

# CMI WORKING PAPER

WP 2015: 01

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

Amrita Dhillon, Vegard Iversen and Gaute Torsvik



Chr. Michelsen Institute (CMI) is an independent, non-profit research institution and a major international centre in policy-oriented and applied development research. Focus is on development and human rights issues and on international conditions that affect such issues. The geographical focus is Sub-Saharan Africa, Southern and Central Asia, the Middle East and Latin America.

CMI combines applied and theoretical research. CMI research intends to assist policy formulation, improve the basis for decision-making and promote public debate on international development issues.



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

By Amrita Dhillon, Vegard Iversen and Gaute Torsvik<sup>†</sup>

## Abstract

We develop a new theory of employee referrals into informal low - and unskilled jobs in developing country labour markets. Employers use social preferences between referees and new recruits to mitigate moral hazard problems in the workplace. We show that employers prefer to hire workers with strong social ties to referees and deliberately select referees with high stakes in the firm. In-depth primary data on low- and unskilled migrants in India are used to provide a suggestive empirical counterpart to these results. Consistent with the theoretical predictions, we observe a high prevalence of referral and of strong social ties between referees and new recruits. Further, workplace intermediaries are different from and typically in higher stake and more ‘prestigious’ jobs than those recruited. Detailed evidence on wages and job types from the main sector of migrant employment provides additional support for our moral hazard explanation for referral.

**JEL:** J41, J31, D82, D86, O12, O17

**Keywords:** networks, low- and unskilled jobs, India, moral hazard, employee referrals, efficiency wages, referee incentives, strength of ties.

---

\*We would like to thank Markus Eberhardt, Parikshit Ghosh, Magnus Hatlebakk, Matt Jackson, Amartya Lahiri, Jeremy Magruder, Francisco Manuel Munoz Martinez, Halvor Mehlum, Stelios Michalopoulos, Abhiroop Mukhopadhyay, Kaivan Munshi, Rohini Somanathan, Chris Woodruff and participants at the ESOP Workshop on ‘Social networks and urban labour markets in developing countries’, the ISI-IGC Conference, the IAS Economics Workshop and the PET development workshop for comments. Special thanks to the Indian Statistical Institute, Delhi for hosting Dhillon and Iversen and the IAS Princeton for hosting Dhillon. We are indebted to Sushil Kumar and Jyoti Tripathi for their commitment and very competent data collection.

<sup>†</sup>Amrita Dhillon, King’s College. London and CAGE Research Affiliate, amrita.dhillon@kcl.ac.uk; Vegard Iversen, University of Manchester, UK: vegard.iversen@manchester.ac.uk; Gaute Torsvik, University of Bergen and CMI: gaute.torsvik@econ.uib.no

# 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 documented high prevalence of social network-based job entry in such settings, little is known about why social networks are preferred, by workers and employers. This question is important because network based job entry may give rise to inequalities. Close family and kin may for instance benefit at the expense of others with similar qualifications. Using social connections to obtain jobs can also be seen as favouritism that jeopardises efficiency (Kramarz and Thesmar (2013), Fafchamps and Moradi (2009)).

A less obvious possibility is that job entry through social networks, because of asymmetric information and incomplete labour contracts, may improve efficiency. This paper develops a theory of demand (employer) driven network recruitment in a setting where legal and informational enforcement infrastructure is absent and worker discipline poses a serious challenge.<sup>2</sup> In our model, firms can recruit workers either anonymously in the spot market or through an employee referee. If referrals are used, the employer invites an employee to recruit on the firm's behalf. This referee can be expected to recommend a member of his social network, e.g. close or more distant family, friends or acquaintances. A key feature of our model is that social proximity to the referee makes it more costly for a recruit to misbehave since bad conduct adversely affects the referee's workplace stature. The employer can therefore reduce the wage premium (the efficiency wage) necessary to induce desirable recruit behaviour.

We show the conditions under which the employer prefers referrals to any-

---

<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 prevalence for men than women. According to the World Bank's Micro-enterprise 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)). In 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.

mous hiring, taking into account both how referral affects the entrant’s wage and the transfers necessary to align referee and firm interests. We also show that employers will invite employees with high stakes in the firm to act as referees and prefer strong ties between a referee and a new recruit.<sup>3</sup>

These theoretical contributions are complemented by a primary data set covering low and unskilled migrants from a poor area of rural North-India. The unusual depth of the data enables us to uncover the role of networks for the entry into first migrant jobs in destination settings where employers have little or no information about workers hired through the market. According to our data, 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 observation is that while entry typically is into bottom tier jobs, workplace intermediaries are usually persons in higher stake and more prestigious jobs. These patterns agree with the main predictions of our model and are difficult to reconcile with rival explanations for network based hiring. Our model is thus able to explain patterns in the data that rival theories are silent about.

Much of the existing literature on social networks and recruitment 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) & (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 demand driven mechanisms, screening for higher ability workers has been studied theoretically by Montgomery (1991) and Kono (2006), empirically by Kajisa (2007) and experimentally, by Beaman and Magruder (2012). Our paper adds to the literature highlighting asymmetric information explanations for referrals but focuses on moral hazard rather than adverse selection. Anthropological evidence suggests that our moral hazard explanation for referrals is particularly plausible for the lower end unskilled labour markets that we study.<sup>4</sup>

---

<sup>3</sup>For parallels to the idea of favouritism and family labour as efficiency-enhancing, 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)).

<sup>4</sup>Holmstrom (1984) provides a series of relevant examples from lower end Indian labour

Referrals as a mechanism to curb worker moral hazard has also been touched upon by Kajisa (2007) and studied by Kugler (2003), Iversen et al. (2009) 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 present new theoretical insights by endogenising referee incentives and the strength of ties and show that if moral hazard motivates employer driven network recruitment, job entry through strong ties and high stake referees should be expected. To the best of our knowledge, this paper is the first to theoretically demonstrate employer gains to the simultaneous use of strong ties and high stake referees for recruitment into low skilled jobs. We also contribute new empirical insights on social network mechanisms in the labour market.<sup>5</sup>

The rest of the paper is structured as follows. Section 2 presents our main contribution, a new theory of employee referrals. Following a brief description of context and our data, section 3 presents descriptive statistics on migration flows, network-based and other labour market entry, the prevalence of referrals and the social ties between referees and new recruits. To obtain clues about referee stakes, we compare the traits of workplace intermediaries and those recruited. Section 4 presents simple regressions to check the robustness of our descriptives and evidence on wages and jobs in the bakery sector, the main sector of employment in our sample. Section 5 concludes.

---

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 based on data on Mexico-US migration. Yet conjectures about the precise network mechanism that generates these effects remain unexplored. That more seasoned migrants are particularly useful for newcomers is interpreted as senior migrants providing referrals on behalf of new arrivals: this might as well reflect the superior labour market knowledge of these seniors. Munshi's (2003) work underscores the challenge associated with pinning down a specific network mechanism. We approach this challenge from a more pragmatic angle.



## 2 A new theory of employee referrals

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 in the spot market or through employee referral. A key feature of the employee referral option is that the firm can sanction both the referee and the recruit if the latter misbehaves, thus relaxing the limited liability constraint of the worker via his relationship to the referee.

In our simple model there are two periods. In the first period, the firm decides whether to hire a worker through the spot market or through employee referral. In each case, the firm offers the worker a contract which can be of two types: (1) an efficiency wage contract which pays a higher wage but where the worker is fired if caught behaving opportunistically (shirking) or (2) a contract paying the worker his reservation wage (normalized to 0).

