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Outcomes-Based Conditionality: Its Role and Optimal Design

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Abstract

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The paper employs a principal-agent framework to analyze the role and design of outcomes-based conditionality in the presence of market frictions and domestic opposition. The results suggest that outcomes-based conditionality is a good option for the IMF when opposition to reforms is relatively weak and when the IMF loan is unsubsidized. The only role conditionality ends up playing in this case is that of an efficiency tool. The benefits of outcomes-based conditionality in the presence of strong opposition are less clear, and using this conditionality as an incentive tool would require that IMF financing be subsidized.

Contents   Page

I. INTRODUCTION

The programs supported by the International Monetary Fund (IMF) are, in essence, incentive schemes.[2] The country is "rewarded" with IMF financing if it implements certain policies and achieves certain outcomes. For an IMF-supported program to be successful, its conditionality should be designed in a way that provides the government with the "right" incentives to adopt necessary policy changes.[3] In other words, the government should be willing to implement reforms. This willingness is often referred to as ownership of a reform program.[4]

One of the proposals to enhance program ownership through conditionality design is greater use of outcomes-based conditionality[5] under which IMF financing is conditional on the member country meeting particular targets or objectives rather than implementing specific actions (policies). From a practical point of view, outcomes-based conditionality[6] in some cases has clear disadvantages, since the results of certain reforms may not be seen for a long time and delaying financing until then may be difficult when a financial crisis is imminent. Hence, outcomes-based conditionality is likely to be more appropriate for medium- and longer-term programs. At the same time, many quantitative targets (such as reserve targets) currently employed by the IMF are, in effect, outcomes-based conditions.

Outcomes-based conditionality is viewed as "reducing the perception of micro-management of countries' economic policies and helping foster and build on country ownership, by giving the authorities greater flexibility to design their own economic policies" (IMF (2002)). Drawing on the risk-sharing result of the standard principal-agent model with unobservable action, IMF (2002) concludes that making financing conditional on the outcome would strengthen the incentives of the authorities to achieve a better outcome.

This result, however, hinges on the ability of the principal to stick to the precommitted schedule, which provides less financing (or no financing at all) in case of undesirable outcomes. It also implies that conditionality can be designed in a way that ensures that the

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[2] This view of IMF conditionality was first suggested in Dixit (2000a).

[3] This will also help ensure that IMF resources are repaid.

[4] A formal definition of ownership adopted by the IMF is as follows: "Ownership is a willing assumption of responsibility for an agreed upon program of policies, by officials in the borrowing country who have the responsibility to formulate and carry out those policies, based on an understanding that the program is achievable and is in the country's own interest" (IMF (2001a)).

[5] The approach was advocated by Carlos Díaz-Alejandro (1984) and discussed in Khan and Sharma (2001), IMF (2001b), and IMF (2002b).

[6] At the moment, IMF conditionality is already a mix of policy-based and outcome-based conditionality. Thus, the issue is really whether the relative importance of outcome-based conditionality should be increased.

outcomes are not achieved by unsustainable or inappropriate policies.[7] Is outcomes-based conditionality still a good option for the IMF when commitment is an issue and when reforms face opposition from domestic lobbies that can divert authorities from sound economic policies?

The paper addresses this question by analyzing the role and optimal design of conditionality within a consistent theoretical framework with clearly defined objective function of the IMF. To model opposition from an outside lobby, I employ a common agency approach following Mayer and Mourmouras (2001),[8] but with stochastic outcome of policy reforms and policy actions unobservable to the IMF.

Despite numerous discussions on the topic, there is, to my knowledge, only one formal model of IMF outcomes-based conditionality, namely, the model of the IMF as a coinsurance arrangement presented in Chami, Sharma, and Shim (2004). The model focuses on the need for precommitment in the context of time inconsistency, but does not address the role and optimal design of outcomes-based conditionality in the presence of opposition.

Most of the existing theoretical literature on conditionality, indeed, focuses on the problem with the donor's commitment in enforcing conditionality contracts. The majority of models are models of conditional aid, with the donor having altruistic preferences. Some of the models employ a principal-agent framework (e.g., Svensson (2000, 2003) and Azam and Laffont (2003)).

Models of IMF conditional lending are rare and often do not provide clear justification for the IMF's objective function. In Drazen (2001), for example, the IMF cares about "extracting" policy reforms from the borrowing government while facing some financing constraints. Mayer and Mourmouras (2001) define the IMF's objective more explicitly—namely, the IMF seeks to maximize the weighted sum of utilities of IMF borrowers and lenders—but without justifying why IMF financing is required.

Chami, Sharma, and Shim (2004) take the issue of the IMF's objective seriously and show that the size and design of the IMF loan contract depend crucially on the choice of IMF objective. They explore alternative objectives balancing IMF concerns about safeguarding its resources with concern about country welfare, but limit the IMF's role to that of an altruistic lender.

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[7] A recent review of the 2002 Conditionality Guidelines (IMF 2005) suggests that this may not be the case in practice and points out the risk that conditions might be met in unacceptable or suboptimal ways.

[8] A common agency framework was proposed in Bernheim and Whinston (1986) and further developed in Grossman and Helpman (1994); Dixit, Grossman, and Helpman (1996); and Dixit, Grossman, and Helpman (1997).

This paper focuses on a potentially different role that the IMF is playing and analyzes the role and optimal design of conditionality under the nonaltruistic objective of the IMF. The role of the IMF is twofold: (i) to bridge the inefficiency gap resulting from the presence of market failures; and (ii) to induce policy changes beneficial for the world. The instruments that the IMF can employ to achieve these two goals are the amount and terms (interest rate) of IMF financing.

Several features of IMF and authorities' preferences make this model different from the standard principal-agent model. The IMF is not a typical principal, in the sense that it would choose to make a contribution (give a loan) even if the country had enough incentives to implement the desired policy changes without the IMF. This is because the IMF plays a role as a "world" social planner that aims at removing the consequences of market imperfections, thereby benefiting both borrowers and lenders. Also unlike the standard principal-agent model, preferences of the country authorities and the IMF are aligned to some extent, since the government cares about the reform outcome directly, as well as changes in IMF financing made in response to the observed outcomes.

The results suggest that when opposition to reforms is relatively weak and the IMF offers financing on market terms, outcomes-based conditionality is a good option for the IMF. In this case, forgoing monitoring of policy decisions does not result in an efficiency loss and an optimal conditionality schedule does not contain an incentive component but simply ensures an efficient allocation of resources[9] between IMF borrowers and lenders.

