Motivating Agents to Spread Information: The Role of Explicit Incentives and Social Identity-Matching

IGC-Bihar Conference, Patna
14 December, 2011

Erlend Berg (Oxford)
Maitreesh Ghatak (LSE)
R Manjula (ISEC)
D Rajasekhar (ISEC)
Sanchari Roy (Warwick)
Motivation

• Research on public service delivery in developing countries has focused on supply-side problems
  – Absenteeism, red tape, corruption, inefficient judiciary, etc.
• The demand-side is relatively under-studied in poor countries
• Lack of awareness/information among beneficiaries is an important cause for failure of public service delivery
  – In India, awareness about the National Rural Employment Guarantee Scheme (NREGS) is low in some of the poorer states
  – Information costs also responsible for low take-up of welfare schemes in developed countries as well (Aizer 2007; Daponte et al 1999)
• What can be done to increase awareness/information of welfare schemes?
Summary

• In this paper, we study different channels of information delivery using a randomized field experiment in India

• Research questions:
  – Does recruiting and paying local women to spread information about a public health insurance programme increase knowledge and take-up?
  – Does the payment structure of agents (flat versus incentive pay) matter?
  – What role does social identity, as an alternative channel, play?

• Findings in brief:
  – Hiring agents has a positive impact on programme knowledge
  – This effect is driven entirely by agents on incentive-pay contracts
  – Higher knowledge is associated with higher programme enrolment
  – In addition to incentive pay, social identity matching between agent and beneficiary also improves knowledge
The Programme

• Our experiment is implemented in the context of a new public health insurance scheme called “Rashtriya Swasthya Bima Yojana” – henceforth RSBY
• Our setting – 2 districts in south Indian state of Karnataka: Bangalore Rural and Shimoga
• Scheme launched in Karnataka in Feb-March 2010
• Key features of programme:
  – Eligible households: Below-Poverty-Line (BPL)
  – Covers hospitalization expenses for 700 medical conditions
  – Annual expenditure cap of Rs 30,000 (630 USD) per eligible HH of five
  – Policy underwritten by insurance co. selected in state-wide tender
  – Policy premium subsidized by government
  – Beneficiary HH pays Rs. 30 (37p) as annual registration fee
The Programme

• Key features of programme (cont’d):
  – Cashless service at any participating ("empanelled") hospital using RSBY smartcard
  – Smartcards contain biometric information of all members of eligible HH
  – Cost of treatment reimbursed to hospital by insurance company based on fixed rates
Experimental design

• 151 randomly selected villages in Bangalore Rural and Shimoga

• First stage of randomization:
  – 112 villages assigned to treatment group – received an “agent”
  – 39 villages assigned to control group – did not receive an “agent”
  – Agent is local woman and member of a Self-Help Group (SHG)
  – Agent’s task: spread information about RSBY among eligible households over a one-year period

• Second stage of randomization: All agents were paid to do the job, but experimental variation in contract structure
  – Flat-pay: Agents paid fixed Rs 400 every three months (38 villages)
  – Incentive-pay: Agents paid a fixed Rs 200, plus a bonus depending on the level of knowledge about RSBY amongst the eligible households in village, tested on a random sample (74 villages)
Experimental design

• Average pay designed to equal Rs 400 across both treatment groups
  – But some deviation in practice
  – The aim was to isolate the “incentive” effect of the contract structure from the “income effect” of the average payment size

• Payment structure revealed to agent after recruitment
  – Payment structure in a sealed envelope
  – The aim was to isolate the “incentive” effect of contract structure from potential “selection” effect

• No agent quit after being told about the payment structure
  – Four agents quit a few months later, due to pregnancy or migration
  – Those villages excluded from our analysis
  – Final number of villages in our sample is 147
Data