There is an infinite supply of labour for such unskilled jobs, so that the chance of a single worker finding a job that pays efficiency wages through anonymous search is zero, while the probability of an employer finding a worker in the spot market is 1. The worker can always find a job at the 0 reservation wage.<sup>6</sup> If referral is used, the employer can make (request) referral specific transfers to (from) the referee who gets the opportunity to recruit someone from his network.

In the second period workers choose behaviour, the employer checks for shirking and pays the corresponding wages.

### 2.1 Efficiency wages with and without referrals

The new worker 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  $\alpha c^7$  if he behaves opportunistically, with  $\alpha < 1$ . The firm monitors employees and detects 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.

---

<sup>6</sup>This assumption implies that the bargaining power lies with employers; the results will not change with a different distribution of bargaining power.

<sup>7</sup>This formulation is equivalent to assuming that the cost of effort is  $\alpha c$ .



### Efficiency wage in the spot market

If the worker behaves well 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:

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

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 the firm uses employee referral to fill a vacancy, the referee implicitly acts as an insurance against recruit misbehaviour. The referee suffers a loss in income, promotion opportunities and reputation if his recommended worker misbehaves. The recruit is sensitive to this loss and more so the stronger his social tie to the referee. To formalize this, let  $\rho$  measure the social proximity between the referee and the worker; a higher  $\rho$  indicates a stronger social tie (closer kinship or friendship). Let  $R$  denote the potential loss to the referee if the new worker shirks.<sup>8</sup> A referred worker who does not shirk is paid the wage  $w_r$ , the expected wage if shirking is  $(1 - q)w_r + \alpha c + q(-\rho R)$ . 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 in-house referral.<sup>9</sup> This conclusion

---

<sup>8</sup>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. Our model can be interpreted as the reduced form specification of a dynamic model with overlapping generations of workers who receive efficiency wages to prevent them from “shirking” and where incumbent workers are used to hire the next generation of workers.

<sup>9</sup>A lower wage implies that there are instances when referrals enhance efficiency. Since  $\alpha < 1$  it is always efficient for the worker to exert effort, but the employer will only induce effort if  $w_s \leq c$ . Hence, a referral based hiring enhances efficiency if  $w_s > q > w_r(\rho)$ .

is similar to Kugler (2003), but the mechanism is different. In Kugler (2003), peer pressure makes it costly for the new recruit to exert less effort than the referee: by selecting a referee who exerts peer pressure through own high effort, the employer is able to 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, captured by  $R$ .

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, in her model there is no role for referee incentives or for the strength of ties. Neither Kugler (2003) nor Heath (2010) consider referee incentives explicitly, which we analyze in the next section.

## 2.2 Referee incentives

As seen above, absent any problems of referee incentives, the employer wants as strong ties between the referee and the worker as possible to minimize the wage required to prevent shirking. It is not, however, obvious that the referee and the employer have aligned interests about the preferred strength of this tie. If not, we need to examine how the employer can induce strong tie referrals and whether this is profitable or not.

We distinguish between two types of referral related transfers that affect the referee's utility. The referee may receive transfers from the recommended 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, approval and reciprocal aid, are captured by this term. In addition, helping someone into 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 a worker obtains when being referred into a job<sup>10</sup>. For the rest of the paper, we assume

---

<sup>10</sup>In an adverse selection model of worker referral, Karlan et al (2009) assume, similarly, that

that  $b(\rho) = \gamma^\rho w_r(\rho)$ , with  $\gamma^\rho < 1$ .

In addition, the employer may also make 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 hired.

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.

### 2.3 Complete information

Solving for the sub-game 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 social utility or the monetary transfer from the worker dominates. If  $B(\rho^H) > B(\rho^L)$ , the employer prefers strong ties since he will save 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, 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  $w_r(\rho^L) - w_r(\rho^H) \leq B(\rho^L) - B(\rho^H)$ ,

---

a low skill/productivity recruit can bribe the referee to portray him as high skilled. The bribe is a fraction of the wage premium high skilled workers earn.

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.

### 2.3.1 Collusion between referee and recruit

Employers are unlikely to have complete information about a candidate referee's social network. It might be common knowledge that everyone has a weak tie person they can recommend for the job, but not everyone has a suitable person they are strongly tied to: Everyone has a  $\rho^L$  in their network, but whether there is a  $\rho^H$  is only known by the referee.

Assume first that the employer can verify the connection between the referee and the worker once the worker is introduced. This takes us back to the complete information case since the contract the employer offers the referee can be made contingent on the strength of the tie.

Whichever social tie the employer prefers, he offers the referee a contract  $\Theta = \{T(\rho^L) = -B(\rho^L), T(\rho^H) = -B(\rho^H)\}$  that guarantees the referee his reservation utility  $R$  whether he recommends a recruit he is strongly or weakly tied to. With this contract, 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 tie between the referee and the recruit. With asymmetric information, the employer may have to provide the referee with incentives to disclose the true social tie between him and the recruit. To illustrate, assume that  $B(\rho^H) \geq B(\rho^L)$  and the employer prefers strong ties with complete information. When the em-

ployer cannot verify the social tie, a referee who is offered the above contract will recommend a  $\rho^H$  person but misrepresent the tie as  $\rho^L$ .

To characterize the optimal contract in this case, let  $U(\rho, \hat{\rho})$  represent referee utility if he refers a worker with social tie  $\rho$  but presents the 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 the strong social tie 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). 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 a strong social tie to reveal the true tie.

With a 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. With complete information the employer prefers a weak tie referral, since he can extract the entire surplus accruing to the referee. This is not possible when information is incomplete, since we have  $T(\rho^H) = T(\rho^L) = -B(\rho^H)$ . This implies that with incomplete information and  $B(\rho^L) > B(\rho^H)$ , the employer will prefer strong ties.

Another way to state this result is that collusion between referee and recruit can reduce the employer’s ability to extract rents: a direct implication is that employers always prefer strong ties in the presence of collusion. Moreover, as before, 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.

### 2.3.2 Referee's risk

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 offers to recruit on behalf of their firm suggest that this is a real concern. This risk is not captured in our model, since on the equilibrium path the worker never misbehaves. In this section, we introduce the possibility of mistakes or accidents even if the worker never misbehaves, so that the referee, more realistically, is exposed to a risk when recommending a worker.

Suppose that the inspection technology is faulty and there is a chance  $\epsilon$  conditional on inspection that the worker is charged even if he didn't misbehave. In this case, the 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  $w_r((1 - q) + q(1 - \epsilon)) \geq w_s(1 - q) + \alpha c + (1 - q)\rho R$ , which gives a referral efficiency wage:

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

as before.

The referee's participation constraint will change since he must be compensated for the risk he takes when agreeing to act as a referee. Participation requires  $U(\rho)(1 - q + q(1 - \epsilon)) \geq U(0)$ , i.e.  $U(\rho) \geq \frac{U(0)}{1 - \epsilon} > U(0)$ . 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 extend to incomplete information) referral is 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  $T(\rho^*)$ , derived from the participation constraint, we find that a sufficient condition for preferring 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, no-risk, case. Note that the relationship between the referral efficiency wage and the spot market efficiency wage is unaffected. Hence the employer's choice between a strong or weak tie referral is not affected by the type of risk examined here.

