the government makes its policy

decisions for the duration of the period. It does so under the influence of the domestic interest group. The IFI also makes its loan assistance decision at the beginning of each period; it makes its grant decision at the beginning of the initial period only.

### A. Unconditional Loan Decisions

With no changes in the economic and political environment, the IFI faces the same situation in each period when it decides on loan awards. It is dealing with an incumbent government whose decisions are influenced by a domestic interest group. The interactions between domestic government and interest group have been laid out in section II–B. They were described by a non-cooperative two-stage game in which the interest group tenders a political contribution schedule,  $C(\omega)$ , in the first stage and the government makes its policy choice in the second stage. The government chooses  $\omega$  such that equation (6) is satisfied. The IFI, in turn, offers a loan that maximizes world welfare as defined in (5). Since the IFI does not consider negative loans to the developing country,  $A \geq 0$ , the government's policy choice,  $\omega^L$ , and the IFI's loan level,  $A^L$ , must satisfy:

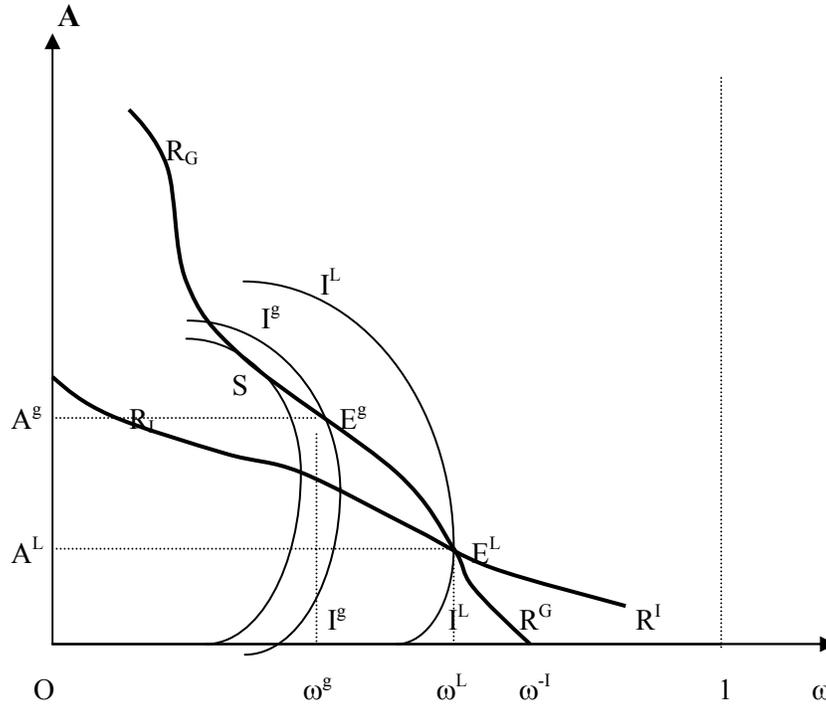
$$U'(\omega^L) - \alpha y(A^L) \leq 0 \quad (11)$$

$$(1 - \omega^L)y'(A^L) - y^*(-A^L) \leq 0 \quad (12)$$

where superscript 'L' indicates equilibrium choices under a loan regime and where (11) and (12) hold as equalities for  $\omega^L > 0$  and  $A^L > 0$ , respectively. Since  $\lim_{\omega \rightarrow 0} U'(\omega) = \infty$  and  $\lim_{\omega \rightarrow 1} U'(\omega) = 0$ , while  $y(A^L) > 0$ , it must be that  $\omega^L > 0$ . The value of  $A^L$ , on the other hand, is positive or zero. It is zero if, in the absence of assistance, the developing country's policies are so distorting that a transfer of resources to the developing country lowers world output.

Figure 2 portrays a situation in which equations (11) and (12) hold as equalities and the equilibrium is unique. The  $R_G R_G$  curve is, as pointed out before, the best-response curve of the domestic government based on (11). It portrays the government's optimal choices of economic policies for all possible levels of IFI assistance, given the interest group's influence on political support for the government. If there is no assistance at all, the government adopts policies that entail a distortion index  $\omega^L$ . The  $R_I R_I$  curve is the best-response curve of the IFI based on (12). The IFI's willingness to offer assistance declines with the magnitude of distortions in the assistance-receiving country. In equilibrium, distortion index  $\omega^L$  and assistance level  $A^L$  prevail. At this 'loan' equilibrium, marked by  $E^L$ , welfare of the IFI is indicated by its assistance-distortion indifference curve  $I^L I^L$ .

