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## **On the Non-Contractual Nature of Donor-Recipient Interaction in Development Assistance**

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### **Abstract**

This paper analyses three issues in strategic donor-recipient interaction motivated by the complexity of the rationale underlying aid. The first is when we have several principals with conflicting objectives. Any one principal cannot offer high powered incentives to the agent to carry out their designated task. The second is to do with the fact that effort associated with ensuring aid effectiveness may concern both principal and agent; the optimal solution to which requires difficult to design cooperative behaviour. Consequently, the contractual type principal-agent relationship between donors and recipients is inappropriate. We need to consider models that signal recipient quality or commitment to reform. A simple model of signalling with commitment problems is presented, along with extensions to multiple types of agents and time periods, as well as possible solutions involving mechanism design.

Keywords: aid, conditionality, contracting, signalling quality, mechanism design

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## Acronyms

DAC	Development Assistance Committee (of the OECD)
NGO	nongovernment organization
OECD	Organization for Economic Cooperation and Development
PRSP	poverty reduction strategy paper

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## 1 Introduction

The motivations underlying overseas development assistance are controversial, or at least complex. Ostensibly aid is altruistic and meant to help, particularly the poor, in developing countries. This may be true of the development assistance granted by the Netherlands and Nordic countries, for example. But aid can be, and almost always is, motivated by a number of other factors. These include strategic considerations, as well as commercial interests. Especially during the cold war, a lot of the United States' aid took the form of explicit military assistance. More generally, a substantial quantity of bilateral and even multilateral foreign aid amounted to a side-payment or bribe, mainly to the ruling elite in developing countries, aimed at cementing their dependency on powerful donors, or at least offering an inducement not to embrace alternative ideologies and patrons. Such objectives (see Frey, 1984, as an example of this literature) are clearly not aimed at fostering pro-poor growth, and can encourage corruption as in Mobutu's Zaire and Marcos's Philippines.

Although the cold war is long over, new security considerations behind aid allocations have emerged. A large chunk of the bilateral aid of the United States continues to go to Israel, a country with Western European living standards. Commercial interests associated with aid are also important, particularly when it involves the sale of military equipment (British aid to Tanzania and Indonesia in the 1990s). In summary, models that motivate aid as solely emanating from an altruistic desire to eliminate poverty, encapsulate only a partial view of reality. The very existence of bilateral aid proves that aid is not just about poverty reduction; otherwise it would be optimal to have a *single* global agency managing a common pool of funds, financing an international public good, the elimination of poverty (Kanbur, Sandler and Morrison 1999).<sup>1</sup>

Analytical models describing donor-recipient strategic interaction should accommodate both altruistic and non-altruistic motivations behind aid. Underlying this complexity are the many actors in this process with differing aims and objectives. So when a principal-agent framework is utilized to characterize this behaviour we have to recognize that there are many principals and agents. The hallmark of principal agent models is the presence of enforceable contractual arrangements, which in the aid business amounts to conditionality ensuring aid effectiveness. Enforcing conditionality with sovereign recipients is problematic, not least because of post-contractual opportunism.

That is why we find increasing disenchantment with conditionality amongst aid policymakers, who prefer that potential recipients signal their worthiness to receive aid. But even this is unlikely to solve the problem, both because of opportunistic behaviour by recipients, but also due to the complexity of donor motivation in granting aid, which is not just simply confined to poverty reduction. This paper considers three disparate models of strategic donor-recipient interaction to highlight problems with contractibility, coordination and cheap talk signals of quality. The overarching theme is the complex donor motivation behind granting aid, which makes finding solutions to the aid effectiveness problem more challenging than when there is only a simple poverty alleviation objective.

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<sup>1</sup> For example, the Marshall Plan aid to Western Europe was administered by a single agency, the OECD.

The analysis of moral hazard and adverse selection in designing aid contracts can be found in Azam and Laffont (2003). If aid is conditional on the consumption of the poor, it succeeds in alleviating poverty to a larger extent than when it is unconditional. When classic adverse selection problems arise, because of the possibility of differing degrees of poverty aversion amongst recipients, the conventional result ensues. That is, when information is private to the agent, he can exact an information rent. Successful delegation to an outside agency can reduce these adverse selection aspects of aid allocation, unless the delegated agency colludes with the aid recipient.