We conclude that when referral exposes a referee to a positive risk of losing workplace rents, referrals remain cheaper than the spot market as long as the social tie is sufficiently strong, i.e. when the feasible  $\rho > \hat{\rho}$ .

## 2.4 Non-efficiency wage contracts

So far we have established that conditional on efficiency wages, referrals are preferable 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 workers their reservation wage. If the employer pays reservation wages,  $\Pi_S = 1$ : when using efficiency wages and referral 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. In this case,  $\Pi(\rho) - \Pi_S = c - \frac{\alpha c}{q} + \rho^* R + B(\rho^*)$ . This expression is positive if  $\frac{\alpha}{q} < 1$ , i.e. as long as the detection probability exceeds  $\alpha$ . With a positive probability of mistakes, we get  $\frac{\alpha}{(1 - \epsilon)q} < 1$ . In general, when the worker's opportunity cost of shirking is given by  $w_S$ , efficiency wages are optimal whenever  $c \geq w_S - \rho^* R - B(\rho^*) \equiv \bar{c}$ . It is evident that  $\bar{c}$  is decreasing in  $R$ . Moreover, when referee utility is increasing in  $\rho$ ,  $\bar{c}$  is decreasing in  $\rho$  as well.

We conclude that efficiency wage contracts will be used in jobs where the costs of opportunism exceed a threshold; this threshold will be lower if the employer can access referees with high stakes in the firm. We also predict a “referral premium”: in equilibrium the worker is either hired through referral and offered an efficiency wage contract or hired anonymously and paid the reservation wage<sup>11</sup>. This referral

---

<sup>11</sup>Here we assume that social networks are sufficiently large for workers to be hired through these networks. When the network is too small or high stakes referees are not available, firms



premium decreases in referee stakes and the strength of ties, if we assume that the referee has aligned incentives.

## 2.5 Summary and predictions

Existing theories of employee referrals tend to focus on skill selection and matching (Montgomery (1991), Karlan et al (2009), Simon and Warner (1992)). These theories predict employee referrals predominantly into skill intensive jobs and weak ties between the referee and the new recruit since finding a person with suitable skills is more likely in the employee’s more distant network.

Our model, focusing on workplace behaviour rather than the skill-sets workers enter jobs with, delivers very different predictions. Firstly, employers recruit through employee referrals in low skill jobs as long as worker opportunism is costly. Secondly, in most cases, the employer unambiguously prefers strong ties between referee and recruit. Thirdly, if employee referrals are used to reduce the costs of preventing workplace misconduct or absenteeism, employers should request referrals from employees with high stakes in the firm (with much to lose if the new hire misbehaves).

A rigorous identification of our model requires data from low skill jobs (to separate our explanation for the skill selection argument) with exogenous variation in “opportunism costs”. With such data, it would be possible to check whether workplace referrals are more prevalent in firms or jobs where worker opportunism is more costly. With exogenous variation in the strength of ties in referee- worker pairs, we could test whether more closely connected workers are more productive.<sup>12</sup> Finally, exogenous variation in referee stakes would allow us to test the hypothesis that employers delegate hiring decisions to referees with high stakes in the firm.

While it is possible to generate such data in a lab setting, a major concern about experimental data is the failure to persuasively imitate real workplace and labour market conditions. In place of experimental data, we have access to a novel and unusually rich primary data set from real labour markets covering labour mi-

---

may find it profitable to offer spot market efficiency wages when the costs of opportunism are sufficiently high.

<sup>12</sup>In a field experiment, Munro et al (2013) find that spouses participating in rural public work tasks are more productive when working as a team than when working separately.

grants from a rural area of North India. Migration is a relevant context to study labour market networks since most unskilled work in the services and manufacturing sectors in India draws on pools of migrant labour. Our data, descriptive statistics and empirical analysis provide suggestive support to the key predictions of our theoretical model and the moral hazard explanation for referral.

## 3 Empirical underpinnings: referrals for migrant workers

### 3.1 Data and context

Our data are from two villages in Bijnor district in western Uttar Pradesh (UP), India's most populous state. 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 and with an interesting social and religious blend.<sup>13</sup> At 41 % Bijnor ranks third on the percentage of Muslims in the population in Uttar Pradesh.<sup>14</sup> The largest Muslim group in our study villages are the Ansaris (Jula-has), who traditionally are 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.

Our data on migrants were collected from a random sample of households in Kasba Kotra and Jagannathpur villages in Nagina tehsil. 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.<sup>15</sup>

---

<sup>13</sup>UP has the highest prevalence of stunting (47 %) among children below the age of three of any Indian state. The quality shortfall in government schools is well documented (e.g. Dreze and Gazdar (1998), Annual Status of Education Report 2014).

<sup>14</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 Jeffery for sharing these statistics.

<sup>15</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.

Among the 316 individuals with a labour migration history, only two were women. Through repeated village visits and the tracing of migrants in e.g. Chandigarh, Delhi, Mumbai, Pune as well as nearby Haridwar and surrounding areas with known factory clusters, we were able to contact and interview 278 or 88 % of these migrants. The first round of migrant interviews were conducted in May 2009, the last in February 2010. Through subsequent tracing we were able to increase the number of migrants interviewed to 287 (90.8 % of the sample).

In this retrospective migrant sample, the timing of the first labour migration stretches from 1950 and upto 2009. The bulk of these first migrations are recent: 64% occurred after 1990 and 39.3 % after 2000. Each migrant was interviewed in depth with special emphasis on accurate recording of the process of entering the first migrant job.<sup>16</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.<sup>17</sup> For the person making the job offer on behalf of a firm, 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 obtained for what we describe as the main contacts below. From the migrants, information on education, work experience and skills was collected along with proxies for individual unobservables expected to be important in these employment relations. The latter included a short Raven-type ability test and whether others considered the migrant to be a person with 'jugar'.<sup>18</sup>

---

<sup>16</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>17</sup>We here introduce the term workplace referral to capture that a workplace referee may be an employee of the firm or the owner of the firm himself. We register, for now, that owners have the strongest incentives to recruit well on the firm's behalf.

<sup>18</sup>A local term that is widely used, well understood and resembles 'street-smart' or 'capacity to improvise shrewdly with available resources (Jeffrey et al 2007: 4).'

## 3.2 Descriptive statistics

This section presents descriptive statistics to connect the theory to our data. Table 1 presents descriptive statistics disaggregated by social group for the first migrant job and sector of work. A striking observation is the concentration of Ansaris - traditionally a weaving community - in bakery sector work. While this sectoral clustering is suggestive of strong network effects in entry into first migrant jobs, a variety of network mechanisms could be responsible: in what follows we carefully evaluate the main rival explanations to our moral hazard hypothesis.