Figure 2. Superiority of Unconditional Grants



**B. Unconditional Grant Decisions**

The IFI decides on awarding a final grant at the beginning of the initial period,  $t = 0$ . Since the grant is irreversible, it determines the stock of assistance capital available to the domestic economy not only for the initial period, but for all periods to come.<sup>8</sup> The domestic government, on the other hand, makes its policy decisions not just at the beginning of the initial period, but revisits it at the beginning of each future period.

Starting with the recipient government, maximization of political support under the influence of the interest group results in a distortion index  $\omega_t^g$  for each period  $t = 0, 1, \dots, \infty$ , such that:

$$U'(\omega_t^g) - \alpha y(A_t) \leq 0 \tag{13}$$

where superscript  $g$  indicates the best policy response when assistance in period  $t$ ,  $A_t$ , is received in form of a grant. Since, for a grant,  $A_0 = A_1 = \dots = A$ , the government chooses policies with the same distortion index for each period.

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<sup>8</sup> It is implicitly assumed that the capital created in the recipient economy with the assistance funds does not depreciate over time.

The IFI makes a grant decision only once, namely at the beginning of the initial period. It chooses a grant value,  $A^g$ , which maximizes the present value of world output:

$$[(1-\omega_0)y(A) + y^*(-A)] + \sum_{t=1}^{\infty} \delta^t [(1-\omega_t)y(A) + y^*(-A)] \quad (14)$$

where  $0 \leq \delta < 1$  is the IFI's discount factor. In the initial period, the value of  $\omega_0$  is chosen simultaneously with  $A$ ; in each future period  $t = 1, 2, \dots, \infty$ , the value of  $\omega_t$  is chosen once  $A$  is already in place. Accordingly, the IFI accounts for the government's future best-responses to  $A$ , such that  $\omega_t = \omega(A)$  based on (13). The IFI's present-value-maximizing choice of  $A$ , denoted by  $A^g$ , requires that:

$$[(1-\omega_0)y'(A^g) - y^{*'}(-A^g)] + [\delta/(1-\delta)] \{ [1-\omega(A^g)]y'(A^g) - y^{*'}(-A^g) - y(A^g)\omega'(A^g) \} \leq 0$$

where  $\omega'(A^g) < 0$ . Recalling that  $\omega = \omega_0$ , the above equation can be reduced to:

$$(1-\omega_0)y'(A^g) - y^{*'}(-A^g) - \delta y'(A^g)\omega'(A^g) \leq 0 \quad (15)$$

with equality holding for  $A^g > 0$ . The equilibrium values of the distortion index,  $\omega^g$ , and grant level,  $A^g$ , are attained from (13) and (15) after substitution of  $A^g$  for  $A_t$  in (13) and of  $\omega^g$  for  $\omega_0$  in (15).

We now return to Figure 2 to compare the unconditional assistance equilibrium under a grant, as described by (13) and (15), with the corresponding equilibrium under an infinite series of identical loans, as described by (11) and (12). The 'loan' equilibrium occurs at point  $E^L$  where  $R_G R_G$  and  $R_I R_I$ , the government's and the IFI's respective response functions, intersect. The 'grant' equilibrium must also lie on the government's best-response curve,  $R_G R_G$ , in order to satisfy (13) as an equality. In addition, (15) implies that, in equilibrium, the government's best-response curve is flatter than the IFI's indifference curve. The slope of the government's best-response curve is  $1/\omega'$ ; the slope of the IFI's indifference curve is  $y/[(1-\omega)y' - y^{*'}]$ . Since  $\delta < 1$ , (15) implies that the 'grant' equilibrium,  $E^g$ , lies at a point between  $E^L$  and  $S$ . At point  $S$ , the IFI's indifference curve is tangent to the government's reaction curve. It would be the grant equilibrium if the IFI moved first in every period, the initial one and all periods thereafter. In our model, however, the IFI moves simultaneously with the government in the initial period and moves before the government for all remaining periods. Accordingly, the more the future counts, the larger the value of  $\delta$ , and the closer is  $E^g$  to point  $S$ .

Figure 2 depicts two indifference curves of the IFI,  $I^L I^L$  and  $I^g I^g$ . The former indicates the level of world welfare when the IFI assists through loans; the latter expresses world welfare when the IFI provides assistance through a grant. Clearly, the IFI, as the gatekeeper of world welfare, is better off along  $I^g I^g$  than along  $I^L I^L$ . Accordingly, it prefers to assist through a grant rather than through loans when assistance is unconditional.

