

# Employee referral, social proximity and worker discipline: Theory and Evidence from India\*

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## Abstract

We study an important mechanism underlying employee referrals into informal low skilled jobs in developing countries. Employers can exploit social preferences between employee referees and potential workers to improve discipline. The profitability of using referrals increases with referee stakes in the firm, and, in most cases, with the strength of the social tie between the referee and the new recruit. We provide an empirical counterpart to these results using primary data covering low- and unskilled migrants in India. Consistent with the theoretical predictions, we find a high prevalence of workplace referral and strong kinship ties between referees and new recruits. Finally, workplace intermediaries are different from and typically in more ‘prestigious’ jobs than those recruited.

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# 1 Introduction

In developing economies poor workers often rely on their social networks to acquire low and unskilled jobs.<sup>1</sup> In spite of the high prevalence of network based labour market entry, little is known about why social networks are preferred, or what the underlying motivations for using referrals on the part of workers and employers are. The question is important because networks give rise to inequalities especially when close family and kin benefit at the expense of others with similar qualifications. Using social connections to obtain jobs has also been interpreted as favouritism that may lower productivity (Kramarz and Thesmar (2007), Fafchamps and Moradi (2009)).

This paper develops a theory of demand (employer) driven network recruitment. In our paper, employers use their own social network, or the network of existing employees, to fill job vacancies and mitigate discipline or motivational problems among staff. In contrast to the negative effects of networks, our paper emphasises an important positive driving force for referrals in low and unskilled labour markets.<sup>2</sup>

In settings where worker discipline poses a serious challenge and legal and informational enforcement infrastructure is absent, informal institutions, such as employee referrals may mitigate moral hazard problems in the workplace. To investigate this possibility we consider employers who can recruit workers either anonymously in the spot market or via an employee referee. If referrals are used, the employee referee recommends a member of his social network which may include close or more distant family, friends and acquaintances. The social prox-

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<sup>1</sup>Munshi and Rosenzweig (2006) report that 70 % of blue collar jobs in Mumbai were found through referral (with a corresponding figure for white collar jobs of around 44 %) and with a higher referral prevalence for men than women. According to the World Bank's Microenterprise Survey for India, covering about 1,500 small enterprises (see below), between 40 and 65 % of new hires were recruited through a workplace insider.

<sup>2</sup>In spite of historical parallels, labour management challenges during rural-urban transitions have received limited attention (e.g. Morris (1955), Kerr et al. (1966)). During the early days of the industrial revolution, workers were unaccustomed to the discipline requirements of the factory floor. Workers were 'transient', 'deviant' or 'volatile' (Pollard (1963)) and work attendance highly irregular: 50 per cent absenteeism on a given day was not uncommon. It was therefore not the better (in the sense of more productive) but the stable worker who was coveted by employers (ibid). Such appreciations of workforce stability echo Holmstrom's (1984) observations among Mumbai employers about two centuries later.

imity to the referee makes it more costly for a recruit to misbehave because of the negative consequences of his own conduct on the referee. The employer can therefore reduce the wage premium (the efficiency wage) to the worker necessary to induce desirable behaviour. Of course, if the referee will be punished for worker misbehaviour, it is not clear why he would want to refer a worker in the first place.

Our main theoretical contribution is to show the conditions under which the employer prefers referrals to anonymous hiring, taking account of a variety of referee utility functions. Indeed, one of the important conditions for employers to opt for referrals is that referees are employees who stand to lose a lot if their recommended worker misbehaves: i.e. referee stakes in good performance are high. Secondly, we endogenise the strength of ties and show that under plausible conditions employers prefer strong ties. Thus, our paper provides an explanation for why favouritism or the use of strong ties mitigates informational problems. Finally we show that, although when referee incentives are accounted for, referrals need not always be advantageous to the employer, when referee stakes are high and the costs of opportunism are sufficiently high, referrals are the optimal mode of recruitment.<sup>3</sup>

We complement our theoretical work with empirical analysis using a unique primary data set that contains information on low and unskilled migrants from a poor area of rural North-India. Consistent with the 2006 World Bank microenterprise survey for India, our data show that job entry through a workplace insider is widespread. Contrary to recent suggestions (e.g. Karlan et al (2009)), such entry typically occurs through a strong social tie. Another important pattern is that while entry is into bottom tier jobs, workplace intermediaries are usually persons in more prestigious jobs. Successful entry, therefore, may not only require a strong social tie to a workplace insider but also that such insiders enjoy some stature within the recruiting firm.

Much of the literature focuses on how social networks match workers to firms through supply side mechanisms, e.g. individuals searching for jobs obtain exclusive vacancy information through family and friends (Granovetter (1973) &

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<sup>3</sup>For parallels to the idea of favouritism and family labour as efficiency-improving, see the economic literature on agricultural organisation (e.g. Singh et al. (1986), Chowdhury (2010)) and on family firms (e.g. Banerji et al. (2011)).

(1995), Wahba and Zenou (2005), Calvo-Armengol and Jackson (2004) & (2007), Topa (2011)). Network selection can also improve the match for both employers and employees (Saloner (1985), Simon and Warner (1992), Mortenson and Vishwanath (1994)). Among the demand driven mechanisms, screening for higher ability workers has been studied by Montgomery (1991), Kono (2006), Iversen et al. (2009) and more recently, and experimentally, by Beaman and Magruder (2012). Our paper fits into the strand of the literature that investigates explanations for referrals based on informational asymmetries but we focus on moral hazard rather than adverse selection. We believe, and anthropological evidence suggests, that our moral hazard explanation for workplace referrals is particularly plausible for the lower end unskilled labour markets in developing countries that we study.<sup>4</sup>

Referrals as a mechanism to curb worker moral hazard has also been studied by Kugler (2003) and Heath (2010). . We reinforce the empirical and theoretical results of these papers, that moral hazard is an important driver of workplace referrals. Kugler (2003) and Heath (2010) both assume that referee incentives will always be satisfied. We endogenise referee incentives and derive the extra prediction that referrals will be used only when employers can access workplace insiders with sufficiently high stakes in referral success. Finally, we contribute to the scarce empirical literature seeking to shed light on the mechanisms underlying the use of social networks and referrals in developing and industrial country labour markets.<sup>5</sup>

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<sup>4</sup>Holmstrom (1984) provides a series of relevant examples from lower end Indian labour markets, including on p. 202, a cite from Van der Veen (1979; 64-65): 'It is a generally accepted policy among managers to accept labourers on recommendation and as groups. The managers of the above-mentioned factories could tell me how everyone of their workers (from 12 to 35) had been introduced. They really prefer to utilize these personal relationships, because it gives them a much stronger grip on their labourers. 'When one man misbehaves, I hold the one who introduced him responsible, and that man will keep the mischief-maker in check', said one manager.' See also Sheth (1968) and the appeal to kinship morality among employers in the dyeing industry in Tamil Nadu in De Neve (2008). Other social mechanisms are highlighted in the nascent literature on social incentives in the workplace (e.g. Bandiera et al. (2009)).

<sup>5</sup>Using rainfall at the source end as an instrument, Munshi (2003) is among the few and seminal papers able to identify network effects using data on Mexico-US migration. Yet, conjectures about the precise network mechanisms remain proximate guesswork. That more seasoned migrants are particularly useful for newcomers is interpreted as senior migrants providing referrals on behalf of new arrivals: it might as well reflect the superior labour market knowledge of these seniors. Munshi's (2003) work underscores the challenge associated with convincingly

The rest of the paper is structured as follows. Section 2 presents our theoretical model. Following the description of our study area and data sets in sections 3 and 4, section 5 presents descriptive statistics on migration flows, network-based and other modes of labour market entry, the prevalence of workplace referrals and the social ties between referees and new recruits. In order to obtain clues about referee stakes, this section also makes comparisons of the traits of workplace intermediaries and those recruited. Section 6 presents regression results and robustness tests while section 7 concludes.

