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The Behavior of the Delivery
Agency in a Donor – Delivery
Agency – Recipient Organization**

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Pocketing and Deceiving: The Behavior of the Delivery Agency in a Donor-Delivery Agency-Recipient Organization*

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Abstract

This paper presents a simple model to analyze the corrupt behavior of the delivery agency in a donor-delivery agency-recipient organization. Corrupt behavior of the delivery agency can take two forms: (i) “pocketing” or where the delivery agency distributes only a portion of the relief fund to the recipient and keeps the remaining fund to itself, and (ii) “deceiving”, where the delivery agency provides false information to the donor regarding the need of the recipient. We show that both forms of behavior can emerge as equilibrium outcomes in this type of organization. We identify factors that influence such corrupt behaviors and draw some policy implications.

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1. Introduction

When a disaster strikes a particular region, many international organizations come forward to help, and often ask local non-governmental organizations (NGOs) or local government agencies to deliver their relief funds to those people who have suffered losses from the disaster. Due to asymmetric information of gathering the real needs and resources of the intended recipients of the relief funds, local NGOs or local government agencies are able to manipulate the information for their own use, and in the process, corruption tends to occur. As a consequence, the objectives of these funds cannot be achieved properly.

International aid plays important roles in reducing poverty, improving geographical equality, and promoting economic development. In particular, they play vital roles for countries and regions that have suffered natural disasters. However, many observers have criticized the low effectiveness of such international aid. Some empirical evidence now exists showing that transfers and/or aids may not reflect the real need of recipients. Alesina and Weder (2002) examine whether less corrupt governments are rewarded with more international aid funds, but they find instead that more corrupt countries actually receive more international aid. Burnside and Dollar (2000) and Collier and Dollar (1998) report that international aid is uncorrelated with the recipient country's poverty incidence. Findings by various other researchers show that very often government institutions either intercept portions of international aid and intergovernmental transfers, or use these funds for wasteful public consumption (Boone 1994, 1996).

Clearly, understanding the behavior of the delivery agencies is important to improve the effectiveness of international aid. As argued by Burnside and Dollar (2000),

international aid has no positive effect on economic growth in the presence of poor policies. As we pointed out earlier, in many settings involving international assistance, a local NGO or a local government agency is often asked by a federal government, or an international agency, or a charitable organization to distribute a certain amount of funds to individuals who are in need of such funds. These are timely issues given the incidence of natural disaster in recent times such as the devastation caused by hurricanes Katrina and Rita in the U.S., and the tsunami in Southeast Asia, or the earthquake in Pakistan and surrounding countries. The institutional setup in such settings seems to have the structure in which *a donor*, often an international agency such as the Red Cross, CARE, has a certain amount of relief funds to be distributed to *a recipient* (individuals who have suffered a loss and are in need of such funds), through *a delivery agency* (a local NGO or a local government agency). Given this institutional setup, the main objective of this paper is to develop a theoretical model to help us understand and analyze the behavior of the delivery agency in this type of donor-delivery agency-recipient institutional setup. In particular, we focus on the potential corrupt behavior of the delivery agency. To understand its behavior, we first note that the delivery agency plays a dual role. First, the donor relies to some extent on the delivery agency to obtain information regarding the needs of the recipient; second, the donor relies to a large extent on the delivery agency to distribute the relief funds to the recipient. This intermediary role is mainly due to the lack of direct communication channels between the donor and the recipient or the very high cost of establishing a direct communication channel between the donor and the recipient. Because of this potential dual role played by the delivery agency, the corrupt behavior can take two forms: “*deceiving*”, in which, the delivery agency provides false

information to the donor regarding the need of the recipient, and “*pocketing*”, where the delivery agency distributes only a portion of the relief fund to the recipient and keeps the remainder for itself.

In the simple theoretical model developed in this paper, we show that the two forms of corrupt behaviors, deceiving and pocketing, can emerge as equilibrium outcomes in this relationship between donor, delivery agency and recipient.¹ We also identify factors that influence the corrupt behavior of the delivery agency and draw some policy implications.

