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NETWORK MECHANISMS AND SOCIAL TIES IN MARKETS FOR LOW- AND UNSKILLED JOBS: (THEORY AND) EVIDENCE FROM NORTH-INDIA.

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Network mechanisms and social ties in markets for low- and unskilled jobs: (theory and) evidence from North-India[1]

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Abstract: Workplace referrals may resolve incentive problems that arise due to incomplete contracts. We use an in-depth primary data set covering low- and unskilled migrants from Western Uttar Pradesh (India), to examine this and alternative explanations for referral-based recruitment. We find little evidence of referral screening for unobservable worker traits, but some support for a hypothesis of referral as a mechanism to enforce workforce discipline. Two observations back this conjecture: the high prevalence of strong kinship ties between referees and new recruits and that those who recruit are in more 'prestigious' jobs and therefore have higher stakes vis-à-vis their employer. These main findings are exposed to robustness checks to rule out rival explanations: that entry through a workplace insider merely reflects privileged access to job vacancy information; that workplace clustering results from preferences for working together or that the higher prevalence of referral for very young migrants that we observe may reflect that referral has an insurance dimension.

JEL-Codes: R23, J24, J61, Z13

Keywords: Work Migration, Social Networks, Screening, Moral Hazard

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1. Introduction

In developing economies poor workers often rely on their social networks to acquire low and unskilled jobs. Munshi and Rosenzweig (2006) report that 70 % of blue collar jobs in Mumbai were found through referral[2] (with a corresponding figure for white collar jobs of around 44 %) and with a higher referral prevalence for men than women.[3] In Nakanishi's (1991) research of a Manila slum, contacts and referrals were prerequisites for finding a job.

Although the prevalence of network based labour market entry is well documented, less is known about *why* social networks are so important in this segment of the labor market. This is unfortunate, since we cannot understand how social networks affect various labor market outcomes (wages, access to jobs etc.), or predict the impact of labor market regulations, without a firm grasp of the underlying network mechanisms and the benefits that these bestow on workers or employers (e.g. Iversen et al 2009: Iversen and Torsvik 2010).

In this paper, we focus on one network mechanism, namely employee or workplace referral. A straightforward explanation for the use of workplace referrals is information: Family and friends may have privileged information about job openings at their workplace. Alternatively, job seekers may use social connections to find jobs because they prefer, for economic or social reasons, to work close to family or friends. Another interesting possibility is that workplace referrals alleviate incentive problems in recruitment. If individuals know more about the productive skills of their family and friends, which is a reasonable assertion, an employer may take advantage of this and ask an existing employee to find a suitable recruit in his (or her) social network. Although less discussed in the literature, workplace referrals may also alleviate behavioral (moral hazard) problems at the workplace. Finally, employing someone from the social network of current workers may be a way for the employer to commit not to exploit the newcomer or for the newcomer to commit to not exploit the employer (that is, workplace referrals may solve hold up problems on both sides of a work relation).

[2] Munshi and Rosenzweig's (2006) definition of referral is vague and captures whether an individual learnt about their first job through a social contact or not.
[3] McEntarfer (2003) makes a similar observation for blue collar jobs in her general and comprehensive literature review.

In order to evaluate the empirical merit of these different explanations for the use of employee referrals, we need in-depth information about the individuals used as referees and the recruits who are hired. We have collected such information on low and unskilled migrants from a poor area of rural North-India. Our data show that workplace entry through a person working for the same employer is widespread. Contrary to recent suggestions (e.g. Karlan et al 2009), such entry typically occurs through a strong social tie. Another important pattern we observe is that while entry is into bottom tier jobs, the 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. We argue that these observations fit the notion that workplace referrals are used by employers to improve worker discipline (reduce moral hazard).

To further ascertain the strength of this explanation we expose our main findings to robustness checks anchored in the most plausible rival explanations. Foremost among these is the idea that entry through a workplace insider merely reflects that the insider has privileged access to job vacancy information. We also test the hypothesis that the social clustering we observe could reflect a preference for working together that may be stronger in some villages or among some social groups than others. Finally, we explore the hypothesis that referral may act as an insurance mechanism for very young job seekers.