## 2 Theoretical backdrop

Consider a firm that needs to fill a vacancy. No specific skills are required in the jobs of interest, but worker misconduct is costly for the firm. The firm can hire the worker either in the spot market or through employee referral. A key feature of hiring through an employee referral is that the employer can sanction both the referee and the recruit if the latter misbehaves. In what follows we develop a simple framework to study efficiency wages with spot and network based recruitment.

There are two periods. In the first period, the firm decides whether to hire a worker through the spot market or by using an employee referral. In each case, the firm offers a contract to the worker which can be of two types: (1) an efficiency wage contract in which case the worker gets a higher wage but is fired if he is caught behaving opportunistically (shirks) or (2) a contract offering the reservation wage of the worker which is normalized to 0. There is an infinite supply of labour for such unskilled jobs, so that the chances of a single worker finding a job that pays efficiency wages through anonymous search are zero, while the probability of an employer finding a worker in the spot market is 1. Of course, the worker can always find a job at the reservation wage of 0. If a referral is used the employer can make (request) referral specific transfers to (from) the employee who gets the opportunity to offer a vacancy to someone in his network.

In the second period workers choose behaviour, the employer checks for shirk-

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pinning down specific network mechanisms. We approach this challenge from a different, more pragmatic and more direct angle. Our advantage is the access to primary data with relevant depth.

ing and pays the corresponding wages.

## 2.1 Efficiency wages with and without referrals

The worker to be hired produces a profit  $e - w$  if he behaves well (does not shirk) and  $1 - w$  if he behaves opportunistically (shirks), where  $e > 1$  and  $w$  is the worker's wage. The costs of opportunism to the firm are given by  $c = (e - 1)$ . The worker gains  $\alpha c$  if he behaves opportunistically, with  $\alpha < 1$ . The firm monitors its labour force and will detect a worker shirking with an exogenous probability  $q \in (0, 1)$ . A worker caught shirking will lose his job and gets a reservation utility equal to 0.

### Efficiency wage in the spot market

If the worker behaves well (does not shirk) his payoff is the (efficiency) wage  $w_s$  while his expected payoff if he shirks is  $(1 - q)w_s + \alpha c$ . The spot market efficiency wage is the minimum wage that ensures no shirking by the worker:

$$w_s = \frac{\alpha c}{q} \tag{1}$$

As in the standard efficiency wage model, the efficiency wage is increasing in the opportunity cost of behaving well and decreasing in the probability of being detected when shirking.

### Efficiency wages with employee referrals

If employee referral is used to fill the vacancy, a parameter  $\rho$  signifies the relationship between the referee and the worker; a higher  $\rho$  indicates a stronger social tie. We assume that the loss inflicted upon the referee if the recommended worker misbehaves is proportional to the referee's stakes, or rents, in the firm. The stakes of the referee variable includes explicit punishments to the referee and also captures the promotional or reputational losses the referee might suffer if his recommended worker misbehaves.

While we are agnostic about their origins, one possible source of referee rents is the same as for the potential recruit: efficiency wages to prevent opportunistic

behavior. Denote the rents at stake as  $R$ . These are exogenous to the problem at hand but will vary across employees within the firm. The key assumption is that the recommended worker will take the referee loss into account when deciding how to behave. The weight assigned to this loss depends on the social proximity to the referee. There are a variety of reasons for why this would be true. If the referee and the worker belong to the same household or extended family the worker is more likely to care about any pain inflicted on the referee through own misbehaviour, and the closer they are the stronger the internalization of this loss. Alternately, suppose the worker and referee are not directly related but have many friends in common, then any information about the worker's misbehaviour will percolate through the network more efficiently the closer they are connected, resulting in a loss of future referral opportunities through the network. Formally, both these effects are captured in the weight the worker assigns to the referee's loss.

A refereed worker who does not shirk gets the wage  $w_r$ , while the expected wage if the worker shirks is given by  $(1 - q)w_r + \alpha c + q(-\rho R)$ . The referral efficiency wage is the minimum wage that ensures non-shirking behaviour and is given by

$$w_r(\rho) = w_s - \rho R. \quad (2)$$

Equation (2) shows that the employer can offer a lower wage premium to prevent shirking if the worker is hired through an in-house referral. This conclusion is similar to Kugler (2003), but the mechanism is different. In Kugler (2003) peer pressure makes it costly for the new recruit to exert lower effort than the referee, and by selecting a referee who exerts peer pressure through his own high effort, the employer can induce higher effort at a lower cost. In contrast, in our set-up, the strength of the social tie between the referee and the new recruit affects the intensity of the social pressure. This social pressure intensifies further with the stakes of the referee.

In Heath (2010), as in our model, referees recruit new workers on the understanding that they can be punished if their recommended worker misbehaves. However, there is no role for referee incentives or for the strength of ties. Moreover none of the two papers considers referee incentives explicitly, which we analyze in the next section.

## 2.2 Referee incentives

As we saw above, absent any problems of referee incentives, the employer wants as close ties between the referee and the worker as possible in order to minimize the wage required to prevent shirking. It is, however, not obvious that the referee and the employer have aligned interests, and if not we need to examine how the employer can induce strong tie referrals and whether it is still profitable to do so.

We will assume that two types of referral related transfers affect the utility of the referee. In addition to workplace rents the referee may receive transfers from the referred worker and his family and network. We denote these transfers  $B(\rho) = v(\rho) + b(\rho)$  where  $v$  captures the social utility a referee gets by helping someone in his network to find a job. Social benefits such as status, prestige and reciprocal aid, are captured by this term. In addition, helping someone get a high paying job may provide the referee with intrinsic utility (“warm glow” altruism). With these interpretations it is reasonable to assume that  $v(\rho)$  is increasing in  $\rho$ . The second term,  $b$ , captures the monetary transfers (bribes) the worker may pay the referee. It is reasonable to assume that the referee can claim a fraction of the wage premium that a worker obtains by being refereed into a job<sup>6</sup>. For the rest of the paper, we will assume that  $b(\rho) = \gamma^\rho w_r(\rho)$ , with  $\gamma^\rho < 1$ .

Finally, the employer may also make some referral related transfers. Let  $T(\rho)$  be the monetary equivalent of the transfer the employer offers (demands) from the referee if the recommended worker is employed.

The referee’s utility (the part affected by the referral decision) is given by  $U(\rho) = R + B(\rho) + T(\rho)$  and the referral related profit for the employer is given by  $\Pi(\rho) = e - w_r(\rho) - T(\rho)$ . In the analysis below we assume there are only two strengths of the social ties,  $\rho = (\rho^H, \rho^L)$ , with  $\rho^H > \rho^L$ . Our results extend to cases with more fine grained social connections.

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<sup>6</sup>In an adverse selection model of worker referral Karlan et al (2009) assumes, similarly, that the low skill/productivity worker can bribe the referee to portray him as a high skilled worker. The bribe is a fraction of the wage premium that high skilled workers earn.



## 2.3 Complete information

Solving for the subgame perfect equilibrium of this two stage game, notice that in the last period  $\rho$  has already been chosen, so  $w_r(\rho)$  is the minimum efficiency wage for a given  $\rho$ . In the first stage the employer must choose  $\rho$  to maximize  $\Pi(\rho)$ . For a fixed  $\rho$ , maximizing profits implies that the referee is paid the minimum to induce him to participate: Let  $U(0) = R$ , denote referee utility if he decides not to refer a worker. Hence, participation requires  $U(\rho) = U(0) \Rightarrow T(\rho) = -B(\rho)$ . Hence, the employer chooses  $\rho$  to maximize  $\Pi(\rho) = e - w_r(\rho) + B(\rho)$ . Thus, we have  $\Pi(\rho^H) - \Pi(\rho^L) = [w_r(\rho^L) - w_r(\rho^H)] + [B(\rho^H) - B(\rho^L)]$

We know from (2) that the first bracket term is positive, the second term can be negative or positive depending on whether it is the social utility or the monetary transfer from the worker that dominates. If  $B(\rho^H) > B(\rho^L)$  then the employer prefers strong ties as he saves wage costs both for the worker and the referee. If, however,  $B(\rho^H) < B(\rho^L)$ , the employer may want the referee to choose a worker he is weakly tied to. When could this happen? Recall that we assumed  $b(\rho) = \gamma^\rho w_r(\rho)$ , with  $\gamma^\rho < 1$ . If the fraction of wages that the referee receives is independent of the strength of the social tie, then it is always optimal for the employer to have a strong tie referee-recruit relationship. But if  $\gamma^H$  is sufficiently lower than  $\gamma^L$  the employer will prefer a weak social tie since he can extract the larger “bribe” the referee is paid by the worker. A weak tie is preferred if  $w_r(\rho^L) - w_r(\rho^H) \leq B(\rho^L) - B(\rho^H)$ , i.e. if:

$$\frac{w_s(\gamma^L - \gamma^H) - (v(\rho^H) - v(\rho^L))}{\rho^H(1 - \gamma^H) - \rho^L(1 - \gamma^L)} > R. \quad (3)$$

The employer prefers a worker with weak ties to the referee if the referee stakes are sufficiently low.