## V. CONDITIONAL ASSISTANCE: THE IFI SHOULD USE LOANS

Economic assistance is conditional when it is contingent on the receiving government's adoption of specific economic policies. The IFI imposes the conditions with the objective of raising world welfare. To be effective, conditional assistance must avoid recidivism—i.e., it must lead to sustainable improvement in economic policies. In the case of loans, achieving sustainable improvement in policies is straightforward: if the assistance-receiving country deviates from the conditions, the IFI does not renew the loan in the succeeding periods no matter what the economic and political circumstances might be. Sustainable improvement of economic policies is far more problematic if the IFI adopts a policy of awarding a final conditional grant. A grant is an outright gift that permanently moves all property rights to the transferred resources to the receiving government. If the grant cannot be undone, then conditions imposed in the initial period cannot be enforced in future periods. The IFI, therefore, anticipates the government to adhere to the policy conditions for the initial period only and to switch over to best-policy responses as soon as the government can revise its policy choice, namely as soon as the initial period is over.

### A. Conditional Loan Decisions

The IFI's loan decisions are made at the beginning of each period. With no changes in economic and political conditions expected, the conditional loan decision as well as the government's choice of the distortion index will be the same in each period. Our analysis, therefore, focuses on the conditions for a truthful equilibrium during a given period only.

The one-period conditional loan model is the same as the one-period model examined in subsection 2.3. It was set up as a two-stage game, in which the interest group presents a contribution schedule and the IFI presents a loan schedule in the first stage, while the government makes its policy choice in the second stage. The conditions for a truthful equilibrium were stated as equations (8)–(10). There as here it was implicitly assumed that no unconditional aid is forthcoming. Equations (8)–(10) can be solved for the government's conditional policy choice in return for a loan,  $\omega^L$ , as well as for the corresponding net utility of the interest group,  $V^L$ , and IFI (world) welfare,  $I^L$  in a given period. It is the IFI welfare measure under a conditional loan,  $I^L$ , that is of particular interest to us. We want to compare it with the IFI welfare measure under a conditional grant,  $I^G$ , which will be discussed next.

### B. Conditional Grant Decisions

The IFI awards a grant contingent on the government's adoption of economic policies that lower the distortion index to a specified value. The award is based on a grant schedule that the IFI presents to the government at the beginning of the initial period. The schedule spells out what size grant will be provided at all possible initial distortion indices. By the nature of a grant, the chosen assistance level remains the same for all periods to come. The government, on the other hand, commits to a specific policy for one period only. Consequently, if it accepts certain conditions for its policy choice in return for a given-size grant, it is bound by these conditions only during the initial period. After the expiration of the initial period, the government is free to choose those policies which, given the grant received, maximize its political support. The IFI, of course, is aware of the government's recidivist

incentives. Pursuing its best interest in the future leads the government to backslide on the policies adopted when it accepted disbursement of the one-time conditional grant.

For each period after the initial one, namely periods  $t = 1, 2, \dots, \infty$ , the government faces an inherited level of assistance capital,  $A$ , and chooses a best-response distortion index  $\omega_t^g$ , such that:

$$U'(\omega_t^g) = \alpha y(A), \quad (16)$$

as was already stated in (13). It follows that the same distortion index prevails in all periods after the initial one and that  $\omega^g = \omega_t^g = \alpha(A)$  with  $\omega'(A) < 0$ .

For the initial period  $t = 0$ , on the other hand, the grant is conditional on the adoption of IFI-prescribed policies. A truthful equilibrium requires that the government chooses  $\omega_o^g$ , such that the present value of political support is maximized,<sup>9</sup> that is:

$$\omega_o^g = \operatorname{argmax}_{0 \leq \omega < 1} \{C^T(\omega_o, V_o^g) + \alpha(1-\omega_o)y[A^T(\omega_o, I^g)]\} + \{\delta/(1-\delta)\} \{C^T[\omega, V^g] + \alpha[1-\omega]y[A^T(\omega_o, I^g)]\} \quad (17)$$

where  $\omega = \omega[A^T(\omega_o, I^g)]$ . In the above expression,  $V_o^g$  and  $V^g$  denote equilibrium net welfare of the interest group during the initial and all succeeding periods, respectively. Also, we use the symbol  $I^g = \{[1-\delta][(1-\omega_o^g)y[A^T(\omega_o^g, I^g)] + y^*[-A^T(\omega_o^g, I^g)]] + \{\delta[(1-\omega^g)y[A^T(\omega_o^g, I^g)] + y^*[-A^T(\omega_o^g, I^g)]]\}$  to indicate the IFI's *per-period present value* of welfare in equilibrium. Furthermore, the term  $C^T(\omega_o, V_o^g)$  in (17) states the initial-period truthful contribution schedule of the interest group, and  $A^T(\omega_o, I^g)$  is the corresponding truthful grant schedule of the IFI. Finally, the term  $C^T[\omega(A^T(\omega_o, I^g)), V^g]$  expresses the interest group's truthful contribution schedule for all periods beyond the initial one; during these periods, the government's policy choice is a response to the grant received in the initial period. As shown in the Annex, the choice of  $\omega_o^g$  must satisfy:

