Corruption, Third Party Influence, and the Poor Implementation of Public Welfare Programs in Developing Countries

Saktinil Roy, PhD
Associate Professor
Centre for Finance, Economics and
Operations Management
Athabasca University

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Abstract

This paper asks if an honest bureaucracy could be corruptible in the context of poverty alleviation programs in developing countries where poor targeting is a persistent problem. The model demonstrates that corruption can exist as part of an equilibrium outcome in "triadic" interactions among an honest bureaucrat, its client, and a third-party intermediary from outside government. Thus, on many occasions, an apparently corrupt pursuit by a self-indulgent bureaucrat is in fact only partly so. The establishment of monetary incentives for bureaucrats is therefore neither obvious nor complete as a solution. We show that such a policy could even increase the scope of bureaucratic corruption.

Keywords: *bureaucratic corruption; triadic relationships; power; influence*

JEL Classification: D73, I38, C72, D8

1. Introduction

The extant literature on bureaucratic corruption usually refers to a principal-agent framework.[1] A government official is an agent of the public entrusted with performing tasks, but its actions and the specific circumstances under which they are carried out are not fully observed or monitored. Under such incomplete information, a dishonest government official engages in rent-seeking activities by either making illegitimate claims in return for its service or by striking illegal deals with private agents looking to evade the law (e.g., tax evasion; violation of environmental regulations). Noting that the incidence of corruption is an outcome of interactions among different parties in a given institutional arrangement[2], this paper departs from the principal-agent framework that involves only *dyadic* relationships.[3] Instead, we seek to explain corruption in governmental bodies with reference to relationships that are essentially *triadic* in nature. It draws its motivation from the works of Akerlof (1976), Basu (1986, 2000), Naqvi and Wemhoner (1995), and Hatlebackk (2002) that analyse social and economic practices as outcomes of three or more economic agents dealing among themselves.

We take this different approach for two important reasons. First, unlike what is typical of a principal-agent framework where corruption results from the relationship between the bureaucrat and the government or the bureaucrat and the client, there are many real world contexts where other parties are able to influence the outcomes of the relationship between the two parties by utilizing their own relationships with one or both. The other parties may benefit from the corrupt practice, even though the individuals or organizations in question may not be directly involved in the bureaucratic procedure or receiving a service from the government. We routinely hear government officials expressing concern about being pressured by political parties, "men of

[1] See Blackburn, Bose, and Haque (2006) and references therein.

[2] The idea that corruption is a social phenomenon and needs to be examined in reference to the prevailing institutions is found in a fringe section of the literature. Esteban and Ray (2006) explain how effective lobbying by privately informed wealthy groups may lead to misallocation of resources by bureaucrats. Tirole (1996) explains how an agent's corruptibility or honesty is partly determined by what others expect from an individual born in a family with a past record of corruption or honesty. In a similar strand, Andvig and Moene (1990), Cadot (1987), and Sah (1988) discuss how the extent of corruption at the group level determines an individual's decision to be (or not be) corrupt. However, in what follows, this paper explores the potential for third-party interference in bureaucratic procedures.

[3] i.e. two-party relationships.

influence," or even private corporations, as a result of which they may have to quit their legitimate course of actions to allow misallocation of resources.[4]

The other, and related, limitation of the principal-agent model is the underlying assumption that corrupt practices are always due to acts of dishonest bureaucrats[5] and that "dishonesty" evolves from a lack of monetary incentives or is a personal trait. This idea seems especially troubling in face of the facts that many societies are rife with several forms of bureaucratic corruption and that, on the other hand, instances of people being motivated by non-monetary incentives are at least as widespread in all societies. This raises an important question: Does corruption always result from a dishonest intent on the part of the government official? This question also has relevance from the perspective of an emerging literature that examines the implications of non-monetary incentives for economic outcomes. According to several findings, individuals not only are attached to the idea of *fairness* (see Akerlof and Shiller, 2009, pp. 19–25 and references therein) but they may also be proud of their identity as part of an organization, group or community, which then implies that part of their satisfaction would depend on how well they fulfill the goals of the organization or group (Akerlof and Kranton, 2005; Besley and Ghatak, 2005).

Therefore, in this paper we ask how corruption or malfeasance occurs due to the influences of other parties when government officials are *honest*. Attempting to explain corruption, the literature has generally taken an extreme stance, with the presumption of agent dishonesty. This paper, then, addresses the issue from the other extreme. The idea is that if the incidence of corruption is understood under these two extreme sets of conditions then we get better insights into the many realistic possibilities. The implication from a policy standpoint is that when corruption is not purely due to the problem of inadequate monitoring of a dishonest

[4] There are also occasions where the individual is caught by adverse circumstances. An excellent illustration is Basu's (1986) "the caucus and the coalition," where people in the inner circle of a tyrant king help sustain the regime by currying more favor not because they are intrinsically more dishonest or submissive, but only because they happen to be in that inner circle.

[5] In fact, "corruption" and "dishonesty" are used synonymously. Rose-Ackerman (1978), Acemoglu and Verdier (2000) and others examine the implications of a partially honest bureaucracy for the extent of corruption and efficiency, but the assumption is that corrupt agents are necessarily dishonest.

government official, then a policy based on a contrary assumption is likely to be inadequate or even inappropriate.

We define "corruption" as an event where a government official deliberately deviates from the public mission in its self-interest. Self-interest in this context could be reflected in a range of activities: from extracting a bribe to trying to retain office (Bardhan, 1997). "Honesty," on the other hand, is defined as the trait that implies zero utility from a bribe.

We choose a real life context where the issue can be well examined. We consider governmental programs in less-developed to assist the rural poor to engage in income-generating activities.[6] It is known that one important reason why such programs may not fully achieve the desired goals is provision of resources to inappropriate people who deserve less assistance or no assistance at all. Government officials are often blamed for engaging in corrupt practices and held responsible for the inappropriate provisions. Yet, as found by many studies[7], quite often it is not the local government but the power relations characteristic of traditional rural societies that cause such misallocations. Influential private third parties often intervene in the process of selection of beneficiaries and assistance provision, and, as a result, the local government end up providing assistance to the wrong people. As noted by the World Bank (2000), even if sufficient fiscal autonomy is vested in a local government, political manipulation and rent-seeking by local elites (quite often landlords) might turn that privilege against the poor. In other words, third party influences in the context of interaction between the government and the potential beneficiaries might lead to underperformance of the poverty alleviation programs.

We examine this phenomenon with a simple model of triadic relationships. There are three agents: i) the government official implementing the program; ii) a potential beneficiary; iii) an intermediary between the first two parties. The intermediary, which may be a person or organization, is also an employer to the beneficiary. The government official is honest: he or she derives utility from his or her reputation and zero

[6] For example, cash transfer programs in Latin America, Africa and Asia, and also the multifaceted poverty alleviation programs, such as Swarnjayanti Gram Swarozgar Yojana in India, where cash transfer is a part.
[7] See Fultz and Francis (2013), Domelen (2007), Jha (2002), Jha (2000), Bandyopadhyay (1988), Dreze (1990), Gebert (1989), and Hara Gopal and Bala Ramulu (1989), for discussions of some real instances. We discuss some of these in Section 4.1.

utility from bribes. The official determines the *legitimate* amount of assistance the potential beneficiary may receive, depending on income, skills, education, and other relevant criteria. We examine under what conditions the third-party intermediary induces the official to provide a larger, illegitimate amount of assistance to its employee, thus extracting a share for itself. Three alternative possibilities are examined: i) *Asymmetry of information* about the eligibility of the beneficiary; ii) *full information* about eligibility, but the intermediary brings the official under an "overt" threat of harassment; iii) *full information*, but the intermediary brings the official under a "covert" threat of harassment via its relationship with the beneficiary. We show that in all three cases the government official engages in a corrupt practice only to choose the lesser of two evils and not for self-advancement or pecuniary gain. This is despite the fact that an observer from outside would likely interpret the official to be extracting bribe payment from the beneficiary or the intermediary or both.

