United Nations University

WIDER

World Institute for Development Economics Research

Discussion Paper No. 2002/107

Strategic Interaction and Donor Policy Determination in a Domestic Setting

S. Mansoob Murshed *

November 2002

Abstract

This paper examines some of the issues associated with the aid donor process arising from the theory of agency or principal-agent models and endogenous policy determination. The principals may be viewed as legislators and the agents as the aid agency. In addition to adverse selection and moral hazard the paper considers intrinsic sources of motivation for agents and the trade-off between adverse selection and moral hazard. It also considers multiple task agents, and where there are many principals with divergent objectives. The principals might be better off by making the tasks more complementary and trading in their differing objectives. The paper also considers the formation of aid policy via median voter outcomes, lobbying with contributions and also in the presence of altruism. Finally, problems associated with signalling commitment to optimal policies are considered.

Keywords: aid effectiveness, political processes, endogenous policy formation

JEL classification: H60, O11, O12, O19

* Institute for Social Studies (ISS), email: Murshed@iss.nl

This study has been prepared within the UNU/WIDER project on the Sustainability of External Development Financing, which is directed by Matthew Odedokun.

This paper was presented at the project meeting in Helsinki, 23-24 August 2002.

UNU/WIDER gratefully acknowledges the financial contribution to the project by the Ministry for Foreign Affairs of Finland.

Acknowledgements

I am grateful to Jonathan Thomas and the project director, Matthew Odedokun, for valuable comments on a previous draft.

UNU World Institute for Development Economics Research (UNU/WIDER) was established by the United Nations University as its first research and training centre and started work in Helsinki, Finland in 1985. The purpose of the Institute is to undertake applied research and policy analysis on structural changes affecting the developing and transitional economies, to provide a forum for the advocacy of policies leading to robust, equitable and environmentally sustainable growth, and to promote capacity strengthening and training in the field of economic and social policy making. Its work is carried out by staff researchers and visiting scholars in Helsinki and through networks of collaborating scholars and institutions around the world.

UNU World Institute for Development Economics Research (UNU/WIDER)
Katajanokanlaituri 6 B, 00160 Helsinki, Finland

Camera-ready typescript prepared by Liisa Roponen at UNU/WIDER
Printed at UNU/WIDER, Helsinki

ISSN 1609-5774
ISBN 92-9190-340-X (printed publication)
ISBN 92-9190-341-8 (internet publication)

1 Introduction

The rationale behind the granting of aid to developing countries is complex. Strategic, humanitarian, human rights and developmental goals enter into this matrix of motivation. See Hopkins (2000) on the political economy behind the donor process. Different donors (multilateral and bilateral) have diverse and even competing reasons for giving aid. Consequently the aid effectiveness literature is voluminous. It can range from the contribution of aid to growth (Burnside and Dollar 2000 is one example) to the rent-seeking aspects of aid in recipient countries (Svensson 2000, for instance).

This paper examines some of the issues associated with the aid donor process arising from the theory of 'agency' and endogenous policy determination. It is concerned with aid donors and not donor-recipient interaction. In a sense, the analysis is about designing good policies in donor agencies.

By the theory of agency I refer to principal-agent interaction as exemplified by adverse selection and moral hazard. The first arises because of information that is private to the agent, and the second is due to the non-verifiable nature of the agent's effort in carrying out his task. Endogenous policy formation refers to the explicit game-theoretic analysis of the political processes underlying equilibrium policy outcomes.

In this paper the principal is ultimately the electorate or society at large in the donor country. In an indirect democracy, this job of determining policies is delegated to the legislature. Legislators may be viewed as intermediate principals acting as the guardians of the people. For the purposes of this paper this distinction is immaterial, except when there are several principals with differing objectives, all of who may not be legislators. The agent is the executive; specifically that part of the executive tasked to execute aid policies.[1] These differences arise not only in constitutional systems such as in the USA with a sharp separation of powers, but in other systems as well.

Section 2 is concerned with motivating agents in the aid agency to exercise optimal effort. In areas of government and academia, intrinsic motivation is as important as extrinsic (financial) rewards, as are inter-temporal considerations regarding future promotion and continued employment. Section 3 examines the trade-off between moral hazard and adverse selection in contract design. Reducing one problem can exacerbate the other. Section 4 is concerned with the difficulties that arise when agents have multiple tasks originating from several principals. The aid agency may be subject to scrutiny, not only from the government, but also other stakeholders such as development non-governmental organizations (NGOs). They will have varying objectives and demand different types of tasks of the agent. Alternatively, even within the legislature there may be different interests. Examples of these are the conflict between commercial and strategic interests on the one hand, and developmental concerns associated with good governance on the other hand. Section 5 goes on to demonstrate that these different tendencies represented by various principals can gain from coordinating their policies and trading off their diverging objectives.

Section 6 moves on from principal-agent analysis to examine the determination of donor nations aid policy in three contexts. The first associated with median voter choices in a direct democracy, the second when contributions from pro- and anti-aid lobbies interact

[1] Without loss of generality, the agent in sections 2-5 of this paper could be the aid recipient.

or counteract, and finally when both political contributions and altruistic tendencies towards aid recipients determine aid. Throughout this section the funding of aid is treated as akin to a tax, and the differential implications for the tax for various parties are considered.