$$-\frac{(1-\delta)\{U'(\omega_o^g) - \alpha y[A^T(\omega_o^g, I^g)]\}}{\alpha B y'[A^T(\omega_o^g, I^g)]} = \frac{\partial A^T(\omega_o^g, I^g)}{\partial \omega_o} \quad (18)$$

where  $B = [(1 - \omega_o^g) - \delta(\omega^g - \omega_o^g)]$ . The left-hand side of (18) states the government's willingness to accept assistance in return for lowering initial-period distortions, with full realization that it will adopt best-policy responses beyond the initial period. The right-hand term, on the other hand, expresses the IFI's willingness to award a grant in return for lowering initial-period distortions. The IFI is also aware that the imposed policy conditions, willingly agreed upon by the government, are binding only for the initial period, while the

<sup>9</sup> Note that the initial period's choice of  $\omega_o$  indirectly influences later-periods choices of  $\omega^g$ .

grant it has given stays with the receiving country forever. As shown in the Appendix, the right-hand side can be expressed as:

$$\frac{\partial A^T(\omega_o^g, I_g)}{\partial \omega_o} = \frac{(1-\delta)y(A^g)}{By'(A^g) - y^{*'}(-A^g) - \delta\omega'(A^g)y(A^g)} \quad (19)$$

where  $A^g = A^T(\omega_o^g, I^g)$ .

The interest group tenders its contribution schedule to the government in the first stage of each period game. The contribution must be sufficiently high to provide the government with the same level of political support as it would receive if did not contribute. The equilibrium contributions differ between the initial period and the ensuing periods. During the initial period, both interest group and IFI tender payments schedules to the government. During the follow-up periods, only the interest group presents a contribution schedule; the IFI's payment is fixed, as determined in the initial period. Maintaining the same level of political support for the government during the initial period,  $t = 0$ , and all remaining periods,  $t = 1, 2, \dots, \infty$ , respectively, requires that

$$\{C^T(\omega_o^g, V_o^g) + \alpha(1-\omega_o^g)y[A^T(\omega_o^g, I^g)]\} = \alpha y[A^T(0, I^g)]$$

and

$$\{C^T(\omega^g, V^g) + \alpha(1-\omega^g)y[A^T(\omega_o^g, I^g)]\} = \alpha y[A^T(0, I^g)]$$

which, in turn, implies that:

$$U(\omega_o^g) - V_o^g + \alpha(1-\omega_o^g)y[A^T(\omega_o^g, I^g)] = \alpha y[A^T(0, I^g)] \quad (20)$$

$$U(\omega^g) - V^g + \alpha(1-\omega^g)y[A^T(\omega_o^g, I^g)] = \alpha y[A^T(0, I^g)]. \quad (21)$$

The IFI, on the other hand, tenders its grant schedule only once, namely in the first stage of the two-stage game that unfolds at the beginning of the initial period. It also offers just enough to create the same present value of political support for the government in equilibrium as the government would receive if no grant were offered; in addition, the interest group's utility must be retained at the same level as in equilibrium. More precisely, the size of the grant must be such that:

$$\begin{aligned} & \{C^T(\omega_o^g, V_o^g) + \alpha(1-\omega_o^g)y[A^T(\omega_o^g, I^g)]\} + [\delta(1-\delta)]\{C^T[\alpha A^T(\omega_o^g, I^g), V^g] \\ & \quad + \alpha[1-\alpha A^T(\omega_o^g, I^g)]y[A^T(\omega_o^g, I^g)]\} \\ & = \{C^T(\omega^I, V_o^g) + \alpha(1-\omega^I)y(0)\} + [\delta(1-\delta)]\{C^T(\omega^I, V^g) + \alpha(1-\omega^I)y(0)\}. \end{aligned}$$