The weakness of the models in the Azam and Laffont (2003) is that they presume contractibility in the donor-recipient relationship between sovereign entities, an assumption more questionable than viewing all aid as purely altruistic. By contrast, Murshed and Sen (1995) analyse a common agency problem, where many principals deal with a single aid recipient, as is the case in the DAC (Development Assistance Committee) meetings of the OECD. The model is not about designing incentive contracts for agents *per se*; it highlights differences amongst principals. Some donors may be more concerned with poverty reduction, compared to others who place a greater value on their trade related aid, connected to lucrative military contracts, for example. In that case donors with differing views can be made better off by trading their *conflicting* objectives. The model distances itself from the fiction that aid is solely about poverty reduction, and it contains an implicit critique of contractability in donor-recipient interaction.<sup>2</sup>

Svensson (2000) considers a situation when the principal cannot commit to a policy rule that rewards/punishes effort/or lack of effort, which is the same thing as saying that recipient effort levels are non-contractible. When the donor cannot commit to a policy rule or contractual effort levels, it is better off delegating to an outside agency (a multilateral like the World Bank) with lower poverty aversion. The assumption that multilateral donors can faithfully adhere to their pre-existing commitments is unrealistic, given the nature of these organizations, and the disproportionate shareholder power of countries like the United States. Svensson (2003) suggests that signals might be used to gauge recipient effort and type. When the donor is unable to pre-commit to a contract rewarding reform all committed aid gets disbursed resulting in zero reform by the agent. If the donor (or its delegate) decides instead to commit its total aid budget to a group of recipients, rather than allocating budgets to individual countries, this raises the opportunity costs of funds and the donor tends to reward good policies, and competition amongst agents reveals more information about agent type.

The problem with the model is that it does not recognize the fact that very often it is not possible to withhold aid from the indigent, even if its government pursued bad policies. Torsvik (2005) rightly points out that the donor-recipient relationship is non-contractual; he models a Nash non-cooperative game. He considers situations where the recipient has a first mover advantage, as in a Stackelberg game. By setting transfers that

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<sup>2</sup> There usually is a plethora of intermediate principals between the ultimate principal and the recipient of aid. The electorate in donor countries or their elected representatives may decide upon aid allocation, but the actual disbursement is delegated to a domestic aid agency, or a multilateral organization such as the World Bank, or a nongovernmental organization (NGO), or consultants. The interactions between these different donor agencies and their ultimate principals are more appropriately analysed using the principal-agent framework, as these relationships are more contractual, see Martens (2002) and Murshed (2003 and 2004) on this.

anticipate donor reactions the agent generates the Samaritan's dilemma.<sup>3</sup> The equilibrium reduction in transfers to the poor is substantial, and although there is a sharp rise in aid induced by this behaviour, the poor are actually worse off because domestic transfers are reduced. This result, however, is not general, nor is it realistic to assume that a completely altruistic donor actually exists, even in the Nordic countries. Also, an altruistic donor can continue to assist the poor while withdrawing some aid from the government.

Reinhardt's (2006) model is the closest application of the theory of signalling to the aid allocation process. Agents (aid recipients) of different quality send out signals to the principal (aid donor). The model considers differential costs of signalling quality by the agent, meaning that it will cost a less productive or bad-type agent more to send out a signal of high quality than the good type agent who makes better use of aid. She concludes that (i) credible signals must be costly; greater than the payoff associated with sending no signal whatsoever, and (ii) the cost of a signal to the bad agent must be greater than the highest payoff available to him. This will ensure a separating equilibrium where pay-offs depend on signals of quality.

In section 2, I present a model where there are several principals with conflicting objectives. The aid business implies far greater complexity than that associated with a single principal and agent. We can have many donors dealing with one agent. The recipient may face a multiplicity of conflicting tasks. Consequently, one principal cannot offer high powered incentives to a single agent to carry out their most favoured task. In section 3, I deal with the fact that the moral hazard associated with ensuring aid effectiveness may concern *both* principal and agent;<sup>4</sup> the optimal solution which requires cooperative behaviour that is difficult to design. Consequently, the contractual-type relationship that characterizes interaction between principals and agents is inappropriate when characterizing interaction that involves sovereign entities, or when these relations are fraught with post-contractual opportunism. We need to consider other models of strategic behaviour that do not involve contracts, such as those that signal recipient characteristics. This is in line with the current fashion favouring recipient selectivity in granting aid, and the belief that the PRSP (poverty reduction strategy paper) process could signal recipient quality. To this end, a simple model of signalling with imperfect commitment is presented, along with extensions to multiple types of agent and time periods, as well as solutions involving mechanism design or delegation in section 4. Finally, section 5 concludes.

