Provider Incentives and Delivery of Developmental Goods*

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ABSTRACT

Key Words: Incentives, Communication, Provider, Developmental Goods.
JEL Classification Number:
May 2010.

*We are grateful to Kaushik Basu, James Copestake, Maitreesh Ghatak and seminar particpants at Bath for comments and suggestions.

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1 Introduction

Developmental efforts involve not just generation of adequate resources for the poor but also effective delivery. In this paper, we look at issues related to the provisioning of developmental goods identified by two distinctive features- non-commercial intent and reliance on non-price allocation mechanisms. Examples of these are transfer of aid, loans and grants, modern technology, technological know-how etc. to the poor. We adopt a donor-provider-agents framework where the donor make the resources available for the provider to deliver to the agents (recipients). Hence it is the provider who interacts with the agents.[1] Our objective in this paper is to analyze the role of the provider's incentives in such a delivery system.

Various aspects of the delivery system have come under scrutiny in recent times. A key recurring theme is the need to incentivise the providers has been emphasized in the literature. In the context of foreign aid, it has been pointed out that the providers (aid intermediaries) may not have the right kind of incentives to see that aid is spent effectively. Easterly and Pfutze (2008) note that " An ideal aid agency must find answers to the problem of zero feedback and *unclear objectives*". In the context of microfinance, great deal of attention has been paid to the issue of incentives for the loan officers to achieve the organizational goals of the Microfinance Institutions (MFI). Similar issues arise in the context of government bureaucracy too.[2]

We look at the communication and information flows between the various layers of the delivery system.[3] An excellent example of a aid project failing

[1] This framework is certainly not unique to the development context, it is used to study many other domestic programme like the provisioning of health services, education and many other public goods.

[2] See Dixit (2002), Tirole (1994), and Wilson (1989) amongst others for the analysis of agency and incentives within government organiations. Maertens et al (2002) contains an excellent collection of articles on various aspects of agency relations within the aid conext. Armandariz and Murdoch (2004) reviews some of the incentive and agency issues.

[3] Information and communication are, of course, important in any organization. Generally, the economics literature emphasizes either the incentives or the communication aspects in the organization but does not look at both. See Mookherjee (2007) for a dis-

completely due to poor information flow is the aid project in mountainous region of Lesotho (Easterly (2003)). To help farmers in the mountainous region get better returns on their produce, the project conceived of building roads to link the region. But the main effect of this was to allow grains into the region and drive the farmers out of business as agriculture was not inherently conducive to the mountainous region. Similar examples can be found in the context of microfinance too. A major crisis broke out in March 2006 when around 50 MFI branches in Andhra Pradesh (a State in India) were closed by the Government because of complaints against practices of these organizations. Some authors, while analyzing this incident, commented on how indiscriminate lending was 'making a debt trap' for the poor. [4] It is conceivable that several individuals who (ex ante) had very small chance of repaying the loans also entered into debt contracts. In more general contexts, the recent literature on participatory development can also be viewed as attempts to adopt development practices where there is better information flow (about local preferences) between the recipients and the providers.[5] The objective of the paper is to argue that in certain cases adoption of high-powered incentives can lead to communication failures and hence would be counter-productive.

We focus on a class of transfers where realization of the benefits is skill sensitive. This could simply be a loan for a small project where the success depends on the entrepreneurial skills of the agent receiving the loan. Be it social banking or microlending, the objective of these transfers is to enable the poor and unemployed get better access to funds for entrepreneurial initiatives (add ref.). It is important that recipients of these loans or benefits should possess some skills. The scheme may not achieve the desired

cussion of some of the issues in the context of organizational design.

[4] See Shylendra (2006), Kumar (2006) on detailed account and analysis of this incident. there is a related litearture on mission drift which looks at problems associated with MFI's objective of outreach and profiatbility. See Copestake (2007).

[5] See Platteau

objective if loans are distributed randomly. Similar issues arise in the case of technology transfers like the use of High Yielding Varieties (HYV) seeds. The HYVs are certainly more productive but they are also more sensitive to know-how and resource base of the recipient farmers. In all these cases the objective is to transfer resources or technologies to agents with certain minimum level of skills. If the agent's skill level (or other relevant attribute) is not commonly observed, it can lead to informational problems. The severity of the problem can be gauged by the fact that even though some types of agents are likely to worse off than their present status, they end up receiving these transfers.