Outcomes-based conditionality may still be a good option for the IMF when resistance to reforms is strong. The IMF would, however, have to offer financing at a subsidized interest rate to be able to use conditionality as an incentive device. The optimal conditionality schedule in this case would reflect the trade-off between risk sharing and incentives as the IMF shifts additional risk to the government. A careful assessment of benefits and costs of outcomes-based conditionality is particularly important in this case, since the average amount of transfer from the lender to the borrower required to ensure good policy is higher in the unobservable case than in the observable one.

A better understanding of political economy in the country is crucial in designing an optimal conditionality schedule, since its role and optimal design depend on the strength of opposition. In the presence of outside lobbies, the incentives of the authorities are shaped not only by the IMF "offer" but also by the offer from special interests.[10] Whether reforms are implemented or not is simply a matter of the "competitive power" of the IMF versus

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[9] The term "efficiency" is used somewhat loosely here. Its precise meaning is explained later in the text.

[10] On weakening of incentives in multiple principals and multitask agent setting, see Dixit (1997). In this model, the principal can make negative marginal payments for the outcomes of tasks that are primarily of interest to the other principals, thereby obtaining insurance against those outcomes. This is true for all principals, and this overprovided negative externality leads to a weakening of incentives in the Nash equilibrium.

domestic lobbies, and unobservability may weaken the IMF's competitive power. In some cases, however, the IMF may find it optimal to incur additional costs in order to induce sound economic policies.

The model makes a surprising prediction about the transparency of IMF-supported programs. If the IMF moves first but cannot commit to nondisbursement when the member country makes a bad policy choice, this may give an advantage to the domestic vested interests. In essence, the IMF cannot strategically manipulate a lobby's response when the maximum benefit from the lobby's contributions to the authorities exceeds the benefit from IMF financing. The lobby, however, can observe policy actions and make use of knowledge of IMF conditionality. In fact, the lobby turns out to be the only "player" who never loses because the IMF cannot monitor government actions.

The model is of interest also because, in many cases, the IMF either cannot effectively monitor government policy decisions or such monitoring is costly. The government may take indirect steps that violate conditionality and even when the agreed policies are adopted, actual policies implemented may differ from the former, since the interpretation of laws is usually flexible and there are always exceptions to the laws.

The rest of the paper is organized as follows. Section II offers a model of IMF conditionality. Section III summarizes results for the case when policy choice is observable. Section IV summarizes results when the IMF cannot monitor government policy decisions. Section V concludes.

II. THE MODEL

Conditionality is a tool for achieving objectives of an IMF-supported program. Hence, in designing conditionality the issue of paramount importance is to clearly identify the objective function of the IMF. The objectives spelled out in the IMF's Articles of Agreement (IMF (2001d)) clearly emphasize the global nature of the organization, which intends to strike a balance between individual country borrowing needs and stable functioning of the world economy.

The requirement of adequate safeguards for making resources available to member countries experiencing balance of payment difficulties indicates the noncharitable nature of the organization. In the past decade, however, the IMF has become more involved in supporting macroeconomic stabilization in poor countries, where the objective was more that of an "equity" rather than "efficiency." This paper focuses solely on the efficiency objective of the IMF, leaving aside poverty reduction concerns, which are better described in the context of conditional aid literature.

In all the proposals emphasizing efficiency as IMF objective, IMF interference is seen necessary to close the inefficiency gap resulting from the presence of market failures, although the types of market failures and the type of IMF involvement are rather different.

Resource allocation may not be efficient in the presence of market failures due to
(i) informational asymmetries; (ii) presence of externalities; and (iii) missing contracts.

Sachs (1999) stresses that the presence of informational asymmetries leads to the fact that
the lender cannot distinguish insolvent from illiquid banks/countries, which leads to an
undersupply of loans or reluctance to roll over existing debt (adverse selection problem).
Rogoff (1999) and Frankel (1999) emphasize the presence of externalities from financial
crises that may spillover to other countries, while Tirole (2002) emphasizes externalities that
different lenders impose on each other by contracting with the government simultaneously.
Tirole (2002) also suggests that market failures can result from missing contracts—while
foreign investors are affected by the actions of both private borrowers and domestic
government,[11] they can only contract with the former, which leads to a possibility of
government moral hazard if the government favors interests of domestic borrowers over
foreign investors.

The proposed solution is either IMF conditional rescue financing itself or the function of
delegated monitor, which would substitute for missing contracts between international
lenders and the domestic government and ensure efficient supply of private financing.
Following these proposals, the objective of the IMF adopted in this paper is to design
conditionality such that to ensure efficient allocation of resources between IMF borrowers
and lenders. IMF conditional financing in this case may be interpreted not only as IMF loan
per se, but also as the total amount of financing the country would receive from official and
private parties if it fulfills IMF conditions.

IMF has to design its conditionality facing political reality, which often implies the presence
of opposition to reforms, for example, powerful vested interests (lobbies) who benefit from
distorted economic outcomes but not directly from the IMF loan. The lobbies may offer the
government a "deal" that would divert it from implementing good policies. Thus, the IMF
and the lobby act as principals, who try to influence policy (action) taken by the government
(agent), hence, the name common agency.

Unsound economic policies may lead to outcomes that benefit the lobbies but negatively
affect the welfare of the general public. Distorted outcomes are captured in the model by an
index of economic distortions $\omega \in [0, \overline{\omega}]$ [12]. Distortions are linked to the policy decision
$a \in A$ (where A is a set of policy options) of the borrowing country government but also
reflect factors outside of government control and unobservable shocks. Hence, government
policy choice (such as the decision not to reform the banking system) cannot be perfectly
inferred from the observed outcomes (such as insolvency of a particular bank). Distortions

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[11] Governments hold many unique control rights in fiscal, monetary, exchange rate, taxation and institutions
infrastructure matters that can affect the return of foreign investors.

[12] These distortions are different from distortions in Mayer and Mourmouras (2002) in that here the index of
distortions is a random variable, while in Mayer and Mourmouras (2002) it is a choice variable.

in the borrowing country may "spill over" through trade and financial channels to other countries thereby reducing world welfare.

The IMF provides financing on the condition that the country undertakes reforms necessary to address the causes of payment imbalances. Conditions might specify particular steps that have to be taken to implement these reforms and/or specific outcomes that have to be achieved as a result of these reforms. The IMF has to design a conditionality schedule before the government makes its next policy step and before uncertainty about economic distortions has cleared although the disbursements take place after the outcome of reforms has been observed.

If the IMF employs outcomes-based conditionality it effectively foregoes monitoring of policy decisions. On the other hand, domestic lobbies, who are closely integrated in the domestic political environment, will continue to have access to the information about government policy decisions, including actions that might not be visible to the IMF or indirect steps whose effect the IMF may not immediately recognize. Hence, it seems reasonable to assume that the lobby always observes government policy choice.