## **2 Multi-task agents and many principals**

This section attempts to sketch a situation where the agent or recipient of aid, the government in a developing country, has several conflicting tasks commissioned by different principals. One of these principals is the external aid donor, who wants the government to engage in policy reform or carry out other tasks such as increase

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<sup>3</sup> This occurs when the responses of an altruistic donor who truly cares about poverty reduction is manipulated by the recipient.

<sup>4</sup> There is an unfortunate tendency in the literature to ascribe all responsibility for aid mismanagement to recipients, ignoring donor culpability in this regard.

investment in the external donor's favoured sectors and activities. Examples include economic structural adjustment, improved 'governance', better human rights and the adoption of the donor's values. The other principal reflects domestic constituencies, and they too fund the government. Alternatively, they may extend political support to the ruling party, which also can be argued to have a pecuniary value. These funds, or the pecuniary value of political support, could facilitate the governmental political party's quest for power in a competitive political process. The domestic sponsors of the government also want something in return for their funding or support. This could range from lucrative business contracts, to protection from international competition, or guarantees that an inefficient loss-making public utility is not privatized. The important point is that the domestic sponsors of the government may desire something which is at variance with the objectives of its external sponsors. Murrell (2002) also considers a case when an aid recipient agent interacts with an aid recipient principal (such as the government), as well as with a donor agent (aid agency).

The presence of a multiple-task agent, as demonstrated by Holmström and Milgrom (1991), in general yields low-powered incentives to perform any individual task, when the various activities of the agent are substitutes as far as the principal's interests are concerned. The Holmström and Milgrom (1991) model considers a situation where a single principal deals with an agent carrying out multiple functions. Following a simplified version of the set-up in Dixit (2003) we specify a multiple principal, multi-task framework. Let there be two tasks denoted by  $x_1$  and  $x_2$  corresponding to commissions made by principal 1 and 2 respectively. Each job entails symmetric costly effort levels,  $h$ , which even if unobservable can be verified from output. I abstract from uncertain variations in the agent's efforts (the influence of luck), agent types and intrinsic motivation.

Principal 1 derives a benefit  $hx_1$  for task 1 but none from job 2, and the same in reverse applies to principal 2. Note that the benefit rises in the agent's output, which depends on the agent's effort. The first principal's profit function,  $U_1$  (benefit minus costs) takes the following form:

$$U_1 = hx_1 - v - wx_1 - w[hx_1^2 + hx_2^2 + 2kx_1x_2] \quad (1)$$

In the right-hand side of (1) the first term refers to the benefit from the agent's effort to the principal, the second indicates the agent's reservation utility ( $v$ ) which the principal must meet. The payment made to the agent is indicated by  $w$ , and the payment schedule is linear in output ( $x_1$ ) and the effort ( $h$ ) required per-unit of the task(s). The terms inside the square brackets indicate the costs of exerting effort by the agent, which the principal must bear. Observe the jointness of effort, which arises because the agent must simultaneously carry out both tasks  $x_1$  and  $x_2$ . The last term refers to how *one* task's efforts affects effort levels in the other. If  $k$  is positive then the two tasks are substitutes: more effort in one direction implies less effort elsewhere. If  $k$  is negative, the two jobs are complements.

The second principal's profit function by symmetry is:

$$U_2 = hx_2 - v - wx_2 - w[hx_1^2 + hx_2^2 + 2kx_1x_2] \quad (2)$$

Maximization of (1) with respect to  $x_1$  will lead to:

$$\frac{\partial U_1}{\partial x_1} = h - w - 2wx(h + k) = 0 \quad (3)$$

where,  $x_1 = x_2 = x$  by symmetry. An identical expression can also be obtained for principal 2. Rearrangement in terms of  $w$  yields the following marginal payment schedule to the agent per unit of output:

$$w = \frac{h}{1 + 2x(h + k)} \quad (4)$$

Payments to the agent are proportional to output (numerator on the right-hand side of (4)), but decline due to the joint nature of the tasks undertaken by the agent in the denominator.