The rest of the paper is organized as follows. Section 2 presents our model. In Section 3, we analyze the behavior of the players involved and present our main results. Section 4 discusses and interprets our results. Some concluding remarks are contained in Section 5.

2. The Model

The organization consists of three players: the donor (D), the delivery agency (DA), and the recipient (R). We assume that the recipient has suffered a *unit* loss from a natural disaster. The donor has a certain amount in a relief fund to be sent to the recipient through the delivery agency. As we indicated above, we assume that, due to the lack of a direct communication channel or the high costs of communication between the donor and recipient, the donor needs to go through the delivery agency to reach the recipient. It is assumed that the fund is sufficient to cover the loss. To focus on the problem at hand, we

¹ Economists have used different approaches to modeling corruption. In terms of the useful categorization of corruption theoretical models developed by Jain (2001), our approach sits somewhere between the agency model of corruption (e.g. Becker & Stigler 1974, Klitgaard 1991) and the resource allocation model, which builds on game theory and oligopolistic competition analyses to explain competitive rent-seeking behavior (e.g. Paul and Wilhite 1994).

assume that the recipient derives utility from the funds received from the delivery agency minus any cost associated with activities relating to receiving the funds. These activities are elaborated more precisely below. The utility function for the recipient is denoted by U , which is assumed to be strictly increasing in its argument. The utility function for the delivery agency is denoted by V , which depends on its income and is assumed to be also strictly increasing. The donor derives “utility” from accurately and correctly distributing the relief fund to the recipient through the delivery agency. This will be made precise when we write down the donor’s objective function later.

There is a probability π that a natural disaster with the unit loss on the recipient part occurs, where $0 < \pi < 1$. The donor relies partially on the delivery agency to obtain the information regarding the occurrence of the natural disaster in the following manner. The delivery agency observes whether a natural disaster has stricken the recipient and writes a report to the donor. The report simply states whether or not a natural disaster occurred. For simplicity, it is assumed that the delivery agency incurs no cost with this activity.² Upon receiving the report, the donor may decide to verify the content of the report. The truthfulness of the report can always be verified at a cost $c > 0$, which is assumed to be exogenously given and is known to all the players in the model. If the report is verified as truthful, the donor bears the cost. However, if the report is proven to be false, then the donor has the ability of making the delivery agency to pay the cost. If the donor decides not to verify the content of the report, then the donor takes a corresponding action depending on the content of the report: if the report states the occurrence of a natural

² It is assumed that the existence of the delivery agency is due to other reasons outside the donor-delivery agency-recipient relationship and the opportunity cost of the delivery agency is zero. This is a reasonable assumption upon reflection of what actually happens in many situations involving donors, delivery agencies and recipients.

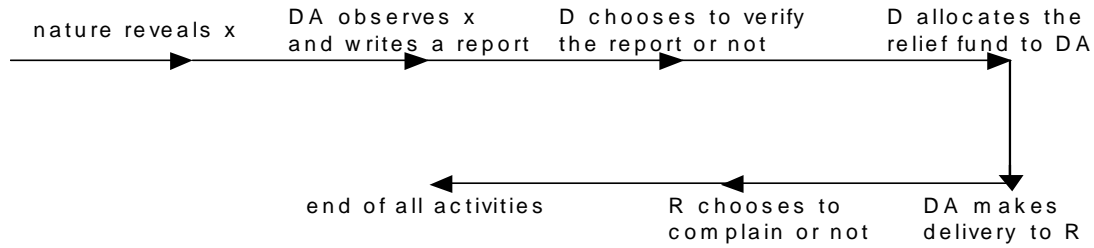
disaster, the donor will ask the delivery agency to distribute the relief fund; if, on the other hand, the report states that there was no natural disaster, then the donor will not allocate any funds to the recipient through the delivery agency. Apart from writing the report to the donor, the delivery agency also makes the delivery of the relief fund to the recipient upon the request of the donor. In the process of delivery, the delivery agency may pocket a certain amount of funds from the available relief funds for itself.