If the IMF can monitor government policy decisions, both policy a and outcomes (the degree of distortions ω) can be specified as a precondition for lending (this is a mix of policy-based and outcomes-based conditionality). If policy choice cannot be perfectly monitored by the IMF, the disbursements are tied to the observed outcomes ω only (this is pure outcomes-based conditionality).

The IMF and the lobby may "move" simultaneously if the IMF reacts quickly to changes in the domestic political environment or the IMF may precommit to a certain conditionality schedule before the lobby approaches the government (moves first). In period zero both principals offer schedules: a menu that ties policy (action) if it is observable and the resulting economic outcomes (the degree of distortions) with the amount of contributions/disbursements. The government makes policy decisions after having analyzed both schedules.

For simplicity, assume that there are only two policy options: "good" and "bad." Any outcome ω may arise under any policy choice; hence, it is impossible to perfectly deduce policy from observed outcomes. The distribution of outcomes (distortions) conditional on the adoption of "bad" policy first order stochastically dominates the distribution of distortions conditional on the adoption of "good" policy. Hence, on average the level of distortions is higher under the "bad" policy choice.

After the outcome of reforms (degree of economic distortions ω) has been observed, the IMF disburses its loan T and the lobby contributes C according to their schedules. Figure 1 summarizes the timing when the IMF and the lobby move simultaneously.

A representative consumer in the borrowing country can use IMF loan T either for immediate consumption C_1 or investment I. The loan has to be repaid[13] in the next period at an interest rate r^B.[14] For simplicity we can think of a representative lender-member of the IMF that finances a loan to the borrowing country. The lender is remunerated at the rate r^L.

The borrowing country can lend at a private market interest rate r^* but cannot borrow from the private markets, while the lender is constrained to lend. These liquidity constraints reflect the presence of market frictions, which may arise due to informational asymmetries, externalities or missing contracts and is a modeling shortcut that allows abstracting from the complexity of issues associated with each of these sources of inefficiency.
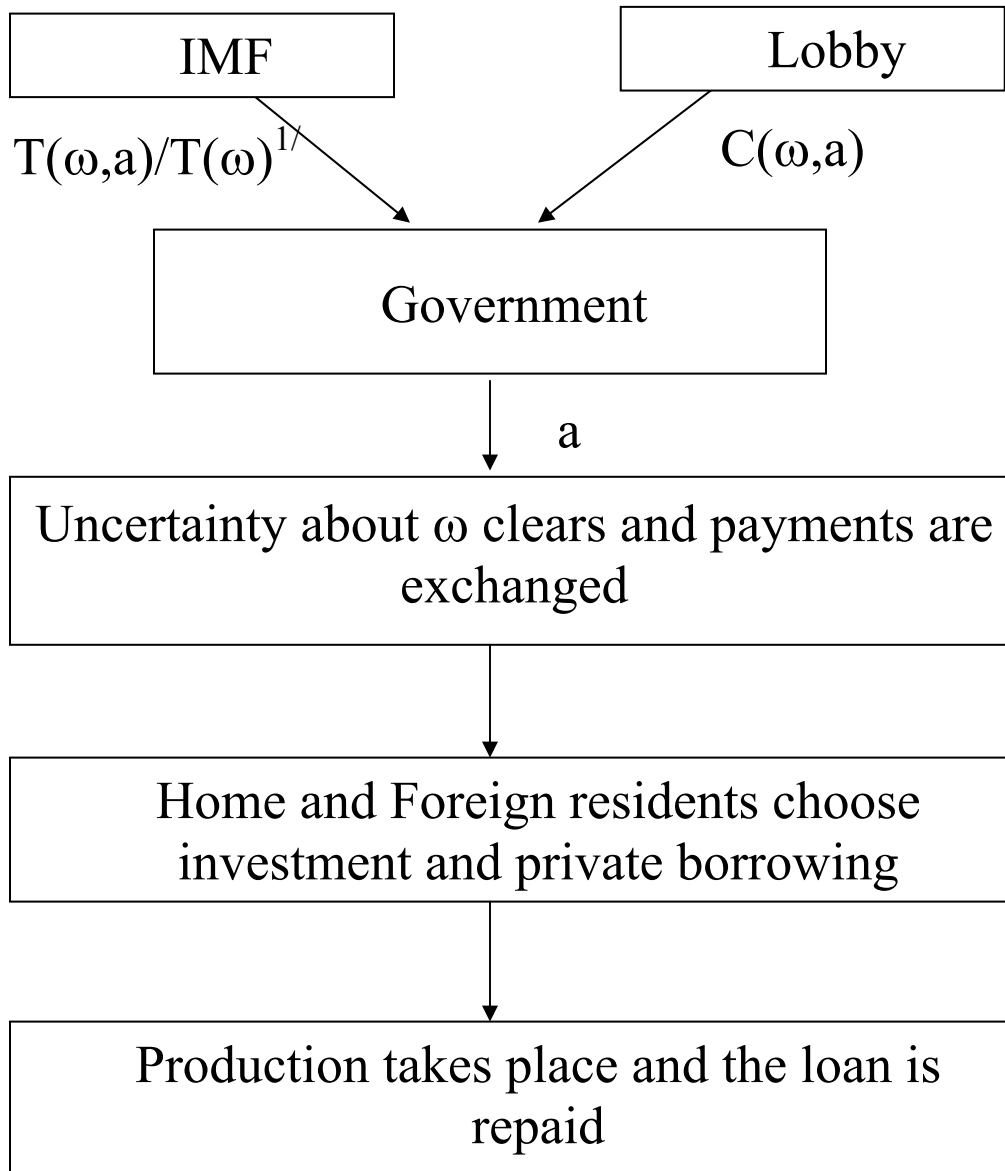
In principle, the IMF has two instruments: the amount of loan and the interest rate. While in practice the IMF employs only the former, both instruments might be required to manage IMF objectives. For simplicity, I analyze only two cases: i) an IMF loan is provided at effectively market interest rate; and ii) an IMF loan is subsidized.[15]

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[13] This formulation abstracts from the possibility of default, which is central to the relationship between private borrowers and lenders. While it may seem that by ignoring default issues, the main conflict of interest between borrowers and lenders is eliminated, in practice IMF loans have almost always been repaid with an interest (Rogoff (2002)). Since the IMF is a preferred creditor, as a practical matter default is not a primary issue for the IMF. For justification of conditionality from the borrower-lender perspective, see also Khan and Sharma (2001).