*Proposition 1:* Payments for any one task to the agent decline (or are less high-powered) if the two tasks conducted by the agent are substitutes, as efforts in one direction detract from the other function.

Proof. This is apparent, from the term  $k$  in the denominator of (4) which lowers payment to the agent for each unit of  $x$ . Furthermore, it lowers total production of  $x$ , as the complementarity of the two tasks engenders extra costs and lowers output in connection with each of the tasks undertaken by the agent (■).

*Corollary 1:* Incentive payments related to effort and output to the agent increase if the principals could act together or cooperate.

Proof. By summing (1) and (2) and then jointly maximizing for  $x$ , in the resultant expression for  $w$  in (4), the term 2 will vanish:

$$w = \frac{h}{1 + x(h + k)} \quad (5)$$

(■)

*Corollary 2:* Incentive payments to a multi-task agent decline as the number of principals increases, because the magnitude of the term 2 in the denominator of (4) increases with the number of principals.

The upshot of this section is that the incentives generated through contractual or conditional relations with aid recipients can be largely negated by other countervailing tasks and duties of the recipient.

### 3 Double moral hazard

This section considers non-cooperative interaction between the donor and the agent, which is not based on a contract between principal and agent. It is usually assumed that the recipient of aid is solely responsible for exerting effort that makes aid effective. However, the donor, too, can exercise effort aimed at improving aid utilization. This may especially apply to the donor's delegated agencies, such as consultancy firms and

NGOs who also engage in monitoring the use of aid. If effort on the part of both donor and recipient is important to aid effectiveness, we have the possibility of *double* moral hazard as analysed in Murshed and Sen (1995), because of the uncoordinated and sub-optimal effort levels exercised by both parties.

The donor's utility is denoted by  $U$  and the recipient's utility is given by  $V$ . There are two possible states of nature: one more beneficial ( $B$ ) and the other less so ( $P$ ). In the better state aid utilization is more effective and productive, compared to the other state. Their probabilities are defined as  $\pi$  and  $1 - \pi$ , respectively. The probability of either state is in turn affected by an action ( $a$ ) by the donor, and effort ( $h$ ) by the recipients. These are also the strategic variables in this type of donor-recipient interaction. We postulate that the probability of the good state  $\pi$  rises with the input of action and effort by both sides, but at diminishing rates. Moreover, these actions and efforts are costly to both donor agencies and recipients.

The expected utility of donors is given by:

$$U = \pi(a, h)U^B(A) + (1 - \pi(\cdot))U^P(A - P) - C(a) \quad (6)$$

where  $U^B$  and  $U^P$  denote utilities in the better and worse states respectively, weighted by the probabilities of the two states. The parameter,  $A$  represents more effective aid in the good state,  $A - P$  stands for less effective aid in the bad state; the utility for the donor from the former situation is greater than the latter.  $C$  is the cost function of undertaking the action,  $a$ . Action,  $a$ , increases the probability of the good state,  $\pi$ , however, undertaking it entails a cost. Also,  $\pi_a > 0$ , but  $\pi_{aa} < 0$ . Both  $C_a > 0$  and  $C_{aa} > 0$ .

Turning to aid recipients, their utility is given by:

$$V = \pi(a, h)V^B(T) + (1 - \pi(\cdot))V^P(T - P) - E(h) \quad (7)$$

Again,  $V^B$  and  $V^P$  denote utilities in better and worse policy states, respectively, weighted by the probabilities of the two states.  $T$  is the total aid income obtained by recipient government in the better state, and  $T - P$  is the lower pay-off during the less auspicious state. Even if some individuals are better off in the inferior state of nature because they are able to pilfer, in aggregate the recipient government derives higher utility from the more beneficial state.  $E$  is the cost of effort,  $h$ , which increases the probability of the superior state,  $\pi$ . Also,  $\pi_h > 0$ , but  $\pi_{hh} < 0$ ,  $E_h > 0$ , and  $E_{hh} > 0$ .