The rest of the paper is structured as follows. Section 2 describes our study area. Following the description of our data set in section 3, the literature is reviewed and a simple theoretical framework laid out in section 4. Section 5 presents descriptive statistics on migration flows and on the attributes of the migrants featuring in our data-set. Section 6 first presents statistics on network-based and other modes of labour market entry before shifting the focus to descriptive statistics highlighting the features and nature of the social and other connections that facilitate entry into first migrant jobs. In order to gain insights about referee stakes vis-à-vis their employer, this also includes a comparison of the traits of those who recruit and those recruited. Section 7 presents regression results and the robustness tests while section 8 concludes.

2. The study area

Our 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 prompted a proliferation of private school initiatives starting from the primary level. According to the 2011 Annual Status of Education Report[4], Bijnor is 37th on private school enrolment among the 70 districts in Uttar Pradesh with 39% of 6-14 year olds presently enrolled in such schools. For learning outcomes among standard 1 and 2 children, the district ranks 22nd on reading and 15th on math skills. The 2001 Census rates for above age 7 rural literacy are 69.3 % for males and 43.3 % for females.[5]

Sugarcane, wheat and paddy remain the most important local crops in rural Bijnor and for low and unskilled workers, agricultural labour demand exhibits seasonal fluctuations that have compelled rural households to address lean season employment opportunity shortfalls. As elsewhere in rural India[6], migration for agricultural or allied work has been common, and often to 'nearby' locations for sugarcane processing (crushing) work.[7]

Unlike the adjacent district headquarters of Muzaffarnagar and Moradabad, the latter 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 who responded to the new educational opportunities in the post-reform era. This failure of education to fulfil the

[4] Published by Pratham and based on the testing of learning outcomes of more than 500,000 school-age children. See http://www.asercentre.org/.
[5] 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.
[6] e.g. de Haan and Rogaly (2002); Rogaly et al (2003).
[7] Our qualitative observations confirm these impressions. At the time of migration, most respondents list irregular construction and agricultural work as the main local alternative to their migrant job. Manual labour in brick kilns and seasonal weaving and tailoring are among the few local non-farm job opportunities.

expectations of educated young local men transcends caste and religious boundaries and has been 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.[8] The Muslim population comprises high status *Sekhs* as well as menial groups like washermen (*Dhobis*) and barbers (*Salmanis*). Conspicuous and 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 in the district.

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.[9] In the latest Gram Panchayat (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 often is absymal, 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.

3. The data set

Our data are from a random sample of households in Kasba Kotra and Jagannathpur villages in Nagina tehsil. The two villages were purposively selected and are located about 3 kms from Nagina town (30 kms to the east of Bijnor town) and the large village

[8] 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 numbers.
[9] Unlike in other studies conducted by the first author, some resistance to being interviewed was encountered in Kasba Kotra.

of Kotwali, respectively. Initial screening of neighbouring areas and villages suggest that the patterns reported below may be typical of rural Nagina as a whole.

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 is based 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. [10]

Among the 316 individuals with a labour migration history only two were women. Not surprisingly, a strong male bias therefore prevails in labour migration from our study area.[11] 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 of this first round of migrant interviews were conducted in 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. We interviewed each migrant in depth to collect as complete accounts of individual employment and educational histories as possible. Particular emphasis was placed on accurate recording of the process of entering the first migrant job and on a selection of subsequent job changes.[12]

To convey an impression of the information at our disposal, 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

[10] 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.

[11] A first guess could be that this merely reflects the strict practice of female seclusion among Muslim (*purdah*) and Hindus (*gungat)* in the study area.

[12] 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.

destination employer. If yes, we defined these as cases of workplace-referral, of which employee referral forms a subset.[13] 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-à-vis the employer (e.g. Fafchamps and Moradi 2011; 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 an employment relation. These variables included a short Raven-type ability test, whether others perceived the migrant to possess social skills, practical skills ('handyman') or whether others considered the migrant to be a person with 'jugar'.[14] We also asked about individual aspirations, general knowledge and whether the migrant cast a vote in the most recent election.

In addition, we collected information on the terms and duration (work-spells) of employment. For the first and most recent migrant job we also asked about the acquisition and upgrading of skills in this job, on own 'effort' and on whether termination of an employment relationship was voluntary or not. We also asked whether the migrant experienced the first and most recent employer to be honest and if not, to give examples of employer dishonesty.