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

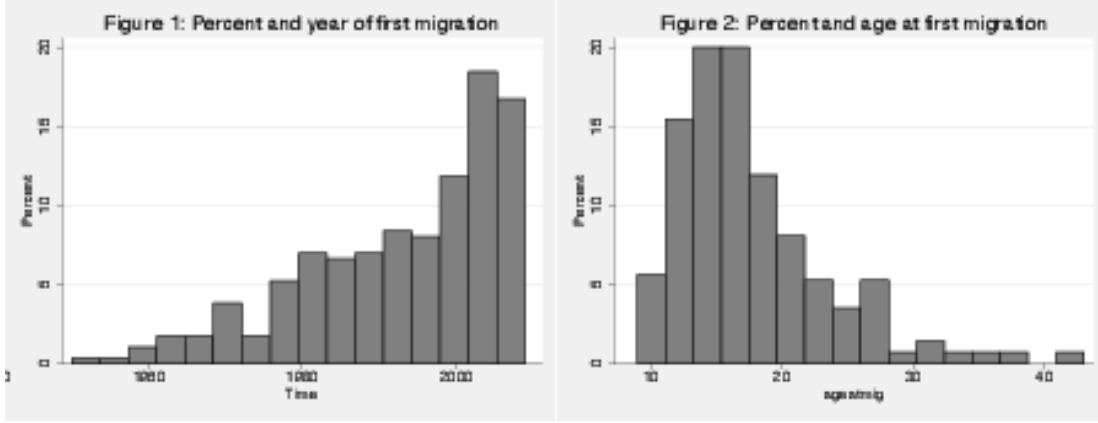
	Ansaris	Chamars	Others
Share of migrant sample	48.4 % (139)	34.1 % (98)	17.4 % (50)
Mean age at time of migration	16.0 (4.39)	19.3 (6.01)	19.5 (6.85)
Mean yrs of schooling at time of first migration	3.4 (4.04)	5.8 (3.64)	7.4 (4.75)
Dominant first employment sector	Bakery (82.0 %)	Construction & agriculture (31.6%)	“Skilled” private sector (40.0%)

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

(a) The year of first labour migration

(b) The age of first labour migration



The youngest migrants are concentrated in the Ansari-dominated bakery sector with bakeries absorbing about two-thirds of this group.

## Job entries

In Table 2 we identify the mode through which migrants entered their first migrant job and distinguish, firstly, between migrants with and without pre-arranged jobs. 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>19</sup>

<sup>19</sup>Notice that apart from the 'indirect' category there are also a few instances where a migrant relies 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.

**Table 2.** Mode of entry

	N	Share
Pre-arranged		88.9%
Workplace referral	167	58.2 %
Indirect	52	18.1 %
Other	36	12.6 %
Not pre-arranged		11.1 %
Workplace referral	9	3.1 %
Indirect	5	1.7 %
Other	18	6.3 %

For those with pre-arranged jobs, the 'other' category comprises recruitment through labour contractors (9.8 % of total) and formal labour market entry which includes e.g. being offered a job after responding to job advertisements for private sector and government employment (2.8 % of total). For those without prearranged jobs, the residual category (6.3 % of total) comprises destination job search and directly approaching a destination spot market for skilled or unskilled labour.

Combining pre- and non-pre arranged jobs, workplace referral is observed for 61.3 % of first migrant jobs.<sup>20</sup> This overall estimate tallies with those reported in the 2006 WB Microenterprise survey for India. Table A1 (Online Appendix) reports mean values of employee referral for the last recruited employee in the cross-section of firms in the WB survey. This is the first 'large' sample of small enterprises in a developing country setting to provide estimates of employee referral across sectors of the economy. The WB data reveal a high average incidence (above 50%): in garments and textiles more than 60% of new jobs are filled through employee referrals.

This high prevalence is in itself consistent with the hypothesis that social net-

<sup>20</sup>This is slightly lower than Munshi and Rosenzweig's (2006) estimate of 'referral' in male blue collar jobs in Mumbai: our definition of workplace referral is more precise and narrow.

works are used to handle moral hazard problems in work relations. If referrals mitigate workplace moral hazard, we also expect a strong social tie between a referee and a new recruit, while the workplace intermediary should have a prestigious position in the workplace. Table 3 reports on the social ties between referees and new recruits in the 176 observations of workplace referral in our sample.

**Table 3.** 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 referral cases in our sample with a member of the same household acting as intermediary in about 30 % of these 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.<sup>21</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.<sup>22</sup>

<sup>21</sup>If ‘relative’ is interpreted too liberally this might blur the distinction between strong and weak ties. 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 carefully distinguished between genuine and fictive kin.

<sup>22</sup>Munshi and Rosenzweig (2006) and (2013) highlight the strength of caste based networks, anchored in the persistence of jati endogamous marriages, among Hindus. Given that the most numerous social group in our sample are Ansari Muslims, what is the prevalence of reliance of within jati or social group based networks in first migrant job entries? Distinguishing between Ansaris, Chamars and others, the percentage of referrals where the referee and recruit belong to the same ‘jati’ is 99 % among Ansaris, 83.7 % among Chamars and 65 % among others.



Our theory also predicts that employees with high stakes in the firm are more likely to be invited to act as referees by their employers. Table 4 illustrates the diversity of jobs held by referees, main contacts and new migrants in our data-set.

**Table 4.** Hierarchically ordered job titles for workplace referees, main contacts and new recruits

Rank	Type of jobs
1 Enterprise owner	
2 Prestigious jobs/positions	Politician. University student. medical doctor. ass supervisor. supervisor. accountant (bakery). accountant clerk. sales clerk. sales manager (bakery). tailor master. forest department supervisor. block coordinator (UNICEF). district project coordinator (UNICEF). Assistant Agricultural Inspector. Territory manager (Pharmaceutical company). Toll clerk. Assistant general manager. School teacher (private school). Religious teacher (mosque). College teacher. Newspaper correspondent
3 Skilled	Builder. electrician. carpenter. pottery maker. welder. tailor (machine operator). weaver (embroidery worker). mason (construction). mistry (bakery). cook (restaurant). barber. office peon. iron smith. motorbike mechanic. moulder. radio/tape/television repairer. engine mechanic (pumps. generators). iron moulder. powerloom mechanic. shopkeeper (petty). assistant storekeeper
4 Other (less) skilled	driver. labour contractor. domestic cook. rickshaw driver. furniture polisher. shop salesman. mattee (bakery product) maker. brush maker. beautician. sweets maker. house painter. nulki (bakery product) mistry. bhattee mistry (in charge of bakery oven). realer. battery mechanic. bicycle repairer. sewing machine operator (simple tasks). electric meter worker. scaler (forest department). waiter. housekeeper (hotel). farmer
5 Vendor	bakery vendor. fruitseller. juiceseller. cobbler; snacks vendor. vegetable vendor. tent stall vendor. scrap vendor
6 Apprentice/ Trainee	barber. tractor repairs. mason. welder. beautician. carpenter. electrician. machine operator. toy artist. tailor. battery mechanic. motor mechanic. iron smith. weaver
7 Unskilled (upper)	shop assistant (sales counter helper). helper. packer. 'soler' (of shoes). counter of shoes (factory). table worker (bakery). cutter helper (factory). maintenance helper. ironing (dhobi). framechecker (factory). 'roller' (bakery). bhattee (oven) worker (bakery). gulli or nulki maker (bakery). jaggory maker. driver helper. bus conductor. chaprasi (messenger)
8 Unskilled (lower)	sweeper. utensil cleaner. cleaner. rickshaw puller. machine cleaner (factory), unskilled factory worker, other domestic worker
9 Unskilled (lower)	manual labour, agriculture, construction, white washing, tent worker, loader, wood cutter