Suppose a farmer is currently earning some fixed deterministic income using traditional technology and considering adoption of modern technilogy with stochastic outcomes. Note that in any such modernization process it is not possible to rule out lower income ex-post. But adoption of the modern technology dominates the current practice in an expected sense. Are there situations where agents with lower expected income can also switch to the modern technology? For rational farmers this can happen only if they do not have full information about the probable outcomes associated with the modern technology. The question is how to provide them with this information. In our example, such information can be provided by the provider. Following the tradition of strategic information transmission we model the information transmission from the provider to the agent as a cheap talk game. It turns out that while providers can successfully communicate to the relevant agents in the absence of any incentives, the communication process breaks down in the presence of high powered incentives for the providers. For a large class of incentive schemes, the provider's announcement regarding the non suitability of the transfer for certain types (low success probability of modern technology) is non-credible. Hence even though the relevant information is available, the agents do not benefit from it and we can get highly inefficient

outcomes.[6]

Suppose the provider needs to incur some cost to acquire the relevant information before it can communicate. Let us assume that this cost is non-verifiable and hence can not be contracted. In that case, we have a catch 22 type situation. It is possible that we need to have some incentive system induce the provider to acquire information but by the creation of this incentive we render the process of communication ineffective. The situation is better when we have some motivated providers who would acquire and communicate this agent relevant information. These motivated providers are driven by the mission to help the disadvantaged (low skilled in our context) and derive some private benefit from doing so. However, we also have non-motivated or typical providers and they respond only to pecuniary incentives. The agents have no way of knowing whether they face a motivated or a typical provider. In the absence of any high-powered incentives, the presence of these typical providers do not affect communication between motivated providers and the agents, but with the introduction of incentives communication breaks down due to the presence of the typical providers. Hence, in presence of incentives, the motivated providers are of little help.[7]

Our paper is related to several strands in the literature and we draw on many of these sources. The role and significance of various types of motivations has received attention by several economists recently. Besley and Ghatak (2005) point out that it might be cheaper to address the moral hazard problem of inducing effort by careful matching of motivated agents than the use of high powered incentives. In our case, reliance on motivated agents can turn out to be the only way of solving the issue of information acquisi-

[6] This outcome has the flavour of the widely known phenomenon called the 'Dutch Disease' where countries become worse off due to certain kinds of transfers. In our case, agents are worse off in an expected sense.

[7] This result has the flavor of the earlier crowding out literature. In the market context introduction of market mechanism eliminates non-market informal mechanims (Stiglitz). In individual context, pecuniary incentives may corwd out non-pecuniary incentives (Titmuss 1970)

tion and communication. The point that introduction of incentives can be counter-productive is not new. A common source of this is the demanding informational requirements that the designer faces. But a recent literature shows that even when incentives are appropriately designed, we are not sure of efficient outcomes because these extrinsic motivations might lead to crowding out of intrinsic motivations.[8] In several Principal-Agent experimental settings, it has been noted that stronger incentives and control induce weaker performances by the agent. Benabou and Tirole (2006) and Ellingsen and Johannesson (2008) show that when agents care for esteem, material incentives may undermine esteem incentives In our case, stronger material incentives do not crowd out motivational incentives of these providers, but material incentives enable the non-motivated providers to add noise to the communication process.

Signalling plays a key methodological role in several of these models of motivations. Individuals have private information regarding own characteristics and individuals try to signal these through generosity, superior performances or esteem enhancing acts.[9] Ours is also a signalling exercise by the provider but it is costless. In that sense it is closer to the literature on strategic information transmission and cheap talk (Austen-Smith (1994), Crawford and Sobel (1992), Krishna and Morgan (2001), Farrell (1995)). It is well known that divergence of interests between the sender (provider) and receiver (recipient) can lead to communication failure. Our paper uses this intuition in a simple setting but with the added features that the sender has to acquire information before communicating and that the nature of

[8] See Benabou and Tirole (2003, 2006), Sliwka (2007), Gneezy and Rustichini (2002), Ellingsen and Johannesson (2008) among others.