Section 7 addresses the problem of signalling commitment to pre-announced policies. The punishment for reneging on pre-announced commitments is a loss of reputation, and the fact that future commitments will not be credible. But this comes in the future, and a particular type of agent may discount the value of future losses if it is in his interests to do so. Given this common knowledge, optimal policies become incentive incompatible or time inconsistent even for the type of agent that does not wish to deviate from pre-announced commitments. The answer lies in devising commitment technologies that enable the truthful agent to signal his commitment credibly, and increase the cost of deviations from announced policies for less honest agents. Finally, section 8 summarizes the findings of the paper.

2 Moral hazard and aid effectiveness

Moral hazard is said to occur when a task undertaken by the agent requires an unverifiable effort that is costly and/or disliked by the agent. Unverifiable effort implies that even if effort can be observed, it cannot be proved in the sense of disciplinary action or other forms of intervention. But the outcome of the agent's effort in terms of the tangible product that arises from effort is verifiable. The principal-agent literature is concerned with designing optimal contracts that minimize moral hazard, and maximize effort levels. Generally speaking, a fixed wage contract, without any outcome based incentives, generates the most moral hazard and can drive effort levels to zero.

But in addition to financial or extrinsic motivation, there are also intrinsic factors that drive agents to exercise effort. Peer group approval, reputation and concern for future career prospects are examples of intrinsic motivation.[2] Innate ability also acts in a similar way, making effort more productive. The important point is that in academia and the public sector, intrinsic motivation may be more important. But even then, moral hazard remains relevant. In terms of aid policy, the agent's role in making aid effective in terms of outcomes such as poverty reduction, growth or demilitarization requires effort and this needs to be monitored by principals.

The model that follows is based on Holmström (1982) and Tirole (1994). Let us say that an agent's performance or output (x) depends on effort (e) and a parameter denoting intrinsic motivation and ability (θ). Both e and θ are unobservable and unverifiable. Total output, following Tirole (1994) can be shown to be:

$$x = \theta + e \tag{1}$$

As with most of the public sector the agent is paid a fixed wage (w_1). But there is a future as well and the agent may be judged by his verifiable performance (x) in the first period. Specifically, let his wage in the second period (w_2) be dependent on the

2 The novelist E M Forster when once asked why he wrote replied (*sic*): I write for the money and to earn the respect of those whom I respect.

expectation (E) of his intrinsic motivation (θ) conditional on first period performance (x):

$$w_2(x) = E(\theta \mid x) \tag{2}$$

The agent's inter-temporal utility function (U) will take the form:

$$U(w,e) = w_1 - g(e) + \delta w_2(\theta + e) \tag{3}$$

where g represents the cost of effort function and δ is a discount factor. Maximization of (3) with respect to effort, setting wage rates at unity will give us the equilibrium effort level:

$$g'(e^*) = \delta \tag{4}$$

In other words, the optimal level of effort is chosen at present only if the current period and the future are treated equally by the agent ($\delta = 1$). If the present is more important ($\delta < 1$), less or sub-optimal effort is exercised. Moreover, if principals or the agent's managers pay no attention to verifiable performance (x) as an indicator of ability (θ), assuming instead a uniform average level of ability, then optimal effort levels are driven to zero. Such an outcome may be described as an unfocussed equilibrium, following Tirole (1994), but is not an outcome of equation (3) above. The important point is that moral hazard will still be present even when we factor in intrinsic motivation. The policy challenge is to strengthen the environment for intrinsic motivation, so that greater effort becomes a sign of ability and motivation, which is well rewarded in the future.

3 Combining moral hazard and adverse selection

Adverse selection occurs when the agent's type is private information to himself and not known widely, especially to the principal. The agent may be good at carrying out the task or he may be average or poor. Moral hazard refers to sub-optimal effort levels. In reality, especially in the public sector, the two can occur simultaneously. In what follows I construct, following McMillan (1992), an example of mixed moral hazard and adverse selection to demonstrate some of the trade-offs in reducing them.

Let there be two types of agents: good (g) and poor (p). The good type is better off at carrying out the task, but the principal does not know their type *a priori*. For the sake of tractability, she assigns an equal probability to the agent being of the good and poor type. Expected utility for the principal (V) from the task undertaken by the agent takes the form:

$$V = 0.5\left[1 + e_g - \frac{e_g^2}{2D} - n_g\right] + 0.5\left[e_p - \frac{e_p^2}{2D} - n_p\right] \tag{5}$$

The squared (quadratic) terms refer to the costs to the agent of carrying out the task, where D is part of the cost of effort. Output for the principal is related to effort, that is

higher, $1 + e_g$ for the good type, and lower, e_p for the inferior category of agent. Let $e_g = q_g$ and $e_p = q_p$ referring to effort/output relations. The terms $n_g = 1 + q_p$ and $n_p = 1$ refer to the incentive payments to the two types of agents. These are designed so as to make agents truthfully reveal their type, therefore the payment to the good type exceeds the compensation for the bad variety of agent, in terms of the poor type's output. Payments take on a pecuniary value and could include prospects of future employment or promotion as in the previous section. Note that the incentive payments are related to output, and the bad type of agent cannot squeeze a greater incentive payment by falsifying his type. But the good type may want to falsify his type to lower his effort level and the required output by the principal. Therefore, he has to be given an incentive, related to his output, to make him truthfully reveal his type.