The recipient, upon receiving the funds delivered by the delivery agency, may choose to go directly to the donor to complain that the delivery agency did not deliver all the available funds set aside by the donor and pocketed a certain amount of the available funds in the process. To make such complaints, the recipient incurs a cost s , where s is such that $0 < s \leq 1$. When the recipient makes a complaint, the donor will conduct an investigation. The investigation will always uncover whether the delivery agency has pocketed some funds for its own benefit in the process of delivery. The cost of conducting the investigation is m , where $0 < m \leq 1$, which is exogenously given. Again, we assume that the delivery agency will have to pay the investigation cost if the complaint by the recipient is true; however, the recipient will have to pay the investigation costs if the reverse is the case. If, on the other hand, the recipient chooses not to complain about the amount of fund received from the delivery agency, then the game is over. It is assumed that, when the recipient makes a complaint that is confirmed by the investigation conducted by the donor, the recipient will receive the exact amount it should have received to start with and that the donor will cover directly any loss.

As we mentioned earlier, the donor's only objective is to distribute the relief fund to the recipient as accurately and correctly as possible. For this purpose, in this paper, we

assume that the donor's payoff is given by the amount of the relief fund received by the recipient minus the total spending by the donor.

The following diagram depicts the time sequence of the events, where x signifies the state of the world: occurrence of the natural disaster or no natural disaster.



3. Equilibrium Analysis

In this Section, we analyze the equilibrium outcome of the model introduced in Section 2. Given the nature of our problem, we shall analyze the behaviors of the recipient, the delivery agency and the donor in a sequel.

The recipient's behavior. We first note that, if there is no natural disaster, then the recipient will never make any complain for not receiving any relief fund from the delivery agency since, by making such a complaint, the recipient will only incur a cost $s > 0$ and no fund will be delivered to the recipient after the investigation by the donor. In the event of the occurrence of a natural disaster, upon receiving a certain amount of relief fund, say Z , delivered by the delivery agency, the recipient will not make a complaint if and only if $Z \geq I-s$. This is because, if Z falls below $I-s$, by making a complaint against the delivery agency, after conducting the investigation by the donor, the recipient will

always get the relief fund in the amount of I . Given that the cost of making a complaint for the recipient is s , the recipient can therefore be guaranteed to have $I-s$ as the net income by making a complaint. *In summary, we have shown that, if there is no natural disaster, then the recipient will never make a complaint against the delivery agency, and if there is a natural disaster, the recipient will not make a complaint against the delivery agency if and only if $Z \geq I-s$.*

The delivery agency's decision on Z , the amount to be delivered to the recipient.

If there is no natural disaster, knowing that the recipient will never make a complaint, the optimal choice of Z for the delivery agency is clearly 0 . In case there is a natural disaster and there is fund to be delivered to the recipient, if $Z < I-s$, the recipient will make a complaint, and as a consequence, the investigation by the donor will reveal that the delivery agency has pocketed for its own. Then, the delivery agency will have to pay the cost of the investigation, $c \geq 0$, and the relief fund will be distributed directly to the recipient. Therefore, the delivery agency will not choose Z with $Z < I-s$. In other words, the optimal choice of Z for the delivery agency is $I-s$. *To sum, the optimal Z for the delivery agency is 0 if there is no natural disaster and is $I-s$ if there is a natural disaster.*

The donor's choice: to verify the report by the delivery agency or not. Let p be the probability that the donor chooses to verify the report by the delivery agency if the report asserts the occurrence of a natural disaster, and q be the probability that the donor chooses to verify the report by the delivery agency if the report states no occurrence of a natural disaster. Note that, if the donor chooses to verify the content of the report, the delivery agency pays the cost associated with the verification if the content of the report is shown false and the donor pays the cost of the verification if the content of the report is

shown true. Note further that, if the natural disaster occurred, it is always optimal for the delivery agency to state the occurrence of the natural disaster in its report since, otherwise, the recipient will make a complaint, which prompts the investigation by the donor, and the delivery agency will bear the investigative cost. It is then clear that, if the report states no occurrence of a natural disaster, there is indeed no natural disaster happened in the first place. As a consequence, the optimal choice of q for the donor is 0: it is optimal for the donor not to verify the content of the report if the report asserts no natural disaster occurred. Therefore, based on the above and our previous analysis of the behaviors of the delivery agency and the recipient, the donor's expected payoff is given by the following:

$$\pi[p((1-s-(1+c))) + (1-p)(1-s-1)] + (1-\pi)[p(0-0) + (1-p)(0-1)] = (1-\pi-\pi c)p + 1-\pi-\pi s$$