[9] It is not the case that only agents engage in signalling. There are cases where the principal also signals (through its choice of control, trust, incentive provision) about the private information held by the principal. In Slikwa (2007), the principal chooses the level of control over the agents to signal about the average level of trustworthy fair agents in the population. In Ellingsen and Johannesson (2008), the principal signals its altruistic characteristics.

incentive schemes for the provider has the potential to affect the degree of divergence in interests.

Lastly, we do not attempt to make any general claim about the usefulness or otherwise of incentive schemes. Ours is an extremely stylized model with two sided asymmetric information, which we elaborate on in the text.[10] It is known that in such settings it is difficult to sustain efficient outcomes no matter what incentive structure or mechanism one uses. But we have introduced the possibility of communication and we show that some efficient outcomes can be achieved in the presence of motivated providers. The interplay of incentives and communication failure is the novel feature of our analysis.

2 The Model

Consider a simple variant of the standard principal-agent framework. There is a donor who provides a fixed amount (M) of finance to the provider. The available finance is to be used to fund several projects to be undertaken by the ultimate recipients (called agents). Each project costs an amount T, hence a maximum of $\frac{M}{T}$ projects can be financed. Besides making finance available, the donor also chooses the compensation scheme for the provider. Beyond that, the donor has no strategic role and most of the paper is about the interaction between the provider and the agent. The funding need not only be cash trasfers, it could be transfer of technology of production too. We discuss the details of this transfer technology, payoffs, and strategies of the provider and agents below.

[10] The provider does not know the skill level of the reciepients and the recipients do not have full knowledge about their success probabilities which the provider does.

2.1 Agents

We assume that there are two types of agents − high skill (h) and low skill (l). Each agent can supply L units of labor in an inelastic manner. Agents are assumed to be risk neutral. Transfer T enables the agents to pursue a project. The probability of success for the high type agent is given by $p_h > 0$. For the low skill agents, on the other hand, the success probability depends on several other factors- which we summarize as the state of nature θ.There are only two possible states $\theta \in \{G, B\}$. The common prior probability of $\theta = G$ is given by μ.The success probabilities of the low skill agent are given by p_{lG} and Ip_{lB} with $p_h > p_{lG} > p_{lB} > 0$. Agents do not know the realization of the true state.

In the absence of the project (which can be interpreted as subsistence sector using traditional technology) output does not depend on the skill type and it is given by

$$X_i = \alpha L \qquad i = h, l \tag{1}$$

where $\alpha > 0$ and L is the labor input into the production process. Undertaking the project leads to output 0 in the failure state and Y_i in case of success. Output in the successful state and expected outputs for both types are given by

$$Y_i = \beta L \ , \ E(Y_h) = p_h \beta L, E(Y_l \mid \theta = G) = p_{lG}\beta L, E(Y_l \mid \theta = B) = p_{lB}\beta L \tag{2}$$

where $\beta > \alpha$. We assume that $p_h\beta >> \alpha$, $p_{lG}\beta > \alpha > p_{lB}\beta$. When $\theta = G$, both types are better off (in an expected sense) by undertaking the project but the $h - type$ is more likely to succeed. When $\theta = B$ the low skill type is better off not undertaking the project. We consider the case where the prior μ is such that the low types will choose to undertake the project,

$$\{\mu p_{lG} + (1-\mu)p_{lB}\}\beta > \alpha \tag{3}$$

Finally the total population is denoted by $N = n_h + n_l$ and the fraction of $h - type$ in the population by λ.

2.2 Provider

The provider can not idenitfy the different skill types but can observe θ only after putting costly effort e. To begin with we consider a typical provider whose payoff is given by $U = Z - d(e)$,where Z is monetary compensation, $d(e)$ is disutitlity of effort. We shall introduce the motivated provider in the next section. The provider is also assumed to be risk neutral. We shall assume that effort $e \in \{0, 1\}, d(0) = 0, d(1) = E$. We assume that effort is observable but not contractible.[11] Provider's reservation utility is $\overline{U} \geq 0$. After learning the true realization of θ, the provider can send a costless signal $S \in \{G, B\}$. Note that donor has to design a suitable incentive scheme for the provider so that the latter undertakes desired effort to gather information about the the state of nature.