[14] The IMF levies market-related interest rate for nonconcessional financing, which is based on the SDR (special drawing rights) interest rate that is revised weekly to take account of changes in short-term interest rates in the major international money markets. It charges higher interest to the borrower (the rate of charge) than the interest rate accrued to the lenders (rate of remuneration) with the difference covering the cost of IMF operations.

[15] Under effectively market rate the IMF charges the borrower an interest rate slightly higher than the market rate, $r^B = r^* + \theta > r^*$ while the lender is remunerated at an interest rate below the market rate $r^L = r^* - \theta < r^*$ but when θ approaches zero. Under the subsidized rate $r^B = r^L = r^* - s$.

Figure 1. Timing of the Game When the IMF and Lobby Move Simultaneously with Observable/Unobservable Policy Choice

| IMF | Lobby |

$T(\omega,a)/T(\omega)^{1/}$ $C(\omega,a)$

Government

a

Uncertainty about ω clears and payments are exchanged

Home and Foreign residents choose investment and private borrowing

Production takes place and the loan is repaid

1/ $T(\omega,a)$ is the schedule the IMF offers when policy choice is observable, while $T(\omega)$ is the schedule the IMF offers when policy choice is unobservable.

The model can be solved backwards starting with a problem of a representative consumer in the borrowing country who chooses the amount of investment and private borrowing solving

$$\max_{C_1,C_2,I,B} U(C_1) + \delta U(C_2)$$

subject to: $C_1 = Y_0 - I + T + B$; $C_2 = g(I,\omega) - (1+r*)T - (1+r^*)B$ and $B \leq 0$
where Y_0 is the national income (endowment) in period 1 and $\delta > 0$ is the discount rate. The utility function $U(C)$ is twice continuously differentiable and concave. The assumptions on the production function are as follows: $g_I > 0$; $g_\omega < 0$; $g_{II} < 0$; $g_{\omega\omega} < 0$ and $g_{I\omega} < 0$ with the last inequality stating that at a given level of investment the marginal product of investment is lower at higher levels of distortions.

The solution to this problem defines investment $I^0(\omega,T)$ and private borrowing $B^0(\omega,T)$ as functions of an IMF loan T and degree of observed distortions. The indirect utility function of a representative consumer in the borrowing country then can be written as:

$$W(\omega,T) = U(Y_0 - I^0(\omega) + T + B^0(\omega,T)) + \delta U(g(I^0(\omega),\omega) - (1+r^B)T - (1+r^*)B^0(\omega,T)) \qquad (1)$$

The properties of the indirect utility function can be obtained by differentiating the first order conditions with respect to the parameters.[16] Distortions reduce public welfare $W_\omega(\omega,T) < 0$ and the indirect utility function is concave in IMF loan $W_{TT}(\omega,T) < 0$. When the borrowing constraint is binding the general public in the borrowing country benefits from IMF loan $W_T \geq 0$, but the sign of cross-partial $W_{\omega T}$ is ambiguous and depends on the effect of distortions on marginal return on investment.[17] When the borrowing constraint is not binding, the benefit to the borrowing country depends on the terms of IMF loan. If the IMF offers financing at an effectively market rate, the borrowing country does not benefit from IMF loan at the margin $W_T(\omega,T) < 0$ since when distortions are high, home residents would prefer to lend abroad at a market interest rate $r*$. The marginal utility of IMF loan in this case decreases with distortions $W_{T\omega} < 0$. If the IMF offers financing at a subsidized rate, the borrowing country always benefits from an additional unit of IMF loan $W_T(\omega,T) > 0$ and the marginal utility of IMF loan is increasing in distortions $W_{T\omega} > 0$. Note that these are general properties of the indirect utility function, not the properties observed in equilibrium.

A similar problem can be formulated for a representative consumer in the lender-country of the IMF, namely,

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[16] Calculations are available from the author upon request.

[17] While it is not possible to sign the cross-partial, all of the relevant expressions in this paper can be unambiguously signed.

$$\max_{C_1^*,C_2^*,I^*,B^*} U(C_1^*) + \delta^* U(C_2^*)$$

subject to constraints:
$$C_1^* = Y_0^* - I^* - nT + B^*$$
$$C_2^* = g^*(I^*,\omega) + (1+r^L)nT - (1+r^*)B^*$$
$$B^* \geq 0$$

The indirect utility function then can be written as:

$$W^*(\omega,T) = U(Y_0^* - I^{*0}(\omega,T) - nT + B^{*0}(\omega,T)) + \delta^* U(g^*(I^{*0}(\omega,T),\omega) + (1+r^L)nT - (1+r^*)B^{*0}(\omega,T)) \quad (2)$$

with $g_I^* > 0$; $g_\omega^* \leq 0$; $g_{II}^* < 0$; $g_{\omega\omega}^* \leq 0$ and $g_{I\omega}^* \leq 0$. These assumptions imply that income of foreign residents in the second period may be adversely affected by borrower's distortions, reflecting negative spillovers of economic problems in the borrowing country (e.g., financial instability) to the rest of the world.

The properties of the indirect utility function (2) are as follows. The lender country may be adversely affected by borrowers' distortions $W_\omega^* \leq 0$ and the marginal utility of IMF loan is decreasing $W_{TT}^* < 0$. If the lending constraint is binding, foreign residents benefit from an increase in IMF lending as it helps to relax the lending constraint $W_T^* \geq 0$ when the loan is offered at effectively market rate or when the interest rate subsidy is sufficiently small.[18] The effect of distortions on marginal utility of IMF loan $W_{\omega T}^*$ is ambiguous in this case. If the lending constraint is not binding IMF loan reduces welfare in the lender country $W_T^* < 0$ as in this case the lender would prefer to borrow at an interest rate r^* from the markets. The marginal utility of IMF loan is decreasing with distortions $W_{T\omega}^* < 0$.

The task of the IMF is to maximize expected utility of its members—a weighted average of public welfare of IMF members (borrowers and lenders)[19] namely:

$$IMF = E_\omega \left[\gamma W(\omega, T(\omega,a)) + W^*(\omega, T(\omega,a)) \big| a \right] \quad (3)$$

where $W(\omega,T)$ is as defined in (1) and $W^*(\omega,T)$ is as defined in (2), γ can be interpreted as the degree of concern of the IMF about the borrowing country.

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[18] When IMF loan is offered at a large subsidy, the lender may be hurt by an increase in IMF loan since the cost of subsidy born by the lender outweighs the benefit from additional unit of lending that relaxes the lending constraint.

[19] Policy a is also affected by the IMF offer T but for notational simplicity this dependence is omitted.