In the non-cooperative or Cournot-Nash game played by the two sides, each side moves simultaneously. The solution to the model involves backward induction given sub-game perfection. Each side, therefore, maximizes its own utility function with respect to its own choice variable. For the donor it implies maximizing utility, Equation (6), with respect to  $a$  as shown by:

$$\frac{\partial U}{\partial a} = \pi_a [U^B(\cdot) - U^P(\cdot)] - C_a = 0 \quad (8)$$

Recipients maximize Equation (7) with respect to  $h$

$$\frac{\partial V}{\partial h} = \pi_h [V^B(\cdot) - V^P(\cdot)] - E_h = 0 \quad (9)$$

Note that in Equations (8) and (9) each side will equate the marginal benefit from their own strategy to the corresponding marginal cost.

It is interesting to consider a counterfactual situation where both sides cooperate or act jointly. This will lead to the joint maximization of welfare ( $W$ ), by summing Equations (6) and (7) together. The single grand welfare function when maximized with respect to  $a$  yields:

$$\frac{\partial W}{\partial a} = \pi_a [U^B(\cdot) + V^B(\cdot)] - \pi_a [U^P(\cdot) + V^P(\cdot)] - C_a = 0 \quad (10)$$

and with respect to  $h$ :

$$\frac{\partial W}{\partial h} = \pi_h [U^B(\cdot) + V^B(\cdot)] - \pi_h [U^P(\cdot) + V^P(\cdot)] - E_h = 0 \quad (11)$$

*Proposition 2:* Non-cooperative behaviour leads to sub-optimal effort levels by both parties, and inferior use of aid.

*Proof.* It is immediately apparent from comparing Equation (8) with Equation (10), and Equation (9) with Equation (11), that the levels of both  $a$  and  $h$  are greater when the two parties act together. (■)

Cooperation is Pareto superior to non-cooperative Cournot-Nash behaviour, as the global marginal benefit of both  $a$  and  $h$  is equated to marginal cost. Note, however, that this is entirely infeasible in our present global institutional setting, as there is no entity capable of completely overseeing donor and recipient interaction in this fashion.

#### 4 Signalling commitment to reform

In many ways signalling quality or commitment by the agent reverses roles in the standard principal-agent model. In the latter case, the principal provides a contract to the agent, designed to avoid any potential moral hazard and adverse selection problems. This kind of relation requires an enforceable contract, and the absence of widespread post-contractual opportunism. In a signalling game, it is the agent who signals his quality, commitment or effort to the principal obviating the need for a contract. For that reason, as indicated earlier, the theory of signalling may be more appropriate in describing strategic interaction between donor and recipient in the aid business. Moreover, we will be concerned with commitment in connection with signalling. Not the donor's commitment to a policy rule, as in Svensson (2003), but the recipient's commitment to reform.

The model proposed below is relevant in characterizing the PRSP process. Implicit within a PRSP is a commitment to policy reform by the recipient,<sup>5</sup> although other requirements such as consultations with stakeholders are also insisted upon by donors. Aid disbursement (usually budgetary support) is the *quid pro quo* for the policy reform signal. Commitments can be imperfect, lack credibility, or even become cheap talk (a signal lacking commitment). Also, the model that follows is in line with the present-day fashion favouring country selectivity over conditionality, when it comes to granting aid.

The basic setup of the model follows Addison and Murshed (2002). It concerns two sides, referred to as the donor and the recipient. Central to the workings of the model is the fact that the aid recipient has something to gain from deviating from pre-announced commitments. In other words, doing less than the donor wants, in terms of policy reform or poverty reduction, for example, either yields a rent or income for the recipient government enabling it to spend more on itself and its client groups, or because by not implementing policy reforms it avoids domestic political costs. But in order to receive aid, it has to commit to the full policy package of reforms.

Let  $p$  represent deviations from the promised reform package. An aid related utility function of the recipient ( $V$ ) could take the form:

$$V = -(1/2)c_1p^2 + c_2(p - p^e) \quad (12)$$

where  $c_1 > 0$ ,  $p, p^e, c_2 \geq 0$ .