2.3 Information and Time Line

Neither the donor nor the agents know the true realization of θ.We assume that the compensation scheme chosen by the donor $Z()$ is commonly known. In the model the low skill agents know the success probabilities associated with the good and bad state, but do not know θ. The provider does not know the types but can learn the true realization of θ. It can communicate this by sending a signal S. Note that S can only take values from the set $\{G, B\}$. Hence we have a two sided asymmetric information situation, but there is

[11] If effort were unobservable, the communication game will have to admit possibilities that the provider can announce G or B without really any knowledge of the true state.

scope for information revelation by the provider in a costless communication game. Once all projects are undertaken and outcomes realized, the donor can verify the total number of successful/failed projects.

Sequence of moves is as follows. 1: Donor provides M to finance $(\frac{M}{T})$ projects and specifies compensation scheme Z. 2: Provider chooses e and makes an announcement $S \in \{G, B\}$.3 Agents update their belief about θ and choose whether to apply for the transfer/project. 4. Provider selects (randomly) a subset of all applicants and transfers amount T to each selected. Let n^* be the total number projects undertaken, n_h^* and n_l^* denote the number of high skill and low skill agents selected to undertake the project. 5. Outputs are realized and the Donor learns the number of successful projects (m).

We are interested in studying the impact of various incentive schemes on the interaction between the provider and agent, and our equilibrium definition essentially captures the interaction in stages 2-3. An equilibrium is given by $\{e^*, S^*, a^*\}$ where e^* denotes the choice of effort and $S^*$is the signal. The agent's choice is denoted by $a : \{G, B\} \longrightarrow \{A, NA\}$. The agents choose whether to apply (A) or not apply (NA) based on their posterior belief $\sigma(S, \mu) : \{G, B\} \times [0, 1] \longrightarrow [0, 1]$.We consider Perfect Bayesian Equilibria of this game (stateg2-3).

3 Results and Analysis

3.1 Communication

As discussed in the introduction, information flow between the provider and the agent is key to our analysis. Consider the following payoff matrix where the low skilled agent chooses whether to apply or not, in the two different states. The first element in each box refers to the provider's payoff and the second refers to the low skilled agent's payoff. These payoffs are for illustra-

tion purposes only and these are not strcitly derived from the utility/payoff specifications discussed earlier. We have not considered the high skilled agent because their choice is not affacted by the provider's announcement. The payoffs capture the idea that the agent is better off choosing NA in the bad state, and prefers A in the good state. In the bad state, the provider also prefers the agent to choose NA. However, in the good state the provider's preferance over the agent's choice depends on whether $x \gtrless x^{/}$.

	A	NA
$\theta = G$	x, X	$x^{/}$,0
$\theta = B$	0,-Y	3,0

Game 1

Suppose, $x \geqslant x^{/}$, it is clear that communication is effective/informative. It is easy to verify that we have a PBE where

$$s^*(G) = G, s^*(B) = B, a^*(B) = NA, a^*(G) = A, \sigma(G) = 1, \sigma(B) = 0 \quad (4)$$

It is of course true that we also have the uninformative 'babbling' equilibrium where $\sigma(s) = \mu$,for all s. The agent learns nothing from the announcement by the provider and the provider's announcement $s^*(G) = s^*(B)$. We do not go in to the equilibrium selection issues here and assume that whenever the fully informative equilibrium exists, player will choose to play according it. Now consider a minor modification of the payoffs to the provider, $x < x^{/}$. In the good state $\theta = G$, the provider's payoff is higher whenever the agent chooses NA. Now, the announcement of $s(B) = B$ is not credible because the agent realizes that the provider would like the agent to believe so even when $\theta = G$. Hence the equilibrium described in equation (4) can not be sustained. In fact, the only PBE in this case is the uninfor-

mative babbling equilibrium where the agent chooses A no matter what the announcement is.