The government in the borrowing country is concerned about public welfare, but also values contributions from the domestic lobby. When both the IMF and the lobby can differentiate between the two policies, the expected utility of the government is

$$G = E_\omega \left[\alpha W(\omega, T(\omega, a)) + C(\omega, a) \big| a \right] \tag{4}$$

where α is the degree of government concern about public welfare, which is defined in (1), and $C(\omega, a)$ is the contribution from the lobby for observed distortion level ω under the government chooses policy a.

The lobby benefits from distortions and its expected utility can be written as

$$L = E_\omega \left[V(\omega) - C(\omega, a) \big| a \right] \tag{5}$$

where $V(\omega)$ is lobby's valuation of distortions with $V_\omega(\omega) > 0$.

III. OBSERVABLE CASE

A. Benchmark Case: IMF and No Lobby

Proposition 1. *When the government policy choice is observable and in the absence of a lobby, the government chooses good policy and the IMF transfers resources from the lender to the borrower according to its "minimum credible" schedule* $T^0(\omega)$ *that also maximizes IMF utility ex-post and satisfies*[20]

$$\gamma W_T(\omega, T^0(\omega)) + W_T^*(\omega, T^0(\omega)) = -\frac{\lambda_T(\omega)}{f(\omega | a_g)} \le 0 \tag{6}$$

where $\lambda_T(\omega) = 0$ if $T^0(\omega) > 0$ and $\lambda_T(\omega) \ge 0$ for $T^0(\omega) = 0$.

In this case there is no problem with incentives: both the IMF and the government dislike distortions and there are no side payments from the lobby. The only role the IMF ends up playing is to redistribute resources between the borrower and lender to remedy the presence of market frictions.

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[20] I assume that the IMF cannot offer negative contributions. Perhaps, withdrawing financing and, thereby, discouraging private lenders could be viewed as a "negative" payment, but it is hard to think of a proportionately higher punishment for higher levels of distortions that would be required in the model to introduce negative payments.

When the IMF offers financing at close-to-market interest rate, the marginal utility of IMF loan is either nonnegative in both countries (constraint is binding) or negative in both countries (constraint is not binding). In this case, (6) implies that IMF financing maximizes individual utilities of the borrower and lender, that is, $W_T(\omega, T^0(\omega)) = 0$ and $W_T^*(\omega, T^0(\omega)) = 0$ for those levels of distortions at which the borrowing constraint is binding in the absence of the IMF and zero $T^0(\omega) = 0$ for those (high) levels of distortions at which the borrowing constraint is not binding. The amount of IMF financing is just enough to ensure frictionless market allocation *ex post* when $\theta \to 0$. Hence, the IMF acts as a "world social planner" and conditionality plays a role of an "efficiency tool" even in the absence of opposition.

When the IMF offers a loan at a subsidized interest rate its "minimum credible schedule" may deviate from frictionless market allocation due to the distortions introduced by a subsidy. In this case, the IMF offers nonzero financing up to the point where the weighted marginal utility of IMF loan in the borrowing country is equal to the marginal disutility of IMF loan to the lender

$$\gamma W_T(\omega, T^0(\omega)) = -W_T^*(\omega, T^0(\omega))$$

In either case $T^0(\omega)$ also maximizes IMF utility subject to nonnegativity constraint given the distribution of distortions conditional on bad policy (the only difference would be the density function, which would need to be replaced with $f(\omega|a_b)$ and the corresponding values of Lagrange multiplier where the IMF offers zero). In this sense, $T^0(\omega)$ is the "minimum" contribution schedule which the IMF can credibly commit to.

B. Common Agency: IMF and Lobby

When the IMF and the lobby move simultaneously (Figure 1) and the policy choice is observable, the two principals make simultaneous offers that involve contribution schedules conditional on both policy (a) and outcome (ω). The strategy for each of the principals in this case is a pair: a schedule relating principal's contribution to the observed outcome under good policy and a schedule tying principal's contribution to the observed outcome under bad policy.

A subgame perfect Nash equilibrium in the common agency game can be characterized as follows:[21]

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[21] Dixit, Grossman, and Helpman (1996) provide a characterization of equilibrium in the common agency game (Theorem 1). Since the only required assumption to prove this theorem is that government utility is increasing in contributions of both principals, the proof goes through for the model presented in this paper with the only difference that all utilities need to be replaced by expected utilities.

◻ $C^*(\omega,a) = \{C^*(\omega,a_b), C^*(\omega,a_g)\}$ and $T^*(\omega,a) = \{T^*(\omega,a_b), T^*(\omega,a_g)\}$ are

feasible with $C^*(\omega,a) \geq 0, T^*(\omega,a) \geq 0$ for $\forall \omega \in [0,\overline{\omega}]$ and $a \in \{a_g, a_b\}$

$$(7)$$

◻ Government chooses $a^* = \underset{a \in \{a_b, a_g\}}{\arg\max} E_\omega \left[aW(\omega, T^*(\omega,a)) + C^*(\omega,a) \middle| a \right]$

$$(8)$$

◻ Lobby chooses $\{a^*, C^*(\omega,a)\} = \underset{a \in \{a_b, a_g\}, C(\omega,a)}{\arg\max} E_\omega \left[V(\omega) - C(\omega,a) \middle| a \right]$ (9)

s.t. $E_\omega \left[aW(\omega, T^*(\omega,a)) + C(\omega,a) \middle| a \right] \geq E_\omega \left[aW(\omega, T^*(\omega,a_g)) \middle| a_g \right]$ (10)

and $C(\omega,a) \geq 0$ (11)

◻ IMF chooses $\{a^*, T^*(\omega,a)\} = \underset{a \in \{a_b, a_g\}, T(\omega,a)}{\arg\max} E_\omega \left[\gamma W(\omega, T(\omega,a)) + W^*(\omega, T(\omega,a)) \middle| a \right]$

$$(12)$$

s.t. $E_\omega \left[aW(\omega, T(\omega,a)) + C^*(\omega,a) \middle| a \right] \geq \underset{a \in \{a_b, a_g\}}{\max} E_\omega \left[aW(\omega, T^0(\omega)) + C^*(\omega,a) \middle| a \right]$

$$(13)$$

and $T(\omega,a) \geq 0$ (14)

Constraints (10) and (13) are individual rationality constraints. Constraint (10) reflects the fact that in the absence of a lobby the government chooses good policy. The lobby, in turn, always offers zero for good policy since it does not "like" making contributions and, by assumption, cannot punish the government with a negative payment. In contrast, the IMF evaluates the situation in (13) compared to $T^0(\omega)$ rather than zero. This is because $T^0(\omega)$ is the "minimum" schedule to which the IMF can credibly commit even when bad policy is chosen, and, by assumption, the players cannot use noncredible threats.