In Equation (12) and what follows the utility functions correspond to expected utilities, and a superscript  $e$  is used for an expectation of a variable for which information may be incomplete. The first term on the right-hand side of Equation (12) is the pure cost of renegeing on commitments ( $p$ ) in quadratic form, where  $c_1$  is the parameter measuring the direct cost of deviations from commitments. The quadratic form of the cost indicates that these costs rise more than proportionately as the level of  $p$  rises, implying increasing aversion to policy deviations. The parameter (1/2) is introduced for simplicity. The second term on the right-hand side of (12) indicates gains to the recipient from renegeing on commitment, or the benefit from a policy ‘surprise’, where the level of actual deviation ( $p$ ) exceeds the level expected by the donor ( $p^e$ ). In other words, the gains from a deviation from policy reform emanate from a surprise; the actual value has to exceed its expectation. The parameter  $c_2$  can be seen to be a subjective measure of the agent’s utility from policy deviations.

As far as the gains from policy surprises are concerned, it is part of a process of income generation for the recipient ( $y$ ) described as:

$$y = y^N + c_2(p - p^e) \quad (13)$$

Here the income of the aid recipient is equal to some fixed amount ( $y^N$ ) available with certainty, plus an additional component arising from policy surprises. The process described in (13) is similar to the Lucas aggregate supply relationship.

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<sup>5</sup> Spending both donor, and domestically generated resources, on the donor’s favoured activities. Currently aid is increasingly taking the form of budget support.

Recipients maximize utility in (12) subject to  $p$ , leading to:

$$p^* = c_2 / c_1 \quad (14)$$

This result can be interpreted in the following manner: the equilibrium choice of policy deviation ( $p^*$ ) is greater the higher the element of pure avarice,  $c_2$ , and the smaller the cost of policy deviations,  $c_1$ . The donor gains nothing from policy deviations, and for her it is optimal that  $p^* = p^e = 0$ .

Now if we assume that the recipient enjoys a first mover advantage, as is the case with a PRSP process, and can announce a policy package where  $p^e = 0$  but actual  $p \neq 0$ . In this case the actual and expected policy deviations would be not be equal, and  $p = c_2/c_1$  and  $p^e = 0$  in Equation (12). This involves cheating on a pre-announced commitment, and the gain from this is:

$$V = (c_2)^2 / 2c_1 \quad (15)$$

At this juncture we introduce a simple form of recipient reputation. The donor believes the announcement if the recipient acted honestly in the previous period and kept to its commitments. Otherwise it is regarded as unreliable. This implies that there is a future cost of cheating. Note that I am ruling out the Samaritan's dilemma (the poor will always be aided), because it is difficult to visualize pure altruism even amongst the most well-meaning donors. Furthermore, even when the Samaritan's dilemma is present, it is still possible to assist the poor while simultaneously punishing the government by withholding some forms of budgetary support. The penalty for cheating ( $C$ ) is equal to the loss of reputation, and the inability to create surprises in the *future*, given by:

$$C = -((c_2)^2 / 2c_1) \quad (16)$$

Hence the penalty for cheating (which is the loss of reputation) appears to exactly equal the gain from cheating in (15). But the punishment comes in some future period. If the recipient discounts this *future* loss, the cost of cheating is always less than the gain from renegeing on a fixed commitment. Typically in many developing countries the future is heavily discounted.

*Proposition 3:* The optimal policy of zero policy deviations ( $p = 0$ ) is incentive incompatible, thus it will not be a self-enforcing outcome.

*Proof.* The utility in (15) is greater than the cost in (16), provided the latter is discounted by a factor,  $\delta < 1$ . Note that the discount factor,  $\delta = (1/1 + r)$ , where  $r$  is an indicator of time preference. (■)

Furthermore, there will be a range of possible policy deviations that are feasible equilibrium outcomes, see Addison and Murshed (2002). Hence, multiple equilibria are possible.

Now, consider two further extensions. First, let the donor-recipient interaction extend to several time periods; for finite-time interaction this can be encapsulated into a two-period framework. Second, let there are be two types of aid recipients. There will

be honest ( $H$ ) and dishonest ( $D$ ) types, where the former is more dependable. The donor knows that there are two possible types of recipient, but is imperfectly informed about their true type. Perceptions about reputation will be inherited from the past and updated using Bayes' rule. The Bayesian priors are common knowledge to both sides. Even dishonest groups, operating over a multi-period time horizon, may not misbehave at early stages of the game so as to leave their reputation intact for manipulation at later stages. A generic objective function for both recipient types can take the following form:

$$V^{H,D} = -(1/2)c_1 p^2 + c_2(p - p^e) + \delta[-(1/2)c_1 p^2 + c_2(p - p^e)] \quad (17)$$

Here we have extended the single period utility in (12) to two periods applying a discount factor,  $\delta$ , to weight the future period.