Recall that with the spot market efficiency wage contract, employer profits are  $\Pi(0) = e - w_s$ . Hence  $\Pi(\rho) - \Pi(0) = \rho R - T(\rho) = \rho R + B(\rho) > 0$ , regardless of the strength of ties chosen in equilibrium. To summarize, the employer always prefers referrals to the spot market, conditional on the use of efficiency wage contracts. However, the choice of strong or weak ties depends on whether the referee utility is increasing or decreasing in  $\rho$ . If referee utility is increasing in  $\rho$ , then strong ties are preferred while if referee utility is decreasing in  $\rho$ , then strong ties are

preferred only if  $R$  is sufficiently large.

## 2.4 Incomplete information

It is unlikely that employers have complete information about the social network of the existing employee. It might be common knowledge that everyone has a weak tie person they can suggest for the job, but not everyone has a suitable person they are strongly tied to: Put differently, everyone has a  $\rho^L$  in their network but not all have a  $\rho^H$  in their network, and whether there is a  $\rho^H$  in the network is only known by the referee.

Assume first that it is possible for the employer to verify the connection between the referee and the worker once the worker is presented to the employer. We are then back to the complete information case since the contract that the employer offers the referee can be made contingent on the strength of the tie.

Whichever tie the employer prefers between the referee and the recruit he gives the selected employee the opportunity to recommend a worker and offers him a contract  $\Theta = \{T(\rho^L) = -B(\rho^L), T(\rho^H) = -B(\rho^H)\}$ . This contract guarantees the referee his reservation utility  $R$  whether he refers a worker he is strongly or weakly tied to and he is willing to bring the tie preferred by the employer.

A more interesting situation arises if the employer is unable to verify the social ties between the worker and the referee. Assume that  $B(\rho^H) \geq B(\rho^L)$  so that the employer prefers strong ties with complete information. In this case a referee who is offered the above contract will recommend a  $\rho^H$  person but misrepresent the tie as  $\rho^L$ . The employer must provide the referee with incentives to disclose strong social ties. To examine the optimal contract in this case, let  $U(\rho, \hat{\rho})$  represent the utility of the referee if he refers a worker with social tie  $\rho$  but presents the social tie as  $\hat{\rho}$ .

We have  $U(\rho^H, \rho^L) = v(\rho^H) + b(\rho^H) + T(\rho^L)$  and  $U(\rho^H, \rho^H) = v(\rho^H) + b(\rho^H) + T(\rho^H)$ . In order to induce truthful reporting  $U(\rho^H, \rho^H) \geq U(\rho^H, \rho^L)$ , hence the employer must choose  $T(\rho^H) \geq T(\rho^L)$ . Exploiting the fact that the participation constraint requires  $T(\rho^L) = -(v(\rho^L) + b(\rho^L))$  implies  $T(\rho^H) \geq -(v(\rho^L) + b(\rho^L))$ . This (incentive) constraint binds iff  $B(\rho^H) \geq B(\rho^L)$ .

The cost minimizing contract disclosing strong social ties is given by  $\tilde{\Theta} =$

$\{T(\rho^L) = -B(\rho^L), T(\rho^H) = -B(\rho^L)\}$ . It is straightforward to check that this contract does not give a referee with weak ties to the worker an incentive to misrepresent the tie (even if he could do so). Given  $B(\rho^H) \geq B(\rho^L)$  and  $w_r(\rho^H) < w_r(\rho^L)$ , the employer will offer a contract that induces a referee with strong social ties to reveal this information.

Given the separating contract  $\tilde{\Theta}$ , we have  $\Pi(\rho^H) - \Pi(\rho^L) = w_r(\rho^L) - w_r(\rho^H) > 0$ . In the complete information case this difference is given by  $[w_r(\rho^L) - w_r(\rho^H)] + [B(\rho^H) - B(\rho^L)] > 0$  which is higher than in the incomplete information case, since the employer needs to leave a “referral” rent equal to the difference  $B(\rho^H) - B(\rho^L)$  to the referee (a rent above  $R$ ) to induce him to reveal that the worker is  $\rho^H$ .

On the other hand, suppose that  $B(\rho^L) > B(\rho^H)$ , and  $R$  is sufficiently small, then, as we saw above in the complete information case, the employer prefers a weak tie referral. In this case, the optimal contract leaves a rent with a weak-ties type referee.  $\tilde{\Theta} = \{T(\rho^L) = -B(\rho^H), T(\rho^H) = -B(\rho^H)\}$ , and analogous to the case above, the gains to the employer due to referral are lower than in the complete information case.

To summarize, even with asymmetric information, the employer’s choice of strong or weak ties depends on the same conditions as in the complete information case: strong ties are preferred when referee utility is increasing in  $\rho$ , and weak ties are preferred when referee utility is decreasing in  $\rho$ , and  $R$  is sufficiently low. Moreover, as before, in both cases, the minimum gain from referrals relative to the spot market,  $\Pi(\rho) - \Pi(0) = \rho R > 0$ , so, conditional on efficiency wage contracts being used, referrals are always preferred by the employer.

## 2.5 Robustness

We started off asking why referees should agree to refer given the risk of losing rents or goodwill vis-a-vis the employer. Informal interviews and discussions with individuals who agreed and turned down the offer to recruit on behalf of their firm suggest that this is a real concern. This risk is not captured in the model, since on the equilibrium path the worker never misbehaves. In this section, we model the possibility that there could be mistakes or accidents even if the worker

never misbehaves, so that the referee, more realistically, runs a risk by referring a worker.

Suppose the inspection technology is faulty and there is a chance  $\epsilon$  conditional on inspection that the worker is caught even when he did not misbehave. Then spot market payoff if the worker does not misbehave is  $((1 - q) + q(1 - \epsilon)) w_s$ . If he misbehaves he gets  $w_s(1 - q) + \alpha c$ . The spot market efficiency wage is given by:

$$w_s = \frac{\alpha c}{(1 - \epsilon)q}$$

Referral efficiency wages must now satisfy  $w_r((1 - q) + q(1 - \epsilon)) \geq w_r(1 - q) + \alpha c + (1 - q)\rho R$ , which gives a referral efficiency wage:

$$w(\rho) = w_s - \rho R$$

as before.