4. Literature and theoretical backdrop

In a study of migration by African Americans from Southern to Northern US in the early 20th Century, Carrington et al (1996) portray destination networks as devices that channel relevant information from pioneer to potential migrants, (see also Winters et al 2001). There are numerous accounts of how social networks spread information about vacant jobs and destination attributes. We want to examine if social networks provide benefits *beyond* information sharing, and to what extent these benefits explain the nature and

[13] Our motivation for distinguishing workplace from employee referral is explained below.
[14] Which translates as 'capacity to improvise shrewdly with available resources (Jeffrey et al 2007).'

prevalence of network-based recruitment. We are especially interested in the hypothesis that employment via networks can mitigate incentive problems in work relations.

Munshi (2003), studying migration from Mexico to the US, suggests that by providing referrals on behalf of new arrivals, veteran migrants aid destination employers by remedying asymmetric information problems that are acute when recruiting migrants. Munshi is, however, vague about the kind of advantage referrals bestow on destination employers and about the referral mechanism itself.[15] Montgomery (1991) considers a specific referral mechanism; intermediation by an existing employee. In his model the employer advantage stems from assuming assortative matching in the networks of high quality employees. Hence, hiring new staff from the networks of high productivity employees remedies adverse selection in recruitment. In Simon and Warner (1992), the referral mechanism is similar but it is not given that more productive employees have higher quality connections. Their key assumptions are that (i) individuals have privileged information about the productivity of members of their social network and (ii) that existing employees will only refer high productivity workers to their employer.

In Kugler (2003), workplace referrals are instead used to monitor the behavior of newcomers once they are inside the firm. By assumption, an employee referee monitors and applies peer pressure on the newcomer if he or she exerts less effort than the referee. Relying on the networks of employees with a high work morale to fill vacancies makes it less costly for the employer (in terms of the necessary wage premium) to induce newcomers to exert high effort.[16]

One issue ignored in the papers above, is the motivation, or lack of motivation, referees have to reveal information about the productivity of job candidates or to monitor and put pressure on the behavior of new recruits once they are hired. The literature implicitly assumes that referee and employer interests are perfectly aligned. [17] Fafchamps and Moradi (2011) present a case where this assumption does not hold. Using data from the Ghanaian army, they found no evidence supporting the hypothesis that referred workers are of a higher quality (lower quit and dismissal rates). They also find evidence of referee opportunism since soldiers referred by personnel close to retirement were of

[15] Munshi does not, for example, distinguish employee referral from other types of referral.
[16] See Dhillon and Iversen (2011) for a theoretical analysis of social incentives, referral and efficiency wages.
[17] Dhillon and Iversen (2011) also address this issue more fully.

especially low quality. The authors suggest that the fact that close to retirement referees had little to lose by recommending low quality soldiers (the stakes are higher for someone with a longer career horizon) may explain this pattern.

Although the incentive problem facing referees appear to have been overlooked by a large public employer like the Ghanaian army, one would expect small enterprises to be aware of potential moral hazard problems and to make arrangements that give recommenders incentives to screen and monitor new recruits. This idea is explored by Karlan et al (2009) who argue that in jobs where skills are important, but unobservable, strong social ties between employers and referees are necessary to sustain trust in recommendations.

To gauge this argument, suppose worker quality is unobservable in the market place and only discernible to members of the same social network as the worker. For simplicity consider two types of workers where high and low quality workers produce output O_H and O_L, respectively, and where $O_H > O_L$. The going wage rate in the marketplace is w and it is common knowledge that a fraction p of the workforce is highly productive. The expected gross surplus from hiring a worker in the market is $R = pO_H + (1\text{-}p)\, O_L$. If the employer is confident that the middleman will recommend a high quality worker, recruiting through the middleman, rather than the market, would generate an expected surplus $R^* = O_H - R$. Karlan et al. assume that the worker (employee middleman) and the employer share this surplus. A high quality employee receives the market wage plus a share αR^* of the surplus, where $0 < \alpha < 1$ reflects the worker's bargaining power.