• 3 waves of ‘mini-surveys’ conducted post-intervention
• A random sample of eligible HH in our sample villages were interviewed in each wave
• A few months’ gap between each wave
• Aim of the mini-surveys:
  – Administer knowledge test to beneficiary HH to determine level of knowledge about RSBY (also used to pay agent)
  – Measure enrolment into RSBY
  – Collect limited background information on households
• Each knowledge test consisted of 8 questions relating to RSBY
  – Each answer was recorded and later coded as being correct or incorrect
  – The number of correct answers gives each interviewed household a score 0-8
• Main outcome variable is the knowledge test z-scores, also look at enrolment
Empirical specification

- Basic specification:
  \[ Y_{hv} = \alpha_0 + \beta \cdot \text{Treat}_v + \epsilon_{hv} \]
- \( \beta \) captures overall effect of information-spreading agents
- All regressions are weighted least squares
  - Not all HHs are observed in every wave, but there is overlap
  - Weighted least squares assigns equal total weight to each HH
- Standard errors robust and clustered at village level
- Survey (wave) and taluk fixed effects included
  - Taluks are sub-district administrative divisions
  - 4 in Bangalore Rural, 7 in Shimoga
## Effect of information-spreading agents

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Knowledge</td>
<td>Knowledge</td>
<td>Knowledge</td>
</tr>
<tr>
<td>Agent in village</td>
<td>0.173***</td>
<td>0.185***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0642)</td>
<td>(0.0571)</td>
<td></td>
</tr>
<tr>
<td>Flat-pay Agent in village</td>
<td></td>
<td></td>
<td>0.0740</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.0918)</td>
</tr>
<tr>
<td>Incentive-pay Agent in village</td>
<td></td>
<td></td>
<td>0.242***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.0567)</td>
</tr>
<tr>
<td>Survey wave fixed effects</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Taluk fixed effects</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>5650</td>
<td>5650</td>
<td>5650</td>
</tr>
<tr>
<td>t-test: flat=incentivised (p-value)</td>
<td></td>
<td></td>
<td>0.0677</td>
</tr>
</tbody>
</table>
Effect of information-spreading agents

- HHs in villages with agent (treatment group) scored, on average, 0.17 standard deviations higher compared to those in control villages.
- This impact is only observed for HHs (and stronger) in those villages where the agent was on an incentive-pay contract linked to knowledge provision.
- HHs living in villages with flat-pay agents did not perform significantly better than those in control villages.
- This finding is consistent with the theoretical prediction that since the flat pay agents were paid a constant amount irrespective of outcome, they were not incentivized to exert effort.
- Results robust to controlling for survey and taluk fixed effects.
# Effect of information-spreading agents, Shimoga

<table>
<thead>
<tr>
<th></th>
<th>(1) Knowledge</th>
<th>(2) Knowledge</th>
<th>(3) Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent in village</td>
<td>0.208**</td>
<td>0.190**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0817)</td>
<td>(0.0739)</td>
<td></td>
</tr>
<tr>
<td>Flat-pay agent in village</td>
<td></td>
<td>-0.0225</td>
<td>(0.122)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.122)</td>
<td></td>
</tr>
<tr>
<td>Incentive-pay agent in village</td>
<td></td>
<td>0.312***</td>
<td>(0.0670)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0670)</td>
<td></td>
</tr>
<tr>
<td>Survey wave fixed effects</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Taluk fixed effects</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>2888</td>
<td>2888</td>
<td>2888</td>
</tr>
<tr>
<td>t-test: flat=incentivised (p-value)</td>
<td></td>
<td></td>
<td>0.00928</td>
</tr>
</tbody>
</table>
Impact on Enrolment

• Does improved knowledge about programme translate into higher enrolment?
• OLS regression of enrolment on knowledge would lead to biased estimates
  – Unobserved heterogeneity at the HH level
  – Reverse causality
• Random assignment of our incentive-pay treatment used as an instrument variable for knowledge
• Villages with flat-pay agents and pure control villages clubbed together to form comparison group
## Knowledge and Enrolment: IV estimates