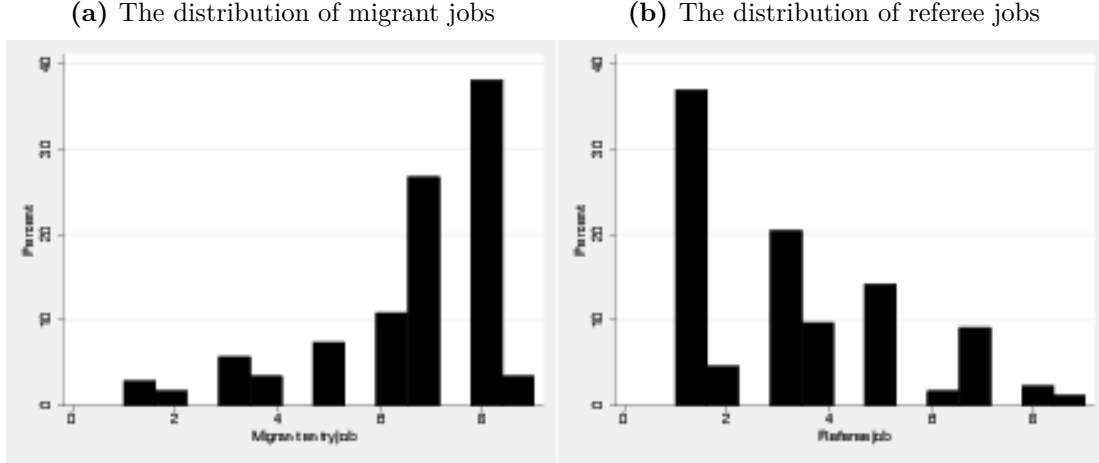
Category 1 are enterprise owners with no distinction made between ownership of small and larger enterprises. Ownership thus includes small enterprises such as teashops: bakery owners are the largest group of enterprise owners in our sample. Categories 2 to 9 were attempted ranked according to skill requirements. Category 2 covers higher prestige jobs, 3 are jobs with comparatively high skill intensity and category 4 somewhat less so.<sup>23</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 that are 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, unskilled manual and low status jobs. While any such ranking inevitably will contain arbitrary elements, table 4 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). It is evident that the first jobs migrants from our study area take up are tough and physically demanding. As Figure 2 panel b) also very clearly demonstrates, the job profiles of the workplace intermediaries are remarkably different from those of the new recruits: About 62 % of the in-house referees are in category 1 to 3 jobs.

---

<sup>23</sup>Prestige is not, of course, necessarily linked to skill: barbers, iron smiths and cobblers are all performing skilled tasks that have strong (lower) caste and low status connotations.

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



We do not have information on the loss recruit misbehaviour will inflict on the referee. It is, however, likely that this loss increases in referee stakes in the firm. A plausible proxy for such stakes is the prestige attached to a referee's job. Our data show that links to people who either are enterprise owners, are more skilled and therefore in more prestigious jobs, or are vendors, by virtue of their occupational specialisation and broad contact base, are crucial for obtaining first migrant jobs. Further, the most important category turns out to be the enterprise owners themselves. Equally compelling, in about one 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. An interesting question, therefore, is whether the recruitment behaviour of owners is systematically different from that of employee referees. In the next section we report evidence of considerable behavioural overlap: our regressions with or without owner recruitment deliver very similar verdicts. The descriptives presented so far suggest a close correspondence between our theory's predictions and key patterns in our data. Are these patterns also consistent with the main rival explanations for referral? We address this question and the robustness of our descriptives next.

## 4 Suggestive correlations; regression analysis.

Above we focused on migrants who entered their jobs through workplace referral. A preferable way to obtain clues about the merit of our moral hazard hypothesis is to compare workplace referrals with migrants who found their jobs through other channels and contacts. If moral hazard is responsible for the high prevalence of workplace referrals, a reasonable minimum requirement would be that those who enter their first migrant job through workplace referral have (a) stronger kinship ties to their referee while (b) the referees have more prestigious jobs than the main contacts of the migrants in the reference group (comprising those entering a job without a workplace intermediary).

In our benchmark 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 ties to the referee (or the main contact) and the status of the job of the referee (or main contact).<sup>24</sup> We think of this first regression as a ‘raw’ or unconditional check of the robustness of our descriptives and of the main patterns in the data reported in section 3. We thus estimate the following simple equation:

$$workplref_i = \beta_0 + \beta_1 highjob + \beta_2 househ + \beta_3 rel + \beta_4 covill + \varepsilon_i$$

*highjob* is a dummy that takes the value 1 if the referee (or main contact) has a job in category 1-3 in Table 5. 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 (*househ*), (ii) was another relative (*rel*), or (iii) was a co-villager not related through kin (*covill*).<sup>25</sup> The results reported as marginal probabilities in table 6 support the impressions from section 3: strong kinship ties and contacts in prestigious jobs appear to be crucial for acquiring first migrant

---

<sup>24</sup>Think about this specification as follows: a rival explanation for the patterns in our data is that strong ties and prestigious job referees are unrelated to referral and moral hazard and simply reflect the typical contacts and social ties used to find jobs among migrants from the study area. Our specification allows us to test and rule out this rival explanation: if the observed patterns simply reflect the ‘normal’ connections used to find jobs, coefficients on the strong kinship ties and prestigious job variables should be zero.

<sup>25</sup>The benchmark category comprises 90 observations. Strong social ties feature in 70 % of these observations. The corresponding figure for workplace referrals is 78.5 %.

jobs through workplace referral.

**Table 5.** Unconditional regression; workplace-referral as dependent variable

Variable	Coefficient
high stake job	0.415*** (0.051)
househ	0.294*** (0.076)
rel	0.266*** (0.097)
covill	0.223** (0.077)
Pseudo $R^2$	0.180
$N$	265

Note: dprobit with robust SEs. \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

There are, as noted, a variety of rival explanations for why social networks may be used to fill vacancies. Some of these are consistent with a subset of the patterns observed in our data. If e.g. workplace insiders have privileged access to vacancy information, the hypothesis that networks are used to disseminate information would also, like our theory, predict extensive entry through workplace insiders. This “information” explanation is, however, hard to reconcile with the observed strong ties between recruits and workplace intermediaries, since relying on weak ties would be the most efficient job search strategy (Granovetter (1973), Zenou (2012)). In addition, and this is important, job acquisition should, if the information dissemination hypothesis was correct, be expected to occur through entry level workers since these (i) are likely to be more numerous than other staff in the average enterprise in our sample and (ii) to be the type of contacts the representative job seeker is most likely to know.

Another important rival explanation is that strong tie and prestigious job contacts are screening devices and not disciplining devices as our theory suggests. Montgomery (1991) and Karlan et al (2009), among others, argue that employers use employee referrals to alleviate informational asymmetries about the talents and unobservable skills of job candidates. Since close kin are likely to possess

superior information about exogenous but unobservable worker traits, we cannot, in the absence of more careful scrutiny, rule out that referral through strong tie connections benefit employers by screening for such traits. To examine whether workplace referral is mainly a screening device and to tackle other confounds, we expand our benchmark specification by adding two controls 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 for whether the worker is considered a person with ‘jugar’.<sup>26</sup>

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 taking 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 staff in more prestigious jobs mainly are manifested through screening for unobservable migrant traits, the strong tie and prestigious job coefficients should weaken once these unobservables are introduced. As seen in column 1 in Table 6, 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 operate as an insurance mechanism for very young migrants. The strongly positive age 12 dummy is consistent with and adds support to this explanation.<sup>27</sup>

Another rival explanation is that social clustering in the workplace simply reflects 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 dummies for belonging to the most numerous group within our migrant sample,

---

<sup>26</sup>The score on the Raven proxy test was obtained from the completion of six progressive matrices after an introductory comprehension test. Note, also, that the correlation between referral and (a) our Raven score and (b) the ‘jugar’ dummy are not significantly different from zero.