In the first case, where the government official has imperfect knowledge about the eligibility of the potential beneficiary, the intermediary deliberately supplies wrong information which the government official partly believes and ends up providing more assistance to the beneficiary than what it deserves. The second case is straightforward; here the intermediary uses its ability to harass the government official and demands more assistance for the beneficiary than what is legitimate. Of particular relevance is the third possibility where, even in the absence of any asymmetry of information and with no ability to directly threaten the government official, the intermediary utilises its relationship with the potential beneficiary to put forward a rather *indirect threat* to the government official of a bureaucratic failure. As a result, the government official offers a greater amount of assistance to the beneficiary than what is otherwise legitimate, even though the government official runs the risk of being punished or earning bad reputation of a corrupt bureaucrat. This is where the literature on power that operates via triadic relationships is relevant.[8] We also show that if the government official is engaging in a corrupt practice under such an *indirect threat* then a monetary incentive to curb bureaucratic corruption[9] will not succeed and instead will increase the level of bureaucratic corruption if

[8] See Basu (1986, 2000), Naqvi and Wemhoner (1995), and Hatlebackk (2002).
[9] This is a common prescription in the literature following Becker and Stigler (1976).

the additional monetary payment increases the cost associated with a bureaucratic failure more than it increases the disutility of a bad reputation or possible punishment for a corrupt official.

In Section 2 the basic model is outlined. In Section 3, three alternative scenarios are described and the conditions are derived under which the government official makes corrupt decisions. Section 4 presents real world examples, policy implications, and possible extensions. Section 5 concludes.

2. The Basic Model

We consider a typical village society in an LDC. A total sum of money, S_0, is allotted to the local government for rendering assistance to N number of poor individuals. It is expected that the poor individuals receiving assistance will engage in income-generating activities to improve their economic condition.

Let G be the official in charge of allocating the total assistance amount. Considering financial needs, education levels, and skill sets, G has to put the N potential beneficiaries in a ranking order that will determine the amount of assistance that each of them will receive. The ranking order will imply that the i^{th} beneficiary will receive an amount of assistance that is greater than the amount to be received by the $(i+1)^{th}$ beneficiary and less than the amount to be received by the $(i-1)^{th}$ beneficiary. We assume that N is large and that i can be taken as a continuum.

Let I_i be the amount to be disbursed to the i^{th} beneficiary. Hence,

$$I_{i+1} \leq I_i \leq I_{i-1}, \quad \forall\, i = 2 \text{ to } N-1.$$

For simplicity we assume,

$$I_i - I_{i+1} = \sigma, \quad \forall\, i = 1 \text{ to } N-1, \tag{1}$$

where σ is a constant.

G is "honest" in that he or she gets *zero* utility from a bribe. However, in accordance with what the standard norms of a society would imply, G gets positive utility from the reputation of an honest and able

government bureaucrat.[10] Let $R(S)$ be the reputation earned by G from disbursal of the amount, S, of the total amount, S_0, allotted to him or her. We assume, further, that if G fails to adopt the proper ranking order for the beneficiaries, then he or she suffers a loss of utility due to bad reputation or punishment from the government. Let d_i be the deviation distance from the *legitimate* rank of the i^{th} potential beneficiary; d_i can be zero, positive, or negative depending on whether the i^{th} potential beneficiary's rank is honoured, placed below its legitimate rank (receiving greater than the legitimate amount of assistance), or placed above its legitimate rank (receiving less than the legitimate amount of assistance). Thus, $\mu\sum_{i=1}^{N}|d_i|$, where μ is a constant, represents the total positive loss of utility due to bad reputation or punishment suffered by G by deviating from the legitimate rankings of all N beneficiaries. Under the special case where the legitimate ranking order is adopted, all $d_i s$ are *zero.* Finally, let D be the positive loss of utility for G that is caused by actions of Y (defined below) without incurring any kind of cost. In other words, D is precisely the maximum amount of harassment that Y, with its own standing as a "man of influence," can cause for G. Thus, G has the following utility function.

$$U_G = R(S) - \mu\sum_{i=1}^{N}|d_i| - D \qquad (2)$$

We assume: $R' > 0$, $R'' < 0$, $R(0) = 0$, $R(S_0) = R_0$ (constant), and that $R(S)$ is defined only over 0 to R_0. The positive sign of the first derivative is on account of two relevant facts. First, the larger the total amount of assistance that G can disburse, the greater the accomplishment, and hence the more the appreciation that G earns from the government. Second, the greater the amount of assistance G disburses, the higher the reputation that he or she earns from the local public.

Next, there is Y, a "man of influence" in the village society, and L, who sells labor to Y. L is also a potential beneficiary, occupying the k^{th} position in the legitimate ranking order. To simplify the model, we assume that L occupies the last (i.e., the N^{th}) position. Also, we preclude the presence of production in the system and instead assume that Y buys labor only for personal services. Y buys an amount of labor, e, at the subsistence wage rate, w_0. As one characteristic of the rural economy in an LDC, there is unlimited surplus labor; i.e., there is large involuntary unemployment at the subsistence wage rate, w_0. This implies that Y can

[10] This assumption is made to answer the main question asked in this paper. In Section 4.3, we discuss how the same results can be derived for the more realistic case where the government official is partly honest, i.e., gets utility from both bribe and reputation.

always replace *L* at a negligible cost, and we assume this cost to be equal to *zero.* Finally, the contract settlement process between *Y* and *L* takes the form of a "take-it-or-leave-it" offer by *Y* to *L.* Thus, *Y* offers the contract, (w_0, e), which *L* can accept or reject.

Y's utility function is the following.

$$U_Y = M_Y(\alpha\sigma d_N - w_0 e) + Q_Y(e), \quad M_Y' > 0,\ M_Y'' < 0,\ Q_Y' > 0,\ Q_Y'' < 0 \tag{3}$$

Here, α stands for the share of the additional, *illegitimate* amount of assistance that *Y* can manage to extract from *L*; $M_Y(.)$ is a function representing the utility that *Y* gets from "money," and $Q_Y(e)$ stands for the utility that he gets from the work performed by *L.*

L has the following utility function:

$$U_L = M_L(I_N + (1-\alpha)\sigma d_N + w_0 e) - Q_L(e),\ M_L' > 0,\ M_L'' < 0,\ Q_L' > 0,\ Q_L'' > 0 \tag{4}$$

L derives utility, $M_L(.)$, from money and disutility, $Q_L(.)$, from work. We assume that if *L* is not hired by *Y*, then *L* gets an amount of utility equal to A_L when it receives assistance amount I_N, and equal to $\underline{A_L}$ when he or she does not receive any assistance. A_L and $\underline{A_L}$ are utilities net of any significant search costs involved in finding an alternative employment.

Throughout the rest of the paper, we will assume the following sequence of actions.

1) G *determines the ranks of all potential beneficiaries and disburses the respective assistance amounts.*
2) L *accepts or rejects the amount offered by* G.
3) Y *observes the amount received by* L *and makes a take-it-or-leave-it offer,* (w_0, e, α), *to* L. Y *determines the amount of the offer by maximizing its utility, subject to certain constraints, including the fact that* L*'s utility should be at least as large as his or her payoff if he or she were not employed by* Y.
4) L *accepts or rejects the offer made by* Y.

This completes the model description. In the next section we discuss five different cases with this model to demonstrate that the legitimate ranking order may or may not be adopted by *G* depending on how the relationships among *G, Y* and *L* evolve.

3. Corruption and Misallocation under Influence and Coercion

The purpose of this section is to demonstrate that interactions among the three parties, *G, Y* and *L,* can result in *G* adopting an *illegitimate* ranking order so that *L* is offered a greater amount of assistance than it should receive in its *legitimate* rank, *N*; in this illegitimate ranking order, part or full of the additional illegitimate amount is enjoyed by *Y.* We first present the *fair* outcomes, where without any intervention from either *Y* or *L* the government official takes the legitimate course. We then present three distinct cases of *corruption* that result from *Y's* intervention, direct or indirect. The incidence of corruption will be under the *influence* or *coercion* of a third party from outside the government—a point this paper argues.