In essence, the IMF and the lobby compete with their contributions to offer the government higher utility for the policy that each of the principals prefers in the absence of the other principal. The two principals raise their "offers" until one of them finds that increasing the "bid" makes him worse off compared to the case when it settles on the policy preferred by his opponent.

Since both principals know each other's preferences, in equilibrium the "winner" needs to insure the government with the same level of utility as it would attain by accepting the offer which makes the other principle indifferent between the two policy options.

The "maximum feasible" schedule the lobby is willing to offer for bad policy satisfies:

$$E_\omega \left[C_{\max}^{Lobby}(\omega, a_b) \big| a_b \right] = E_\omega \left[V(\omega) \big| a_b \right] - E_\omega \left[V(\omega) \big| a_g \right] \tag{15}$$

Similarly, the "maximum feasible" schedule that the IMF is willing to contribute for good policy $T_{ob\max}^{IMF}(\omega, a_g)$ is the one that provides the IMF with the lowest payoff, still at least as much as IMF payoff under bad policy. Namely, this schedule satisfies the first order condition of IMF maximization problem (μ_1 is Lagrange multiplier on individual rationality constraint (13) and $\lambda_{IMF}(\omega)$ is Lagrange multiplier on nonnegativity constraint (14)):

$$\gamma W_T(\omega, T_{ob\max}^{IMF}(\omega, a_g)) + W_T^*(\omega, T_{ob\max}^{IMF}(\omega, a_g)) + \mu_1 \alpha W_T(\omega, T_{ob\max}^{IMF}(\omega, a_g)) = -\frac{\lambda_{IMF}(\omega)}{f(\omega | a_g)}$$

and the following condition:[22]

$$E_\omega \left[\gamma W(\omega, T_{ob\max}^{IMF}(\omega, a_g)) + W^*(\omega, T_{ob\max}^{IMF}(\omega, a_g)) \big| a_g \right] \geq E_\omega \left[\gamma W(\omega, T^0(\omega)) + W^*(\omega, T^0(\omega)) \big| a_b \right] \tag{16}$$

It is assumed that when the two principals "tie," the government chooses bad policy.

Proposition 2. *When the government policy choice is observable and the IMF moves simultaneously with the lobby, two sets of subgame perfect equilibria are possible:*

- *If the IMF is a potential "winner" (i) the lobby offers its "maximum feasible" schedule for bad policy $C_{\max}^{Lobby}(\omega, a_b)$ and zero for good policy; (ii) the IMF offers a schedule for good policy that provides the government with slightly higher utility than what it could obtain under the "maximum feasible" lobby contribution by choosing bad policy and offers its "minimum" credible schedule for bad policy; (iii) the government chooses good policy $a^* = a_g$*

- *If the lobby is a potential winner (i) the lobby offers zero for good policy and for bad policy a schedule that reimburses the government for switching from good policy under IMF "maximum feasible" schedule $T_{ob\max}^{IMF}(\omega, a_g)$ to bad policy under IMF "minimum credible" schedule $T^0(\omega)$; (ii) the IMF offers its "maximum feasible"*

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[22] Essentially, the question being asked here is "what is the maximum average lobby's contribution for bad policy that the IMF can outbid?" $T_{ob\max}^{IMF}(\omega, a_g)$ is the "maximum" schedule that the IMF is willing to contribute for good policy and, therefore, determines maximum lobby's contribution that the IMF can outbid.

schedule $T_{ob\,\max}^{IMF}(\omega, a_g)$ for good policy and its "minimum credible" schedule $T^0(\omega)$

for bad policy and iii) the government chooses bad policy $a^* = a_b$

The resulting policy choice is a matter of the competitive power of the IMF versus the domestic lobby, and the role and design of conditionality depend on the strength of opposition and the terms of IMF financing.

If the IMF offers a loan at an interest rate close to the market rate, the only schedule that satisfies equilibrium conditions is IMF "minimum credible" schedule and the only role conditionality ends up playing in this case is that of an efficiency tool. This is because when the IMF offers financing at an interest rate approaching the market rate, government utility at any given lobby's contribution is maximized at IMF "minimum credible" schedule, which removes the borrowing constraint. Since *ex-post* the IMF is always better off by proving financing according to its "minimum credible" schedule and the government does not benefit from borrowing more than it would in a frictionless market, the IMF effectively cannot use conditionality as an incentive tool.

If the IMF provides a subsidized loan, the borrower always benefits from IMF loan while the lender may be hurt beyond a certain level of desired lending. Hence, the IMF faces a trade-off and in some circumstances may find it optimal to exchange some of lenders' resources for good policy, which reduces the likelihood of distorted outcomes and benefits the world. In this case, the role of conditionality is two-fold: an incentive tool for motivating the government to implement necessary policy changes and an "efficiency" tool for mitigating the presence of market frictions.[23] While the IMF cannot ensure an efficient market allocation due to the distortions introduced by a subsidy, the world may be better off if the IMF offers subsidized financing provided it can induce good policy.

Surprisingly, if the IMF were to move first, the lobby could benefit from observing IMF schedule if it is a potential "winner." In this case, the IMF picks the "point" on lobby's "reaction function" that provides the highest utility. When the loan is subsidized and the lobby is a potential winner, the IMF may offer a less attractive package for good policy compared to the package it would offer in a simultaneous move game as it receives the same payoff (utility under bad policy) irrespective of what offer it makes for good policy.

The equilibria described above assume that the IMF cannot precommit to nondisbursement when the government chooses bad policy as such a threat is not credible (zero disbursement under a bad policy is not optimal for the IMF *ex-post)*. However, if the IMF could find access to a commitment technology, it might be better off as it may be able to induce good policy even if it cannot do so without commitment. This is because for a lobby to win in this case, it would have to reimburse the government for switching from good policy under IMF "maximum feasible" schedule to bad policy under zero IMF contribution, which requires

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[23] I assume that the subsidy is small enough so that at least for some levels of distortions the lender would still benefit from IMF loan.

higher contribution than reimbursing the government for switching to bad policy under IMF "minimum credible" contribution.