<sup>27</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 %.



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 substantially weaken or turn the strong tie coefficients 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 6. The Ansari coefficient is weakly significant, while the village dummy is insignificant. The changes in other relevant coefficients are small.

In light of the descriptive statistics, which suggested a particularly high prevalence of referral within the bakery sector, it is 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 6 reports the results of introducing a bakery sector dummy. The coefficient on the bakery dummy is large, positive and significant at the 1 % level. The other coefficients of interest now shrink in size. While the *highjob* and *rel* coefficients retain their statistical power, , the *househ* coefficient becomes borderline (in-) significant. The Ansari dummy turns insignificant once the bakery dummy is included. <sup>28</sup>

---

<sup>28</sup>Notice that the results are equivalent if we estimate LPMs instead of dprobits.

**Table 6.** Testing rival explanations and robustness tests

Variable	Models			
	High stake jobs. strong ties and referral as a screening device	Workplace clustering reflects social preferences	Bakery sector 'fixed effect'	Sample restricted to employee referrals
high stake job	0.430*** (0.052)	0.412** (0.053)	0.385*** (0.056)	0.312*** (0.073)
househ	0.264*** (0.080)	0.224** (0.089)	0.156 (0.099)	0.307** (0.117)
rel	0.241** (0.098)	0.29** (0.100)	0.203** (0.099)	0.290** (0.123)
covill	0.199*** (0.082)	0.209** (0.08)	0.158 (0.091)	0.236* (0.124)
'Raven'-score	0.003 (0.032)	-0.002 (0.032)	-0.003 (0.032)	0.012 (0.039)
'jugar'	0.079 (0.077)	0.076 (0.077)	0.082 (0.074)	0.138 (0.089)
Age	-0.011* (0.006)	-0.008 (0.006)	-0.005 (0.005)	-0.014* (0.008)
Age 12:	0.192** (0.073)	0.209** (0.070)	0.233*** (0.063)	0.234* (0.106)
Yrs of schooling	0.001 (0.007)	0.007 (0.007)	0.010 (0.007)	0.008 (0.009)
Ansari		0.130* (0.072)	0.009 (0.075)	
Kasba Kotra		0.020 (0.073)	-0.020 (0.070)	
Bakery			0.270*** (0.089)	
Pseudo R2	0.228	0.239	0.266	0.136
N	262	262	262	198

Note: dprobit with robust SEs. \* p<0.1; \*\* p<0.05; \*\*\* p<0.01. Kasba Kotra is a village dummy.

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 and with the descriptive statistics reported in table A1 (Online Appendix).

As flagged above and as an additional check, with results reported in table 6, column 5, we restrict the sample to the subset of cases of 'employee referral'. The sample size is now down to 198 observations. Crucially, the main results prevail and the key coefficients, namely the highjob and strong tie dummies, continue to be strongly significant.<sup>29</sup> This has two important implications. First, it shows that the results for the high stake job coefficient are unrelated to whether owner recruitment is included in the analysis or not. Second, this suggests that workplace referees, whether they are owners or employees, behave and recruit in a very similar manner (e.g. with respect to social ties), thus suggesting that referee and owner incentives are closely aligned ex post.

## 4.1 The bakery sector

We next combine wage data and in-depth insights from bakery sector enterprises to more closely scrutinize the moral hazard explanation for referral. Recall that in table 6, column 4, the bakery sector dummy weakened the strong tie and (to a lesser extent) the high job coefficients in the referral regression. Compared to other destination workplaces, bakeries are small enterprises with fewer workers and are more likely to be family firms.<sup>30</sup> The former echoes Kajisa's (2007) finding that family networks strengthen the odds of unskilled employment in small workplaces in the Philippines; the latter resonates with the standard moral hazard based explanation for preferring family to hired labour in agriculture. Studying labour management challenges in small enterprises in the dyeing industry in Tirupur, Tamil Nadu, De Neve (2008) reports on how employers strategically appeal to kinship morality to galvanise e.g. employee effort, attendance and a willingness to work overtime.

---

<sup>29</sup>While we do not report the results here, the results for the 'employee referral' regression closely follow those of the 'workplace referral' regression when dummy variables for Ansari, village and bakery sector are included.

<sup>30</sup>The average numbers of workers in bakeries and 'other' workplaces are 12.8 and 72.8, respectively. 16 % of bakeries and 2 % of 'other' workplaces are family firms. Both differences are statistically significant at the 1 % level (t-test; unequal variances).

A key prediction of our theory is that employers can take advantage of workplace social ties between referees and new recruits: our wage data can shed light on the merit of this prediction. To start with and if correct, we should expect referral entry wages in the most densely networked sector in the sample to be lower than in other sectors and firms. To explore this hypothesis, we use the natural log of the real monthly wage as dependent variable: given that first migrations occur over an extensive time period, we convert nominal to real wages using the All India Consumer Price Index for industrial workers (CPI (IW)).<sup>31</sup> <sup>32</sup>We estimate an augmented Mincerian wage equation: the aim is to present estimates which are valid for our random sample of migrants and not for the general working age population in the study villages; conditional on being a migrant, what determines a job entrant's real wage? Given the time period under study, it is possible that bakery sector jobs dominated early on and at a time when real wages may have been lower than, say, in the post reform (after 1991) years. The ability composition of the migrant flow could also have transmuted over time, with more (or less) able migrants later on. While nominal wages display a gradual rise, we derive some analytical comfort from observing no upward real wage trend for entry jobs among the migrants in our sample.<sup>33</sup>

On the right hand side, we include three dummy variables for level of schooling completed, years of work experience and with the Raven score and jugar dummies as the key 'unobserved ability' controls.<sup>34</sup> Given the time dimension, and in spite of figure A2 providing no indication of upward real wage trends, we add decadal

---

<sup>31</sup>The Labour Bureau reports the index from 1968 onwards (see <http://labourbureau.nic.in/CPI%20IW%20Prev%20Indexes.htm>). For the period 1955-1968, we use the Economic Survey (1968-69, table 5-2) available from the Ministry of Finance website (see <http://indiabudget.nic.in/previoususes.asp>)

<sup>32</sup>In these labour markets, wages are not always observed: apprentices are often not paid a wage: similarly, a son starting work in the family enterprise may not have a clearly defined wage, which could represent a substantive advantage for the firm. These observations could either be included as zeroes ( $\ln 0+1$ ), or dropped. The following results are not sensitive to which of these approaches is used. For the results reported below, we drop observations with a zero wage.

<sup>33</sup>Figures A1 and A2 in the Online Appendix plot nominal and real wages against time with the former showing a clear upward trend: there is no discernible real wage increase for entry jobs among migrants in our sample.

<sup>34</sup>Work experience is computed as age at time of migration minus years of schooling minus 6 (the usual time of starting school for individuals with school education) and as age at time of migration minus 10 for individuals with no schooling (using the age of 10 as cutoff for gaining relevant experience). The reported results are not sensitive to how experience is measured.

wage trends to control for economic progress or setbacks. We also control for workplace size and for the type of jobs migrants are recruited into: this job type dummy takes the value 1 if the entry job is category 8 or 9 in table 4 and 0 otherwise. In addition, we include destination characteristics controls, specifically a dummy for large cities (Delhi, Mumbai, Pune). The results are reported in Table 7.