The donor, therefore, chooses p to maximize the above payoff. Obviously, the optimal p is given as follows:

$$p = 1 \text{ if } 1-\pi-\pi c > 0, p = 0 \text{ if } 1-\pi-\pi c < 0, \text{ and } p \in [0,1] \text{ if } 1-\pi-\pi c = 0.$$

To summarize, it is optimal for the donor not to verify the content of the report if the report states no occurrence of a natural disaster or if the report asserts the occurrence of a natural disaster and $1-\pi-\pi c < 0$; and it is optimal for the donor to verify the content of the report if the report asserts the occurrence of a natural disaster and if $1-\pi-\pi c \geq 0$.

The delivery agency's choice of the content of the report. As already discussed above, it is optimal for the delivery agency to report the occurrence of the natural disaster if a natural disaster indeed happened. It is also optimal for the delivery agency to report the occurrence of the natural disaster even though no natural disaster occurred if $1-\pi-\pi c <$

0, since the donor optimally chooses not to verify the content of the report in this case. Therefore, it is optimal for the delivery agency to report no occurrence of the natural disaster if and only if $1-\pi-\pi c \geq 0$.

The main finding of the paper is summarized in the following proposition.

Proposition:

- (1) Suppose the natural disaster occurred. Then, the delivery agency always states the occurrence of the natural disaster in its report to the donor; the donor verifies the content of the report if $1-\pi-\pi c \geq 0$ and does not verify the content of the report if $1-\pi-\pi c < 0$, and the donor allocates 1 unit of the relief fund; the delivery agency delivers the relief fund in the amount of $1-s$ to the recipient and diverts s to itself; the recipient receives $1-s$ from the delivery agency and chooses not to complain. The donor's spending is $1+c$ if $1-\pi-\pi c \geq 0$ and 1 if $1-\pi-\pi c < 0$, the delivery agency pockets s amounts of the relief fund, and the recipient gets $1-s$.
- (2) Suppose there was no natural disaster. Then,
 - (2.1) if $1-\pi-\pi c < 0$, then the delivery agency asserts the occurrence of the natural disaster; the donor chooses not to verify the content of the report and allocates the relief fund in the amount of 1; the delivery agency pockets the entire allocated relief fund; the recipient receives nothing from the delivery agency and does not make any complaint. The donor's spending is 1, the delivery agency gets 1, and the recipient gets 0.
 - (2.2) if $1-\pi-\pi c \geq 0$, the delivery agency states non-occurrence of the natural disaster; the donor does not verify the content of the report and makes no allocation of the relief fund; the delivery agency and the recipient gets

nothing, and the recipient does not complain. The donor's spending is 0, both the delivery agency and the recipient get 0.

4. Discussions and Interpretation

Our proposition suggests that, in the occurrence of the natural disaster, though the delivery agency is honest in its report, it does not distribute the allocated relief fund entirely to the recipient and always pockets s , the amount indicating the cost to the recipient of making a complaint to the donor directly. Note that s may reflect the degree of difficulty to establish a communication channel between the donor and the recipient. The higher the s , the more difficult it is to establish a communication channel between the donor and the recipient. Several factors may influence the difficulty of having a communication channel between the donor and the recipient, and thus s . For example, if the recipient resides in a remote region, then it is likely that s is high. Similarly, if it is not easy to access the recipient due to various bureaucratic rules, s again is likely high; a country with a non-transparent political and economic system may have a high s as well. "Pocketing" may be regarded as a type of corrupt phenomenon. To reduce this form of the corruption on the delivery agency part, it is vitally important to reduce the cost of making complaints by the recipient against the delivery agency. This may be accomplished in various ways depending on what factors influence the establishment of a (direct) communication channel between the donor and the recipient. One way may be simplifying who is the recipient. If there are several layers of groups of people or institutions, to be the recipients, it will be more costly for them to get organized. Redesigning the aid package so to provide funds for recipients to communicate more easily with the donor would seem to be a good use of donor funds to prevent corruption