A low quality worker has an incentive to bribe the mediator to underwrite a recommendation. The maximum bribe a low quality worker is willing to pay is αR^* and in order to induce truth telling, the recommender must lose something of at least similar value if he recommends a low quality worker. In Karlan et al (2009), it is the value of the recommender's social relationship to the employer that is at stake. Denote this value T. It is clear that the employer can trust the person recommending a worker if and only if $T > \alpha R^*$. Furthermore, an employer is especially concerned about selecting the right type of worker for jobs where productivity varies with skills (and where the difference between O_H and O_L is large). It is also for such jobs that recommenders have the

strongest incentives to accept bribes from low productivity workers. Hence, a key prediction from this model is that we should observe stronger social ties between recommender and employer when workers are hired for skilled as opposed to unskilled jobs. In fact, as Karlan et al point out, for jobs with no skill requirements job entries through weak social ties are expected. An immediate implication for the low or unskilled jobs we study is that migrants should use their weak tie connections to find jobs.

We extend this model in two directions. First, even in jobs where skills are not an issue, workers can harm employers by not showing up at work or by not performing well while there. Put differently, and as documented in Banerji et al's (2011) large study of hiring by Indian firms, moral hazard is an important issue also in the kind of low- and unskilled jobs covered by our data. Second, it is not only social collateral that can provide a recommender with an incentive to act in the interest of the employer. For example, when using the network of an employee to fill a vacancy (workplace referrals) the employer can punish the referee even if there is no social collateral at stake. The employer can simply strip the recommender of workplace status and privileges (position, wage) if he fails to ensure that the newcomer is executing his work duties. This mechanism works best if the recommender and the new recruit are strongly connected. Our extension predicts that a person selected to act as a referee will have privileges in the current workplace and will also be strongly tied to the workers he recommends.

To see this, consider a simple example where the worker who is hired earns a rent R^* if he shirks at the job (if he uses his time and energy on private projects rather than performing the tasks he is set to do). The worker will "perform" if and only if shirking inflicts an expected punishment that matches this rent. Suppose there is a probability q that the employer detects shirking and in this case inflicts a cost ε on the shirker as well as a cost T on the workplace referee. The referee will also monitor and impose a cost C on the newcomer he recommended if he observes shirking (we assume that the referee detects shirking with certainty). Let s be an index variable that increases in the strength of the social tie between the referee and the new recruit. The expected cost of shirking (for the worker) is now $q(\varepsilon + \rho(s)T) + C(s)$, where $\rho(s)$ is the weight the entrant puts on the punishment imposed on the workplace referee in case shirking is observed. Since it is reasonable to assume that both $\rho(s)$ and $C(s)$ are increasing in s, we have the following

three hypotheses. If network recruitment is used to curb moral hazard problems at the workplace we expect to observe.

H1: An extensive use of workplace referrals. The reason is that in order to discipline the newcomer the referee must be able to observe his workplace behaviour.

H2: Employers use high rank or status employees as referees. The rationale is that a worker with a higher rank or status has more to lose (a high *T*) from referring a worker who misbehaves or underperforms.

H3: Strong social ties between the referee and the worker he recommends. Strong ties to the recruit makes it easier for the recommender to punish, and prevent, shirking (a high *s* increases ρ and *C*).

5. Descriptive statistics: general

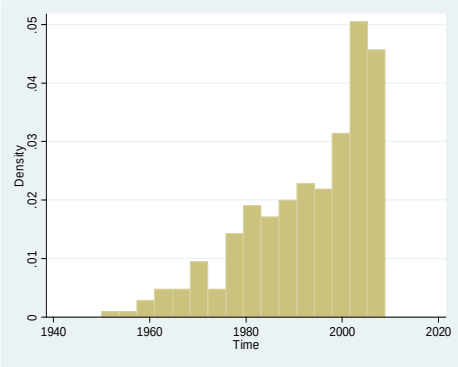
Table 1 presents broad descriptive statistics disaggregated by social group for the first migrant job and destination. Ansaris and Chamars are both strongly represented and simple comparisons highlight some startling contrasts – Ansaris were younger and less educated at the time of departure while their sectoral concentration is 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 Maharasthtra, specifically Mumbai and Pune, for Ansari migrants. Notice also that the share of Ansaris migrants moving to large cities is higher than for 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