It is instructive to examine decisionmaking by the two types in the final period of analysis. A dishonest ( $D$ ) type recipient in the second and final period of the game will simply choose the level of policy surprise indicated by (14) above. This is because no discounting is involved in the last period, and the second term on the right-hand side of (17) vanishes with  $\delta = 0$ . The honest-type maximizes utility (first-term on the right-hand side of Equation (17) with respect to two constraints. The first is a dependability constraint; the honest type wants to appear to be true to its word:

$$p^H(2) = p^A(2) \quad (18)$$

where the superscript  $H$  stands for the dependable or honest type,  $H$ 's announcements or offers are indicated by the superscript  $A$ , while the 2 in parentheses indicates the second period. This constraint states that the actual outcome equals the announcement. The other constraint concerns the donor's beliefs about the type of recipient. The donor assigns a probability,  $\gamma$ , that the other side is the honest type and a probability  $1 - \gamma$ , that it is the dishonest type. Its expectation of the level of policy deviation in period 2 will be a linear combination of the two strategies weighted by their corresponding probabilities:

$$p^e(2) = \gamma(2)p^A(2) + (1 - \gamma(2))[c_2 / c_1] \quad (19)$$

Substituting (19) in (17), using (18),  $\delta = 0$ , and then maximizing with respect to  $w^H$ , yields:

$$p^H(2) = p^A(2) = (1 - \gamma(2))[c_2 / c_1] \quad (20)$$

Note that the level of policy deviation picked by the  $H$ -type in (20) is lower than that chosen by the  $D$ -type in (14). Observe, however, that even the 'better' type of recipient engenders policy deviations. Given the uncertainty about agent type, the donor will not regard commitments to no policy deviation as a credible offer even from an honest type of recipient. Levels of  $p$  chosen in (20) vary proportionately with the poorness of equilibrium reputation,  $(1 - \gamma(2))$ . The result in (20) is akin to classic adverse selection problems, where the high-risk type exerts a negative externality on the pooled contract offered to both risk categories.

*Proposition 4:* If the donor is imperfectly informed about recipient type, then the level of policy deviation expected is strictly positive for each type of recipient.

Proof. This can be seen from (20), only if  $\gamma(2) = 1$ ,  $p^H(2) = p^A(2) = 0$ , and there is no policy deviation. It amounts to perfect information for the donor. If the agent type is not known with certainty, policy deviations are positive for both types of aid recipients. (■)

*Corollary 3:* The level of policy deviation by the honest type is zero, if and only if, the donor is fully informed about the recipient type.

Proof. As with proposition 4. Otherwise in the presence of uncertainty, donors will use Bayes' law to update prior beliefs about recipient type. (■)

Let us now move on to consider mechanism design with a view to eliciting information about recipient-type and engendering commitment to pre-announced policies. Consider a reformulated version of the recipient utility function, ignoring type for the moment, where we embed an additional signalling cost component for the agent, which really amounts to making cheap talk more costly:

$$V = -(1/2)c_1 p^2 + c_2(p - p^e) - c_3(p - p^e) \quad (21)$$

where:  $c_1 > 0, c_2 \geq 0, c_3 \geq 0$ .

The last term in (21) can act as a *commitment technology* for the recipient, and  $c_3$  measures the costs to the recipient of renegeing on a pre-announced commitment of no policy deviations. Maximizing (21) with respect to  $p$  yields the optimum level of  $p$  with commitment ( $p_c^*$ ):

$$p_c^* = (c_2 - c_3) / c_1 \quad (22)$$

*Proposition 5:* The introduction of extra costs to cheap talk signals lowers the aid recipient's incentive to engage in these. The choice of policy deviation from the pre-announced commitments is lower.