The referee's participation constraint changes since he must be compensated for the risk that is involved when he acts as a referee. Participation requires  $U(\rho)(1 - q + q(1 - \epsilon)) \geq U(0)$ , ie.  $U(\rho) \geq \frac{U(0)}{1 - \epsilon} > U(0)$ . Thus the firm must pay  $T(\rho) = \frac{U(0)}{1 - \epsilon} - U(0) - B(\rho)$  to ensure referee participation. Substituting for  $U(0) = R$ , the transfer that guarantees participation is given by  $T(\rho) = \frac{\epsilon q R}{1 - \epsilon q} - B(\rho)$ . Let  $\rho^* \in \{\rho^L, \rho^H\}$  denote the employer's optimal choice of  $\rho$ . Assuming complete information (results easily extends to incomplete information) referrals are now preferred by the employer if  $\Pi(\rho) - \Pi(0) = (e - w_r(\rho^*) - T(\rho^*)) - (e - w_s) \geq 0$

Using the expression for  $T(\rho^*)$  we derived from the participation constraint we find that a sufficient condition for preferring a workplace referral, conditional on efficiency wage contracts being used, is that

$$\rho^* \geq \frac{\epsilon q}{(1 - \epsilon q)(1 - \gamma)} \equiv \hat{\rho}.$$

Referee rewards for referral increase by  $\frac{\epsilon q R}{1 - \epsilon q}$  compared to the benchmark, the no-risk, case. The relationship between the referral efficiency wage and the spot market efficiency wage is, however, unchanged. Hence the employers choice between a strong or weak tie referral is not affected by the kind of risk we are examining here.

We conclude that when the referee encounters a positive risk of losing workplace rents by referring a worker, referrals remain cheaper than the spot market when the kinship network is sufficiently close, i.e. when  $\rho > \hat{\rho}$ .

## 2.6 Non-efficiency wage contracts

So far we assumed that the firm used only efficiency wage contracts, and showed that conditional on efficiency wages, referrals are preferred to anonymous hiring. It is straightforward to show that when the costs of opportunism to the employer are sufficiently low, the employer would prefer to pay the reservation wage for workers. If the employer pays reservation wages, then  $\Pi_S = 1$  and if he uses efficiency wages and referral then profits are  $\Pi(\rho) = e - w_r(\rho^*) - T(\rho^*)$ . Thus efficiency wages are preferred when  $\Pi(\rho) \geq 1$ . Consider first what happens when there are no mistakes in the detection of shirking. Then,  $\Pi(\rho) - \Pi_S = c - \frac{\alpha c}{q} + \rho^* R + B(\rho^*)$ . This is clearly positive as long as  $\frac{\alpha}{q} < 1$ , i.e. as long as the detection probability is higher than  $\alpha$ . With a positive probability of mistakes, this changes to  $\frac{\alpha}{(1-\epsilon)q} < 1$ . In general, when the worker's opportunity cost of shirking is given by  $w_S$  then efficiency wages are optimal whenever  $c \geq w_S - \rho^* R - B(\rho^*) \equiv \bar{c}$ . It is clear that  $\bar{c}$  is decreasing in  $R$ . Moreover, when referee utility is increasing in  $\rho$ , then  $\bar{c}$  is decreasing in  $\rho$  as well.

We conclude that efficiency wage contracts will be used in jobs which have costs of opportunism greater than a threshold, and this threshold is lower, if the employer has access to referees with high stakes in the firm. We also predict a “referral premium”: in equilibrium the worker is either hired through referral and then he is offered an efficiency wage contract or he is hired anonymously and paid the reservation wage. This referral premium however, decreases in referee stakes as well as with the strength of ties, if we assume that the referee has aligned incentives.

## 2.7 Summary and Predictions

We obtain the following robust predictions that we can use to explore whether employee referrals are used to mitigate discipline problems in the workplace:

- H1: We should observe referral based entry into low and unskilled jobs with high costs to firms from worker shirking ( $c \geq \bar{c}(\rho^*, R)$ ).
- H2: From H1 , we expect variation in the use of workplace referral across sectors and job types.
- H3: A higher prevalence of workplace referrals in jobs where strong tie networks have the capacity to supply ( $\rho > \hat{\rho}$ ) candidates. In contrast to Karlan (2009), we expect more referral in low and unskilled jobs which are jobs 'everyone can do'.
- H4: There should be strong social ties between the worker and the referee when referee incentives are aligned with the firm or when referee stakes are high.
- H5: We should observe referrals when the employer has access to referees with high stakes (good positions, a lot to lose) in the firm.
- H6: We should observe a negative relationship between referee stakes and the entrant's wage and between the strength of ties and the entrant's wage.
- H7: We should observe a referral wage premium for jobs that have a high cost of opportunism relative to jobs with low costs of opportunism. Controlling for the job however, this premium will disappear.

Although H6 and H7 are both interesting and testable with the right type of information, our data will only allow us to address the first five hypotheses.

### 3 The context and data

Our primary data set is from two study villages in Nagina tehsil in Bijnor district in western Uttar Pradesh, India's most populous state. A consistent underperformer, UP is part of India's poverty belt and has the highest prevalence of stunting (47 %) among children below the age of three of any Indian state. UP is also shared 16th (among 20 states) on the percentage of underweight children

in the same age group (46 %) (Shiva Kumar (2007)). The quality shortfall in government schools (e.g. Dreze and Gazdar (1998)) has spurred private school initiatives starting from the primary level. The 2001 Census rates for above age 7 rural literacy are 69.3 % for males and 43.3 % for females.<sup>7</sup> Sugarcane, wheat and paddy remain the most important local crops. For low and unskilled workers, agricultural labour demand exhibits seasonal fluctuations that have compelled rural households to actively remedy lean season employment opportunity shortfalls.<sup>8</sup>

As elsewhere in rural India, migration for agricultural or allied work has been common, and often to ‘nearby’ locations for sugarcane processing (crushing) work. Unlike the adjacent district headquarters of Muzaffarnagar and Moradabad (a centre for North-India’s brass industry), Bijnor’s industrial base and local non-farm employment opportunities have been slow to evolve. Coupled with a post 1991 decline in the availability of government jobs (Jeffrey et al (2007)), frustrations over limited local job opportunities run deep also among those responding to new educational opportunities in the post-reform era. This failure of education to fulfill the expectations of educated young local men transcends caste and religious boundaries and is a recurring theme in the rich sociological literature on Bijnor (ibid.).

At 41 % Bijnor ranks third on the percentage of Muslims in the population in Uttar Pradesh.<sup>9</sup> The Muslim population comprises high status Sekhs as well as menial groups like washermen (Dhobis) and barbers (Salmanis). The largest Muslim group in our study villages are the Ansaris (Julahas), traditionally a weaving community. Jats, the main local landowners, and Chamars, who are Scheduled Castes and traditional leatherworkers, are among the most conspicuous and numerous Hindu communities. While the social and religious heterogeneity of the study area has been a seed of some conflict, the Ravidas Jayanti, a major and politically significant Chamar festival, was attended and celebrated by members of all communities in Kasba Kotra in February 2009. In the latest Gram Panchayat

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<sup>7</sup>The 2001 census figures for literacy among males and females above the age of 7 in our two study villages were 73.4 % and 48.3 % in Kasba Kotra and 52.3 % and 19.6 % in Jagannathpur, respectively.

<sup>8</sup>e.g. de Haan and Rogaly (2002); Rogaly et al (2003).

<sup>9</sup>From the 2001 Census. The two other districts in UP with more than 40 % Muslims are Moradabad (45.5%) and Rampur (49%). We are grateful to Roger Jeffrey for sharing these statistics.

(village council) election in the same village, a political alliance of Ansari Muslims and Chamars defeated and replaced an inefficient male (in a seat reserved for women) Jat incumbent with a new Chamar village council head.

Our study of un- and low-skilled labour markets is thus located in an impoverished rural setting where the quality of public services has been abysmal, where private school penetration reflects growing parental aspirations and with an interesting social and religious blend. Consistent with observations from other districts in Uttar Pradesh (Kapur et al (2010)), there is also discernible occupational change among the Chamars at the bottom of the caste hierarchy.