Making these appropriate substitutions into (5) and maximizing with respect to q_g and q_p and solving for output levels we obtain:

$$q_g = 1 \tag{6}$$

and

$$q_p = \frac{D-1}{D} < 1 \tag{7}$$

The per unit compensation for declaring that you are good is greater than if a poor quality is indicated. But a problem of incentives in the public sector remains, as rewards are not always related to output except when the reward is intrinsic or comes in the future.[3] But even when incentives make the good type truthfully reveal his type, problems of moral hazard associated with the poor type remain. As equation (7) shows, his incentive to exercise effort declines further in the event of greater payments to the good type.

4 Multiple principals and multiple tasks

We have seen that when the effort by the agent is unobservable or unverifiable, there is the standard problem of moral hazard. These difficulties can be further exacerbated when there are many principals or donors dealing with the same agent or government (the common agency problem). An additional problem can arise when the agent carries out multiple tasks implying a variety of unverifiable effort levels. The presence of a multiple-task agent, as demonstrated by Holmström and Milgrom (1991), in general yields low-powered incentives to perform any one task, when the various activities of the agent are substitutes as far as the principal's interests are concerned. It might even pay the principal to forbid one or more activities that negatively impact on the principal's objectives. The Holmström and Milgrom (1991) model considers a situation where a single principal deals with an agent carrying out multiple functions.

3 Fixed wage contracts are more common in the public sector.

Wilson (1989) characterizes a typical government bureaucracy as answering to many masters and stakeholders, as well as carrying out several functions simultaneously. There are many instances where several principals deal with a single agent or government agency carrying out several tasks. For example, they could all be interacting with a single government agency, which consequently has several jobs.

Following the set-up in Dixit (2001), we specify a multiple principal, multi-task framework. Let the two tasks to be done be denoted by x_1 and x_2 corresponding to commissions made by principal 1 and 2, respectively. The first job might correspond to monitoring the utilization of aid for development purposes. The second task could be associated with promoting the strategic and commercial interests of the donor nation. The first principal could be an NGO. Each job entails symmetric costly effort levels, *e*. I abstract from uncertain variations in the agent's efforts (the influence of luck or simply better organized effort), and intrinsic motivation.

Principal 1 derives a benefit, B for task 1 but none from job 2, and the same in reverse applies to principal 2. Both principals will need to satisfy the participation constraint of the agent. The first principal's profit function (V_1) takes the following form:

$$V^1 = Bx_1 - w\left[x_1 + ex_1^2 + ex_2^2 + 2kx_1x_2\right] \tag{8}$$

The terms inside the square brackets indicate the costs of exerting effort by the agent, which the principal must meet in order to satisfy the agent's participation constraint. Observe the jointness of effort, because the agent must simultaneously carry out both tasks x_1 and x_2. The payment made to the agent is indicated by *w*, and the payment schedule is linear. The last term refers to how carrying out one task 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:

$$V^2 = Bx_2 - w\left[x_2 + ex_1^2 + ex_2^2 + 2kx_1x_2\right] \tag{9}$$

Note that both principals must take into account the two types of effort exercised by the agent, even if it does not directly concern them.

Maximization of (8) with respect to x_1 will lead to:

$$w = \frac{B}{1 + 2x(e+k)} \tag{10}$$

where, $x_1 = x_2 = x$ by symmetry. An identical expression can also be obtained for principal 2. Due to the symmetry property, there will have to be some cost-sharing agreement amongst the principals, which is not modelled here.

Note the following:

a) The outcome in (10) is in a situation when effort is unverifiable, but output can be observed. Incentive payments 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. This is not the case if the jobs are complements.

b) Incentive payments related to effort and output to the agent increase, if the principals act together in a cooperative or collusive manner. Thus, incentives to the agent to exert optimal effort become stronger. This can be demonstrated by summing (8) and (9) and then jointly maximizing for x. In the resultant expression for w in (10), the term 2 will vanish.

$$w = \frac{B}{1 + x(e + k)}$$

c) Equation (10) states that incentive payments to a multi-task agent decline as the number of principals, stakeholders or masters increases, as the magnitude of the term 2 in the denominator of (10) rises with the number of principals.

There are at least two clear policy implications here. One is that principals should try to make the various efforts that they jointly require of the agency more 'complementary'. In other words, they should go together. The second is that principals should cooperate more with one another. We examine this in the next section.

5 Adverse selection and common agency

Here, once again, we have several principals dealing with the same agent, the common agency problem. The agent's innate type is unknown to the principals, and therefore there is the potential for adverse selection. Consider, for example, two types of principals or legislators deciding on the allocation and amount of aid. One group (type 1) is more concerned about the use of aid for development, poverty reduction and good governance. The other set (type 2) is less motivated by the recipient's developmental considerations and more by strategic and trade promotion considerations.[4] The agent is the overseas development agency, whose type is uncertain, with the first type being more efficient than the second variety. Following Murshed and Sen (1995), I will demonstrate that principals can be better off coordinating their objectives at an earlier stage of dealings with the agent.