After substitution of  $C^T(\omega_o^g, V_o^g) = U(\omega_o^g) - V_o^g$  and  $C^T(\omega^g, V^g) = U(\omega^g) - V^g$ , this condition can be restated as:

$$(1-\delta)\{U(\omega_o^g) + \alpha(1-\omega_o^g)y[A^T(\omega_o^g, I^g)]\} + \delta\{U[\alpha A^T(\omega_o^g, I^g)] + \alpha[1-\alpha A^T(\omega_o^g, I^g)]y[A^T(\omega_o^g, I^g)]\} = U(\omega^I) + \alpha(1-\omega^I)y(0). \quad (22)$$

Equations (16), (18), and (20)-(22) constitute the conditions for a truthful equilibrium when the IFI awards a conditional grant during the initial period and the government knows that the IFI has no enforcement ability beyond this initial period. The system's endogenous variables are the government's policy choices, yielding distortion indices  $\omega_o^s$  and  $\omega^s$ , respectively, for the initial and follow-up periods, the corresponding net welfare levels of the interest group,  $V_o^s$  and  $V^s$ , and the IFI's per-period welfare measure,  $I^s$ . It is the last of these variables in which we have a particular interest. We want to compare it with  $I^L$ , the per-period measure of IFI welfare when assistance is given in form of loans for all periods to come.

To make these IFI welfare comparisons, we first determine the Pareto-optimal combination of distortion index,  $\underline{\omega}$  and grant level,  $\underline{A}$ , given the constraint that joint welfare of domestic government and interest group,  $G + V$ , is equal to what it is in the absence of the IFI providing aid. Hence, we are choosing  $\underline{\omega}$  and  $\underline{A}$  to maximize  $I = [(1-\omega)y(A) + y^*(-A)]$  given the constraint  $[U(\omega) + \alpha(1-\omega)y(A)] = [U(\omega^L) + \alpha(1-\omega^L)y(0)]$ . Such optimal choice requires that:

$$\frac{U'(\underline{\omega}) - \alpha y'(\underline{A})}{\alpha(1-\underline{\omega})y'(\underline{A})} = \frac{y(\underline{A})}{y^*(-\underline{A}) - (1-\underline{\omega})y'(\underline{A})}. \quad (23)$$

Next, we look at the equilibrium conditions for rollover *loans* and compare them with the Pareto-optimality condition. The conditions for the optimal choice of  $\omega^L$  and  $A^L$  were stated in equations (8) and (10) of Section 2.3., whereby we set  $\omega^L = \omega^L$  and  $A^L = A^L(\omega^L, I^L)$ . One can see immediately, that the optimal distortion index choice condition of equation (8) is the same as the Pareto-optimality condition of equation (23). Also, the constraint on joint welfare of domestic government and interest group under which the Pareto-optimal values of  $\underline{\omega}$  and  $\underline{A}$  were derived are the same as the equilibrium values of distortion index and IFI per period assistance,  $\omega^L$  and  $A^L$ . Accordingly, given the constraint of (10), the loan equilibrium results in the highest possible welfare per period for the IFI.

In case of a one-time *grant*, on the other hand, the condition for Pareto optimality cannot be satisfied. The constraint on joint welfare of domestic government and interest group in the conditional grant model was stated on the right-hand side of equation (22). It is the same as the constraint in the loan model and for the Pareto-optimal choices of  $\underline{\omega}$  and  $\underline{A}$ . If  $\omega_o^s$  were equal to  $\omega(A^T)$  in (22), then the solution of the IFI grant level,  $A^T(\cdot)$ , would be the same as the Pareto optimal level of  $\underline{A}$ . But since the initial-period government choice of the distortion index,  $\omega_o^s$ , is less than its later-period choice of  $\omega(A^T)$  – when the grant conditions are no longer binding – it must be that  $A^s \neq \underline{A}$ . Furthermore, the government's choice of the initial-period,  $\omega_o^s$ , was shown to be the solution to equation (18). After substitution of (19), this condition for the optimal choice of  $\omega_o^s$  reduces to:

$$\frac{\{U'(\omega_o^s) - \alpha y'(A^s)\}}{\alpha B y'(A^s)} = \frac{y(A^s)}{y^*(-A^s) + \delta \omega'(A^s) y(A^s) - B y'(A^s)} \quad (24)$$

where again  $B = [(1-\omega_o^s) - \delta(\omega^s - \omega_o^s)]$  and  $A^s = A^T(\omega_o^s, I^s)$ . Clearly, this condition for the initial-period distortion index differs from the Pareto-optimality condition due to the influence of  $B = [(1-\omega_o^s) - \delta(\omega^s - \omega_o^s)] < (1-\omega_o^s)$  and of  $\delta\omega'(A^s)y(A^s) < 0$ , assuming that the future matters ( $\delta > 0$ ). Furthermore, the government's choice of the distortion index in later periods must be larger than during the initial period as it no longer is constrained by IFI conditions. Consequently, the award of a conditional grant implies that the adopted combinations of  $(\omega_o^s, A^s)$  during the initial period and of  $(\omega^s, A^s)$  during all periods thereafter cannot be the same as the Pareto-optimal combination  $(\underline{\omega}, \underline{A})$  for each period.