3.2 Efficiency

Suppose the donor is interested in maximizing total benefits to the recipients, given M. Since the agent's payoff from not undertaking the project is fixed, this will amount to maximising the expected output $\{p_h n_h^* + (\mu p_{lG} n_{lG}^* + (1-\mu) p_{lB} n_{lB}^*)\}\beta$ subject to the constraints $E(Y_i \mid \theta) \geq X_i$. These constraints can be viewed as interim participation constraints. We shall refer to this outcome as the interim efficient outcome. The solution will be given by

$$\begin{aligned} n_h^* &= n^* = \frac{M}{T}, \quad n_h \geq \frac{M}{T} \\ n_h^* &= n_h, n_{lG}^* = \frac{M}{T} - n_h, n_{lB}^* = 0, \ n_h < \frac{M}{T} \end{aligned} \tag{5}$$

Note that this does not involve welfare loss on the part of the low skilled agents in the bad state. Expost inefficieny can not be ruled out becasue of the non-deterministic nature of output. Interim efficiency requires that some amount of funds will remain unutilised when $\theta = B$, $n_h < \frac{M}{T}$. But if we drop the above contraints and insist on complete utilization of resources then the solution would be

$$n_h^* = n_h, n_{l\theta}^* = \frac{M}{T} - n_h, \theta = G, B, n_h < \frac{M}{T} \tag{6}$$

For the time being let us avoid this discrepancy by focusing on the case where $n_h \geq \frac{M}{T}$. Can the donor achieve the outcome described in (6)? The only way this outcome can be achieved is by preventing the low skilled types from applying in the bad as well the good state and it is impossible to achieve this. Note that in the absence of any communication about the realized

state, our assumptions about the prior belief μ implies that both types will apply to undertake the project. For the low skill types to revise their prior belief we need the provider to first incur the cost to acquire information about realized θ, and then credibly communicate this information. There is a basic tension between these two. Since effort is not contractible the only way to incentivise the provider will be to make its compensation dependent on outcome. The number of successful projects is known ex post, and the provider can be provided incentives through a scheme with $Z^{/}(m) > 0$. Since the compensation scheme is assumed to be common knowledge, the payoff matrix in the communication game between the provider and the low skill agents will be exactly like the payoff matrix specified in Game 1 with $x < x^{/}$. We know that the only equilibrium in this game is the uninformative babbling equilibrium. Hence the benefits of communication are non-existent and the provider is better off not acquiring any information. For communication to be effective we need $Z^{/}(m) = 0$ and for the provider to acquire information we need $Z^{/}(m) > 0$ and clearly it is not possible to have both. We can summarize this in the following.

Proposition 1 *Let $n_h \geq \frac{M}{T}$, for any compensation scheme $Z(m)$, both types apply in all states and $n_h^* < n_h, n_{l\theta}^* > 0, \theta = G, B$.*

3.3 Motivated Provider

Suppose we have some providers who are mission-oriented. These providers derive positive private benefits which are Rawlisian in nature- seek to maximize the expected benefit to the most disadvantaged group, the low skilled agents. As discussed earlier, we focus on the interim payoffs. In state $\theta = G$, the expected benefit to the low skilled type will be $(p_{lG}\beta - \alpha)\frac{n_l}{N} > 0$. The provider's private benefit is maximized when n_l^* is maximized. On the other

hand, in state $\theta = B$ the expected benefit to the low skilled type will be $(p_{lB}\beta - \alpha)\frac{n_l}{N} < 0$ and this is maximized when $n_l^* = 0$. hence the provider's private benefits are state dependent. We rewrite the motivated provider's payoff as

$$U^M = Z - d(e) + I(\theta)n_l^* k - J(\theta)n_l^* k^{/}, I = 1 \text{ when } \theta = G, J = 1 \text{ when } \theta = B, k^{/} > k > 0 \tag{7}$$

This implies that the motivated provider would like to screen out the low skilled types in the bad state (prevent disaster). This also implies that in the good state, in the absence of any incentives, the provider would like to prefer the low skilled agent to undertake the project. An example of such motivated providers will be loan officers working for a MFI who would not advance loans to someone who is most likely to be severely indebted- not because the repayment rates are going to be adversely affected but because the client is strictly worse off (in an interim sense). There are also the typical providers who simply maximize $Z - d(e)$. Let the fraction of such motivated providers be δ