**Table 7.** Real wage determinants

Variable	Coefficient
Work experience	0.038*** (0.11)
Primary education	0.151 (0.169)
Secondary education	0.311** (0.136)
Higher education	0.665*** (0.241)
Raven	0.063 (0.056)
Jugar	0.142 (0.135)
Bakery	-0.287** (0.130)
Workplace size	0.00028* (0.00015)
Entry job dummy	-0.246 (0.117)
Large city	0.034 (0.117)
Decade 1970	-0.275 (0.234)
Decade 1980	-0.025 (0.150)
Decade 1990	0.012 (0.120)
$N = 283$	Pseudo $R^2 = 0.11$

Note: OLS with robust SEs. \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

The results suggest positive migrant entry job returns to work experience and to secondary and higher education and that entry wages in large enterprises are higher. The main finding is that the most densely networked sector in our sample, the bakery sector, has the lowest real wages for first migrant jobs. This is consistent with the hypothesis that employers take advantage of social ties between referees and new recruits and pay lower wages to instil worker discipline and provides additional support to our moral hazard explanation for referral-based labour market entry. To progress further, we next demonstrate, with results reported in table 8, that the likelihood of being recruited into a category 8 or 9 job – a start up level ‘unattractive’ job - is much higher in bakeries than in the average other sector the migrants from our study area move into. To facilitate comparisons, we use the same explanatory variables as in table 7, but now using a dummy for entryjob category 8 and 9 as our dependent variable.

**Table 8.** Probability of recruitment into ‘unattractive’ job

Variable	Coefficient
Work experience	0.001 (0.006)
Primary education	-0.075 (0.088)
Secondary education	-0.134* (0.080)
Higher education	-0.390*** (0.073)
Raven	-0.026 (0.029)
Jugar	-0.037 (0.077)
Bakery	0.219*** (0.066)
Workplace size	0.000 (0.000)
Large city	-0.009 (0.064)
Decade 1970	0.233* (0.114)
Decade 1980	0.090 (0.086)
Decade 1990	0.020 (0.077)
$N = 283.$	$R^2 = 0.11$

Note: dprobit with dummy-dependent variable=1 if entryjob is category 8 or 9. Robust SEs. \* p<0.1; \*\* p<0.05; \*\*\* p<0.01.

In small bakeries, category 8 and 9 jobs are ‘unattractive’ and low status jobs that involve cleaning of utensils and equipment under often unhygienic working conditions. The probability of being recruited into such a job is 22 percentage points or 50 % higher (the mean is 0.44) in bakeries compared to the average other sector. Keeping entry level workers sufficiently content not to leave, given the working conditions on offer, poses a major challenge for bakery owners and

provides a compelling rationale for the strong tie referral patterns we observe.<sup>35</sup>

We have also estimated a wage equation for the bakery sector to examine whether workers entering through referral are paid more or less than those entering through other channels (the market). Kajisa (2007) reported a wage premium consistent with a screening explanation for referral in the Philippines. Our table 6 results above did not support the screening hypothesis. We retain the specification in table 7, now including referral as a right hand side variable and restricting the sample to category 8 and category 9 bakery jobs. We are now down to 78 observations with the full results reported in table A2 (Online Appendix). The referral coefficient is negative and strongly significant suggesting that all else equal, workers recruited into the least attractive bakery sector jobs through referral are paid less than those recruited through the market. This is inconsistent with the screening explanation. Recall that our theoretical model predicts that those recruited through referral should be paid a wage premium and that efficiency wages will not be paid for workers recruited through the market. Note, however, that if efficiency wages are paid for the latter, referral wages should, because of the social ties between recruits and referees, be lower than the wages of those recruited through the market. This is consistent with what we observe and suggests that employers in the bakery sector, when hiring workers for the least attractive jobs, strategically use referral and social ties to induce desirable recruit behaviour at a lower cost.

## 5 Conclusion

This paper develops a new theoretical model where firms use employee referral to curb moral hazard problems in low and unskilled jobs. While recognised in

---

<sup>35</sup>Absenteeism (footnote 2) and worker turnover pose important challenges during industrial transitions. Comparing the United States in the 1920s with India in the 1950s, the average annual labour turnover (workers leaving their jobs) in the US in the 1920s stood at 100 percent with rates of 200-400 percent not uncommon (James 1960). James's estimates of absenteeism and turnover in India for the 1950s are remarkably similar to the most recent data from the Annual Survey of Industries (ASI) (2011-12). While ASI information is only available for manufacturing enterprises, absenteeism figures for e.g. Delhi and Maharashtra in 2011 were 14.4 % and 11.0 %, respectively with average annual turnover levels (workers leaving their jobs) of 32.3 % and 15.6 %. The general perception is that absenteeism and turnover in small enterprises are considerably higher, especially in the type of unattractive jobs we are looking at here.



the study of agriculture and rural institutions, labour management challenges during rural-urban and modernity transitions have received limited theoretical and empirical attention. In our model, employers can exploit social ties between a referee and a new recruit to leverage desirable recruit behaviour at a lower cost. This strategy only works if the referee has the right incentives and when relevant, strong tie networks, have the capacity to supply suitable candidates. The latter is much more likely for the type of jobs that we focus on, namely low and unskilled jobs: these are jobs that anyone, in principle, can do. In general we expect to observe more referrals in jobs with high costs of opportunism and when referees with high stakes in the firm are available. Our theory predicts 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 descriptive statistics square well with our predictions and show a very high prevalence of referral based labour market entry. We also, consistent with our theory, find that entry through a strong social tie is most common, thus challenging much received wisdom about the ties that matter in labour market entry in low income and other settings. Our data also show that referees and new recruits have very different job profiles. While the former are in more prestigious and high stake jobs, as predicted by our theory, entrance typically occurs at the bottom of the job hierarchy. Finally, we show that wages in the most densely networked sector are lower than elsewhere and that workers recruited through referral into the least attractive jobs in this sector - where retention and other discipline problems are expected to be most acute - are paid less than workers recruited through other channels.

The evidence we have presented should be interpreted as suggestive. We carefully considered the main rival explanations and although these may contribute to the high prevalence of entry through workplace insiders, they are hard to reconcile with our data and findings: For migration into low- and unskilled jobs, moral hazard is a relevant problem that employers appear to use workplace referrals to mitigate. The patterns in our data thus support results in Kugler (2003) and Heath (2010) of moral hazard as an important driver of workplace referrals, but adds to the literature new empirical insights and the interesting theoretical themes of the role of social ties and how referee incentives can shape referral prevalence

and outcomes.