3.1 Fair allocation under full information

We assume that the following conditions hold.

i) There is full information about the eligibility of each potential beneficiary.

ii) *Y* does not intervene in the process of provision of assistance.

iii) *Y* does not arrange any difficulty for *G.*

Under conditions i) through iii) *Y* only solves the following problem.

$Max \quad U_Y$
(e)

S. T.
i) $U_L \geq A_L$
ii) $\alpha = 0$
iii) $D = 0$

Let e^* be the solution. We assume that constraint *i)* does not bind. This is a very reasonable assumption when there is unlimited surplus labor. When the probability of finding an alternative employment is low, there are significant search costs. Therefore, the payoff from an existing or alternative employment is likely to be higher than the reservation utility, although, we note, *Y* pays only the subsistence wage rate, w_0. Hence, the solution will be the same if *L* does not receive any assistance, i.e., if *L's* reservation payoff is $\underline{A_L}$ instead of A_L.

Under conditions i) through iii), G is able to adopt the legitimate ranking and disburse the whole assistance amount, S_0, to enjoy maximum utility from reputation. This means that all $d_i s$ are set to *zero*. Since under these conditions $S = S_0$ and $D = 0$, the total utility for G is equal to R_0. These lead to the following proposition.

PROPOSITION 1:

The following payoffs describe the fair outcome under full information.

$$G: \quad U_G^* = R_0 \tag{5}$$

$$Y: \quad U_Y^* = M_Y(-w_0 e^*) + Q_Y(e^*) \tag{6}$$

$$L: \quad U_L^* = M_L(I_N + w_0 e^*) - Q_L(e^*) \tag{7}$$

Let $\mathring{U}_L\ (\geq A_L > \underline{A_L})$ be the payoff to L under the special case when $I_N = 0$.

3.2 Fair allocation under asymmetry of information

We assume that the following conditions hold.

i) Y and L know the legitimate rank of L for receiving government assistance. But, in the absence of L's ability to signal its true rank, G has incomplete information in this regard. G knows what the exact ranks of the other $N-1$ potential beneficiaries should be if L doesn't receive any assistance. However, for the rank of L it only knows that it can be any of 1 through N—each with probability p.[11]

ii) Y does not intervene in the process of provision of assistance.

iii) Y does not arrange any displeasure for G.

[11] Hence, $Np = 1$

LEMMA 1:

Assuming N *is odd, utility maximisation by* G *entails:*

i) *choosing* $\frac{\mathrm{N}}{2}+1$ *as* L's *rank;*

ii) *an ex post expected loss of reputation equal to* $\mu(\frac{\mathrm{N}}{2}-1)$*;*

iii) *an expected payoff equal to* $\mathrm{R}_0-\mu(\frac{\mathrm{N}}{2}-1)$.

Proof: If *G* assigns the k^{th} position to *L* then there is a deviation, $|k-i|$, from each possible position, *i,* with probability *p*. But this also means that in each case the ranks of $|k-i|$ other beneficiaries are deviating from their true ranks by 1 with probability *p.* Hence, the total deviation in each case is: $2|k-i|$ with probability *p.* Thus, the second term in equation (2) becomes: $2\mu p\sum_{i=1}^{N}|k-i|$. It can be checked easily that the expected loss is minimized if *G* chooses $k=\frac{N}{2}+1$ when *N* is odd and $k=\frac{N}{2}$ or $\frac{N+1}{2}$ when *N* is even. Hence, if *N* is odd then the *ex ante* expected loss is: $2\mu p\sum_{i=1}^{N}|\frac{N}{2}-(i-1)|$. This means that the *ex post* loss is: $2\mu\left|\frac{N}{2}-(N-1)\right|=2\mu(\frac{N}{2}-1)$. Since *G* is able to disburse the whole of S_0, assuming $D=0$, the payoff to *G* is: $R_0-2\mu(\frac{N}{2}-1)$.

Once *G* makes a choice about the rank of *L* and disburses the assistance amount, $I_{N/2+1}$, *Y* observes and solves a maximization problem that is similar to the one under the condition of full information. Letting A_{La} (which includes utility from the greater assistance amount) stand for the payoff to *L* when it is not employed by *G,* the first constraint will now mean that *Y* has to provide *L* at least A_{La}. Again assuming that this constraint does not bind, the optimal *e* in this case will be the same as under full information. Thus, we have:

PROPOSITION 2:

The following payoffs describe the fair outcome under asymmetry of information.

$$G: \quad U_{Ga}^{*}=R_0-2\mu(\frac{N}{2}-1) \tag{8}$$

$$Y: \quad U_{Ya}^{*}=M_Y(-w_0\,e^{*})+Q_Y(e^{*})=U_Y^{*} \tag{9}$$

$$L: \quad U_{La}^{*} = M_L(I_{N/2+1} + w_0 e^{*}) - Q_L(e^{*}) \qquad (10)$$

Although the above payoff structure represents the fair outcome, the legitimate ranking is not implemented due to asymmetric information about *L'*s rank for receiving assistance. Therefore, *G* stands to lose (as $U_{Ga}^{*} < U_G^{*}$), even though he or she makes an optimal decision with the best intent. However, there is no third-party intervention or influence in the achievement of this result. Considered next is what happens when a third party, like *Y,* steps in.

3.3 Influence and misallocation under asymmetry of information

The conditions under which the government official is able to adopt the legitimate ranking (under full information) or get as close as possible (under asymmetry of information) describe the benchmark versions of the model. The essential question is: how can corruption occur in such a setting? Specifically, how can *Y,* acting as an intermediary between *L* and *G,* bring forth an illegitimate ranking order that *G* and *L* will accept? This subsection demonstrates only one such possibility: *Y,* as a "man of influence," takes advantage of the asymmetry of information about *L*'s eligibility.

This will be a very realistic case for many villages in a typical *LDC,* where the institutions for community involvement in decision making processes are rather weak. *G* will naturally try to get information about *L*'s eligibility for funding through his or her own office staff, many of whom are from the village. These people, if unsure of *L*'s eligibility, may contact *Y,* or a person who knows *Y,* to collect the relevant information.[12] They are likely to take that route on the assumption that since *L* works for *Y*, the latter will have more information about *L's* status than will others in the village. As *Y* is a person of high standing in the village, his/her information will also be assumed to be credible. Of course, just as we have assumed that *G* is honest, *Y* may also turn out to be so, supplying the correct information. Moreover, there certainly are instances as such. However, a dishonest *Y*—also found in many instances—will utilize this opportunity for an additional payoff.

Let us explain. When approached by *G*'s staff, *Y* can deliberately supply wrong information about *L'*s circumstances (which will determine *L*'s rank) in the hope of extracting part of a greater assistance amount

[12] Dreze (1990) describes a few real world scenarios where this is possible.

that *G* might provide to *L*. Let us suppose that *Y* states *L*'s rank to be 1. As we will see, this number is arbitrary, and the argument holds true for any rank of *L* that is lower than *L*'s legitimate rank. Upon receipt of this information *G* can believe it fully or partly. If we assume that *G* and his or her office staff have some doubt about the credibility of this information, then there are a number of possible ways to deal with it. *G'*s office staff can try to check with others in the village, at some extra cost, or they can proceed based on the information gleaned from *Y* by assigning updated probabilities to all possible ranks of *L*. If they think that the rank stated by *Y* is more-or-less credible, then they will likely map the ranks to probabilities as a decreasing function. In other words, the higher the rank, the lower the probability that *L* has that rank. Let us suppose that: p_i is *G's* updated probability of *i* as *L's* rank, where $p_i < p_{i-1} \forall\, i = 2$ to *N*.

