Who gets the job referral? Evidence from a social networks experiment

Lori Beaman and Jeremy Magruder
Northwestern and UC Berkeley
Motivation

- Social networks are important in labor markets
  - Around half of jobs in U.S. found through informal channels
  - 44% of employed sample in India report getting someone a job
  - Quantity and quality of network members influence labor market outcomes
  - May spread information & help screen
- We know very little about **who** networks allocate jobs to
  - large gap between detailed theory and "black-box" empirics
  - simply observing that networks matter tells us little about who benefits/loses from this fact
  - Very, very little evidence on how networks choose who benefits from a new job opportunity
Employee Incentive Problem

- Focus on screening story (Montgomery 1991)
  - Assortative matching within networks
  - Or, with heterogeneity in ability within network
    - Requires ability to screen; proper incentives
- Complicated incentives among social relationships
  - Repeated game; mutual insurance
  - Altruism and other-regarding preferences (Foster and Rosenzweig 2001)
  - Therefore good reason to think employees will not always choose the “best” person from the firm’s perspective
- Externalities to network hires
  - Heterogeneity in on-the-job relationships influences productivity (e.g. Mas and Moretti 2009, Bandiera et al 2005, 2007, 2009a, b)
  - May also be suboptimal for society: may generate inequality ((Calvo-Armengol and Jackson 2004; Magruder 2010))
Overview

• This study we are interested in:
  • Are some (or all) workers able to identify good matches among their network members?
  • Do financial incentives induce employees to change their optimal choice for a referral?
    • Do financial incentives affect the relationships that people bring in?
    • Do they affect the productivity of referrals?
  • To look at these questions, we ran a laboratory experiment in the field in peri-urban Kolkata
  • Basic idea: we use recruitment into the laboratory
    • Laboratory participation is fundamentally a day labor job
    • Multiple-round experiment allows participants to make referrals
    • Can observe actual referral choices under randomized incentives
  • Combine lab setting with out-of-laboratory behavior
Experimental Design: Round 1

- Initial individuals offered a fixed wage (Rs 135 or $3) for about 2 hours of time in the lab
  - Recruitment done door to door at every 3rd house
  - Average daily income of individuals in sample is about Rs 110
- They complete a survey and then randomly assigned to one of two tasks: cognitive (puzzles) or effort (peanuts in a bag)
  - Focus on cognitive task today
- After receiving their pay, they are offered a finder’s fee of at least a specified amount to bring in someone “who would be good at the task they did”
Finder’s fee was also randomized in the following way:

<table>
<thead>
<tr>
<th></th>
<th>Cognitive Task</th>
<th>Effort Task</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance Pay</strong></td>
<td>Low: 60-80 Rs</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>High: 60-110 Rs</td>
<td></td>
</tr>
<tr>
<td><strong>Fixed Payment</strong></td>
<td>Very Low: 60 Rs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low: 80 Rs</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>High: 110 Rs</td>
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</tbody>
</table>
Experimental Design: Round 2

- Referrals and the initial participants (OPs) who brought them come to lab:
  - Those in performance pay treatments informed that they will be paid the maximum of the range they were told
    - Were concerned about side payments
  - Referrals complete the survey
  - Referrals perform both cognitive and effort tasks
  - OPs complete interim survey: expected performance of referral
Details on Tasks: Cognitive

- Asked to help design a “quilt”
- Given different colored squares, asked to arrange in a pattern
- Observe: whether correct answer, total time to correct answer and # of incorrect attempts
- Normalize these data into a z-score
- Used 2 (randomly selected across days) sets of puzzles to minimize cheating
Randomization and Data

- Randomization worked, for the most part
- Few notes on sample:
  - Young sample: average age is around 30; 34% between 17 and 25
  - Few HH heads: only 33%
  - Almost all literate
  - Basically, HHs sending their adult (employed, primary-earner) sons to participate
Paper presents a model which suggests three predictions:

- **Participation sensitivity**
  - Groups with more info should respond to perf pay by returning more frequently

- **Fixed Fee sensitivity**
  - Fixed fees should not affect referral choice
  - Empirically, no differences across fixed fee groups

- **Tradeoffs between social and professional incentives**
  - OPs should respond to performance incentives by bringing in more distant relations
  - If OPs have info, may respond to performance incentives by bringing in better workers
Participation in Round 2