## 4 Data

Our data are from a random sample of households in Kasba Kotra and Jagannathpur villages in Nagina tehsil. The two villages were purposely selected and are located about 3 kms from Nagina town (30 kms to the east of Bijnor town) and the large village of Kotwali, respectively. Initial screening of neighbouring areas and villages suggest that the patterns reported below are quite typical of rural Nagina. Having rejected as inadequate the Panchayat office house list in Kasba Kotra and the voter list in Jagannathpur, village censi were conducted and used to construct a proper sampling frame for each village. From each village and following a PPS principle, households were randomly selected for interviews. The evidence presented below draws on interviews with household members with a labour migration history who were identified during our initial household survey which covered 236 households in Kasba Kotra and Jagannathpur.<sup>10</sup>

Among the 316 individuals with a labour migration history only two were women. Through repeated village visits and the tracing of migrants in Chandigarh and Delhi, in distant Mumbai and Pune as well as in nearby Haridwar and surrounding areas with known factory clusters, we were able to pin down 278 or 88 % of these migrants. The first round of migrant interviews were conducted in

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<sup>10</sup>An individual is understood to have a labour migration history if he has spent a minimum of one month continuously living away from the village for employment purposes. Following Winters et al (2001), we define a household as (i) people living under the same roof and who eat from the same kitchen and (ii) offspring or other family members who would otherwise reside with the unit in (i) but who have migrated for work.



May 2009, the last in February 2010. Through subsequent tracing we have been able to increase the number of migrants interviewed to 287 (90.8 % of the sample).

In our retrospective migrant sample the timing of the first labour migration stretches from 1950 and upto 2009. The bulk of these first migrations are recent with 64% occurring after 1990 and 39.3 % after 2000. Each migrant was interviewed in depth to collect as complete accounts of individual employment and educational histories as possible. Special emphasis was placed on accurate recording of the process of entering the first migrant job and on selected subsequent job changes.<sup>11</sup> To illustrate, we asked whether the first migrant job was pre-arranged and if so whether the migrant had received a job offer. If he did, we asked if the person who made the offer was working for the migrant's first destination employer. If yes, we defined these as cases of workplace-referral, of which employee referral forms a subset. For the person making the job offer on behalf of an employer, information was collected from the migrant on the relationship to the migrant and on the referee's job (job title) within the recruiting firm.

As explained in the theory section, the latter intended to capture the referee's stake vis-a-vis the employer (e.g. Fafchamps and Moradi (2009), Iversen and Torsvik (2010)). Similar information was collected for what we describe as main contacts below. Apart from education, information on work experience and skills were collected along with proxies for individual unobservables expected to be important in these employment relations, including a short Raven-type ability test or whether others considered the migrant to be a person with 'jugar'.<sup>12</sup> We also asked about individual aspirations, general knowledge and whether the migrant cast a vote in the most recent election.

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<sup>11</sup>Given the spread in timings of first migrant jobs, recall poses a methodological hazard. Testing recall in relation to migration, Smith and Thomas (2003) find that subjects are able to recall salient moves with greater accuracy: the first migrations we study are typically salient.

<sup>12</sup>A local term that is widely used, well understood and resembles being 'street-smart'. It translates more accurately as 'capacity to improvise shrewdly with available resources (Jeffrey et al 2007: 4).'

## 5 Descriptive statistics

Table 1 presents broad descriptive statistics disaggregated by social group for the first migrant job and destination. Ansaris and Chamars are both strongly represented. Simple comparisons highlight startling contrasts – Ansaris were younger and less educated at the time of departure and their sectoral concentration much stronger. Although Delhi is the main first destination for all three groups, the main first destination state was nearby Uttarakhand for Chamars and ‘Others’ and Maharashtra, specifically Mumbai and Pune, for Ansaris. Notice also that more Ansaris move to large cities compared to the other groups. Ansari migrants are also spread across more destinations with first migrations primarily for bakery work to destinations stretching from Orissa and West-Bengal in the east, via Bihar and now Jharkhand and Punjab, to Gujarat in the west. In contrast, Chamar migrants typically cluster in nearby destinations.

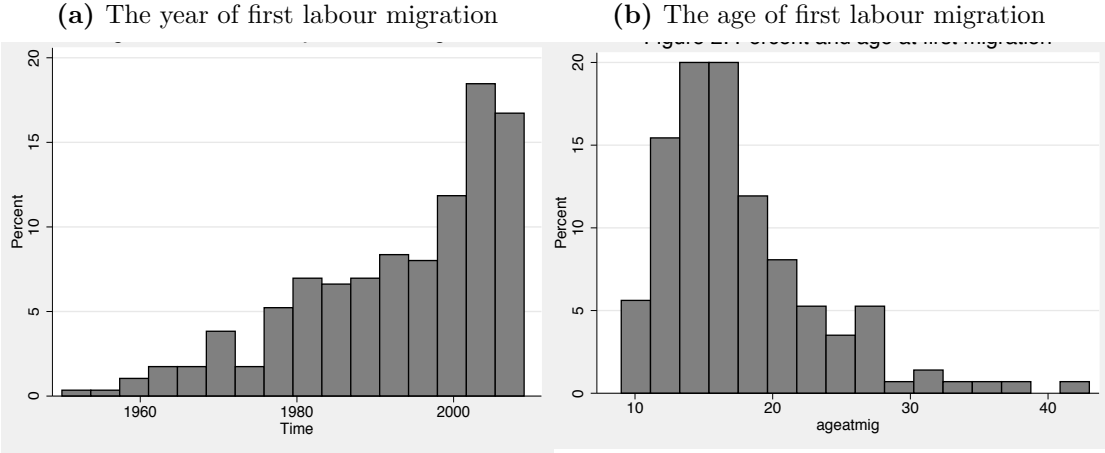
**Table 1.** Migration patterns for main social groups

	Ansaris	Chamars	Others
Share of migrant sample	48.4 % (139)	34.1 % (98)	17.4 % (50)
Mean age at time of migration	16.0 (4.39)	19.3 (6.01)	19.5 (6.85)
Mean yrs of schooling at time of first migration	3.4 (4.04)	5.8 (3.64)	7.4 (4.75)
Dominant first employment sector	Bakery (82.0 %)	Construction & agriculture (31.6%)	“Skilled” private sector (40.0%)
Dominant first migration destination	Delhi (23.7%)	Delhi (13.3%)	Delhi (18.0%)
Dominant destination state for first migration (other than UP)	Maharashtra (36.7%)	Uttarakhand (30.6 %)	Uttarakhand (26.0%)
Share of first migrations within Bijnor district and within UP	2.9%	33.7%	24%
Share of first migrations to large cities	69.0%	25.5%	38%
Other destination states	Uttarakhand Jharkhand West Bengal Orissa Gujarat Punjab Himachal-Pradesh	Punjab Himachal Pradesh	Maharashtra Jharkhand Punjab Himachal-Pradesh

Figure 1 panel a presents the timing of the first labour migration for the 287 migrants in our sample. First migrations are spread out in time, with the main bulk occurring during the last decade. Compared to other studies (e.g. the review in Lucas (1993)), the age at first migration from our study area is low. Panel b shows the high proportion of migrants in the 15-20 age range and the significant

numbers also below that. In fact, 31.6 % of the 287 migrants were 14 years or younger at the time of their first migration.

**Figure 1.** Time and age at migration



The very young migrants are concentrated in the Ansari-dominated bakery sector with bakeries absorbing about two-thirds of this group. The mean age of first migrants dropped from 18.85 before to 17.11 years after 1991.<sup>13</sup> During the same period, the mean age of first migrants entering the bakery sector work fell from about 17 to 15 years.