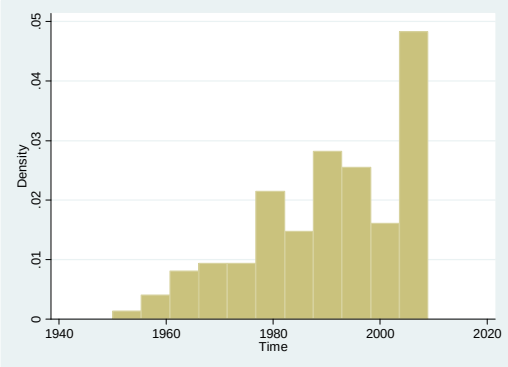
	Ansaris	Chamars	Others
Percentage of migrant sample	48.4 % (139)	34.1 % (98)	17.4 %(50)
Mean age at time of first migration	16.0 (4.39)	19.3 (6.01)	19.5 (6.85)
Mean yrs of completed schooling at time of first migration	3.4 (4.04)	5.8 (3.64)	7.4 (4.75)
Dominant first employment sector	Bakery (82.0 %)	Construction and 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%)
% of first migrations within Bijnor district and within UP	2.9 %	33.7 %	24 %
Percentage of first migrations to large cities	69.0 %	25.5 %	38.0 %
Other destination states	Uttarakhand Jharkand West Bengal Orissa Gujarat Punjab Himachal Pradesh	Punjab Himachal Pradesh	Maharashtra Jharkhand Punjab Himachal Pradesh

Figure 1 presents the timing of the first labour migration for the 287 migrants in our sample, first for the full sample and then for Ansaris and Chamars.

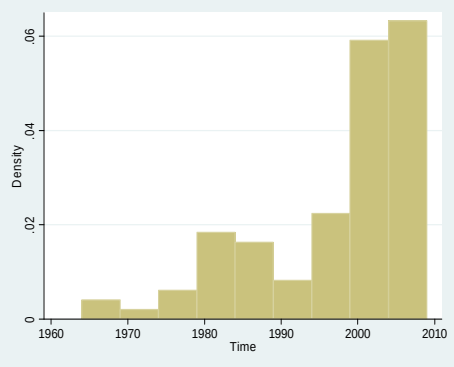
Figure 1a) Full sample



1 b) Ansaris

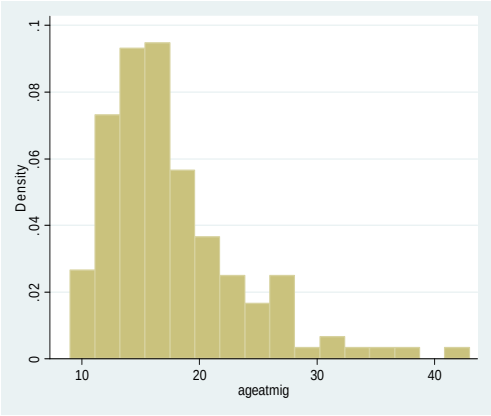


1 c) Chamars



First migrations are spread out in time, with the main bulk occurring during the last decade. While early migration was comparatively higher among Ansaris, there appears to have been a particularly sharp recent rise in migration among Chamars. Compared to other studies (e.g. the review in Lucas 1993), the age at first migration from our study area is low. Figure 2 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 their first migration.

Figure 2: Age at first migration



Very young migrants are concentrated in the Ansari-dominated bakery sector with bakeries absorbing about two-thirds of the youngest migrants. Notice also that the mean age of first migrants dropped from 18.85 before to 17.11 years after 1991.[18] During the same period, the mean age of first migrants entering bakery sector work fell from about 17 to 15 years.

6. Descriptive statistics: network mechanisms in the labour market

We next classify 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, whereas 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. [19]

Our simple taxonomy of destination labour market entry also includes intermediation by labour contractors. Labour contractors in Bijnor have traditionally

[18] Statistically significant at the 5 % level.

[19] This person. when operating on behalf of the employer, may be an employee or the owner of the firm himself. For all referees and main contacts, we have collected information on relation to the migrant and job title. 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. These cases are also included in the regression analysis in section 7.

recruited for agricultural and allied work, often on behalf of sugarcane crushing units located within or just outside the district boundaries.[20]

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 and comparatively minor categories are, first, 'asking around' which is the closest we get to a destination job search process and secondly and observed in several destinations, directly approaching a local spot market for unskilled or skilled labour where those looking to hire on daily or short term basis are matched with job seekers.[21] 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.