What is the outcome in the absence of any incentives to the providers (fixed Z)? With probability δ,the provider is motivated to choose $e = 1$ and communicate the realized state to the agents. With probability $(1 - \delta)$, the provider does not observe the realized state. Given our assumption about observability of effort, when a signal is observed by the client, it knows that signal is from the motivated agent. We can show that there is an equilibrium where the motivated provider truthfully conveys the state and the low skilled types do not apply in the bad state. Note that given the objective function of the motivated provider, the communication game resembles Game 1 with $x > x^{/}$. This means the provider would like the low skilled types to apply in the good state but not in the bad state. This makes

their announcement credible. Hence the low skilled agent chooses according to the strategy combination $a(G) = A, a(B) = NA$. It is easy to verify that the non-motivated type does not have any incentive to deviate and acquire information to take advantage of the credible communication.Since compensation Z does not depend on the outcome, doing so would simply lead a reduction in equilibrium payoff of E. So in this setting, with probability δ we get the outcome where only the high types apply in the bad state and with probability $(1-\delta)$, we get the inefficient outcome where all types apply in both states. However, allocation of projects is different from (5). In the good state both high and low skilled agents have equal probability of receiving transfer T.

Equilibrium strategies are given by

$$e_M^* = 1, e_T^* = 0, s(G) = G, s(B) = B, a_h = A, a_l(G) = A, a_l(B) = NA \quad (8)$$

The corresponding equilibrium outcome is given by

$$n_h^*(\theta = G) = \lambda\frac{M}{T}, \quad n_l^*(\theta = G) = (1-\lambda)\frac{M}{T}, n_h^*(\theta = B) = \frac{M}{T}, \quad n_l^*(\theta = B) = 0 \quad (9)$$

If T type provider deviates and choose $e_T = 1$,it can send the signal $S(G) = S(B) = B$.Given the agents' strategies this would lead to $n_h^* = \frac{M}{T}$. This means the number of successful project is highest. But since Z is fixed, this will mean a lower payoff and hence deviation is not profitable. We have the following proposition.

Proposition 2 *Let $n_h > \frac{M}{T}$, the motivated provider's payoff be given by (7) and $Z(m) = Z$. There exists an equilibrium where the motivated provider chooses to acquire information about the true state and communicates truthfully. The high skilled agents always apply, the low skilled agents apply only*

when the announced state is good. The non-motivated provider chooses not to acquire any information.

Now consider an incentive scheme of the type discussed earleir, $Z^{/}(m) > 0$. For the motivated providers this does not change any of the equilibrium strategies for sufficiently large values of $k, k^{/}$. Consider the equailibrium strategies given in (9). The motivated provider will contnue to choose $e = 1$. It ic lear that it will choose to communicate truthfully in the bad state. But will it choose $s = G$ when the realized state is G? Depending on λ, $Z(m)$ will be lower by the equilibrium strategy in (9). But it is easy to show that for $k \geq k_\lambda$ the motivated provider will not devitate to $s = B$, where k_λ is given by[12]

$$Z(p_h \frac{M}{T}) = Z(p_h \lambda \frac{M}{T} + p_{lG}(1-\lambda)\frac{M}{T}) + (1-\lambda)\frac{M}{T}k_\lambda \tag{10}$$

However, the incentive scheme has a significant impact on the typical provider's strategies. Given the strategies of the motivated provider and the agents, the typical provider's payoff from deviation to $e = 1$ and $s(G) = B$ will lead to a higher payoff if the following is satisfied.

$$Z(p_h \frac{M}{T}) - E \geq Z(p_h \lambda \frac{M}{T} + p_{lG}(1-\lambda)\frac{M}{T}) \tag{11}$$

It is clear that for given E and λ this condition depends on the slope of the compensation function Z. The slope can be interpreted as the power of the incentive scheme, with a higher slope meaning high-powered incentives. If compensation is highly responsive to the outcome (in this case m) then the typical rovider will deviate. But once the typical provider also makes announcements the agents have no way of separating the typical provider's annuncement from that of the motivated provider. A signal B could be by

[12] In the context of crowding out, as discussed earlier, this can be interpreted as intrinsic motivation being strong enough.

a typical provider in state G or it could be by both providers in state B. Agent'sposterior belief σ is monotonic in the prior belief μ and the fraction of typical providers $(1-\delta)$. If there are large number of typical providers and agents' belief about the underlying state being good is high, all agents will aplly even when state is bad. Hence introduction of high-power schemes leads to communication failure.