from “pocketing”. We also note that, according to our proposition, the delivery agency may not be honest in writing its report to the donor. Though it is always honest in reporting the occurrence of the natural disaster, depending on the parameters π and c , the delivery agency may falsely write a report asserting the occurrence of a natural disaster even though no natural disaster occurred in the first place. This deceit behavior happens if $1-\pi-\pi c < 0$, or $1-\pi < \pi c$. This is because, in this case, the donor chooses not to verify the content of the report: the expected benefit for the donor, which is given by $1-\pi$, falls short to cover the expected loss to the donor, which is given by πc , from verifying the report. It may be argued that this deceiving behavior of writing a false report to the donor is a form of corruption. In our framework, a possible way of reducing this form of corrupt behavior is to reduce the cost of verification, c . There are various factors that may have an impact on the cost of verification. For example, a transparent political and economic system may have a low c , so is a system that can be more easily accessible in space, culture and so on. For this reason, donors may be expected to have a greater tendency to get involved with disaster relief and other forms of aid that are closer to home, or less costly to verify. Donors should also try to rely on disaster reports that are not issued by the agency that would have been put in charge of implementing the disaster relief.

It is interesting to note that the cost associated with the investigation conducted by the donor upon the complaint by the recipient does not play any role in the equilibrium outcome. This is because, the very threat of conducting the investigation by the donor if there is any complaint from the recipient induces the delivery agency to distribute the relief fund in such a way that the recipient has no incentive to make any complaint.

We assume that, if the donor chooses to verify the content of the report, with the cost of c then, the donor can always find out the truth. One may argue that this is a strong assumption. Instead of this assumption, one may assume that there is a positive probability, which may not be 1, that the donor will find the truth of the report if the donor chooses to verify the content of the report. With this imperfect verification, it is not difficult to see that our model suggests the delivery agency will be more likely to report the occurrence of the natural disaster than with perfect verification. In other words, imperfect verification will exacerbate the deceiving behavior of the delivery agency.

Our model also assume “perfect investigation” in the sense that, if the recipient makes a complaint about the delivery agency, with a cost m , the donor can always find out whether or not the complaint is true. Again, one may argue that this is a strong assumption and that one should consider an imperfect investigation in the sense that, when a complaint is made, with a cost m , the donor may not always find the truth, but with a positive probability the truth of the complaint will be discovered by the donor. With such an imperfect investigation scheme, it can be checked that the delivery agency will pocket more of the relief fund since there is now a probability that the donor may not be able to discover the truth of the complaint by the recipient. It is therefore clear that the imperfect verification will exacerbate the pocketing behavior of the delivery agency.

5. Concluding Remarks

In this paper, we have presented a simple model to analyze two forms of corrupt behavior by the delivery agency in a donor-delivery agency-recipient organization. The two forms of corrupt behavior that we analyzed are the “pocketing” behavior by the

delivery agency at the expense of the recipient, and the “deceiving” behavior by the delivery agency at the expense of the donor. One factor influencing the pocketing behavior is the degree of difficulty establishing a communication channel between the donor and the recipient. As we argued in the last section, to reduce the “pocketing” behavior of the delivery agency, it is important to have a communication channel between the donor and the recipient. In our analysis, one important factor influencing the “deceiving” behavior is the cost associated with the verification of the report. This cost may depend on several things including the transparency of the political and economic system and the accessibility of the system.

Our main results are in accord with the traditional wisdom that transparency can help decrease corrupt behavior. In a transparent environment, for example, an environment with free press, both the verification cost and the cost associated with complaints are arguably low. With lower verification costs, the delivery agency is less likely to report falsely thus reducing its “deceiving” behavior. Similarly, with lower complaint costs, the delivery agency distributes more to the recipient thus reducing the “pocketing” behavior of the intermediary agency.

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