**Descriptives on job entries**

In Table 2 we identify the mode through which these migrants entered their first migrant job and distinguish, firstly, between migrants with and without a pre-arranged job. The latter left for destination without a job waiting, the former had a job lined up. For these two broad categories, we separate workplace referrals where a person intermediates and makes a job offer on behalf of his employer from what we call indirect network-based entry where a main contact, usually the person making a job offer, does not work for the migrant’s first destination employer.<sup>14</sup>

<sup>13</sup>Statistically significant at the 5 % level.  
<sup>14</sup>A workplace referee may be an employee of the firm or the owner of the firm himself. Notice that apart from the ‘indirect’ category there are also a few instances where a migrant relies

**Table 2.** Mode of entry

	N	Share
<u>Pre-arranged</u>		88.8%
Informal:		
Workplace referral	167	58.2 %
Indirect	53	18.5 %
Labour contractor	27	9.4 %
Formal:		
Other	8	2.8 %
<u>Not pre-arranged</u>		11.2 %
Informal:		
Workplace referral	9	3.1 %
Indirect	5	1.7 %
By asking around	8	2.8 %
By directly approaching known spot market	10	3.5 %

Our simple taxonomy of destination labour market entry also includes intermediation by labour contractors. Labour contractors in Bijnor have traditionally recruited for agricultural and allied work, often on behalf of sugarcane crushing units located within or just outside the district boundaries. Formal labour market entry is a separate mode which includes being offered a job after responding to job advertisements for private sector and government employment, being selected for placement through a campus recruitment campaign or through similar channels. The two remaining minor categories are, ‘asking around’ which is the closest we get to a destination job search process and directly approaching a local spot market for unskilled or skilled labour where those looking to hire on daily or extensively on the assistance of a main contact (e.g. a more experienced migrant) for finding short term jobs in a destination labour ‘chowk’ (spot market) or for setting up a business. For all referees and main contacts, we have collected information on relation to the migrant and job title.

short term basis are matched with job seekers.<sup>15</sup> Haridwar in Uttarakhand is one nearby destination with a local labour ‘chowk’ that Bijnori migrants are familiar with while Delhi, the nearest big city, has many such spot markets. As expected, a substantial majority of the first migrant jobs were allocated informally.

Combining pre- and non-pre arranged jobs, workplace referral is observed for 61.3 % of first migrant jobs. This is somewhat lower than Munshi and Rosenzweig’s (2006) estimate of ‘referral’ in male blue collar jobs in Mumbai, but our definition of workplace referral is more precise and narrow than the one used by Munshi and Rosenzweig. Our figure tallies with the estimates reported in the 2006 WB Microenterprise survey. Table 3 reports mean values of employee referral for the last recruited employee in the cross-section of firms covered by the WB survey. As far as we know, this is the first ‘large’ sample of small enterprises in a developing country setting to provide estimates of the incidence of employee referral across sectors. The incidence is high, across the board, but particularly high in garments and textiles. Standard errors are reported in parenthesis.

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<sup>15</sup>See Bryan, Chowdhury and Mubarak (2011) for an innovative experiment illustrating why, in a context of widespread poverty, job search in the city (or at destination) may be prohibitively costly for most households thus helping to explain why, in such settings, jobs should be expected to be arranged up front and prior to migration.

**Table 3.** Employee referral by industry

	Mean incidence of workplace referral	N
Auto components	0.58 (0.053)	86
Chemicals	0.40 (0.061)	65
Electrical goods	0.57 (0.047)	111
Electronics	0.44 (0.056)	77
Food processing	0.41 (0.03)	262
Garments	0.64 (0.027)	307
Leather	0.54 (0.053)	87
Metal and machine tools	0.46 (0.033)	232
Textiles	0.65 (0.035)	188
TOTAL	0.53	1415

The fact that workplace referrals are so prevalent and varies across industries indicates that recruitment via social networks may be used to curb moral hazard problems at the workplace (confer our hypotheses H1 and H2 above). If workplace referrals mitigate workplace moral hazard, we also expect a close social relationship between the referee and the recruit (H4), while the workplace intermediary ought to have a prestigious position in the workplace (H5). Table 4 considers the social connections that feature in the 176 observations of workplace referral in our sample.

**Table 4.** Social ties and workplace referral

Relation to referee	N	Percentage	Cumulative
Member of the same household	51	29.0%	29.0%
Other relative	87	49.4%	78.4%
Village friend	7	4.0%	82.4%
Village acquaintance	21	11.9%	94.3%
Friend from elsewhere	2	1.1%	95.4%
Acquaintance from elsewhere	6	3.5%	98.9%
Other	2	1.1 %	100.00 %

Kin account for almost 80 % of the cases of workplace referral with a member of the same household acting as intermediary in about 30 % of the workplace referral cases. Village friends and acquaintances add up to just above 15 %. The most important relations for mediating labour market entry through workplace referral are relatives who do not belong to the migrant’s household. If ‘relative’ is interpreted too liberally this might blur the distinction between strong and weak ties.<sup>16</sup> Our descriptives thus suggest that strong, kinship-based ties are overwhelmingly more important than weak ties for referral-based entry into first migrant jobs.

Our theory also predicted that employees with sufficient stakes are more likely to be invited to act as referees by their employers. Table 5 illustrates the diversity of jobs held by referees, main contacts and new migrants in our data-set.

<sup>16</sup>The largest categories of ‘other relative’ in table 3 are cousins (32), uncles (30) and brother-in-laws (17). While the term ‘uncle’ is used generously in the Indian context we have very carefully distinguished genuine from fictive kin.



**Table 5.** Hierarchically ordered job titles for workplace referees, main contacts and new recruits

Rank	Type of jobs
1	Enterprise owner
2	Prestigious jobs/positions
3	Skilled
4	Other (less) skilled
5	Vendor
6	Apprentice/ Trainee
7	Unskilled (upper)
8	Unskilled (lower)

Category 1 are enterprise owners with no attempt made to distinguish be-

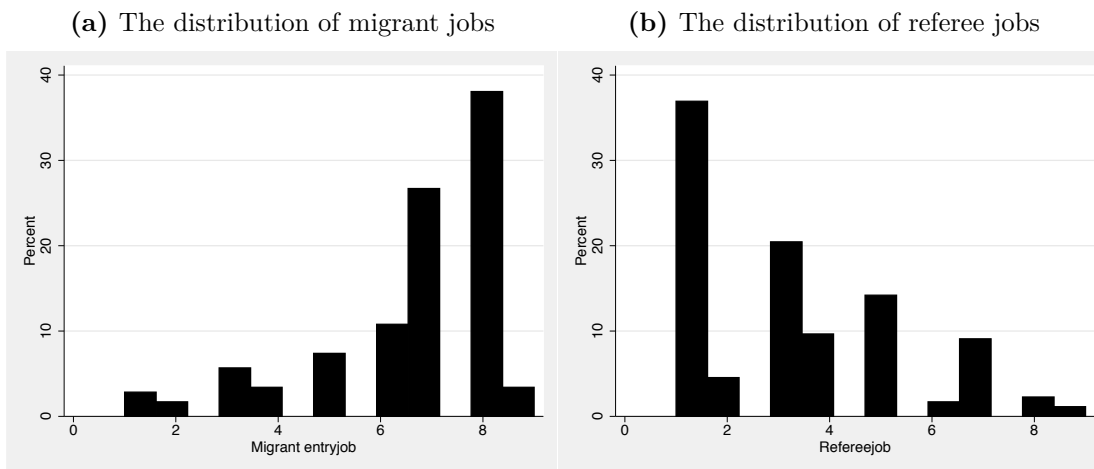
tween ownership of small and larger enterprises. Ownership thus includes tiny enterprises such as teashops - It is bakery owners that form the largest group of enterprise owners in our sample. Categories 2 to 9 were attempted ranked according to skill requirements. Category 2 covers higher prestige jobs, 3 are jobs with comparatively high skill intensity and category 4 somewhat less so.<sup>17</sup> Category 5 are vendors, often self-employed, and frequently, because of the nature of their work, people with useful connections, especially within the bakery sector. Category 6 covers apprentice jobs and a rich range of practical and technical skills in the process of being acquired. Category 7 represents the upper end of the low-skilled jobs while categories 8 and 9 are physically demanding and unskilled, manual jobs. While any such ranking inevitably will contain arbitrary elements, table 5 is, we believe, reasonable and balanced.

Using these categories, Figure 2 panel a) portrays job classifications for the first migrant jobs for the 176 individuals recruited through workplace referral in our sample. 79 % of these first migrant jobs are clustered from category 5 downwards with categories 7 and 8 being the most common, followed by category 9 and then by apprentice jobs (category 6). Put differently, first migrant jobs are typically tough and physically demanding. As Figure 2 panel b) shows, the job profiles of the workplace intermediaries are strikingly different from those of the new recruits: About 62 % of the in-house referees are in categories 1 to 3.