IV. UNOBSERVABLE CASE

When the IMF and the lobby move simultaneously (Figure 1) but the IMF cannot monitor government policy choice, a subgame perfect Nash equilibrium can be characterized as follows:

▫ $C^*(\omega,a) = \{C^*(\omega,a_b),C^*(\omega,a_g)\}$ and $T^*(\omega)$ are feasible with

$$C^*(\omega,a) \geq 0, T^*(\omega) \geq 0 \text{ for } \forall \omega \in [0,\overline{\omega}] \text{ and } a \in \{a_g,a_b\} \tag{17}$$

▫ Government chooses $a^* = \underset{a \in \{a_b,a_g\}}{\arg\max} E_\omega\left[aW\left(\omega,T^*(\omega)\right)+C^*(\omega,a)\middle|a\right]$ (18)

▫ Lobby chooses $\{a^*,C^*(\omega,a)\} = \underset{a \in \{a_b,a_g\},C(\omega,a)}{\arg\max} E_\omega\left[V(\omega)-C(\omega,a)\middle|a\right]$ (19)

s.t. $E_\omega\left[aW\left(\omega,T^*(\omega)\right)+C(\omega,a)\middle|a\right] \geq E_\omega\left[aW\left(\omega,T^*(\omega)\right)\middle|a_g\right]$ (20)

and $C(\omega,a) \geq 0$ (21)

▫ IMF chooses $\{a^*,T^*(\omega)\} = \underset{a \in \{a_b,a_g\},T(\omega)}{\arg\max} E_\omega\left[\gamma W\left(\omega,T(\omega)\right)+W^*\left(\omega,T(\omega)\right)\middle|a\right]$ (22)

s.t. $E_\omega\left[aW\left(\omega,T(\omega)\right)+C^*(\omega,a)\middle|a\right] \geq \underset{a \in \{a_b,a_g\}}{\max} E_\omega\left[aW\left(\omega,T^0(\omega)\right)+C^*(\omega,a)\middle|a\right]$ (23)

a solves $\underset{\tilde{a} \in \{a_g,a_b\}}{\max} E_\omega\left[aW\left(\omega,T(\omega)\right)+C^*(\omega,\tilde{a})\middle|\tilde{a}\right]$ (24)

and $T(\omega) \geq 0$ (25)

As in the observable case, constraints (20) and (23) are individual rationality constraints. Constraint (24) is the incentive compatibility constraint. It insures that under the optimal contribution schedule from the lobby and the IMF, the government voluntarily chooses the policy desired by the IMF. This constraint has to be satisfied only if good policy is chosen in equilibrium since if bad policy is chosen the lobby can make sure that the government does not deviate from it when "nobody is looking."

Under unobservability the maximum utility that the IMF can insure the government with under good policy may be lower compared to the case when government policy is observable. The "maximum" IMF schedule $T_{unob\max}^{IMF}(\omega,a_g)$ satisfies

$$E_\omega\left[\gamma W(\omega,T_{unob\max}^{IMF}(\omega))+W^*(\omega,T_{unob\max}^{IMF}(\omega))\middle|a_g\right] \geq E_\omega\left[\gamma W(\omega,T^0(\omega))+W^*(\omega,T^0(\omega))\middle|a_b\right] \tag{26}$$

But now it also has to satisfy the first order condition from a more constrained problem taking into account the incentive compatibility constraint (24), namely,

$$\gamma W_T(\omega, T_{unob\max}^{IMF}(\omega)) + W_T^*(\omega, T_{unob\max}^{IMF}(\omega)) + \mu_1 \alpha W_T(\omega, T_{unob\max}^{IMF}(\omega))$$

$$+ \mu_2 \alpha W_T(\omega, T_{unob\max}^{IMF}(\omega)) \left[1 - \frac{f(\omega|a_b)}{f(\omega|a_g)} \right] = -\frac{\lambda_{IMF}(\omega)}{f(\omega|a_g)} \tag{27}$$

Essentially, the schedule $T_{unob\max}^{IMF}(\omega)$ determines the maximum average lobby's contribution for bad policy that the IMF can outbid under unobservability. The maximum average lobby contribution that the IMF can outbid under unobservability should be no higher than that under observability, as now the IMF faces a more constrained problem. Hence, in some cases the IMF may be unable to induce good policy under unobservability even if it could do so under observability. Clearly, bad policy will prevail in equilibrium in unobservable case if it were chosen in equilibrium in observable case.

Proposition 3.

- *If the IMF is a potential "winner a set of good policy equilibria can be described as follows (i) the lobby offers its "maximum feasible" contribution for bad policy and zero for good policy; (ii) the IMF offers an outcomes-based schedule $T^*(\omega) = T_{unob}^{*g}(\omega)$, which satisfies individual rationality constraint, incentive compatibility constraint and the first order condition; and (iii) the government chooses good policy $a^* = a_g$*

- *If the lobby is a potential "winner":*
  1. *When the IMF offers a subsidized loan, there are no pure strategy equilibria in a simultaneous move game.*
  2. *When the IMF offers financing at an interest rate close to the market rate, the bad policy equilibrium can be characterized as follows (i) the IMF offers its "minimum credible" efficiency schedule $T^*(\omega) = T^0(\omega)$ (ii) the lobby offers zero for good policy and a schedule for bad policy that reimburses the government for switching from good to bad policy under IMF "minimum" efficiency schedule $T^0(\omega)$ and (iii) the government chooses bad policy $a^* = a_b$*

When the IMF offers financing at a subsidized interest rate, the optimal schedule reflects the trade-off between risk-sharing and incentives. To motivate the government to adopt good policy the IMF shifts additional risk on the government but the average amount of financing required to induce good policy is higher compared to the observable case. In this case, outcomes-based conditionality serves as an incentive tool.

Moving towards outcomes-based conditionality, however, not always implies shifting more risk on the government. When the IMF offers financing at an interest rate close to the market rate, the optimal outcomes-based schedule is the same as in the observable case, namely, IMF "minimum credible" schedule $T^0(\omega)$, which delivers frictionless market allocation. This is because, the IMF cannot make any better offer to the government than the schedule that maximizes public welfare in the borrowing country and, hence, government's welfare at any level of lobby's contribution. Under this schedule both individual rationality and incentive compatibility constraints are nonbinding.

As in the observable case, under unsubsidized financing the only role conditionality ends up playing is that of an efficiency tool and there is no loss of efficiency from unobservability. The IMF is better off by switching to outcomes-based conditionality in this case since even a small monitoring cost or the benefit from flexibility of making policy choice would make outcomes based conditionality more attractive.

While there are no pure strategy bad policy equilibria when IMF loan is subsidized, bad policy equilibrium exists if the IMF offers a loan at effectively market rate. In this case, IMF "maximum feasible" schedule coincides with its "minimum credible" schedule. The lobby can also induce bad policy equilibrium if the IMF moves first irrespective of whether the loan is subsidized or not.

V. CONCLUSIONS

The paper employs a principal-agent framework to analyze the role and optimal design of outcomes-based conditionality with a clearly defined objective function for the IMF, namely, to maximize the joint welfare of its members in the presence of market frictions and opposition to reforms. The equilibrium policy choice is a matter of the "competitive power" of the IMF versus the domestic lobby. Nonobservability, however, weakens the IMF's competitive power, and the lobby turns out to be the only "player" who never loses because the IMF cannot monitor policy decisions.