LEMMA 2:

Assuming N *is odd, utility maximisation by* G *entails:*

i) *choosing* $\acute{k} < \frac{N}{2} + 1$ *as* L's *rank;*

ii) *an ex post expected loss of reputation greater than what would be realized as part of the fair outcome under asymmetry of information;*

iii) *an expected payoff less than what would be realised as part of the fair outcome under asymmetry of information;*

iv) L *receiving an amount of assistance that is greater than what it would receive as part of the fair outcome under asymmetry of information.*

Proof: If *G* assigns the k^{th} position to *L*, then there is a deviation from each possible other position, *i,* with probability p_i. But in each case this also entails a deviation of 1 from the true ranks of $|k - i|$ other beneficiaries with probability p_i. Hence, the second term in equation (2) becomes: $2\mu \sum_{i=1}^{N} p_i |k - i|$. Clearly, for sufficiently large p_i *s* in the range between *1* and *N/2,* the rank that minimizes the expected loss of reputation is *less* than *N/2 + 1* (the optimal rank as part of the fair outcome in Section 3.2). Let $\acute{k}$ *(< N/2 + 1)* be the optimum rank. In this case, the *ex post* loss is: $2\mu(N - \acute{k})$, which is *greater* than $2\mu(\frac{N}{2} - 1)$ realized as

part of the fair outcome under the condition of asymmetry of information. Since G is able to disburse the whole of S_0, assuming $D = 0$, the payoff to G is: $R_0 - 2\mu(N - \acute{k})$. This is smaller than $R_0 - 2\mu(\frac{N}{2} - 1)$ realized as part of the fair outcome under asymmetry of information. L receives an amount of assistance equal to $I_N + \sigma(N - \acute{k})$, which is greater than $I_{N/2+1}$, the assistance amount it would have received as part of the fair outcome under the condition of asymmetry of information.

Since Y is aware that as a result of its supply of wrong information to G, L has received an amount that is greater than what L would have received otherwise, Y will now solve the following problem and get a share of the additional amount.

$$\underset{(e,\ \alpha)}{Max} \quad U_Y = M_Y(\alpha\sigma(\acute{k} - \frac{N}{2} - 1) - w_0 e) + Q_Y(e)$$

$$S.\ T.$$
$$i)\ U_L \geq \acute{A}_{La}$$
$$ii)\ 0 \leq \alpha \leq 1$$

Here, $\acute{A}_{La}$ stands for the utility L receives under no employment from Y; this of course includes the utility from the greater assistance amount. Let $(\acute{e}_a, \acute{\alpha})$ be the solution.

PROPOSITION 3:

The following is the payoff structure under an asymmetry of information condition resulting from Y's *"bad influence."*

$$G:\ \acute{U}_{Ga} = R_0 - 2\mu\ (N - \acute{k}) \qquad (11)$$

$$Y:\ \acute{U}_{Ya} = M_Y(\acute{\alpha}\sigma(\acute{k} - \frac{N}{2} - 1) - w_0\,\acute{e}) + Q_Y(\acute{e}) \qquad (12)$$

$$L:\ \acute{U}_{La} = M_L(I_N + \sigma(1 - \acute{\alpha})(\acute{k} - \frac{N}{2} - 1) + w_0\,\acute{e}) - Q_L(\acute{e}) \qquad (13)$$

Since $\acute{U}_{Ga}$ is *less* than U_{Ga}^*, G stands to lose as a result of his or her partial belief in the wrong information supplied by Y. On the other hand, while *L's* payoff is at least as large as what he or she would get as part of a fair outcome, Y will not supply wrong information in the first place if he does not earn a higher payoff from the solution.

Thus, this is an outcome showing *G* engaging in corruption by providing to *L* an illegitimate amount of assistance. Under these circumstances, *G* will be labelled by the local people as corrupt, and will probably also face disciplinary actions from his or her superiors in government. Yet *G* is entirely honest in this case, and it is the dishonesty of *Y* that leads to the corrupt outcome. Note that the literature on corruption generally ignores such a possibility and typically only considers a case where the government official enters into a private deal either with the "man of influence" or with the beneficiary.

Finally, we note that the analysis and conclusion in this subsection are somewhat similar to those of Esteban and Ray (2006). The authors show that effective lobbying by privately informed, wealthy groups could lead the government to allocate resources to sectors that are less productive than others.

3.4 Overt threat leading to corruption under full information

This and the next subsection are devoted to exploring how outcomes similar to the last one can emerge under conditions of full information. Let us assume that there is no private information about the legitimate rank of *L,* but *Y* is pondering whether he is able to ask *G* to adopt a higher rank for *L* and provide a larger assistance amount. Let us suppose that *Y* wants *G* to put *L* in the k^{th} position. *Y* thus has to make sure that if *G* adopts the legitimate rank for *L*, then its payoff will be less than what it will earn if it puts *L* in the k^{th} position. Bribery is an obvious tool—and the related literature generally considers only that possibility—but here it is ruled out by assumption. Instead, let us suppose that *Y*, being a man of influence—perhaps the leader of the dominant local political party or a wealthy man with strong local connections—holds sufficient power to cause difficulty for *G.* This is where the term *D* in the utility function of *G* is relevant.

LEMMA 3:

Y *can ask* G *to place* L *in the* k^{th} *position if an interior solution to the following problem exists.*

$$\underset{(e,\,\alpha,\,k)}{Max} \quad U_Y = M_Y(\alpha\sigma(N - k) - w_0 e) + Q_Y(e)$$

S. T.

i) $U_L \geq A_{Lk}$

ii) $D \geq 2\mu(N - k)$
iii) $0 \leq \alpha \leq 1$
iv) $1 \leq k < N$

Proof: In the first constraint, A_{Lk} is *L's* payoff when *L* receives the greater assistance amount, I_k, but is not employed by *Y*.[13] If *G* assigns to *L* the rank of *k* instead of its true rank, *N,* then there is a deviation equal to $(N - k)$. But this also entails a deviation of 1 for *N-k* other beneficiaries from their true ranks. Hence, the total deviation is $2(N - k)$ and the related loss of reputation for *G* is $2\mu(N - k)$. The second constraint is in view of the fact that *G's* displeasure from the harassment should be large enough so that it has no incentive to adopt the *legitimate* ranking. The last two constraints are obvious. Hence, when an interior solution to the above problem exists, *Y* can ask *G* to place *L* in the k^{th} rank, which both *G* an *L* will accept.

Assuming the existence of an interior solution, let us suppose that this is: $(\underline{e}, \underline{\alpha}, \underline{k})$. Note that nothing prevents *G* from disbursing the full amount, S_0, allotted to it. Thus, we have the following proposition.

PROPOSITION 4:

The following payoff structure describes an outcome characterized by corruption resulting from an overt threat of harassment.

$$G: \quad \underline{U}_G = R_0 - 2\mu(N - \underline{k}) \tag{14}$$

$$Y: \quad \underline{U}_Y = M_Y(\underline{\alpha}\sigma(N - \underline{k}) - w_0\,\underline{e}) + Q_Y(\underline{e}) \tag{15}$$

$$L: \quad \underline{U}_L = M_L(I_N + \sigma(1 - \underline{\alpha})(N - \underline{k}) + w_0(\underline{e}) - Q_L(\underline{e}) \tag{16}$$

Here, $\underline{U}_G < U_G^*$ and $\underline{U}_L \geq U_L^*$. Also, $\underline{U}_Y > U_Y^*$ —otherwise *Y* will simply set *D* at *zero* and allow *G* to take his or her own course.

Thus, this is again an outcome where *G* is likely to be labelled as "corrupt" – in this case particularly because it provides an *illegitimate* amount of assistance, $\underline{I}_k$, to *L* without having any doubt about the right amount that *L* should receive. Yet, under the threat of possible future harassment, *G* chooses the lesser of two

[13] As in the previous subsections, we assume that this constraint does not bind.

evils, and *Y* extracts part of the additional amount of assistance. Note that the threat doesn't even have to be announced. So long as *Y*'s ability to cause such harassment is known, a request by *Y* to provide an illegitimate assistance amount to *L* may be understood as implying an underlying threat.