<table>
<thead>
<tr>
<th></th>
<th>(1) Enrolled (OLS)</th>
<th>(2) Enrolled (Reduced form)</th>
<th>(3) Knowledge (First stage)</th>
<th>(4) Enrolled (IV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>0.207***</td>
<td></td>
<td></td>
<td>0.395***</td>
</tr>
<tr>
<td></td>
<td>(0.00907)</td>
<td></td>
<td></td>
<td>(0.131)</td>
</tr>
<tr>
<td>Incentive-pay Agent in village</td>
<td>0.0806**</td>
<td>0.204***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0361)</td>
<td>(0.0615)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Survey wave fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Taluk fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>5650</td>
<td>5650</td>
<td>5650</td>
<td>5650</td>
</tr>
</tbody>
</table>
Knowledge improves Enrolment

• Improved knowledge about programme associated with increased enrolment in our sample
Incentives and Social Identity

- Recent literature suggests the importance of social identification effect on take-up of insurance products (Cole et al 2010)
- Thus, we compare the effect of providing incentive pay to that of matching the agent and beneficiary household on social identity
- Limited HH background information for a subset of our sample
- Hence we focus on caste identity defined in terms of SC/ST status
- Within-treatment group analysis in order to control for agent characteristics in levels
## Incentives and Social Identity-matching

<table>
<thead>
<tr>
<th></th>
<th>(1) Knowledge</th>
<th>(2) Knowledge</th>
<th>(3) Knowledge</th>
<th>(4) Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentive-pay Agent in village</td>
<td>0.176**</td>
<td>0.175**</td>
<td>0.193*</td>
<td>0.165*</td>
</tr>
<tr>
<td></td>
<td>(0.0888)</td>
<td>(0.0876)</td>
<td>(0.101)</td>
<td>(0.0903)</td>
</tr>
<tr>
<td>Agent is SC/ST</td>
<td>-0.108</td>
<td>-0.133</td>
<td>-0.132</td>
<td>-0.180**</td>
</tr>
<tr>
<td></td>
<td>(0.0912)</td>
<td>(0.0903)</td>
<td>(0.0902)</td>
<td>(0.0845)</td>
</tr>
<tr>
<td>HH is SC/ST</td>
<td>-0.0436</td>
<td>0.0591</td>
<td>0.0585</td>
<td>0.0667</td>
</tr>
<tr>
<td></td>
<td>(0.0500)</td>
<td>(0.0548)</td>
<td>(0.0550)</td>
<td>(0.0476)</td>
</tr>
<tr>
<td>HH SC/ST status matches that of agent</td>
<td>0.212***</td>
<td>0.230**</td>
<td>0.215**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0561)</td>
<td>(0.0920)</td>
<td>(0.0868)</td>
<td></td>
</tr>
<tr>
<td>Agent is incentivised *HH SC/ST status matches that of agent</td>
<td>-0.0272</td>
<td>0.00250</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.103)</td>
<td>(0.0970)</td>
<td></td>
</tr>
<tr>
<td>Survey wave fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Taluk fixed effect</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Agent controls</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>2756</td>
<td>2756</td>
<td>2756</td>
<td>2756</td>
</tr>
</tbody>
</table>
Incentives and Social Identity-matching

- Social matching plays a role in information dissemination
- Knowledge scores are higher for households that share same caste identity as agent
  - Social proximity reduces cost of communicating information (Fisman, Paravisini and Vig, 2011)
  - Social proximity engenders trust (Cole, 2010)
- Our experiment does not enable us to disentangle these effects
- Social matching and incentive pay have independent effects on knowledge dissemination
- Interaction of two insignificant, implying effects of matching and incentive pay additive rather than reinforcing
- Cannot reject the equality of the two coefficients
Conclusion

• The demand side is under-studied in public service delivery
  – Lack of information in the target population often key reason for low take-up of welfare programmes
• Recruiting local agents to spread information can make a difference to beneficiaries’ knowledge about a scheme
• Agents with monetary incentives do better at this
• ...but social identity also matters. Knowledge levels are higher for households who are similar to their agents in terms of caste identity
• Improved knowledge also leads to higher take-up of welfare programmes