## References

- [1] Banerjee, B. (1983): 'Social networks in the migration process: empirical evidence on chain migration in India', *The Journal of Developing Areas*, 17 (January): 185-96.
- [2] Banerji, S., R. Natarajan and K. Sen (2011): 'Monitoring Costs, Credit Constraints and Entrepreneurship', mimeo, IDPM, University of Manchester.
- [3] Beaman, L. and J. Magruder (2012): 'Who gets the job referral? Evidence from a social networks experiment', *American Economic Review*, vol.102(7):3574-93.
- [4] Calvo-Armegnol, A. and M. O. Jackson (2004): 'The Impacts of Social Networks on Employment and Inequality', *American Economic Review*, 94(3): 426-54.
- [5] Calvo-Armengol, A. and M. O. Jackson (2007): 'Networks in Labour Markets: Wage and Employment Dynamics and Inequality', *Journal of Economic Theory*, 132(1): 27-46.
- [6] Chowdhury, N. T. (2010): The Relative Efficiency of Hired and Family Labour in Bangladesh Agriculture, mimeo, Department of Economics, Gothenburg University.
- [7] De Neve, G. (2008): 'We are all Sondukarar (Relatives)! Kinship and its morality in an urban industry of Tamilnadu, India,' *Modern Asian Studies*, 42(1): 211-46.
- [8] Dreze, J. and H. Gazdar (1998): *Uttar Pradesh: The burden of inertia*, in Dreze, J. and A. Sen (eds): *Indian Development – Selected Regional Perspectives*, New Delhi: Oxford University Press.

- [9] Fafchamps, M. and Moradi (2009): Referral and job performance: evidence from the Ghana Colonial Army, mimeo, Department of Economics, University of Oxford.
- [10] Granovetter, M (1973): The strength of weak ties, *American Journal of Sociology*, 78, 1360-80.
- [11] Granovetter (1995): Getting a Job: A Study of Contacts and Careers, 2nd edition, Chicago University Press
- [12] Heath, R. (2010): 'Why do firms hire using referrals? Evidence from Bangladeshi Garment Factories,' Unpublished manuscript.
- [13] Holmstrom, M. (1984): *Industry and Inequality: The social anthropology of Indian labour*, Cambridge University Press.
- [14] Iversen, V., K. Sen, A. Verschoor and A. Dubey (2009): 'Job recruitment networks and migration to cities in India', *Journal of Development Studies*, 45(4): 522-43.
- [15] Iversen, V. and G. Torsvik (2010): 'Networks, middlemen and other (urban) labour market mysteries', *Indian Growth and Development Review*, 3(1): 62-80.
- [16] Jeffrey, C., P. Jeffery and R. Jeffery (2007): *Degrees without Freedom: Education, Masculinities and Unemployment in North-India*. Palo Alto, CA: Stanford University Press.
- [17] Karlan, D., M. Mobius, T. Rosenblat and A. Szeidl (2009) 'Trust and Social Collateral,' *Quarterly Journal of Economics*, 124(3): 1307-1361.
- [18] Kerr, C., J. T. Dunlop, F. H. Harbison and C. A. Myers (1966): 'Industrialism and Industrial Man. The Problem of Labor and Management in Economic Growth', Oxford University Press.
- [19] Kono, H. (2006): 'Employment with connections: negative network effects,' *Journal of Development Economics*, 81: 244-258

- [20] Kugler, A. (2003): 'Employee referrals and efficiency wages', *Labour Economics*, 10: 531-56.
- [21] Kramarz, F. and D. Thesmar (2007): 'Social networks in the boardroom', *Journal of the European Economic Association*, 11(4): 780-807.
- [22] Lucas, R. E. B. (1993): Internal migration in developing countries, in M. R. Rosenzweig and O. Stark (eds): *Handbook of Population and Family Economics*, Vol 1, Part B: 721-98, Amsterdam: Elsevier.
- [23] Montgomery, J. D. (1991): 'Social networks and labour market outcomes: toward an economic analysis', *American Economic Review*, 81(5): 1408-18.
- [24] Morris, M. D. (1955): 'Labor Discipline, Trade Unions and the State in India', *Journal of Political Economy*, 63(4): 293-308.
- [25] Mortensen, D.T. and T.Vishwanath (1994): 'Personal contacts and earnings: It is who you know', *Labour Economics*, 1: 187-201.
- [26] Munro, A. , A. Verschoor and A. Dubey (2013): 'Does working with spouses make teams more productive', *Economics Letters*, 118: 506-08.
- [27] Munshi, K. (2003): Networks in the Modern Economy: Mexican migrants in the US labour market, *Quarterly Journal of Economics*, 118(2): 549-99.
- [28] Munshi, K. and M. R. Rosenzweig (2006): 'Traditional institutions meet the modern world: Caste, Gender and Schooling Choice in a Globalizing Economy', *American Economic Review*, 96(4): 1225-52.
- [29] Pollard, S. (1963): 'Factory Discipline in the Industrial Revolution,' *The Economic History Review*, 16(2): 254-71.
- [30] Saloner, G, (1985): 'Old boy networks as screening mechanisms', *Journal of Labour Economics*, Vol.3(3): 255-267.
- [31] Sheth, N. R. (1968): *The social framework of an Indian factory*, Manchester University Press.

- [32] Simon, C. J. and S. Warner (1992): ‘Matchmaker, matchmaker: the effect of old boys networks on job-match quality, earnings and tenure’, *Journal of Labor Economics*, 10(3): 306-30.
- [33] Singh, I., L Squire and J. Strauss (1986): *Agricultural Household Models: Extensions, Applications and Policy*, John Hopkins University Press.
- [34] Smith, J. P. and D. Thomas (2003): ‘Remembrance of Things Past: Test-Retest Reliability of Retrospective Migration Histories’, *Journal of Royal Statistical Society*, 166(1): 23-49.
- [35] Topa, G. (2011): ‘Labour Markets and Referrals’, chapter 22 in *Handbook of Social Economics*, Vol.1:1193-122, J. Benhabib, A. Bisin and M.O.Jackson (eds).
- [36] Wahba, J. and Zenou, Y. (2005): ‘Density, social networks and job search methods: Theory and application to Egypt,’ *Journal of Development Economics*, 78(2), 443-473.
- [37] Winters, P., A. de Janvry and E. Sadoulet (2001): ‘Family and community networks in Mexico-US migration’, *Journal of Human Resources*, 36(1): 159-84.

**CMI WORKING PAPERS**

This series can be ordered from:

**CMI (Chr. Michelsen Institute)**

Phone: +47 47 93 80 00

Fax: +47 47 93 80 01

E-mail: [cmi@cmi.no](mailto:cmi@cmi.no)

P.O.Box 6033 Bedriftssenteret,  
N-5892 Bergen, Norway

Visiting address:

Jekteviksbakken 31, Bergen

Web: [www.cmi.no](http://www.cmi.no)

Printed version: ISSN 0804-3639

Electronic version: ISSN 1890-5048

Printed version: ISBN 978-82-8062-517-5

Electronic version: ISBN 978-82-8062-518-2

This paper is also available at:  
[www.cmi.no/publications](http://www.cmi.no/publications)

Cover photo:

Ian Baker on flickr.com

**INDEXING TERMS**

Networks, low- and unskilled jobs, India,  
moral hazard, employee referrals, efficiency wages,  
referee incentives, strength of ties

We develop a new theory of employee referrals into informal low - and unskilled jobs in developing country labour markets. Employers use social preferences between referees and new recruits to mitigate moral hazard problems in the workplace. We show that employers prefer to hire workers with strong social ties to referees and deliberately select referees with high stakes in the firm. In-depth primary data on low- and unskilled migrants in India are used to provide a suggestive empirical counterpart to these results. Consistent with the theoretical predictions, we observe a high prevalence of referral and of strong social ties between referees and new recruits. Further, workplace intermediaries are different from and typically in higher stake and more 'prestigious' jobs than those recruited. Detailed evidence on wages and job types from the main sector of migrant employment provides additional support for our moral hazard explanation for referral.