3.5 Covert threat leading to corruption under full information

In the preceding case, *Y* uses an "overt" threat of harassment to induce *G* to provide *L* a higher amount of assistance than *L* would otherwise be assessed as deserving. This is definitely a possibility in many backward regions of LDCs where power and wealth are concentrated in a few hands. In many other regions, however, carrying out such a threat will not be possible, due to stronger rule of law, less concentration of power, or both. Can *Y* still get a larger, illegitimate amount for *L* and extract a share? The purpose of the analysis in this subsection is to show that this is still a possibility. This is therefore the most interesting case, and somewhat counter-intuitive. As the discussion and the related examples in Section 4 suggest, however, this situation is not less realistic than the preceding two outcomes.

Note that in the last two examples, *Y* had exploited its employer-employee relationship with *L* in order to communicate to *G* the amount of assistance *Y* thinks *L* should receive. Thus, the outcomes wouldn't have been realized without *triadic* interactions among *Y, G,* and *L.* In this sense, in the last two examples, corruption resulted from a triadic relationships. If *Y* had been unaware that *L* would receive assistance, then there would have been no opportunity for corruption. However, in none of the cases did *Y* manage to extract an additional payoff by putting forward a threat to *L* that is transmitted as a "covert" threat to *G.* In this subsection we examine this possibility.

We refer to the notion of *power* that works through *triadic* relationships (Basu, 1986, 2000; Naqvi and Wemhoner, 1995; Hatlebakk, 2002). In this literature, an agent, *A,* can utilize its trade relationships with a second agent, *B*, and a third agent, *C,* to ensure a larger payoff from its trade with *C* than what it would have gotten had *B* not traded with both *A* and *C*. *A* can put forward a threat by asserting that if *C* does not accept *A's* offer then it will not trade with *C,* and, moreover, if *B* continues to trade with *C* after *C* has rejected its offer,

then *A* will not trade with *B* either. If this "threat" is credible, then *A* can get a bigger payoff from its trade with *C* than what it would have gotten had it not traded also with *B*.

The game structure in the present context is a bit different, as *Y* has no trade relationship with *G*. So, unlike the above example, *Y* is unable to put forward an "overt" threat to *G*. However, *Y* can adopt a similar strategy and put forward a "covert" threat. To see how this is possible, let us first consider the following problem that *Y* can solve, where it chooses *L's* rank, *j,* along with *e* and α.

$$\begin{aligned} &Max \quad U_Y = M_Y(\alpha\sigma(N-j) - w_0 e) + Q_Y(e) \\ &(e, \alpha, j) \end{aligned}$$

$$\begin{aligned} &S.\ T. \\ &i) \quad U_L \geq A_{Lj} \\ &ii) \quad R(S_0 - I_N) \leq R_0 - 2\mu(N-j) \\ &iii) \quad 1 \leq j < N \\ &iv) \quad 0 \leq \alpha \leq 1 \end{aligned}$$

A_{Lj} is *L's* utility from the assistance amount, I_j, when it is not employed by *Y*. As in the last two cases, the first constraint stands for the fact that *Y* has to ensure that *L* has no incentive to refuse its offer of employment after receiving a larger amount of assistance, I_j. We assume, as in the previous cases, that this constraint does not bind. The second constraint stands for the fact that the loss of reputation, $2\mu(N-j)$, for *G* from the provision of an illegitimate amount to *L* is not large enough for *G* to have an incentive to deny *L* of any assistance at all.

LEMMA 4:

Assuming an interior solution to the above problem, let $(\hat{e}, \tilde{\alpha}, \hat{j})$ *be the solution. The respective payoffs are given below.*

$$G: \ \hat{U}_G = R_0 - 2\mu(N-\hat{j}) \tag{17}$$

$$Y: \ \hat{U}_Y = M_Y(\tilde{\alpha}\sigma(N-\hat{j}) - w_0\hat{e}) + Q_Y(\hat{e}) \tag{18}$$

$$L: \ \hat{U}_L = M_L(I_N + (1-\tilde{\alpha})\sigma(N-\hat{j}) + w_0(\hat{e})) - Q_L(\hat{e}) \tag{19}$$

LEMMA 5:

From the model set-up in Section 2 and the analysis done so far in this section, the following inequalities must hold.

$$U_G^* > \hat{U}_G \geq R(S_0 - I_N) \tag{20}$$

$$\hat{U}_Y > U_Y^* \tag{21}$$

$$\hat{U}_L \geq U_L^* > \mathring{U}_L > A_L > \underline{A_L} \tag{22}$$

$$\hat{U}_L \geq A_{Lj} \tag{23}$$

Thus, if Y wants to realize this solution and the payoff, $\hat{U}_Y$, which is higher than U_Y^*, then it will ask G to place L in the j^{th} rank. Due to loss of reputation on G's part, this act of corruption puts G on a level of utility lower than U_G^*, but the payoff is still greater than what G will get when he or she does not alter L's rank but fails to disburse the part, I_N, of the total allotment, S_0 (see constraint *ii)* above). Yet, there is no reason for G to accept such a request by Y. In the absence of any direct threat of harassment (since $D = 0$), G can simply provide only I_N to L and enjoy the level of utility U_G^*, something it gets as part of the fair outcome under full information. However, the following announcement by Y—and the underlying threat—will bring about a dramatic change in conditions:

*"*G *should provide an amount of assistance to* L *equal to* I_j. *If* G *provides any less than* I_j *and* L *accept it, then I will not employ* L.*"*

Unlike the previous case, this is not an "overt" threat to G. The threat announced is only to L. But, Y's strategy does also amount to a "covert" threat to G. This is because of the possibility that L will not accept I_N, as otherwise L will lose his or her employment and get a payoff, A_L, that is less than $\mathring{U}_L$—the payoff under full information with an assistance amount equal to *zero* (see (7) in Section 3.1). But if L does not accept G*'s* offer of assistance in the amount of I_N, then G gets a payoff equal to $R(S_0 - I_N)$, which is not only less than what G could get (U_G^*) as part of the fair outcome, but also less than $\hat{U}_G$ that Y is offering. However, what makes it credible that Y will terminate L's employment? Under the assumption of unlimited surplus labor, Y can always

find a substitute for L and manage a payoff equal to U_Y^*, exactly the amount that he can manage by employing L without government assistance (see (6) in Section 3.1 and the subsequent discussion).

All of this means that the solution, *(ê, α̃, ĵ),* can be realized as part of a *Nash equilibrium* that is *subgame perfect*. This can be formally established with the extensive form representation of the related game in Figure 1. I use the following notations for possible actions by *Y, G,* and *L.*

IN: Y decides to intervene in the assistance-allocation process and proposes *(ê, α̃, ĵ).*

OUT: Y decides to stay out of the assistance-allocation process.

OB: *G* obeys *Y*, i.e., it offers *L* an amount of assistance per *Y*'s recommendation.

DIS: *G* disobeys *Y,* i.e., it adopts the legitimate ranking.

AC: *L* accepts the offer of assistance by *G.*

RE: *L* rejects the offer of assistance by *G.*

B: *Y* buys labor from *L*.

N: *Y* does not buy labor from *L* and employs somebody else instead.

[Insert Figure 1 about here]

The decision tree in Figure 1 retains the sequence of moves by *G, L,* and *Y* that was specified in Section 2. The only difference is that, before any other actions can take place, *Y* now has the choice of staying out of the assistance-provision process or intervening with an offer of *(ê, α̃, ĵ).*[14]

LEMMA 6:

Consider the following strategy profiles, which in this case also represent the respective sequences of actions.