Both the principals and the agent posses information private to themselves. Let α^i denote the principal where $i = 1, 2$ similarly let β_j, where $j = 1, 2$ denote the agent. Let p^1 and p^2 denote the probability of the principal being of type 1 and 2 respectively ($p^1 + p^2 = 1$). Let π_1, and π_2 indicate the probability of the type of agent being of type 1 and 2 respectively, $\pi_1 + \pi_2 = 1$.[5] V stands for the utility of the principal.

---

4 Recently in the UK there has been some disagreement within the cabinet about the use of aid to Tanzania for the purchase of air traffic control equipment. At least one cabinet member (Clare Short) felt that this aid could have been used for better purposes. She is like the type 1 principal. Another group of cabinet members were more swayed by strategic considerations and the interests of British companies, and are more like type 2 principals.

5 Superscripts refer to the principal and subscripts to the agent.

$$V = V(A, G, \alpha) \tag{11}$$

where G stands for the pecuniary value of the activities of the agent, promoting good governance in aid-recipient nations. A stands for the transfer made by the principal to the agent – the aid budget. The principal's utility is increasing in G, she feels better because aid money is being properly used, and decreasing in A. Let U indicate the utility of the agent:

$$U = U(A, G, \beta) \tag{12}$$

The agent's utility is increasing in A and decreasing in G, because promoting good governance is costly in terms of effort. Utility is also decreasing in the type of the agent, i.e., the type 1 agent derives higher utility for all values of A and G. One could therefore say that the type 1 agent is the 'better' type. The type 2 agent can be described as the worse type as he would require a higher level of A and lower G to obtain the same utility levels as the type 1 agent.

The principal-agent relationship follows a three-stage game. In the first stage the principal proposes a contract or an aid package with transfers and conditionality about monitoring governance. In our model the principal, too, has private information about her type. She can make an announcement about her type 1 in stage 1, either explicitly, or implicitly via the type of contract she proposes. In the second stage of the game the agent either accepts or rejects the proposed contract. If he accepts the game proceeds to the third stage where the contract is executed; there is revelation of the type of the agent and principal (if not already known in stage 1); and, the various payoffs A and G to the agent and principal materialize. The parties may choose a set of messages, corresponding to strategies which in turn reflect a combination of A, G, at the various stages of the game. These strategies, or messages, will be Bayesian perfect – they maximize expected utility given beliefs about the other party's type. Beliefs (priors) are updated using Bayes' rule. The principal updates her prior about the agent at the end of the second stage, after the agent has accepted the contract. The agent updates his beliefs about the principal at the end of the first stage after the contract has been proposed.

The agent's decision to accept or reject the contract in stage 2 will depend upon whether his reservation utility has been met by the proposal – the familiar individual rationality (IR) contract. Since the type 2 agent derives less utility from every combination of A and G, it is his IR constraint which is binding:

$$U_2(A_2^i, G_2^i) \geq u \tag{13}$$

where u is the reservation utility of the type 2 agent.

In the third (pay-off) stage of the game the principal pays out A and receives G from the agent. The type 1 agent gives more G for every level of A. The type 1 agent has to be given the correct incentives to truthfully reveal his type – the incentive compatibility (IC) constraint. This means his utility from telling the truth must be at least as high as from falsifying his type:

$$U_1(A_1^i, G_1^i) \geq U_1(A_2^i, G_2^i) \tag{14}$$

The IC constraint of the type 2 agent will not be binding in the solution to our problem, as the type 2 agent derives no benefit from falsifying his type which would result in his receiving a lower net transfer. The principal in proposing the contract will guarantee her minimum reservation utility (IR constraint).

The full informational problem for the principal in stage 2 of the game is to maximize (for the type 1 principal, say)

$$\begin{aligned} &\pi_1 V^1(A_1^1, G_1^1, r^1, c^1) + \pi_2 V^1(A_2^1, G_2^1, r^1, c^1) \\ &s.t.\ \lambda^1\left[U_2^1(A_2^1, G_2^1) \geq u\right] \\ &\text{and}\quad \mu^1\left[U_1^1(A_1^1, G_1^1) \geq U_1^1(A_2^1, G_2^1)\right] \end{aligned} \tag{15}$$

λ and μ are the Lagrange multipliers associated with the agent's IR and IC constraint respectively; r and c represent slack to (or the violation) of the IR and IC constraints respectively from which principals derive utility.

In the solution to the above full informational problem, the principal has revealed her type in stage 1; the agent knows the principal's type with probability 1. The implication of this is that the agent's IR and IC constraints have to bind for each principal (1 and 2) individually and they cannot trade r and c. There is a separating equilibrium for each type of principal. But (15) above suggests gains in utility to principals from violating constraints, which means gains from trade in constraints. For example if:

$$\lambda^1 / \mu^1 > \lambda^2 / \mu^2$$

$\lambda^{1,2}$ and $\mu^{1,2}$ can be viewed as the shadow prices of r and c. This means that principal 1 would gain greater utility from more slack on the IR constraint (r) in exchange for less slack on the IC constraint (c); the opposite is true for principal 2. The implied trade and gains from it cannot take place with full information, as for each principal the constraints on IR and IC of the agent are fully binding and no violations or slack are allowed on these constraints.