• 70% of OPs return with a referral
• 2 ways to view participation in Round 2
  • as a test of the model - groups with higher expected payment should be more likely to return to the lab
    • groups with more information in performance payment treatments
    • Empirically, high ability, high incentivized OPs are more likely to return with a referral than others
  • interesting for employers if different contracting schemes elicit different types of referrals.
  • As a bias in exploring later specifications
Participation in Round 2

- Main approach: heckman twostep selection model
- Exclusion restriction: daily rainfall
  - Each OP given 3 day window to return with referral
  - We use the number of days it rained, 0 to 3, during that window as the exclusion restriction
  - Results also robust to more flexible functional form specifications
• OPs trade off social incentives (altruism, informal insurance) and employer incentives

• For both reasons, we anticipate relatives serve a different function in network than more socially distant individuals such as coworkers

  • Relatives give many more gifts to OPs - 35% of gifts come from relatives vs. 2% from workers

→ Therefore if tradeoffs were important, would expect to see more coworkers and fewer relatives brought in in response to performance pay

We find that all OPs bring in more 8 percentage points more coworkers and 7 percentage points fewer relatives

• 50% swing in fraction of coworkers and relatives
However, no average increase in performance

<table>
<thead>
<tr>
<th>Referral Cognitive Ability Task Performance</th>
<th>Selection Model</th>
<th>OLS: Full Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>OP Cognitive Test Score * High Perf Pay</td>
<td>0.370 **</td>
<td></td>
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<tr>
<td></td>
<td>(0.159)</td>
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<tr>
<td>OP Cognitive Test Score * Low Perf Pay</td>
<td>0.065</td>
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<tr>
<td></td>
<td>(0.138)</td>
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<tr>
<td>OP Cognitive Test Score</td>
<td>0.152 **</td>
<td>0.036</td>
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<tr>
<td></td>
<td>(0.071)</td>
<td>(0.079)</td>
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<tr>
<td>OP Treatment: High Perf Pay</td>
<td>-0.135</td>
<td>-0.107</td>
</tr>
<tr>
<td></td>
<td>(0.157)</td>
<td>(0.151)</td>
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<tr>
<td>OP Treatment: Low Perf Pay</td>
<td>0.068</td>
<td>0.077</td>
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<tr>
<td></td>
<td>(0.172)</td>
<td>(0.164)</td>
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<tr>
<td>N</td>
<td>562</td>
<td>562</td>
</tr>
<tr>
<td>Mean of Dep Var for Excluded Group</td>
<td>-0.068</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>1.166</td>
<td></td>
</tr>
<tr>
<td>Chi$^2$ statistic: joint test of rainfall variables</td>
<td>12.743</td>
<td>13.449</td>
</tr>
<tr>
<td>Mills: Coefficient</td>
<td>1.356</td>
<td>1.301</td>
</tr>
<tr>
<td>Mills: SE</td>
<td>0.561</td>
<td>0.514</td>
</tr>
<tr>
<td>N Censored Obs</td>
<td>155</td>
<td>155</td>
</tr>
</tbody>
</table>
Interpretation: Puzzle Performance

- Results ⇒ high ability workers have ability to screen network members if given proper incentives
- While all OPs respond to incentives by shifting type of referral, only high ability OPs bring in referrals who actually perform better
- This would be consistent if low ability OPs were not able to predict the performance of their referrals
- Also consistent with differential return rate for high ability OPs in Performance pay treatments
- Empirically, one more piece of evidence: we asked OPs to predict referral performance
  - predictions strongly correlated for high ability OPs
  - predictions uncorrelated for low ability OPs
Conclusion

- Job networks appear ubiquitous: attempt to look inside black box of networks
- Using lab experiment with out-of-lab behavior, we find:
  - Individuals offered performance pay contract more likely to recruit coworkers and less likely to recruit relatives
  - High ability individuals recruit high ability referrals who are also reliable when incentivized
- Provides evidence that networks - at least high ability members - can exploit information about peers’ capabilities
- Also suggests that individuals in networks are responsive to incentives (network incentives not binding)
  - Important for firm
  - May also be important for other policy contexts where you spread information or goods through a network