Table 2: Modes of labour market entry

Pre-arranged	**247**	**88.8%**
Informal:		
Workplace referral	167	58.2 %
Indirect	53	18.5 %
Labour contractor	27	9.4 %
Formal:		
Other	8	2.8 %
Not pre-arranged	**32**	**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 %

[20] The recent proliferation of recruitment agencies in Delhi and other cities and that specifically target low and unskilled migrants by offering placements as domestic workers, security guards and so forth have had no discernible impact on first migrant jobs in our sample of migrants from Bijnor.

[21] 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 would be expected to be arranged up front and prior to migration.

The prevalence of pre-arranged employment for migrants in our sample, 88.8 %, is significantly higher than Banerjee's (1991) estimate for a random sample of migrants in Delhi (58.6%). Combining pre- and non-pre arranged jobs, workplace referral is observed for 61.3 % of first migrant jobs. While 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 than the one used by Munshi and Rosenzweig. In Banerjee (1983), which contains clues about the incidence of workplace referral, the percentage was 36 % and well below ours. Once indirect entry through a contact is added, the incidence of network based labour market entry jumps to 81.5 %, which is a very high number.

The fact that workplace referrals are so prevalent indicates that recruitment via social networks may be used to curb moral hazard problems at the workplace (confer our hypothesis H1 above). The conjecture that recruitment via social networks mitigates moral hazard problems at the workplace had two additional implications. If workplace referrals are used we expect strong social ties between the referee and the recruit and the recommender ought to have a "prominent" position in the workplace. We first consider the type of social connections that feature 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	52	29.55 %	29.55 %
Other relative	87	49.43 %	78.98 %
Village friend	6	3.41 %	82.39 %
Village acquaintance	21	11.93 %	94.32 %
Friend from elsewhere	2	1.14 %	95.45 %
Acquaintance from elsewhere	6	3.41 %	98.86 %
Other	2	1.14 %	100.00 %

It is evident that kin account for almost 80 % of the cases of workplace referral with a member of the same household being the 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, however, 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.[22] Our descriptives thus indicate that strong, kinship-based ties are overwhelmingly more important than weak ties for referral-based entry into first migrant jobs.

We have also argued that employees with sufficient stakes should be more likely to be invited to act as referees by their employers. As a precursor to making comparisons of the jobs of referees and new recruits, table 4 illustrates the diversity of jobs held by referees, main contacts and new migrants in our data-set.

[22] 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 4: Hierarchically ordered job titles for workplace referees, main contacts and new recruits

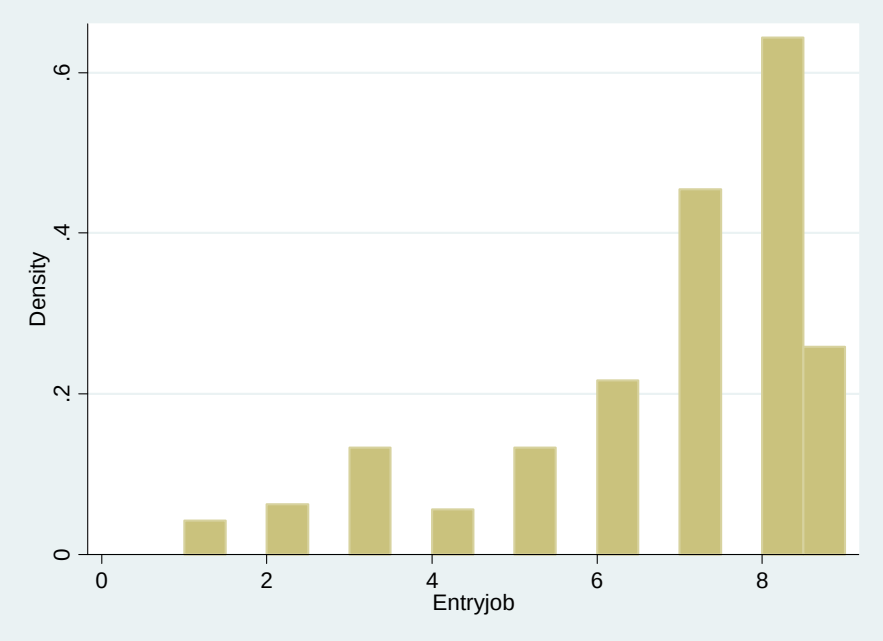
	Rank	Type of jobs
1	*Enterprise owner*	
2	*Other prestigious jobs/positions*	Politician, University student, medical doctor, asst supervisor, supervisor, accountant (bakery), accountant clerk, sales clerk, sales manager (bakery), tailor master, forest department supervisor, block coordinator (UNICEF), 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, 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: manual)*	sweeper, utensil cleaner, cleaner, rickshaw puller, machine cleaner (factory), unskilled factory worker, other domestic worker
9	*Unskilled (lower: manual)*	manual labour, agriculture, construction, white washing, tent worker, loader, wood cutter