If principals postpone the revelation of their type to the last stage of the game, they could gain from trading in IR and IC of the agents. To do this, they must pool their offer at the proposal stage, coordinate their proposals and in effect make a joint offer. Then the agent does not know their type for certain, has only priors with regard to their type. The upshot of this is that the IR and IC constraints of agent 2 and 1 respectively need hold in expectation and not individually for each principal. One principal can violate one constraint and the other another constraint subject to the condition that they hold in aggregate. Note that as we have only two principals, one principal's violation of a constraint has to be fully matched by the other. Principal 1, for example, maximizes:

$$\begin{aligned} &\pi_1 V^1(A_1, G_1, r^1, c^1) + \pi_2 V^1(A_2, G_2, r^1, c^1) \\ &s.t.\ \lambda^1\left[U_2(A_2, G) \geq u - r^1\right] \\ &\text{and}\quad \mu^1\left[(U_1(A_1, G_1) \geq U_1(A_2, G_2) - c^1\right] \end{aligned} \tag{16}$$

for prior, p^1 on the part of the agent.

Trade in slack on the constraints is possible if (13) and (14) become:

$$\sum_{i=1}^{2} \bar{p}^{i} U_2(A_2^i, G_2^i) \geq u - \sum_{i=1}^{2} \bar{p}^{i} r^i \tag{17}$$

$$\text{and} \quad \sum_{i=1}^{2} \bar{p}^{i} U_1(A_1^i, G_1^i) \geq \sum_{i=1}^{2} \bar{p}^{i} U_1(A_2^i, G) - \sum_{i=1}^{2} \bar{p}^{i} c^i \tag{18}$$

Equations (17) and (18) imply that the constraints must hold only in expectation, where p is the agent's prior about the principal's type. One principal can violate a constraint as long as they hold in aggregate. After solving (16) the principal will maximize an indirect utility function, Z

$$Z^i(r^i, c^i) \;\; s.t. \;\; \lambda r^i + \mu c^i \leq 0 \tag{19}$$

implying:

$$\frac{\partial Z^i / \partial r^i}{\partial Z^i / \partial c^i} = \frac{\lambda}{\mu} \tag{20}$$

Let us return to the case where principal 1 found the IR constraint more costly than principal 2, for her $\lambda^1/\mu^1 > \lambda^2/\mu^2$, she wants to give up slack on the IC constraint for more slack on the IR constraint:

$$\begin{aligned} r^1 &= u - U_2(A_2, G_2) \\ \text{and} \quad c^1 &= U_1(A_2, G_2) - U_1(A_1, G_1) \end{aligned} \tag{21}$$

Principal 1 wants more r^1 in return for less c^1, and the converse is true for principal 2. It means that she would like to give the agent, if he is type 2, less than his reservation utility implying she dislikes type 2. She is also prepared to give the agent, if he is type 1, more utility than warranted by his incentive compatibility constraint. She has a preference for the type 1 agent and is more like the group of principals or legislators more deeply concerned about development and good governance. The other principal is the opposite implying that principal 2 is more concerned with national or strategic interests. By pooling their initial offer, the principals can jointly, instead of individually, satisfy the agent's two constraints. Following Maskin and Tirole (1990), it can be demonstrated that there is a competitive equilibrium in the above case of trades in r and c, derived from (17) and (18). This competitive equilibrium is also Pareto optimal and dominates the full informational outcome from (15) where, of course, trade in r and c is impossible. In this model, therefore, the principals are better off without making the agent worse off, provided there is donor cooperation.

6 Lobbying, aid and the political process

In this section I will present the manner in which foreign aid policies could be formulated out of a variety of domestic political processes. I am, therefore, putting aside

problems of agency, where the aim is to motivate the agent (the aid agency) and the dilemmas posed by opposing objectives amongst principals such as the use of aid for strategic or commercial purposes versus the common humanity or poverty reduction motive for aid.

Aid requires financing, and even if it is a very small fraction of total government expenditure, it is worth analysing the political processes through which public expenditure is determined. My focus is on endogenous policy determination in respect to taxation, which is necessary to finance aid. Lahiri and Raimondos-Møller (2000) present a model of aid allocation amongst recipient countries, where relatively more affluent developing countries (such as Israel) might gain at the expense of more deserving poorer nations, due to the lobbying activities of their national diasporas resident in donor countries. My focus is on the total volume of aid, rather than its allocation amongst various recipients. The first model is to do with a median voter outcome, the second is associated with competitive lobbying, and the third involves a mixed system, partially driven by altruism (common humanity considerations) as well as political contributions. The analysis follows Helpman (1997), whose model is concerned with the formulation of trade policies. In what follows a higher rate of taxation is synonymous with greater public expenditure, including aid.