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<sup>17</sup>Prestige is not, of course, necessarily linked to skill: barbers, iron smiths and cobblers are all performing skilled tasks with strong (lower) caste and low status connotations.

**Figure 2.** Job categories for migrants and referees



We do not have information on the loss misbehaviour will inflict on the referee. It is however likely that this loss increases in the stakes of the referee and a sensible proxy for the referee stakes vis-a-vis the employer is the prestige attached to their job category. It transpires that links to people who either are enterprise owners, are more skilled and therefore in more prestigious jobs, or are vendors, who by virtue of their occupational specialisation have a broad contact base, are crucial for finding the first migrant job. Further, the most important category turn out to be the enterprise owners themselves. Equally compelling, in about a third of the instances where the owner acted on behalf of the firm, he recruited a member of his own household. In 43 % of the same instances, the owner recruited another relative. The descriptives presented so far suggest a close correspondence between the theoretical predictions and our primary data.<sup>18</sup>

## 6 Regression Analysis

Our aim in this section is not to deliver a causal story. There is no experiment and no quasi-experimental identification of our model. Instead, the following

<sup>18</sup>In a separate regression available in an Online Appendix, we use the WB 2006 Microenterprise survey data to test the variation in employee referral across industries and the higher prevalence of referrals in low and unskilled jobs suggested by H3. The results support these conjectures.

discussion centers on the more modest, pragmatic and important aim of delivering 'robust' correlations. Above we only considered migrants who entered their jobs through workplace referral. A better way to 'test' the moral hazard hypothesis is to compare workplace referrals with migrants who found their jobs through other contacts. If alleviation of moral hazard explains the use of workplace referrals we expect those who enter via a workplace referral to have stronger kinship ties to their referee while the referees themselves should have more prestigious jobs when compared to migrants in the reference group (which comprises those entering a job without a workplace intermediary).

In our baseline specification, we use a binary dependent variable that takes the value 1 if individual  $i$  entered his first workplace through workplace referral and 0 otherwise. We relate this indicator to dummies capturing the social connections to the referee (or the main contact) and the status of the job held by the referee (or main contact). We think of our first regression as a 'raw' or unconditional check of the robustness of our descriptives and of the main patterns in the data. We estimate the following equation:

$$workplacereferral_i = \beta_0 + \beta_1 Refhighjob + \beta_1 Refjobvendor + \beta_1 Refhh + \beta_1 Refrelt + \beta_1 Refcovill + \varepsilon_i$$

Refhighjob is a dummy that takes the value 1 if the referee (or main contact) has a job in category 1-3 in Table 5 and Refvendor is a dummy if the referee (or main contact) was a (bakery) vendor. The following three dummies capture the social relationship between the new recruit and the in-house referee (or main contact), specifically whether the workplace referee (or main contact) (i) was a member of the same household (Refhh), (ii) was another relative (Refrelt), or (iii) was a co-villager not related through kin (Refcovill).<sup>19</sup> The results reported as marginal probabilities in table 6 confirm the impressions from section 6: strong kinship ties and contacts in prestigious jobs appear crucial for acquiring the first migrant job through workplace referral.

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<sup>19</sup>The benchmark category comprises 90 observations where strong social ties feature in 70 % of the observations. The corresponding figure for workplacereferral is 78.5 %.

**Table 6.** Unconditional regression; workplace-referral as the dependent variable

Variable	
Referee has high-job	0.406*** (0.065)
Referee is vendor	-0.020** (0.09)
Referee is member of migrant's household	0.288*** (0.077)
Referee is migrant's relative	0.260*** (0.091)
Referee is migrant's covillager	0.214*** (0.083)
Pseudo $R^2$	0.182
N	263

As noted in the introduction and elsewhere there are several explanations why social networks are used to fill vacancies. Some of these rival explanations are consistent with a subset of the patterns observed in our data. If workplace insiders have privileged access to vacancy information, the notion that networks are used to disseminate information would also predict extensive entry through workplace insiders. This “information” explanation is, however, hard to reconcile with recruits having strong ties to workplace intermediaries, as weak tie search would be the most efficient job search strategy (Granovetter (1973), Zenou (2012)). In addition, job acquisition should typically occur through entry level workers since these (i) are likely to be more numerous than other staff and (ii) are the type of contacts our representative job seeker should be most likely to know.

It is possible that strong tie and prestigious job contacts act mainly as screening devices and not as discipline devices as we suggest. Montgomery (1991) and Karlan et al (2009), among others, argue that employers use social networks to attain information about unobservable skills and talents of job candidates. One

fact that adds weight to our moral hazard interpretation is that most of the jobs in our sample are low - or no - skill jobs. To examine the possibility that workplace referral is mainly a screening device and to rule out other confounding factors, we expand our benchmark model by adding two proxies for unobservable individual migrant attributes expected to matter in these employment relations: a general ability test score based on a Raven proxy and a dummy of whether the worker is considered a person with ‘jugar’.<sup>20</sup> Since close kin are likely to possess superior information about exogenous but unobservable worker traits we cannot, a priori, rule out that referral through strong tie connections benefit employers by screening for such traits.

We also add controls for observable individual attributes, i.e. age at the time of migration and years of schooling. For the former we use a dummy which takes the value 1 for migrants aged 12 and below and 0 otherwise alongside a general variable for age at migration. If the advantages to employers of recruitment through strong tie networks or through staff in more prestigious jobs mainly are manifested through screening for migrant unobservables, the strong tie and prestigious job coefficients should weaken once these unobservables are introduced. As seen in column 1 in table 7, the impacts of controlling for these unobservable and observable worker traits on the highjob and social tie coefficients are negligible.

It appears, therefore, that strong social ties and recruitment through staff in more prestigious jobs do not provide employers with a screening advantage. Another possibility is that referrals through a strong tie to a person in a prestigious job may act as an insurance mechanism for very young migrants. The strongly positive age 12 dummy is consistent with and adds support to this explanation.<sup>21</sup>

The kind of social clustering in the workplace that we observe could also reflect preferences for working together. We are able to control for such preferences at the level of the jati (sub-caste and its equivalent for Muslim workers) and at the level of the village (e.g. Banerjee (1983), Munshi (2003)). Specifically, we add

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<sup>20</sup>The score on the Raven proxy test was obtained from the completion of six progressive matrices with an inbuilt introductory comprehension test: see Online Appendix for further details.

<sup>21</sup>This impression is reinforced by the descriptives. The incidence of referral for migrants aged 12 and below is 85.3 %. For the 13-16 age group, the corresponding incidence is 70.9 % and for those aged 17 and above, the incidence is 49.3 %.

dummies for belonging to the most numerous group within our migrant sample, the Ansaris, along with a village dummy to control for village level variation in unobservable social cohesion and family relations. If the strong social tie coefficients simply reflect that members of the largest social group have more intense preferences for working together, controlling for their identity should turn the strong tie coefficient insignificant. Similar reasoning applies to such preferences at the village level. The results from introducing these two controls are reported in column 2 in table 7.

Note that excepting the *refcovill* probability, other probabilities of interest now shrink in size. The coefficient on *refreft* and *refcovill* also become statistically weaker. Closer scrutiny reveals that these are mainly Ansari effects: the village dummy has no effect, whatsoever. Beyond the effects operating through the *highjob* and social tie coefficients, there appears to be a large and separate effect of Ansari identity on the probability of being recruited through referral.

In light of the descriptive statistics, which suggested a particularly high prevalence of referral within the bakery sector, it is quite possible that the strong social tie and high job coefficients are driven by unobservable characteristics of the small enterprises that dominate this sector. Column 3 in table 7 reports the results of introducing, firstly, a bakery sector dummy and secondly a dummy for first migrant jobs in agriculture and construction sector jobs: the latter are typically short-term and seasonal jobs. These two sectoral dummies are both statistically significant, the bakery dummy is positive and significant at the 1 % level. The coefficients of interest now all shrink in size. While the *refhighjob* coefficient remains strongly significant, the social tie coefficients become statistically weaker and borderline (in-) significant .