NE 1: (IN, DIS, AC, B)

NE 2: (IN, DIS, AC, N)

NE 3: (IN, DIS, RE, B)

[14] The game tree does not include *L's* acceptance or rejection of *Y's* offer of employment. This would be a trivial extension due to the assumption that *L* is always offered higher than its reservation payoff.

When (20) through (23) hold, all of NE 1, NE 2 and NE 3 represent Nash equilibria (henceforth, NE), but only NE 1 is subgame perfect.

Proof: NE 1, NE 2 and NE 3 are Nash equilibria because in each case none of the parties has an incentive to deviate from their respective strategies. The strategy profile associated with NE 1 is subgame perfect because it is also NE in any proper subgame of the whole game. Under this NE, the payoff profile is the same as what would result if Y chose "*OUT*."

NE 2 is not subgame perfect because in the subgame that ensues after *G* has chosen "*OB*," *Y* is clearly better off choosing *"B."* Hence, "*N*" (or "always *N*," to be precise) is not a credible strategy on the part of *Y.* NE 3 is not subgame perfect because in the subgame that follows from *G* choosing "*OB*," *L* is clearly better off choosing "*AC*." Hence, "*AC*" (or "always *AC*," to be precise) is not a credible strategy on the part of *L.*

Our interest, of course, is with the payoff profile, ($\hat{U}_G, \hat{U}_Y, \hat{U}_L$), and whether it can be realized as part of a subgame-perfect NE. This leads us to the following proposition:

PROPOSITION 5: The following is a subgame-perfect NE, with the corresponding payoff profile ($\hat{U}_G, \hat{U}_Y, \hat{U}_L$).

NE 4:

> Y*: Choose "*IN*" and offer* (ê, α̃, ĵ) *to* L *and* G. *If* G *doesn't set* L*'s rank at* ĵ *and* L *still accepts the assistance amount, then I will not hire* L. *I will hire* L *and buy* e^* *amount of labor if L rejects* G*'s offer when the amount of assistance is different from* $I_{\hat{j}}$.
>
> L*: Choose "*AC*" if G chooses "*OB*" and choose "*RE*" if* G *chooses "*DIS.*"*
>
> G*: Choose "*OB.*"*

Proof: Since given others' strategies no one does better by choosing a different strategy, this strategy profile is indeed an NE. It is subgame-perfect if it is also NE for all possible proper subgames. To determine whether that is the case, one only needs to check that the off-the-equilibrium paths along which the threats in *Y*'s and *L*'s strategies will be carried out are NEs. The punishment path in *Y*'s strategy is: *IN-DIS-AC-N*, which, we already know, is an NE (NE 2 in Lemma 6). So, the underlying threat to *L* in *Y*'s strategy is credible. The

punishment path in *L*'s strategy is: *IN-DIS-RE-B*, which is also an NE (NE 3 in Lemma 6). So, the underlying threat to *G* in *L*'s strategy is credible.

If *Y* adopts and announces its strategy as mentioned above, then *L* knows that the threat is credible. So *L* will adopt and announce its own strategy accordingly. Since *G* knows that *L*'s strategy is credible given that *Y*'s strategy is credible, *G* will choose "*OB*." Hence, once *Y* announces its strategy, the payoff profile ($\hat{U}_G$, $\hat{U}_Y$, $\hat{U}_L$) will be realized, and not (U_G^*, U_Y^*, U_L^*). This way, *Y*'s overt threat to *L* transmits as a covert threat to *G,* and *G* has no option but to choose between greater and smaller losses, in either case becoming a corrupt official without accepting any bribe.[15] *Y,* on the other hand, clearly gains by extracting at least part of the additional, illegitimate amount of assistance provided to *L.*

One relevant question could be whether the loss resulting from a bureaucratic failure will ever be so high as to allow such a strategy on the part of *Y.* The cost can indeed be very high, as in many cases the government would publish data on the amount of money allotted but not utilized. But perhaps more important is the fact that typically *Y* would ask *G* to alter ranks of a number of potential beneficiaries that are *Y*'s employees, as opposed to just one. In many cases the cost of a bureaucratic failure related to, say, 50 potential beneficiaries would be higher than the total loss of reputation associated with small or large changes of rank.[16] One real-life example is discussed in Section 4.1.

4. Examples, Policy Implications, and Possible Extensions

4.1 Examples

The specific context chosen for the model was assistance programs for the rural poor in an LDC. Several studies strongly indicate that implementation of such programs is fraught with abuse of funds, and on many

[15] One could argue, however, that instead of complying with *Y, G* could always decide to report to his or her higher authority that *L* is unwilling to accept the offer of assistance. But, in most cases, this is not likely to be taken seriously by the higher authority. Even if *G*'s supervisor is aware of this possibility, it might be easier to assign the responsibility of failure partly to *G* and partly to the supervisor him- or herself, rather than trying to convince officials higher up who have never been in a similar situation.

[16] This is particularly so because the cost of a bureaucratic failure is expected to be an increasing function. Also, the number of potential beneficiaries, the ranks of which would be altered, might also be determined as part of a subgame-perfect equilibrium. This, however, will not change our conclusion.

occasions this is due to third-party influences such as those illustrated in the preceding section, although other attenuating factors (e.g., bribery or lack of administrative will and intelligence) are in play.

One such program is the Swarnjayanti Gram Swarozgar Yojana in India.[17] In this program, households living below the poverty line, if they meet certain criteria of skill and background, receive government start-up funds to begin an income-generating activity. The findings from the study by Gebert (1989) based on fieldwork in twenty villages of the state of Tamil Nadu are clear evidence that the program's dismal performance has been at least partly due to these factors. The author discusses provision of assistance to members of rural milk societies. The members of these societies mostly receive assistance under the intermediation of the society's president, who is "generally a fairly powerful person in the village, frequently a contractor, a large land holder (usually a rich peasant), and often a ruling party person." This is despite the fact that the program guidelines mandate against relying on a single person for information on potential beneficiaries. She cites specific instances where society presidents use their power and influence to secure assistance for society members. In one such instance a "would-be president appealed directly to the collector during an opening ceremony for a noon meal centre in the village. The collector agreed to sanction fifty milk animal loans immediately. The president then lobbied the collector's office for another fifty loans, and with the help of the block development officer, whom he had helped to stage the successful opening ceremony, got an additional forty-six."

Bandyopadhyay (1988), Dreze (1990), Fenichel and Smith (1990), Hara Gopal and Bala Ramulu (1989), Jha (2000), and Jha (2002) report and discuss poor performance of government assistance programs partly due to misidentification of beneficiaries, which, in some cases, results from the manipulating role of the rural elite. Bandyopadhyay (1988) cites studies by the National Bank for Agriculture and Rural Development (NABARD) confirming that the percentage of ineligible families receiving assistance under the Swarnjayanti Gram Swarozgar Yojana in India varied widely across states, and could be as high as 70 percent in Andhra Pradesh and 47 percent in Gujarat. He also observes: "A man who lives on somebody else's land, cannot really

[17] Before 1999 this was known as the Integrated Rural Development Program. One similar program is the National Rural Employment Guarantee Act.

operate a mini dairy unit or a small poultry or even a spinning wheel without the landowner's permission and cooperation....In such an event, the poor beneficiary might be used as the front man of the landowner and would act as a convenient conduit for benefits to the ineligible category." Dreze (1990) reports extensive misallocation of funds related to government assistance programs for the poor in India and notes that in some states (e.g., Uttar Pradesh) this is largely due to the fact that identification of beneficiaries, in most cases, is done through middlemen rather than by convening village assemblies—contrary to what appears in the guidelines of such schemes. He also reports that such intermediaries almost always receive payments from the beneficiaries. Further, he mentions that an exception in this regard is the state of West Bengal, which, partly as a result, has one of the highest success rates for these programs.[18] Fenichel and Smith (1992) mention third-party influences in the context of an integrated rural development program in Zambia. With this program, the Zambian government attempted to raise rural income by allocating resources to areas that had high agricultural potential. However, the program failed partly because the institutional framework in rural societies did not favor small farmers and in some cases because intermediaries between the rural communities and the government effectively lobbied in favor of large farmers. Domelen (2007) discusses similar possibilities in the context of cash transfer and other forms of poverty alleviation programs undertaken by governments of many countries.