6.1 Direct democracy and median voter outcomes

Here we have the example of a democracy where the median voter's preferences determine the policy outcome. The issue at stake is the imposition of a commodity tax that provides revenues to be spent on public good provision including foreign aid. Expenditure on public goods, including aid, is modelled as a lump-sum transfer back to the public. This is because aid, if approved by the individual, increases his utility. But the tax to finance aid also lowers the profit income or rents from a factor of production owned by individuals in the taxed sector. The former entails a benefit and the latter a cost. The typical individual's indirect utility function takes the form:

$$U_i(\tau_i, \gamma_i^j) = \tau_i M_i(\tau_i) + \gamma_i^j P_i(\tau_i) + S_i(\tau_i) \qquad (22)$$

where U stands for utility and τ indicates the tax rate. M is the demand function for the good(s) that are taxed as a function of tax rates, and τM is the tax revenue that is redistributed back to the public in a lump-sum fashion. P indicates the profit or rent income from the ownership of factors in sector (i); weighted by γ, the individual (j's) share in the ownership of that factor. This income declines as τ is imposed. S is the consumers surplus' as a function of the tax. The first term on the right-hand side of (22) represents revenues redistributed back to the public. The second term stands for factor income, which is adversely affected after the tax is imposed. The last term indicates the manner in which consumer's surplus is related to the tax. Differentiating (22) with respect to τ and setting it equal to zero for an optimum, we find:

$$\frac{\partial U_i}{\partial \tau_i} = \tau_i M_i' + M_i(.) + \gamma_i^j P_i' + S_i' = 0$$

using the following in the interest of compact notation:

$$P_i' = X_i$$
$$M_i(.) = -X_i - S_i'$$

we obtain:

$$\tau_i = \frac{(1-\gamma_i^m)X_i}{M_i'} \tag{23}$$

The superscript m in γ above indicates the median voter's share in the assets adversely affected by the tax in sector i. The equilibrium tax is declining in the median voter's share of the asset that is taxed, as well as the negative effect of the tax on his sector specific factor income (X). Conversely a low median voter share in the taxed asset will produce a higher tax rate. Also, the smaller the absolute price (tax) elasticity of demand for the taxed good (M'), the higher is the tax, akin to the Ramsey rule. The standard Ramsey rule is associated with $\gamma = 0$ and $X_i = 1$ in (23).

In democracies where the median voter determines tax policies, taxes will have to be on those goods where median voter ownership (γ) is low, and where their income (X) is not greatly affected by the tax. The ownership of assets in sectors that are adversely affected by taxes may be highly concentrated, putting them outside the median-voter range. But as stated in Olsen (1965), these individuals may be better at organizing, and solving collective action problems such as free riding. They might even form influential lobbies, and it is to this that we now turn.

6.2 Lobbying

In this sub-section I model the non-cooperative Nash game between two groups lobbying the government for opposing outcomes. One group favours the tax, the other is opposed to it. Lobbying entails expenditures. I assume that each group has solved its intra-group collective action problem. Let us say that a fraction 'a' of society is opposed to the tax, and another group, '$1 - a$' is in favour. The former group may be construed as against foreign aid, and the latter lobby as pro-aid.

Take the case of the group opposed to the tax. Its welfare is given by:

$$W_i^a(\tau_i) = P_i(\tau_i) + a\left[\tau_i M_i(\tau_i) + S_i(\tau_i)\right] \tag{24}$$

where the terms inside the square brackets represent the group's share in revenues and consumers surplus. Differentiating the above with respect to tax rates and using the same assumptions as in the previous sub-section we obtain:

$$\frac{\partial W^a{}_i}{\partial \tau_i} = X_i(1-a) + a\tau_i M_i' \tag{25}$$

Equation (25) is the marginal benefit from the tax, which will be negative if X_i is large and negative.

The welfare of the other group favouring the tax and numbering $1 - a$ is:

$$W_i^{1-a}(\tau_i) = (1-a)\left[\tau_i M_i(\tau_i) + S_i(\tau_i)\right] \tag{26}$$

Here there is no loss associated with the ownership of any taxed assets or factors.

$$\frac{\partial W^{1-a}{}_i}{\partial \tau_i} = (1-a)\left[-X_i + \tau_i M_i'\right] \tag{27}$$

The marginal benefit of the tax to this group is positive, for negative X_i.

Each group will maximize its welfare by incurring expenditures in lobbying (C) given the expenditure of the other group. The general tax formation function takes the form:

$$\tau_i = T_i(C_i^{\,a}, C_i^{\,1-a}) \tag{28}$$

The equilibrium tax rate arising out of the above political process is:

$$\tau_i = \frac{\left[(1-a_i)(b_i-1)\right]X_i}{\left[a_i b_i + (1-a_i)\right]M_i'} \tag{29}$$

where $b_i = -T_i^a/T_i^{1-a} > 0$. This is the ratio of the marginal rates of substitution between the lobbying expenditures of the two opposing groups. If $b_i > 1$ then the marginal expenditure by the anti-tax lobby is more effective.[6] This could easily be the case if the anti-tax lobby is smaller and more effective.