The results suggest that outcomes-based conditionality is a good option for the IMF when opposition to reforms is relatively weak, since it provides the benefit of flexibility and allows the IMF to save on monitoring costs without loss of efficiency.

The benefits of outcomes-based conditionality in the presence of strong opposition are less clear. Powerful special interests, who extract rents from economic distortions, can "insure" the government against distorted outcomes. If the lobby can offer authorities a "bribe" that outweighs the value of adopting reforms, including that of IMF financing, the best the IMF can credibly commit itself to is to provide financing to mitigate the presence of market frictions. And nonobservability weakens IMF's potential to outbid the lobby.

In order to be able to use conditionality as an incentives device, the IMF would have to offer financing at a subsidized interest rate. The optimal conditionality schedule in this case reflects a trade-off between risksharing and incentive, and shifts additional risk to the government. The average amount of transfer from the lender to the borrower required to induce good policy, however, is higher than in the observable case.

Without explicitly modeling the benefit from flexibility that authorities obtain when they can choose their own economic policies, the model does not allow us to answer the question on the ultimate effectiveness of outcomes-based conditionality, but the results suggest that the optimal design and role of such conditionality should be quite different, depending on the terms of IMF financing and the strength of the opposition. Clearly, when the model predicts that outcomes-based conditionality will be a good choice for the IMF, it will remain so when the benefit from flexibility is added to the picture. But when the model predicts an efficiency loss, the benefit of flexibility should be weighed against the cost of giving up on monitoring government decisions.

Ultimately, the question on the effectiveness of performance-based incentives in IMF-supported programs would need to be resolved empirically, but the existing evidence on the effectiveness of the performance-based incentives in the public sector[24] suggests (see Dixit (2000b)) that those incentives work well in agencies where performance can be easily and unambiguously measured. It is hard to argue that this is the case in IMF-supported programs.

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[24]See for example, the analysis of the success of a program on Performance Based Organizations launched in 1993 in the United States in Dixit (2000b).

REFERENCES

Azam, Jean-Paul, and Jean-Jacques Laffont, 2003, "Contracting for Aid," *Journal of Development Economics*, Vol. 70, pp. 25–58.

Bernheim, Douglas, B. and Michael D. Whisnton, 1986, "Menu Auctions, Resource Allocation, and Economic Influence,*" Quarterly Journal of Economics,* Vol. 101(1) (February), pp. 1–32.

Chami, Ralph, Sunil Sharma. and Ilhyock Shim, 2004, "A Model of the IMF as a Coinsurance Arrangement," BIS Working Papers No. 170 (Basel: Bank for International Settlements).

Díaz-Alejandro, Carlos F., 1984, "IMF Conditionality: What Kind?" *PIDE Tidings*, Vol. 23, pp. 7–9 (Pakistan: Pakistan Institute of Development Economics).

Dixit, Avinash, 1997, "Power of Incentives in Private versus Public Organizations," *American Economic Review*, Vol. 87, No. 2, *Papers and Proceedings of the Annual Meeting of the American Economic Association,* pp. 378–82.

_____, 2000a, "IMF Programs as Incentive Mechanisms," unpublished memorandum prepared for the International Monetary Fund.

_____, 2000b*,* "Incentives and Organizations in the Public Sector: An Interpretative Review," Working Paper, Department of Economics, Princeton University.

_____, Gene M. Grossman, and Elhanan Helpman, 1996, "Common Agency and Coordination: General Theory and Application to Tax Policy," CEPR Discussion Paper No. 1436 (London: Center for Economic Policy Research).

_____, 1997, "Common Agency and Coordination: General Theory and Application to Government Policy Making," *Journal of Political Economy,* Vol. 105(4) (August), pp. 752–69).

Drazen, Allan, 2002, "Conditionality and Ownership in IMF Lending: A Political Economy Approach,*" Staff Papers*, International Monetary Fund, Vol. 49, Special Issue, pp. 36–67.

Frankel, Jeffrey A., 1999, "International Lender of Last Resort: Discussion," Rethinking the International Monetary System, Conference Series, No. 43 (Boston: Federal Reserve Bank of Boston).

Grossman, Gene. M., and Elhanan Helpman, 1994, "Protection for Sale," *American Economic Review*, Vol. 84 (September), pp. 833–50.

International Monetary Fund (IMF), 2001a. "Strengthening Country Ownership of Fund-Supported Programs," (Washington: IMF Policy Development and Review Department), available on the web at *http://www.imf.org/external/np/pdr/cond/2001/eng/strength/120501.pdf*.

_____, 2001b, "Conditionality in Fund-Supported Programs—Overview," (Washington: IMF Policy Development and Review Department), available on the web at *http://www.imf.org/external/np/pdr/cond/2001/eng/overview/index.htm*.

_____, 2002, "IMF Conditionality," (Washington: International Monetary Fund), available on the web at *http://www.imf.org/external/np/exr/facts/conditio.htm*.

_____, 2005, "Review of the 2002 Conditionality Guidelines," (Washington: IMF Policy Development and Review Department), available on the web at *http://www.imf.org/external/np/pp/eng/2005/030305.pdf*.

Khan, Moshin S., and Sunil Sharma, 2003, "IMF Conditionality and Country Ownership of Programs*," World Bank Research Observer*, Vol. 18 (Fall), pp. 227–48.

Mayer, Wolfgang and Alex Mourmouras, 2001, "Vested Interests in a Positive Theory of IFI Conditionality," IMF Working Paper 02/73.

Rogoff, Kenneth, 1999, "International Institutions for Reducing Global Financial Instability," NBER Working Paper No. 7265, (Cambridge, Massachusetts: National Bureau of Economic Research).

_____, 2002, "Managing the World Economy," *Economist* (August), available on the web at *http://www.imf.org/external/np/vc/2002/080302a.htm*.

Sachs, Jeffrey D., 1999, "The International Lender of Last Resort: What Are the Alternatives?" Federal Reserve Bank of Boston, Conference Series, No. 43.

Svensson, Jakob, 2000, "Foreign Aid and Rent Seeking," *Journal of International Economics*, Vol. 51, pp. 437–61.

_____, 2003, Why Conditional Aid Does Not Work and What Can Be Done About It?" *Journal of Development Economics*, Vol. 70, pp. 381–402.

Tirole, Jean, 2002, "Financial Crises, Liquidity, and the International Monetary System" (Princeton, New Jersey: Princeton University Press).