In deriving a specific Pareto-optimal combination of distortion index and IFI assistance,  $(\underline{\omega}, \underline{A})$ , we imposed the condition that domestic government and interest group are just as well off as in the absence of IFI assistance. The same constraint is binding in determining the optimal combination of distortion index and IFI assistance for conditional loan rollovers and for a conditional grant. For the conditional loan rollovers, it was shown that  $(\underline{\omega}, \underline{A})$  is the choice in each period. For a conditional grant, on the other hand,  $(\underline{\omega}, \underline{A})$  cannot be the choice in each period. It follows that the maximizing value of IFI welfare under loans,  $I^L$ , must be larger than the maximizing value of IFI welfare under a grant,  $I^G$ . Hence, in contrast to the grant bias under unconditional assistance, there exists a loan bias under conditional assistance.

## VI. CONCLUDING REMARKS

The appropriate terms of IFI financial assistance to low-income countries, including their duration, interest rate, and other repayment terms, are an important policy concern for IFIs and the donor countries that provide these institutions with their capital. To our knowledge, these issues have not been the subject of dynamic political-economy analysis to date. We study some of these issues using a dynamic version of the common-agency model developed by Mayer and Mourmouras (2002). In this model, the transfer of resources from the rest of the world to a developing country has the potential to raise the welfare of the world as a whole. It thereby addresses the questions of how the world's resources are best allocated among countries but does not address temporary relief needs in crisis situations.

The analysis confirms the inefficiency of prolonged financial association of IFIs with low-income countries when assistance is unconditional. We demonstrate that if there are no changes in either the rest of the world or the receiving country, it is best to place unconditionally transferred resources permanently in the developing country. If such a permanent resource transfer is called for and there is no difference in returns between short- and long-run projects, then awarding a grant is more efficient than employing renewable loans. The solution to the unconditional assistance game is never Pareto optimal. On the one hand, the IFI gains from using an initial-period grant rather than loans that are renewed every period, since the grant gives the IFI a first-mover advantage in its game with the government for all periods past the initial one.

If, on the other hand, assistance is conditional on the recipient country improving its policies, then loan rollovers are more efficient than a one-time grant. Conditional loans can be enforced from period to period, whereas for the final grant the IFI's ability to enforce conditions ends after the initial period. Under a loan regime, the IFI is able to set and enforce

conditions that bring about a Pareto-optimal combination of domestic economic policies and IFI assistance. Under a grant regime, the lack of later-period enforceability makes it impossible to achieve a Pareto-optimal outcome.

The question of the appropriate length of engagement of IFIs in developing countries is closely related to the rationale for continued multilateral lending. On the one hand, our results suggest that for conditional assistance, permanent involvement of international institutions is called for as long as domestic interest groups resisting reforms remain organized in assistance-receiving countries. On the other hand, limiting the time frame of unconditional assistance—subjecting IFI assistance to a sunset clause—confers on the IFI a “first-mover's advantage.” When assistance is unconditional, this advantage enables an IFI that is active for only one period to achieve better results than would be possible through permanent engagement. There are two problems with this arrangement, however. One is that it fails to achieve a Pareto-optimal allocation for the world economy. Although the transfer of resources results in a permanent improvement in policies relative to the no-assistance equilibrium, policies worsen after the IFI withdraws and reform-resisting interest groups reassert themselves. The second weakness is that final grants are not time consistent. To implement the final grant policy, the IFI must commit to not reengage in the assistance-receiving country. But unless the interest groups lobbying for distortionary policies become a spent force under the final-grant policy, the IFI will face incentives to reengage. These incentives will be stronger, the larger are the unexploited gains from the political game between the IFI and the assistance-receiving country.

As is true in all theoretical investigations, our results are derived within a model that abstracts from a variety of considerations that are likely to be important in practice. In the real world, the opportunity costs of giving aid, the benefits from receiving aid, and the political concern of the receiving government for its general public undergo frequent changes. Consequently, all decision makers face an uncertain future, and the IFI will find it advantageous to employ loans instead of grants to adjust to changing circumstances. The IFI also will be aware that the length of time for which it transfers resources affects the type of investment project to which these resources are directed. Generally, a long-term resource transfer offers more flexibility with respect to investment projects than a short-term one. Accounting for both of these influences, the IFI attempts to find the right mix of loans and grants. Given this context, the message of this paper is that, in the real world, the IFI must also account for a third influence on its decision—namely, its ability to influence the behavior of the assistance-receiving government. Under unconditional assistance, the grant commits the IFI and enables it to benefit from its first-mover situation. Under conditional assistance, conditional loans help the world economy attain a Pareto Optimum. But this works only if conditions are enforceable in every period, as they are for loans but not for a grant.