4.2. Policy Implications

One common recommendation for curbing bureaucratic corruption is to increase monetary incentives for public officials (e.g., Acemoglu and Verdier, 2000; Becker and Stigler, 1976; Palmier, 1983; Rose-Ackerman, 1978). In general, this takes the form of an efficiency-wage argument—a wage premium reduces the chances of shirking (bribe-taking in the present context) by increasing the value of the current job relative to other opportunities. Of course, this policy is likely to work for an ill-paid bureaucrat who engages in corruption to feed private self-indulgence. However, when government officials are honest and yet still engage in corrupt

[18] However, he also notes that rather than an anti-poor bias (as in many other states), West Bengal has a bias toward the supporters of the ruling party.

practices, as in the present case, this simple prescription may not work depending on specific conditions. More importantly, since an increase in salary is often associated with expectation of superior bureaucratic performance—and hence greater punishment and/or loss of reputation in the event of failure—such a policy could actually increase the level of corruption. To see the possible outcomes of an increase in bureaucratic compensation under specific conditions, we consider again the three cases of corruption under third party influence from Section 3.

PROPOSITION 6: When corruption results from Y's *influence under asymmetry of information then an increase in bureaucratic compensation will have no effect on bureaucratic corruption.*

Proof: Clearly, in Section 3.3, where corruption results from *Y's* influence under asymmetric information of *L's* true rank, there is no single variable in *Y's* constrained utility maximization problem that could be impacted by an increase in *G's* salary. Hence, the level of bureaucratic corruption will remain unchanged after an increase in *G's* salary.

In Section 3.4, where *Y's* overt threat of harassment causes *G* to deviate from its legitimate path, the second constraint $(D \geq 2\mu(N - k))$ in *Y's* maximization problem is likely to be impacted by an increase in bureaucratic corruption. An increase in *G's* compensation will likely also raise expectation of a superior performance and raise the level of punishment for deviating from the legitimate path. Thus, the value of the parameter μ will increase. In other words:

$\mu = \mu(C); \mu'(C) > 0,$

where *C* is *G's* compensation level.

If the constraint does not bind and if it remains so after an increase in *G's* compensation level then there is no change in the solution. On the other hand, if the constraint is binding, then the outcome will be different, as stated below.

PROPOSITION 7: If the second constraint in Y's *maximization exercise in Section 3.4 is binding then an increase in bureaucratic compensation,* C*, will lower the level of bureaucratic corruption.*

Proof: As μ is present only in this constraint in the whole maximization exercise, we can examine the effect of an increase in *C* on optimum *k* only with this equation.

We have:

$2\mu(N - k)) = D$

Differentiating totally w.r.t *C* and noting that *D* is a constant, we must get a measure of the increase in the optimum rank of *k* following an increase in bureaucratic compensation:

$$\frac{dk}{dC} = \frac{d\mu}{dC}\left(\frac{N-k}{\mu}\right) \tag{24}$$

As $\frac{d\mu}{dC} > 0$, an increase in the value of *C* will raise the optimum value of *k* and bring it closer to the true rank, *N,* implying a decrease in bureaucratic corruption.

We can similarly examine the effects of an increase in *G's* compensation on bureaucratic corruption that results from a covert threat by *Y* to *G* (Section 3.5). Here, in addition to the relationship between μ and *C* (as in the previous case), an increase in *G's* salary will also raise the loss of reputation for a bureaucratic failure to use up the total assistance amount, S_0. Hence, we can write:

$R = R((S_0 - I_N), C);$ $\quad \frac{\partial R}{\partial C} < 0$

Thus, the second constraint, $[R(S_0 - I_N) \leq R_0 - 2\mu(N - j)]$, in *Y's* optimization problem will be impacted by a change in the value of *C*.

PROPOSITION 8: If the second constraint in Y's maximisation exercise in Section 3.5 is binding then an increase in bureaucratic compensation, C, may decrease or increase the level of bureaucratic corruption, depending on if $(\mathrm{N} - \mathrm{j})(\mu'(\mathrm{C})) >$ *or* $<$ $\left|\frac{\partial \mathrm{R}}{\partial \mathrm{C}}\right|$

Proof: Since *R* and μ are present only in this constraint in the whole maximization exercise, an increase in *C* could decrease or even increase the level of bureaucratic corruption. We follow through the steps below.

We have:

$R((S_0 - I_N), C) = R_0 - 2(N - j)\mu(C)$

Differentiating totally w.r.t *C,*

$$\frac{\partial j}{\partial C} = \frac{\partial R}{\partial C}\left(\frac{1}{2\mu(C)}\right) + (N - j)\left(\frac{\mu'(C)}{2\mu(C)}\right) \quad (25)$$

Since $\mu'(C) > 0$ and $\frac{\partial R}{\partial C} < 0$, the first term on the RHS is negative and the second term is positive. Hence,

$\frac{\partial j}{\partial C} >$ or < 0 depending on if $(N - j)(\mu'(C)) >$ or $< |\frac{\partial R}{\partial C}|$.

In other words, an increase in bureaucratic compensation will raise the loss of utility due to bad reputation or punishment for any amount of deviation from the legitimate rank, *N,* but such an increase in compensation will also negatively impact the perceived bureaucratic success associated with any amount of partial disbursement of the total assistance amount for the *N* number of beneficiaries. When the loss of reputation due to the decrease in perceived bureaucratic success is greater than the increase in bad reputation due to the deviation from the legitimate rank, *N,* then the level of bureaucratic corruption will increase, as *Y* is able to achieve an even lower rank for *L* via its covert threat to *G*.

Another recommendation in the literature for curbing bureaucratic corruption is to increase economic and political competition (Klitgaard, 1988; Shleifer and Vishny, 1993, Rose-Ackerman, 1978). If different agencies serving the government are in economic competition with each other, then rent-seeking will be less of an option, and corruption will be reduced down to the minimum. Similarly, in the presence of political competition, the public is likely to remove corrupt bureaucracies through election cycles. The analysis in this paper suggests that increases in political competition are unlikely to have any effect on bureaucratic corruption when this occurs due to third party influence. On the other hand, increases in economic competition might help reduce bureaucratic corruption by limiting concentration of wealth that may be one source of extraordinary power of a private individual or entity. But the more critical issue is about how this can be brought to bear. One way to achieve these goals would be to reduce rates of poverty and inequality; in this case, the state would need to assume an active role in redistributing income through the provision of greater entitlements to the less fortunate and less endowed (Myrdal, 1974; Sen, 1981, 1983). The analysis of this paper suggests that concentration of power and wealth—a typical feature of LDCs—are impediments themselves to providing entitlements and hence to greater economic competition. If the rural poor could be provided with

economic and social entitlements, then there could be a higher level of competition, and adverse influences on legitimate bureaucratic endeavors could be reduced. However, the model demonstrates that the power relations embedded in the prevailing institutional structure are a major barrier to achieving this goal (see Rajan, 2009, for similar problems in the context of changes through election). This of course suggests a vicious circle in effect[19], a characteristic that is consistent with empirical findings by Gupta, Davoodi and Alonso-Terme (2002). While a large part of the theoretical literature suggests that income inequality causes corruption, the regression results of these authors, based on a cross-country panel of data for 1980–1997, indicate that the level of income inequality and poverty in a society may also be partly determined by its level of corruption. They assert that one of the major areas of fallout from such relationships is "poor targeting of social programs."