**Table 7.** Testing rival explanations; workplace referral as dependent variable

Variable	Model		
	High jobs. strong ties and referral as screening device	Workplace clustering reflects social preferences	Bakery sector 'fixed effect'
Refhighjob	0.406*** (0.064)	0.354*** (0.068)	0.244*** (0.080)
Referee is vendor	-0.062 (0.103)	-0.164* (0.106)	-0.312*** (0.118)
Referee is member of migrant's household	0.256*** (0.052)	0.209*** (0.069)	0.159 (0.090)
Referee is migrant's relative	0.221*** (0.073)	0.196** (0.086)	0.172* (0.092)
Referee is migrant's covillager	0.179*** (0.071)	0.182** (0.070)	0.146* (0.079)
'Raven'-score	0.005 (0.072)	0.000 (0.026)	0.006 (0.026)
Person with 'jugar'	0.075 (0.075)	0.076 (0.082)	0.072 (0.078)
Age at migration	-0.011* (0.006)	-0.008 (0.006)	-0.004 (0.005)
Age 12:	0.204** (0.059)	0.226*** (0.050)	0.218*** (0.043)
Yrs of schooling	0.000 (0.002)	0.007* (0.004)	0.003 (0.003)
Ansari		0.189*** (0.056)	0.024 (0.065)
Kasba Kotra		0.021 (0.052)	0.014 (0.054)
Bakery			0.253*** (0.060)
Agri/Const			-0.422** (0.171)
Pseudo R2	0.2258	0.2448	0.3111
N	260	260	260

Note: In all specifications, standard errors are robust and clustered at the level of 'tola' or neighbourhood (there are a total of nine tolas in the two study villages). \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ . Kasba Kotra is a village dummy, Agri/Const is a dummy for agriculture/construction

Put differently, while our results suggest that the high job and in particular



the strong tie effects are more pronounced in the bakery sector, they are also significant but statistically weaker for other sectors. Such sectoral variation is consistent with our theoretical predictions (H1 & H2), the descriptive statistics reported in table 3 and lends support to our moral hazard hypothesis.

The standard approach to addressing endogeneity concerns in regressions containing network variables is to make use of an IV technique. In our table 8 results, we have instead and as a robustness check introduced an alternative dependent variable, *strongtie referral*, that includes the most vulnerable regressors in our earlier specifications, namely *Refhh* and *Refrel*.<sup>22</sup> In this respecification, therefore, the social tie dummies are no longer relevant right hand side variables. Given the redefinition of the dependent variable, this enables us to check the association between *Refhighjob* and *strongtie referral*. Note that the *Refhighjob* coefficient remains positive and statistically significant in columns 1 and 2. Could the *Refhighjob* coefficient not also be biased? Suppose that unobserved diligence is correlated with career progress and thus with having a 'high' or 'prestigious' job of the type that our workplace referees have been observed to have. For this to represent a genuine concern such unobserved diligence would have to be associated with a higher (or lower) propensity to recruit relatives and family members into a given job. We find such an association implausible.

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<sup>22</sup>The *strongtie referral* dependent variable dummy is equal to 1 if *referral=1* & *referral* occurred through a strong social tie.

**Table 8.** Robustness check; strong-tie workplace referral as dependent variable

Variable	Model		
	High jobs. strong ties and referral as screening device	Workplace clustering reflects social preferences	Bakery sector 'fixed effect'
Refhighjob	0.262*** (0.073)	0.178** (0.081)	0.110 (0.095)
Referee is vendor	0.032 (0.095)	-0.137 (0.096)	-0.198* (0.110)
'Raven'-score	0.005 (0.04)	-0.006 (0.038)	-0.002 (0.039)
Person with 'jugar'	0.072 (0.108)	0.076 (0.111)	0.074 (0.121)
Age at migration	-0.019** (0.009)	-0.016* (0.008)	-0.014* (0.007)
Age 12:	-0.010 (0.094)	0.015 (0.081)	-0.009 (0.073)
Yrs of schooling	-0.005 (0.065)	0.004 (0.007)	0.0012 (0.007)
Ansari		0.310*** (0.055)	0.257*** (0.078)
Kasba Kotra		-0.062 (0.059)	-0.047 (0.063)
Bakery			0.032 (0.104)
Agri/Const			-0.315** (0.130)
Pseudo R2	0.079	0.123	0.142
N	260	260	260

As a further robustness check we estimate the same model restricting the observations to the subset of cases of 'employee referral'. The sample size is now

down to 196 observations. Even so the main equivalent results in prevail.

**Table 9.** Restricting the sample to employee referrals

Variable	Model		
	High jobs. strong ties and referral as screening device	Workplace clustering reflects social preferences	Bakery sector 'fixed effect'
Refhighjob	0.290*** (0.087)	0.252** (0.098)	0.154 (0.118)
Referee is vendor	-0.061 (0.114)	-0.159 (0.108)	-0.289** (0.112)
Referee is member of migrant's household	0.292*** (0.087)	0.231* (0.111)	0.160 (0.132)
Referee is migrant's relative	0.263** (0.120)	0.231 (0.142)	0.190 (0.152)
Referee is migrant's covillager	0.204 (0.115)	0.203 (0.112)	0.150 (0.130)
'Raven'-score	0.015 (0.033)	0.010 (0.031)	0.019 (0.029)
Person with 'jugar'	0.133 (0.083)	0.131 (0.089)	0.122 (0.098)
Age at migration	-0.015* (0.008)	-0.012 (0.008)	-0.007 (0.007)
Age 12:	0.204** (0.059)	0.290*** (0.089)	0.279*** (0.082)
Yrs of schooling	0.007** (0.003)	0.013*** (0.004)	0.008*** (0.003)
Ansari		0.210** (0.089)	0.018 (0.096)
Kasba Kotra		-0.025 (0.067)	-0.026 (0.069)
Bakery			0.273*** (0.060)
Agri/Const			-0.389** (0.150)
Pseudo R2	0.134	0.151	0.3111
N	196	196	196

Note: In all specifications, standard errors are robust and clustered at the level of 'tola' or neighbourhood (there are a total of nine tolas in the two study villages). \* p<0.05; \*\* p<0.01; \*\*\* p<0.001. Kasba Kotra is a village dummy, Agri/Const is a dummy for agriculture/construction

In Table 9, the Refhighjob and strong tie dummies are all strongly significant in column 1. Given the sample restrictions, the results are somewhat weaker in column 2 (the refrelt coefficient is now borderline insignificant). We should also not, given the sample size, be surprised that these key coefficients all turn insignificant in column 3.

## 7 Conclusion

In this paper we present a model where firms use employee referral to curb moral hazard problems in low and unskilled labour markets. We showed that the firm can exploit social preferences between the recruit and the referee to leverage desirable behaviour at a lower cost. This strategy only works if the referee has the right incentives and relevant, strong tie networks, have the capacity to supply candidates. The latter is more likely for the type of jobs that we focus on, namely low and unskilled jobs that anyone, in principle, can do. In general we expect to observe referrals in jobs with high costs of opportunism and when referees with high stakes in the firm are available. We predict strong tie connections in this case.

We confront these predictions with an in-depth primary data set covering low- and unskilled migrants from Western Uttar Pradesh (India). Our descriptives square well with our predictions and show a very high prevalence of referral based labour market entry. The evidence we have presented should not be interpreted as decisive; other concerns may explain the prevalence of job entry through workplace insiders. We do, however, address the main rival explanations and although they may contribute to explain the high prevalence of entry through workplace insiders, they do not alter our conclusion: For migration into low- and unskilled jobs, moral hazard is a relevant problem that employers appear to use workplace referrals to mitigate. Our paper thus support results in Kugler (2003) and Heath (2010) that moral hazard is an important driver of workplace referrals, but adds to the literature the interesting themes of the role of social ties and how referee incentives can shape referral prevalence and outcomes.

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