Proof. Note that equilibrium  $p_c^*$  in (22) is less than  $p^*$  in (14). (■)

*Corollary 4:* With no separation of the type of aid recipient, as long  $c_3 \geq c_2$  (see, also Reinhardt 2006) the optimal choice of  $p_c^* \leq 0$  for the dishonest type aid recipient.

Proof. This is because optimal  $c_2$  is zero for the better-type aid recipient when the mechanism proposed in (21) is in place; he does not want to engage in cheap talk. (■)

The intuition behind the above is that if the extra signalling cost to both types of agents is high, no aid recipient (irrespective of type) will send out cheap talk signals, deciding instead to stick to his pre-announced commitment to optimal policy reform. The upshot is that the introduction of explicit differential signalling costs leading to revelation of agent type may not be necessary with the pooled mechanism design proposed in (21) and corollary 4. Without such a mechanism, the revelation of the recipient's type

continues to matter, and even the more honest type of aid recipient finds it optimal to engage in a degree of cheap talk.

Can we think of real life examples of such a mechanism? One suggestion is donor delegation to a multilateral body such as the World Bank, as suggested by Svensson (2000). Apart from the fact that bilateral donors who are sovereign powers always dislike delegating power, this suggestion could only work if the delegated agency were truly independent and above capture by other interests, including its own empire-building ambitions. The World Bank or its sister organization, the International Monetary Fund (IMF) cannot be regarded as truly independent, see Mosley (1996). The only other alternative mechanism is making the PRSP process even more rigorous, which amounts to making the recipient pay for its signal. In reality, it means the aid recipient committing sizable resources to optimal poverty reduction policies, and/or engaging in costly reforms as part and parcel of the signal. This will also require greater commitment to rewarding poverty reduction policies, and not just paying for other strategic considerations, on the part of donors. Non-altruistic donors, in particular, must respond positively to costly and credible signals of policy reform in connection with poverty reduction.

## **5 Conclusions**

The main results of the paper may be summarized as follows. The strategic interaction between the aid donor and recipient cannot be truly characterized along the lines of principal and agent, as the relationship is not completely contractible due to recipient sovereignty and post-contractual opportunism. The example given in the paper concerns a single agent (aid recipient government) dealing with a donor and a domestic principal, each wanting conflicting tasks done by the agent. Neither principal is able to give proper incentives to the agent. Therefore, in practice aid donors can only hope to achieve partial results, as far as changes in recipient behaviour and donor objectives are concerned.

The interaction between donor and recipient may be better described through simple non-cooperative games. In this context, if effort by both sides is important to achieving aid effectiveness, there could be double moral hazard. Unless there is better coordination, both donor and recipient will exercise sub-optimal effort. No such coordinating agency can in reality be thought of; the coordinating role of the World Bank in low-income aid receiving countries does not extend to all aspects of aid. This is particularly true for politically motivated aid, engendered by strategic considerations (the war on terror, for example). However, greater aid effectiveness continues to require superior coordination of donor and recipient monitoring efforts.

Perhaps, the answer lies in characterizing donor-recipient interaction employing models where the aid recipient signals his commitment to reform and optimal policies, as is desired in the PRSP process. When the recipient has an incentive to signal optimal policy without commitment (cheap talk), optimal policies are not self-enforcing. There have to be mechanisms that raise the cost of these cheap talk signals to induce optimal policy adoption. Mechanism design aimed at engineering commitment technologies to optimal policies is problematic, as it may require delegation to third parties or a stronger donor commitment to reward costly signals of reform by the aid recipient. This

commitment may be more difficult for non-altruistic bilateral aid donors who donate aid based on geo-political strategic considerations. Powerful bilateral donors, like the United States, are extremely reluctant to surrender discretionary powers. Nevertheless, aid effectiveness requires a stronger commitment to rewarding credible (hence costly) signals of the recipient's commitment to change.

Finally, we should not rule out the possibility of intrinsic motivation on the part of the agent. This is when he actually derives utility from poverty alleviation. This may even restore the applicability of principal-agent model in donor-recipient interaction. Also, if the removal of global poverty is regarded as an international public good from which we all equally benefit, it also raises issues regarding free-riding amongst donors sharing these objectives. Ultimately, there should be a single global agency managing poverty reduction, and for coordinating donor behaviour.

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