In Table 4, the jobs underlined are held exclusively by referees or main contacts while all other jobs, in principle, could be either a referee or first migrant job. Category 1

are enterprise owners and no attempt has been made to distinguish between ownership of small and larger enterprises. While ownership thus includes tiny enterprises such as teashops, bakery owners are the biggest group of enterprise owners in our sample. The categories from 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.[23] Category 5 are vendors, often self-employed (but see below), 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, a reasonable.

Using these categories, figure 5 portrays job classifications for the first migrant jobs for the 287 migrants in our sample.

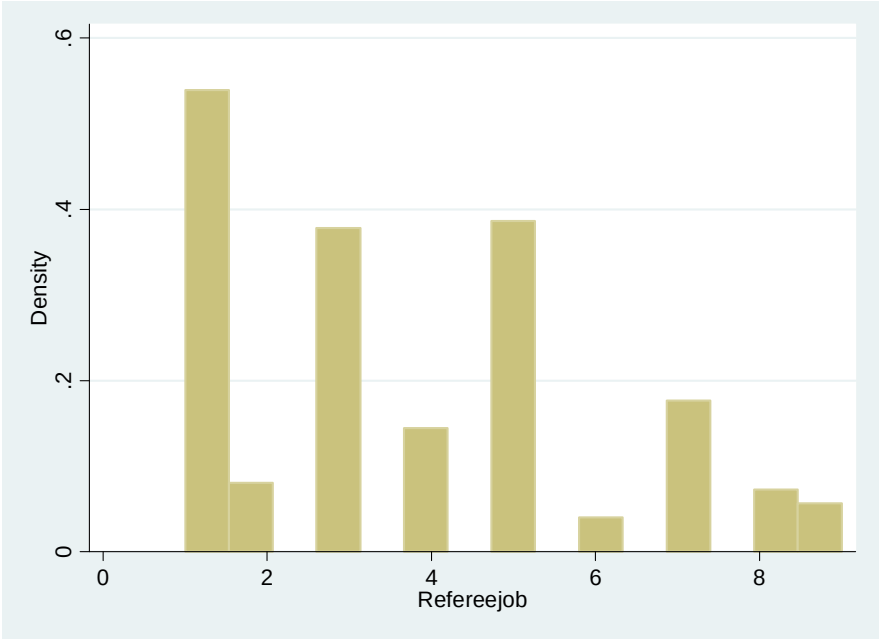
Figure 5: Job classifications first migrant job



[23] Prestige is not, of course, necessarily linked to skill: barbers, iron smiths and cobblers are all performing tasks with strong (lower) caste connotations.

78.7 % of the 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 and the destination work lives awaiting the migrants from our two study villages are, at least to start with, distinctly inglorious. We next make a comparison with the jobs held by the referees or contacts our migrants relied upon in order to enter these first migrant jobs. As figure 6 illustrates, the job profiles of these in-house referees or main contacts are strikingly different from those of the new recruits:

Figure 6: Job classifications: in-house referees or main contacts



Since we do not have information on the duration of the tenure of the referee in the workplace where a new recruit is brought in, we use the prestige attached to their job category as our proxy for their stake vis-à-vis their employer.[24] 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

[24] Remember that we interviewed migrants who typically would be knowledgeable about the job the referee held, but would be less likely to accurately recall the duration of the referee's tenure.

broad contact base, are crucial for finding the first migrant job. Further, the most important category turns 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.[25] The descriptives suggest a close correspondence between our theory and the data which we return to in the empirical section below.

