Who Gets the Job Referral? Evidence from a Networks Experiment

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There is a large theoretical and empirical literature showing that social networks play an important role in labor markets, both in the U.S. and in developing countries (Bayer et al., 2005; Beaman, 2009; Kramarz and Skans, 2007; Granovetter, 1973; Laschever, 2005; Magruder, 2009; Munshi, 2003; Munshi and Rosenzweig, 2008; Topa, 2001). Yet despite the extensive evidence that social networks do select individuals for jobs, we know relatively little about how they work, in terms of which individuals are selected as job referrals. Similar to the series of experiments by Bandiera et al. (2005, 2007, 2009b,a) in the U.K., this paper uses a lab experiment in the field in to understand how individual weigh a variety of incentives to select different network members for jobs in Kolkata, India.

Social networks weigh two incentives in selecting referrals. First, the seminal work by Montgomery (1991) and Munshi (2003) both argue that employers can use networks to overcome information asymmetries in the labor market; in contrast, other models focus on information dissemination where networks reduce search costs (Calvo-Armengol and Jackson, 2004; Beaman, 2009; Mortensen and Vishwanath, 1994). There is little empirical evidence, however, explicitly showing that social networks have and exploit informational advantages. Social networks also serve as important sources of informal insurance (Udry, 1994; Townsend, 1994; Rosenzweig and Stark, 1996). In the absence of formal contracts, these networks likely depend on other-regarding behavior, such as trust, altruism and reciprocity e.g. Foster and Rosenzweig (2001). The altruistic and insurance nature of social ties suggests that individuals may refer network members with whom they share a close social bond, potentially at the expense of market efficiency, and several studies (Loury, 2006; Magruder, 2009; Munshi and Rosenzweig, 2008) have suggested that particular family relationships may be important in job network contexts. In contrast, the potential of networks to resolve asymmetric information problems suggests that job networks identify their most qualified members to take advantage of job opportunities. Estimating both the capacity of networks to use asymmetric information in referrals and how networks trade off social preferences for more efficient job allocation remain important open questions.

We use a laboratory experiment in the field to observe real, out-of-laboratory behavior. In the laboratory, initial randomly selected subjects are asked to invite members of their social networks to participate in the experiment in subsequent rounds. The day-labor nature of the task recalls the actual, casual labor markets in which the majority of our sample work. In doing so, we directly observe a job network allocating jobs, in this case the position of being a laboratory subject, in a natural environment. By varying the incentives, we seek to learn how networks work in a close to real world, but controllable, employment environment. Our experiment consists of two rounds. In the first round, a random sample of individuals will be selected and asked to take a survey and perform a task emphasizing either effort or cognitive ability for a fixed wage. These individuals will then be asked to refer another individual to our study, and will be offered, at random, either a fixed finder's fee or a performance-based incentive to do so. In the second round, the initial participants

will return with their referrals; the referrals will complete a survey and both tasks.

This project addresses two principle research questions. First, do social networks make use of information about network members in a labor market setting? If so, do financial incentives impact the decision-making process of who to refer for a job? By comparing the performance of referred individuals to the initial pool of participants and the performance of referrals recruited under different incentive schemes, we test whether and when networks succeed in recruiting individuals with match-specific skills. The experimental design allows an investigation of whether financial incentives, particularly performance-based incentives, are necessary in order for a firm to exploit any asymmetric information available within a network. Second, who do job networks select and why? Using survey data on the overall network, we will be able to see which individuals are selected from the network in terms of relationship and proximity to the referring member. In addition, the economic games allow us to measure other-regarding behavior including reciprocity and altruism. Therefore, the study will test if there is a tradeoff between referring an individual who is good at a task versus other preferences, including altruism or the likelihood the referral will reciprocate in the future. While some studies have examined the capacity of laboratory experiments to predict outcomes outside of the laboratory (e.g. Karlan 2005, Ashraf et al 2005), no other study, to our knowledge, has utilized recruitment into laboratory games as a means of directly testing economic models