The present analysis calls for changes in institutional arrangements. As demonstrated by our model, a poor person facing threats of eviction or termination of employment will be more vulnerable than a person who does not face such threats. But this vulnerability will help sustain the power of the local elite and their ability to influence local bureaucratic procedures. It is therefore no surprise that West Bengal, the first state in India to enact laws that secure sharecropper tenancy, has one of the highest rates of success of poverty alleviation programs (see Drez, 1990). West Bengal is also one of the first states in India to implement effective decision-making processes on important local issues through village assemblies on a large-scale basis.[20] Thus, the prescription is not only for greater decentralization of fiscal responsibility and decision-making within the government, but also for greater law enforcement to increase the security of socially vulnerable groups, new legislation to improve transparency of bureaucratic functions, and greater participation of people in important governmental proceedings.[21]

[19] Somewhat similar ideas are found in Mauro (2004) and Mishra (2006), where corruption persists because it is so widespread that agents lack incentives to change underlying conditions or because it becomes a social norm. However, in this paper the emphasis is on adverse power relations that are part of the prevailing institutional framework.

[20] However, there are significant challenges even in this state. See Ghatak and Ghatak (2002) for areas that are still lacking and recommendations for improvements.

[21] This is in line with the general developmental policies recommended by the World Bank (2001) and Ghatak and Ghatak (2002).

4.3 Possible Extensions

While the three cases of corruption presented in Section 3 demonstrated the process by which an amount of service greater than the legitimate amount is provided to the client, straightforward extensions can show some other realistic possibilities. One possibility is where a "man of influence," acting as an intermediary between a government official and its client, will allow disbursal of the legitimate amount of assistance, but extract part of the amount directly from the official. As long as the transaction between the intermediary and the official remains hidden, the latter does not suffer a loss of reputation, but does engage in corruption, while still not receiving any bribe. The client, in this case, receives a smaller amount of service than he or she deserves, yet accepts it because of fear of a greater loss from the termination of its relationship with the "man of influence." This, again, could emerge under the circumstance of either an overt or covert threat to the official by the "man of influence."

It is easy to see how this model can be extended to incorporate bureaucrats who care about their reputation for honesty but also derives positive utility from bribes. If we assume that a bureaucrat's preferences are subject to substitutability between bribe and reputation then a third party—or even the client itself—could influence decisions taken by the bureaucrat by using a bribe to partly compensate for any loss of reputation. This would explain the incidence of corruption in more realistic terms. In our model, if a bureaucrat is concerned only about reputation, then the second constraint as presented in the last two maximization problems in the preceding section may not be satisfied. However, if an illegal payment partly compensates for the loss of reputation, then solutions could exist for these problems. Of course, the crucial implication is that there is an infinite number of realistic possibilities where bureaucrats are partly honest and what appears to be corruption by dishonest agents is only partly so.

5. Conclusion

This paper takes the view of bureaucratic corruption as a social phenomenon and poses the problem outside of a context where dishonest bureaucrats pursue corrupt activities under imperfect monitoring. The key

contribution of this paper is addressing the question if an honest bureaucrat could be corruptible, and if so, how this could be explained with third party influences in the context of *triadic* relationships. The specific real world context chosen was poverty alleviation programs in less developed countries where poor targeting is a persistent problem. It demonstrates that an honest bureaucrat could provide an illegitimate amount of funds or other services to a client purely from considerations of self-interest, and yet such considerations would consist only in pursuing an option less harmful—and not more beneficial—to the bureaucrat itself. This situation may arise under a number of plausible conditions, including an asymmetry of information about the eligibility of the client for receiving assistance (in line with the work by Esteban and Ray, 2006), an overt threat of reputational or other damage from an influential party, or even a covert threat of reputational damage or action causing the failure of the bureaucrat's mission. The incidence of corruption is therefore part of a broader institutional framework where the milieu of power relations has a significant role.

The important policy implication is that provision of simple monetary incentives to government officials from an efficiency-wage standpoint is not an obvious solution, and there could be even quite negative effects to this policy. An honest government official with greater compensation and more assumed responsibility, when brought under the threat of failure, could allow even greater misallocation of resources. While policies aimed at increasing economic competition might be the right direction to take, this paper additionally recommends initiatives toward greater law enforcement in private spheres, more transparency of bureaucratic decision-making processes, and greater public participation in important governmental procedures.

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Figure to be inserted in the text

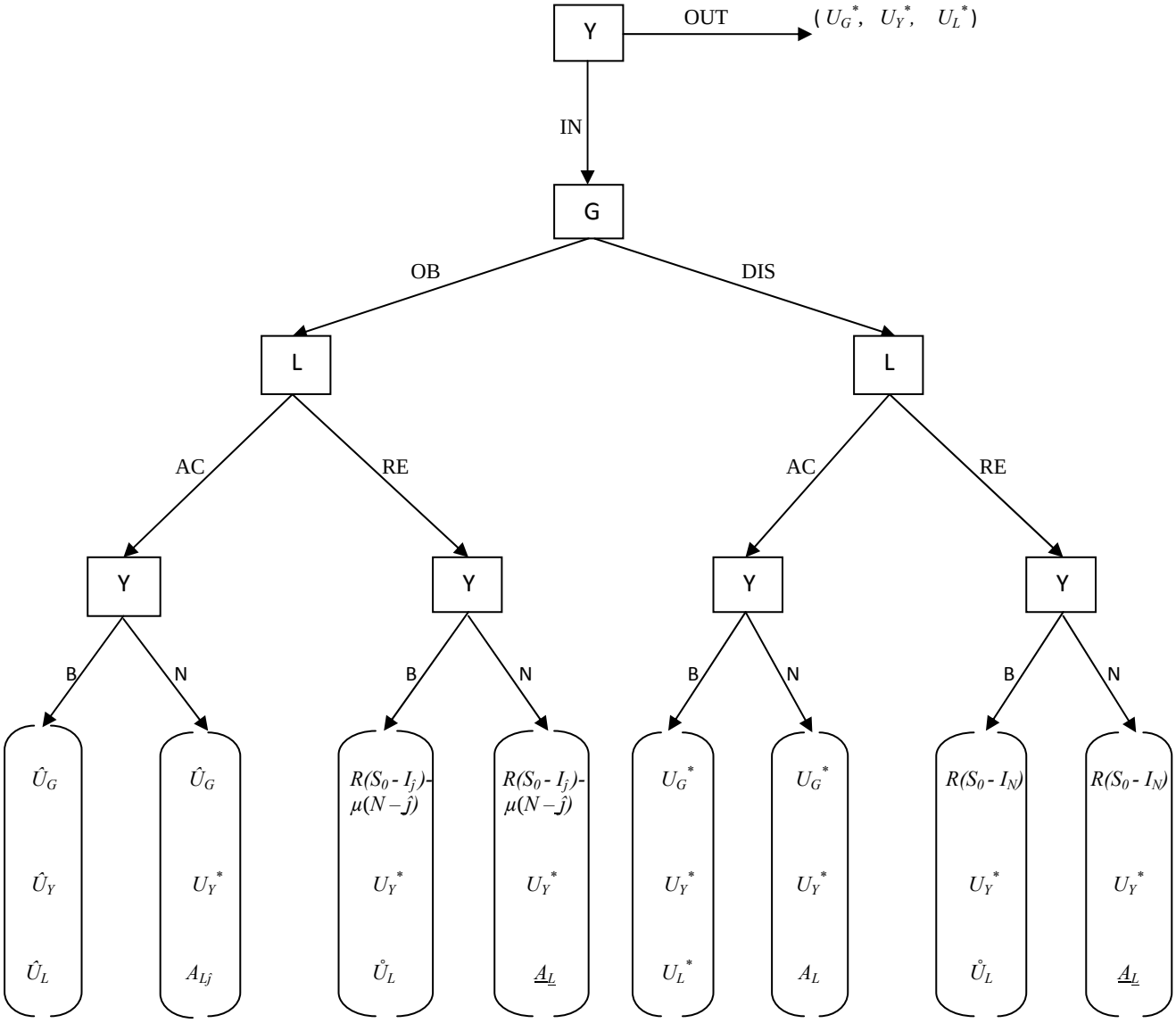

Figure 1: Extensive form representation