6.3 Altruism and influence

Here I consider a government or policymaker that combines social welfare and the influence of political contributions. Aggregate welfare enters into the government's policy function and includes the common humanity argument for giving aid. Contributions also sway the government. To keep the analysis simple, there is only one group making political contributions, the anti-aid lobby. See Helpman (1997) for other permutations and complications. Let the government or policymaker's objective function (Y) take the following form:

$$Y = R + dW \tag{30}$$

where R indicates political contributions. W indicates national or per-capita welfare. The parameter d represents the trade-off, or the marginal rate of substitution, between welfare or common humanity considerations and contributions. The higher d, the greater the weight placed by the government on national welfare. Thus d is a benevolence or altruism measure.

As far as the lobbying group is concerned, its welfare (W_i) can be construed as:

---

6 If $b_i = 1$, then the two lobbies cancel out their respective influences.

$$W_i(\tau) = P_i(\tau_i) + a\left[\tau_i M_i(\tau_i) + S_i(\tau_i)\right] \tag{31}$$

again the parameter *a*, measures the size of the group. The lobby group will have to satisfy the participation constraint of the government. In other words, its contributions must at least match the government's utility without the policy advocated by the group, and contributions should be such that they induce a change. The lobby group will maximize $W_i(\tau) - R_i$. The equilibrium tax rate will be derived from the following function:

$$W_i(\tau) + dW(\tau) \tag{32}$$

This will lead to:

$$\tau_i = \frac{(1-a_i)X_i}{(a_i - c)M_i'} \tag{33}$$

Note that the tax rate is a declining function of the concentration in the ownership of the specific factor adversely affected by the tax, and the associated negative output effect on factor owners. Also the higher the level of altruism, the greater the tax rate and aid.

7 Credible commitment to good aid policies

In this penultimate section I consider problems associated with signalling commitment to good aid policies by the agent. The model utilized in this section is a considerably simplified version of the game outlined in Addison and Murshed (2002). Essentially, the problem arises because it is not possible to credibly commit to optimal policies given uncertainty about the agent's type. There are two types of agent. The first type (1) adheres to the optimal policies as determined by society (or their representatives, the principals) regarding aid policy. The second type of agent (2) has an incentive to deviate from optimal policies, and has his own agenda.[7]

The utility of the first type of agent is given by:

$$U_1 = f(G - R) \tag{34}$$

where *G* refers to prior commitment to good governance, and *R* refers to current deviations from the good governance activities of the agent or aid agency. This will lead to the following choice by the type 1 agent with respect to deviations (*R*):

$$-f_1 = 0 \tag{35}$$

Agent 1 has no desire to deviate from his agreed task. Equation (35) also represents the social optimum regarding deviations from agreed policy about the management of aid, at least as viewed by the principal.

---

7 The second type of agent may have some strategic agenda of his own, or collude with certain corrupt interests in developing countries.

The second type of agent derives positive utility (h) from deviations from agreed policies. His utility is given by:

$$U_2 = f(G - R) + h(R) \tag{36}$$

This will lead to the type 2 agent choosing the following level of R:

$$f_1 = h_1 \tag{37}$$

The term on the right-hand side of (37) represents the gain from deviations from optimal policies, which will be carried out by the type 2 agent.

The principal, as usual, is unsure about the agent's type. But unlike in the principal-agent games in sections 2-5, the agent may have a first-mover advantage over the principal. This is plausible, as the agent represents the executive, and the principal corresponds to the legislature or the electorate. In that case the type 2 agent may announce commitment to the optimal policies indicated in (35) and simply renege on this commitment. Whether his announcement about being a type 1 agent is believed or not will depend on his inherited reputation. Reputation may evolve along principles associated with Bayes' law where prior beliefs are updated based on current actions in each period. The punishment for reneging on pre-announced commitments is a loss of reputation, and the fact that future announcements will not be credible. But this retribution comes in the future, and the agent may discount the value of future losses. Given this common knowledge, optimal policies from (35) become incentive incompatible or time inconsistent even for the better type of agent. In other words, because of the uncertainty about the agent's type and his first-mover advantage, commitments to optimal policies are not credible for all types of agents.

The solutions lie in devising commitment technologies that allows the type 1 agent to signal his commitment to optimal policies, and increases the cost of deviating from optimal policies for the type 2 agent. Consider the following for the type 2 agent:

$$U_2 = f(G - R) + h(R - m(R)) \tag{38}$$

Here the system of governance devises an additional cost to the type 2 agent ($-m$) of pursuing his own private agenda. This cost is over and above the loss of reputation and consists of an immediate institutional sanction such as the diminution of powers during the agent's tenure in office.

The resultant choice by the type 2 agent is:

$$f_1 = h_1(1 - m_1) \cdots m_1 \leq 1 \tag{39}$$

When we compare (39) to (37) there is less deviation from optimal policies by the type 2 or dishonest agent. As $m_1 \to 1$, the type 2 agent will choose the optimal policies regarding governance as given by equation (35). Furthermore, the presence of an extra sanction, although unnecessary for the type 1 agent, will also allow him to signal his good intentions.