1 Experimental Design

The experiment begins by drawing a random sample of individuals and offer a fixed wage to participate in a short experiment. First, individuals are asked to complete a survey identifying network members and their relationship to one-another, along with demographic information and labor force participation. The initial group (called Original Participants or OPs) faces an experimental treatment randomized along several dimensions. OPs are asked to complete one of two (randomly chosen) tasks: a task emphasizing cognitive ability or a second task emphasizing pure effort. At the end of the experiment, individuals are paid 135 INR (approximately $2.75) for their participation. They are also invited to return with a friend or family member (a referral) and offered a finder's fee if they return. A second randomization occurs to determine the amount of payment the OP will receive when he returns with a referral. Payment varies along two dimensions: the amount of pay and whether pay may depend on the referral's performance. OPs in a fixed payment treatment are paid either 60,80, or 110 Rs for returning; OPs in a performance-pay treatment are told either that they will be paid either in the range of 60-80 Rs or 60-110 Rs, with exact payment determined by the referral's performance.

The task is determined by the randomization at the beginning of the experiment and the offered payment is told to OPs immediately prior to their exit from the laboratory. When the original participants return with their referrals, the referrals perform both the effort and the cognitive ability tasks. To isolate the selection effect from the incentive effect of performance pay, all OPs are paid the maximum amount within the pay range they were told. That is, participants in

the Cognitive Ability Performance Pay High category are all paid 110 Rs.

Once the referrals have completed the tasks, both the OP and the referral are invited to participate in a round of economic games. Each participant plays two versions of the dictator game and two versions of the Trust game. Each OP plays with his own referral and one randomly selected participant. The goal of this game is to learn about the importance of other-regarding preferences both within and outside of network groups, and to examine how network social capital interacts with recruitment into the study.

2 Research Questions and Preliminary Analysis

Preliminary resuts in this section are based on an early subset of the data and are subject to change.

1): Do referrals outperform OPs on average? Table 1 illustrates that referrals do not outperform original participants. Given that individuals select a network member as a referral based not only on the qualifications of the network member for the job but also the returns an individual receives from the network member or the network in general, including altruism, and/or future referrals or transfers, the employee may respond differently to different types of finder's fees. The treatments may change the optimization problem the OP faces: performance pay in particular may shift the preferred referral away from the person who pays the highest return in repeated network game to the person who has the best skills for the job.

2): When do referrals outperform OPs? As seen in Bandiera et al. (2009b), there may be significant heterogeneity in social effects according to worker ability. In their context, evaluating spillovers from an individual working in close proximity to his or her friend, they found that the average social effect was zero since high ability workers had the opposite response to a peer than low ability workers. Moreover, the work by Montgomery (1991) suggests that high ability workers will have higher ability social network members to choose from, if properly incentivized. In this spirit, we evaluate:

$$y_{ik} = \alpha + \beta_1 \theta_i + \phi_k + \epsilon_{ik} \tag{1}$$

where θ_i is referral i OP's ability, as measured by the OPs performance of the task in phase 1 of the experiment; ϕ_k represents the 7 treatment categories. If there is positive assortative matching in networks, we would expect that $\beta_1 > 0$. It is also possible that high ability OPs can refer higher ability referrals, but require proper motivation to do so. We therefore estimate

$$y_{ik} = \alpha + \beta_1 \theta_i + \beta_2 perf_j * \theta_i + \phi_k + \epsilon_{ik} \tag{2}$$

where $perf_j \theta_i$ is the interaction of ability and an indicator for whether the OP was in a performance pay treatment. If high ability OPs would respond more to high powered incentives, then we anticipate $\beta_2 > 0$. If the across-the-board assortative matching assumption in Montgomery (1991) is correct, then $\beta_1 > 0$ in this specification.

Table 2 looks at how treatment type relates to referrals' performance. Both columns restrict

the sample to referrals whose OPs were randomly assigned to the cognitive ability treatment and whose initial performance is therefore observed. Column 1 suggests that treatment type of the OP has no significant effect on a referral's performance on the cognitive ability task. None of the individual dummy variables are significant, nor are they jointly significant (p value of .27). However, the OP's performance is positive and significantly correlated with his referral's performance. To test the hypothesis listed above that high ability OPs may respond more to incentives, we also estimate equation 2 in column 2. The results indicate that the positive relationship between OP and referral performance is driven by OPs in performance pay treatments. This suggests that the assumption made by Montgomery (1991), that high ability individuals have superior social networks across the board, is overly simplified. However, this result is consistent with the underlying assumption in Munshi (2003): while high ability people may not uniformly refer other high ability people the the experiment, they are able to identify other high ability people in their networks, when properly motivated.