The vagaries faced by developing countries suggest the need for permanent institutions to assist countries that fall into poverty at different random times (either because of exogenous shocks or for other reasons beyond their control). To assist low-income countries, IFIs need to be endowed with assistance funds before crises erupt. Future research should determine the modalities of IFI assistance to low-income countries, taking into account both the need

for flexibility in the provision of assistance and the moral hazards of prolonged financial association of IFIs with developing countries. The answer to this question, which has an analogue in the design of national safety nets to deal with household income and other risks, will require more complicated models, but finding it is a key issue for thinking about the replenishment of funds of assistance-providing IFIs.

The dynamic version of the lobbying model developed in this paper suggests two additional topics for future research. The first is the question of whether IFI-supported structural reforms contribute to a sustainable decline in the pernicious influence of special interest groups in assistance-receiving countries. This question, in turn, is key to addressing the factors blocking the emergence of strong institutions and improving the business climate in these countries. In our framework, the organized interest group is a permanent fixture of the institutional landscape in the assistance-receiving country. Although its position is weakened as a result of IFI operations, and its equilibrium rents and political influence decline, the interest group does not go away. In reality, of course, interest groups are able to organize themselves only if they can overcome the free-rider and other collective-action problems, as argued in Mancur Olson (1965). It would be interesting to study how the survival of interests groups is affected by IFI conditionality if there are costs to setting them up, as in Mitra (1999).

In a model in which interest groups become organized only if their members pay some fixed cost, the possibility arises that IFI involvement could push the rents earned by interest groups below the threshold required for organized lobbying activity to be profitable. If the IFIs knew the threshold below which the organized interest group would be “disarmed,” they could then strategically manipulate their conditional assistance to drive the interest group’s profits below this critical value, resulting in permanent, long-term improvements in the recipient country’s institutional climate. The provision of assistance aiming to destroy the interest group as an organized force could still be modeled as a truthful equilibrium, since the welfare benefits from interest group “disarmament” are real. Such assistance could be compared with the possibility analyzed in the present paper—namely, that rents are higher than the fixed cost of organizing the interest group, in which case the interest group continues to operate but is permanently worse off as a result of the IFI’s intervention. This idea provides a natural link between the lobbying literature and the literature on the new institutional economics (see North (1993)) and could aid in formulating a positive theory of institutional evolution.

The second issue concerns the need for models of IFI-recipient country interactions that incorporate explicit public-choice dynamics. IFIs increasingly provide their assistance to democratic governments that are subject to electoral contests (and street protests and other forms of asserting political influence) when they reorient resources from nontraded-to traded-goods industries and undertake other reforms. IFIs are sometimes surprised by the political dynamics associated with the reform programs they support, including those affected by elections. A better understanding of such dynamics would help in the design of politically sustainable reform programs (Willett (2003)). In our theory, the equilibrium level of political support for recipient governments is endogenously determined over time, yet incumbents never get thrown out of office in equilibrium. This outcome reflects the lack of voting or other explicit public-choice mechanism in the version of the Grossman and Helpman theory

we employ. Extensions in this direction seem feasible. Grossman and Helpman (1996) have extended their model to rationalize their choice of objective function. Analyzing the impact of IFI assistance on an endogenously determined domestic political process is a promising avenue for future research.

ANNEX

**A. Derivation of Equation (18)**

Since  $C^T(\omega_o, V_o^g) = U(\omega_o) - V_o^g$  and  $C^T(\omega, V^g) = U[\omega(A^T(\omega_o, I^g))] - V^g$ , differentiation of (17) with respect to  $\omega_o$  implies the first-order condition:

$$\{U'(\omega_o^g) - \alpha y(A^g) + \alpha(1-\omega_o^g)y'(A^g)(\partial A^g/\partial \omega_o)\} + \{\delta/(1-\delta)\}[U'(\omega^g) - \alpha y(A^g)\omega'(A^g)(\partial A^g/\partial \omega_o) + \alpha[1-\omega(A^g)]y'(A^g)(\partial A^g/\partial \omega_o)] = 0, \text{ where } A^g = A^T(\omega_o^g, I^g).$$