8 Summary

8.1 In motivating agents to exercise effort, attention needs to be focussed on intrinsic motivation as well as extrinsic financial payments. Outcomes will improve when effort is a signal of the agent's ability and motivation. This means that the principal has to be seen to take the agent's effort into account.

8.2 The public sector is notorious for fixed wage contracts leading to minimal effort levels by the agent. When the agent's type or quality is in doubt (adverse selection), incentive payments may be designed to make the agent reveal his true type. But even then a problem remains, as the inferior type agent will reduce effort exacerbating moral hazard. This trade-off between moral hazard and adverse selection needs to be borne in mind even in principal-agent relationships involving legislature-aid agency relations.

8.3 Supposing the aid agency has to deal with several masters (principals), such as NGOs on the one hand, and the strategic interests of the donor country represented by the Foreign Ministry on the other hand, we will then have several principals or stakeholders and a single agent with multiple tasks. Principals are better off designing the agent's various efforts so as to make them more complementary rather than competing. This will ensure more effort from the agent. But it requires principals to cooperate or collude among themselves. Effort levels will also improve when there are fewer principals exerting pressure on the agent.

8.4 When a variety of principals with divergent interests interact with the same agent, they are not only better off colluding with each other, but pooling their influence on the agent at the initial stage of the principal-agent relationship. In a sense they will be trading in their concerns. Examples of varying objectives include the dilemmas posed by strategic and commercial interests on the one hand, and developmental concerns on the other hand. Certain principals will be more interested in the former, and others (including NGOs) in the latter.

8.5 In the context of endogenous domestic policy formation regarding aid, median voter preferences need to be taken into account mainly in direct democracies utilizing referenda. But usually it is powerful lobbies that influence aid policy. There will also be altruistic motivation regarding aid related to common humanity considerations. These altruistic motivations need to be worked on. In most societies, however, lobbies are most important, due to the fact that the few (rich and powerful) are far better at collectively organizing around their interests.

8.6 When signalling credible commitment to pre-announced policies is the problem, the governance structure in donor countries needs to generate extra and immediate costs to reneging on agreed policies. This is particularly necessary in donor countries where on many occasions a newly elected government commits to development and human rights improvements, but at some later stage reneges on them in favour of strategic interests.

In conclusion, whether or not the granting of aid is motivated by foreign policy considerations or a concern for common humanity, there are worries about the optimal

pursuit of the chosen policies by those tasked to carry them out. In many instances, it might be better to delegate the authority for carrying out aid policy management to international organizations, rather than depend on national bodies. This certainly strengthens the case for a common pool approach to the funding of, and access to, development assistance. When aid is drawn from a common pool administered by an international agency, both policy ownership in developing countries and the transparency of the actual purpose of development assistance are strengthened.

References

Addison, Tony, and S. Mansoob Murshed (2002). 'Credibility and Reputation in Peacemaking'. *Journal of Peace Research*, 39: 487-501.

Burnside, Craig, and David Dollar (2000). 'Aid, Policies and Growth'. *American Economic Review*, 90: 847-68.

Dixit, Avinash K. (2001). 'Some Lessons from Transaction-Cost Politics for Less-Developed Countries'. Unpublished manuscript. Available at: www.princeton.edu.

Helpman, Elhanan (1997). 'Politics and Trade Policy', in D. M. Kneps and K. F. Wallis (eds), *Advances in Economics and Econometrics: Theory and Applications*. New York: Cambridge University Press, 19-45.

Holmström, Bengt, and Paul Milgrom (1991). 'Multi-task Principal Agent Analysis'. *Journal of Law, Economics and Organization*, 7: 24-51.

Holmström, Bengt (1982). 'Managerial Incentive Problems: a Dynamic Perspective', in *Essays in Economics and Management in the Honor of Lars Wahlbeck*. Helsinki: Swedish School of Economics.

Hopkins, Raymond F. (2000). 'The Political Economy of Foreign Aid', in F. Tarp and P. Hjerthom (eds), *Foreign Aid and Development*. London: Routledge, 423-49.

Lahiri, Sajal, and Pascalis Raimondos-Møller (2000). 'Lobbying by Ethnic Groups and Aid Allocation'. *Economic Journal*, 110: C62-C79.

McMillan, John (1992). *Games, Strategies and Managers*. Oxford: Oxford University Press.

Maskin, Eric, and Jean Tirole (1990). 'The Principal-Agent Problem with an Informed Principal: The Case of Private Values'. *Econometrica*, 58: 379-409.

Murshed, S. Mansoob, and Somnath Sen (1995). 'Aid Conditionality and Military Expenditure Reduction in Developing Countries: Models of Asymmetric Information'. *Economic Journal*, 105: 498-509.

Olsen, Mancur (1965). *The Logic of Collective Action*. Cambridge, MA: Harvard University Press.

Svensson, Jakob (2000). 'Foreign Aid and Rent Seeking'. *Journal of International Economics*, 51: 437-61.

Tirole, Jean (1994). 'The Internal Organization of Government'. *Oxford Economic Papers*, 46: 1-29.

Wilson, James Q. (1989). *Bureaucracy: What Government Agencies Do and Why They Do It*. New York: Basic Books.