Further research will also make use of the behavioral date to investigate whether OPs pick referrals who they share a strong social bond, but who may not be particularly effective at the task, and how that covaries with OP incentives

	(1)
1 if Original Partipant	0.063
	(0.070)
Constant	0.164
	(0.109)
N	797

Table 1: Cognitive Ability Performance: OPs versus Referrals

	(1)		(2)	
OP test score * Performance Pay			0.258	**
			(0.109)	
OP Cognitive Test Score	0.111	**	-0.012	
	(0.055)		(0.075)	
OP Type 2: Cognitive Ability, Low Fixed Payment	0.222		0.243	
	(0.165)		(0.164)	
OP Type 3: Congitive Ability, Very Low Fixed Payment	-0.151		-0.164	
	(0.183)		(0.182)	
OP Type 4: Cognitive Ability, High Performance Payment	-0.024		-0.026	
	(0.159)		(0.158)	
OP Type 5: Congitive Ability, Low Performance Payment	0.123		0.117	
	(0.167)		(0.166)	
Constant	0.136		0.148	
	(0.205)		(0.203)	
N	328		328	

Table 2: Cognitive Ability Performance: OPs versus Referrals

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References

Bandiera, O., I. Barankay, and I. Rasul (2005). Social preferences and the response to incentives: Evidence from personnel data. *Quarterly Journal of Economics 120*, 917–962.

Bandiera, O., I. Barankay, and I. Rasul (2007). Incentives for managers and inequality amongworkers: Evidence from a firm level experiment. *Quarterly Journal of Economics 122*, 729–773.

Bandiera, O., I. Barankay, and I. Rasul (2009a). Social connections and incentives in the workplace: Evidence from personnel data. *Econometrica 77*, 1047–1094.

Bandiera, O., I. Barankay, and I. Rasul (2009b). Social incentives in the workplace. *Review of Economics Studies*.

Bayer, P., S. Ross, and G. Topa (2005). Place of work and place of residence: Informal hiring networks and labor market outcomes. *NBER Working Paper 11019*.

Beaman, L. (2009). Social networks and the dynamics of labor market outcomes: Evidence from refugees resettled in the u.s. *Mimeo, Northwestern University*.

Calvo-Armengol, A. and M. O. Jackson (2004). The effects of social networks on employment and inequality. *American Economic Review 94*, 426–454.

Foster, A. and M. Rosenzweig (2001). Imperfect commitment, altruism, and the family: Evidence from transfer behavior in low-income rural areas. *Review of Economics and Statistics 83*, 389–407.

Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology 78*, 1360–1380.

Kramarz, F. and O. Skans (2007). With a little help from myĚ parents? family networks and youth labor market entry. *CREST Working Paper*.

Laschever, R. (2005). The doughboys network: Social interactions and labor market outcomes of World War I veterans. *Unpublished*.

Loury, L. (2006). Some contacts are more equal than others: Informal networks, job tenure, and wages. *Journal of Labor Economics 24*, 299–318.

Magruder, J. (2009). Intergenerational networks, unemployment, and persistent inequality in south africa. *Forthcoming, AEJ: Applied Economics*.

Montgomery, J. D. (1991). Social networks and labor market outcomes: Toward an economic analysis. *American Economic Review 81*, 1408–1418.

Mortensen, D. and T. Vishwanath (1994). Personal contacts and earnings. It is who you know! *Labour Economics 1*, 187–201.

Munshi, K. (2003). Networks in the modern economy: Mexican migrants in the US labor market. *Quarterly Journal of Economics 118*, 549–599.

Munshi, K. and M. Rosenzweig (2008). The Efficacy of Parochial Politics: Caste, Commitment, and Competence in Indian Local Governments. *Mimeo*.

Rosenzweig, M. and O. Stark (1996). Consumption smoothing, migration and marriage: Evidence from rural india. *Journal of Political Economy 97*, 905–926.

Topa, G. (2001). Social interactions, local spillovers and unemployment. *Review of Economics Studies 68*, 261–295.

Townsend, R. (1994). Risk and insurance in village india. *Econometrica 62*, 539–5915.

Udry, C. (1994). Risk and insurance in a rural credit market: An empirical investigation in northern nigeria. *Review of Economics Studies 61*, 495–526.