Corollary 1 *In the presence of high-powered incentives, communication by the providers may cease to be credible and all agents will apply even in the bad state. This can happen even when the motivated providers continue to be truthful.*

3.4 Developmental Objectives

The above discussion has brought out the donor's objective in to focus. Why should the donor be interested in awarding the provider in terms of number of successful projects? As the complete information benchmark suggests efficiency maximzing donor would like to have all high skilled agents get the project irrespective of the state. But as we saw it is impossible to achieve. However, it is not the case that donors have to be interested in maximizing returns to every dollar spent. Suppose the donor is interested in only avoiding the worst case- low skill types undertaking the project in the bad state but has no preference over types in the good state.[13] Note that ex post the provider can observe the total number of failed projects. First consider the simple scenario where the donor can identify the different failed types.[14] Consider a compensation scheme

[13] This would of course include the case where the Donor would like the low skill agents to get the project in the good state. If wealth and skill level are positively coorrelated, one can justify such objectives.

[14] One can argue that the informational requirements of these kinds of schemes are demanding. This requires the donor to have some kind of audit of all the failed projects.

$$Z = \bar{z} \text{ if } n^*_{lB} = 0, Z = \underline{z} < \bar{z} \text{ otherwise} \tag{12}$$

This compensation scheme will not change the motivated provider's incentives. One can choose $\bar{z}, \underline{z}$ suitably so that $U(e = 1) \geqslant U(e = 0)$ and $U(e = 1) \geqslant \overline{U}$. What about the typical provider? Now the typical provider cares about the low skill types only in the bad state and its interests are aligned with those of the low skill types. There is an equilibrium with

$$\begin{aligned} e^*_M &= 1, e^*_T = 1, s^M(G) = s^T(G) = G, s^M(B) = s^T(B) = B \\ a_h &= A, a_l(G) = A, a_l(B) = NA \end{aligned} \tag{13}$$

Hence communication is effective, in the good states both types apply and the provider will randomly choose projects. In the bad state only the high skill types apply and $n^*_h = \frac{M}{T}$.[15]

4 Conclusion

Using a very simple and stylised setting we have shown that introduction of high-powered incentives can lead to communications failure and undermine the very reasons why incentives were introduced. In our view communication and information flows are vital to the success of many development projects (aid, microfinance, transfer of know-how). It is essential that communication between the immediate provider of services and the recipients is credible. Incentivisng the providers may destroy this credibility in some settings.

While our result is related to the recent literature on intrinsic and ex-

[15] When $n_h < \frac{M}{T}$ this would imply that the provider will not disburse the whole amount M. This shows that some of the input based incentives where providers are assessed in terms of the number of projects financed or amount of funds disbursed are not likely to be optimal in this case.

trinsic motivation, the emphasis on information flows and communication is a novel feature. The mechanism through which introduction of extrinsic motivations work is quite different. It does not destroy the intrinsic motivations of the motivated providers, rather it makes the typical provides active in such a way that the communication between the motivated providers and the agents breaks down.

As mentioned earlier, the model is extremely simple. There are two issues which need further investigation. First we have assumed (through most of the paper) that the number of high skilled agents exceed the number of projects that can be financed. Suppose this is not true, then it is possible that in some states entire amount of funds supplied by the donor will not be disbursed. Some donor might insist on full utilization (disbursement) and this outcome might be deemed inefficient from that poihnt of view. But on the other hand, in the bad state where the low skilled types are better off not undertaking the project, it is better to have undisbured funds. We have made partial refernce to this issue but have not investigated it properly.

Secondly, the provider has to always rely on random allocation if the number of applications exceed the number of projects to be financed. The only wat the provider can affect the final allocation is by communicating and influencing the agents' choice to apply for the projects. This restriction was imposed to keep the focus on communication. But in practice, the provider might undertake costly screening of the applications. It is obvious that costless screening will render the communication process redundant. But the case when screening is costly has not been explored and it has been left for future research.

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