Since  $U'(\omega^g) = \alpha y(A^g)$  from (16) due to the government's optimal response to the grant past the initial period, one can solve the first-order condition for:

$$-\frac{(1-\delta)[U'(\omega_o^g) - \alpha y(A^g)]}{\alpha y'(A^g)[(1-\omega_o^g) - \delta(\omega^g - \omega_o^g)]} = \frac{\partial A^g}{\partial \omega_o}.$$

**B. Derivation of Equation (19)**

The term  $A^T(\omega_o^g, I^g)$  denotes the IFI's truthful offer of a grant when the government chooses the equilibrium initial-period distortion index and the IFI's equilibrium welfare is  $I^g$ . It is derived from the definition of  $I^g = (1-\delta)[(1-\omega_o^g)y(A^g) + y^*(-A^g)] + \delta\{[1-\omega(A^g)]y(A^g) + y^*(-A^g)\}$ . At a given  $I^g$ ,

$$\frac{\partial A^g}{\partial \omega_o} = \frac{(1-\delta)y(A^g)}{y'(A^g)[(1-\omega_o^g) - \delta(\omega^g - \omega_o^g)] - y^{*'}(-A^g) - \delta\omega'(A^g)y(A^g)}.$$

## REFERENCES

- Bernheim, B. Douglas, and Michael D. Whinston, 1986, "Menu Auctions, Resource Allocation, and Economic Influence," *Quarterly Journal of Economics* 101 (1), pp. 1–32 (February).
- Bird, Graham, Mumtaz Hussain, and Joseph Joyce, 2000, "Many Happy Returns? Recidivism and the IMF," Wellesley College Department of Economics Working Paper 2000–04 (March).
- Cunningham, Stephen, 2002, "G7 Finance Ministers End Row Over World Bank Grants, Loans," Reuters North American Securities News (June 15).
- Dixit, Avinash, Gene M. Grossman, and Elhanan Helpman, 1997, "Common Agency and Coordination: General Theory and Application to Government Policy Making," *Journal of Political Economy* 105 (4), pp. 752–769.
- Drazen, Allan, 2002, "Conditionality and Ownership in IMF Lending: A Political Economy Approach," *IMF Staff Papers* 49 (Special Issue), pp. 36–67. Available via the Internet at <http://www.imf.org/External/Pubs/FT/staffp/2001/00-00/pdf/ad.pdf>.
- Friedman, Milton, 1958, "Foreign Economic Aid: Means and Objectives," *Yale Review*, pp. 500–516.
- Grossman, Gene M., and Elhanan Helpman, 1994, "Protection for Sale," *American Economic Review* 84 (September), pp. 833–850.
- , 1996, "Electoral Competition and Special Interest Politics," *Review of Economic Studies* 63 (2), pp. 265–286.
- International Monetary Fund, 2002, *Evaluation of Prolonged Use of IMF Resources*, Independent Evaluation Office, Volumes 1 and 2 (September). Available via the Internet at <http://www.imf.org/external/pubs/ft/EPUI/2002/pdf/Report.pdf>.
- , 2003a, "Conclusions of the Task Force on Prolonged Use of Fund Resources," (February 4). Available via the Internet at <http://www.imf.org/external/np/pdr/ufr/2003/020403.pdf>.
- , 2003b, "Operational Guidance for Assessments of Countries with a Longer-Term Program Engagement" (August 20). Available via the Internet at <http://www.imf.org/external/np/pdr/ufr/2003/082003.htm>.
- , 2003c, "Fund Assistance for Countries Facing Exogenous Shocks" (August 8). Available via the Internet at <http://www.imf.org/external/np/pdr/sustain/2003/080803.pdf>.

- Mayer, Wolfgang, and Alexandros Mourmouras, 2002, "Vested Interests in a Positive Theory of IFI Conditionality," IMF Working Paper 02/73 (Washington: International Monetary Fund).
- Mitra, Devashish, 1999, "Endogenous Lobby Formation and Endogenous Protection: A Long Run Model of Trade Policy Determination," *American Economic Review* 89 (5), pp. 1116–1134.
- North, Douglass, 1993, "Economic Performance Through Time," Nobel Memorial Prize Lecture, Stockholm (December 9). Available via the Internet at <http://www.nobel.se/economics/laureates/1993/north-lecture.html>
- Olson, Mancur, 1965, *The Logic of Collective Action* (Cambridge: Harvard University Press).
- Willett, Thomas, 2003, "IMF Conditionality and the New Political Economy of Ownership," Working Paper (Claremont McKenna College).