7. Regression analysis

The descriptive statistics square well with our suggestion that workplace referrals are used to restrain moral hazard problems at the workplace. But above we only considered migrants who entered their jobs with a workplace referral. Another way to test the moral hazard story is to compare workplace referrals with migrants who used other contacts to get their job. The prediction is that those who enter via a workplace referral should have stronger kinship ties to their referee and the referees themselves should have more prestigious jobs than those in the reference group (those entering a job without a workplace referral). 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.[26] We relate this indicator to dummies capturing the social connections to the referee (or the main contact) and the status of the job hold by the referee (or main contact).

$$Y_i = \beta_0 + \beta_1 D_{JH_i} + \beta_2 D_{JV_i} + \beta_3 D_{NHH_i} + \beta_4 D_{NOR_i} + \beta_5 D_{NCOV_i} + u_i \quad (1)$$

On the right hand side, the two dummies with subscripts J pin down the jobs of in-house referees or main contacts (whether the referees or contacts had jobs in category 1-4 in table 1 for D_{JH} or were (bakery) vendors for D_{JV}). The following three dummies depict 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

[25] Notice that the combination vendor and workplacereferral is confined mainly to the bakery sector where vendors sell products on commission and without receiving a fixed salary but typically are linked to one bakery where the vendor shares accommodation with other bakery workers. The new migrant may then become an employee of the same bakery (most common) or a vendor assistant (less common) for the cases of workplacereferral or rely on the vendor's links to other bakeries for indirect job entry.

[26] The 0 category (see also footnote 19 above) thus comprises migrants who entered employment 'indirectly', through a labour contractor or who otherwise relied on a main contact.

household (D_{NHH}), (ii) was another relative (D_{NOR}), or (iii) was a co-villager not related through kin.

We estimate probit models for each specification and report the probit results as marginal probabilities. The benchmark results in table 7a 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.

Table 7a: "Benchmark model": Probit, workplace referral as dependent variable

Variable	Marginal probability
Referee has prestigious job	0.403***
	(0.064)
Referee is vendor	-0.102
	(0.101)
Referee is member of migrant's household	0.341***
	(0.069)
Referee is migrant's relative	0.349***
	(0.101)
Referee is migrant's covillager	0.257***
	(0.058)
Pseudo R^2	0.1822
N	263

***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.

We have touched upon rival explanations for the patterns observed in our descriptive statistics – specifically the hypothesis that workplace insiders may have privileged access to vacancy information. Social clustering in the workplace could also reflect preferences for working together or a possible insurance effect reflected in the higher prevalence of referral among younger migrants.[27] We cannot, moreover and without further scrutiny, rule out that strong tie and prestigious job contacts act as screening devices.

[27] 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 %.

We first address the potential objection that our finding that workplace referral is so widespread could simply pick up that firm insiders have privileged access to information about vacancies in their workplaces and share this information with potential candidates. If correct, job acquisition would be expected to occur mainly through weak ties since weak tie search would be the most efficient job search strategy. In addition, job acquisition would also be expected to 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 is most likely to know. While the high prevalence of strong tie entry in table 7a) militates against the weak tie search hypothesis, it is evident that co-villagers also matter. Yet, what further undermines the insider vacancy information sharing hypothesis is that the connections that matter are not workers at the same level as the new entrants but individuals in more prestigious jobs.

Using pathway analysis, we now adjust our benchmark specification to explore the merit of other competing explanations and as robustness tests. 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 implication of such unobservables would be to bias our estimates since the coefficients in our benchmark model would be correlated with the error term. The two alternative and well known ways of addressing such endogeneity concerns is to resort to IV or proxy variable techniques (e.g. Wooldridge 2002). In a small sample like ours and given the proxy variables at our disposal, we prefer the latter option.

To examine the possibility that workplace referral is mainly used as a screening device (and to tackle endogeneity concerns) we expand our benchmark model by adding four proxies for unobservable individual migrant attributes expected to matter in an employment relation to the benchmark specification: a general ability test score based on a Raven proxy plus variables that attempt to capture worker (i) social skills, (ii) practical skills and (iii) a measure of whether the worker is considered a person with 'jugar'.[28] These unobservables are captured by the coefficients α_j and the vector X in equation (2). Since close kin are likely to possess superior information about exogenous but

[28] The last three are measured at the time of our survey so could potentially be outcomes of migration – reverse causality is thus a potential concern; however, the very limited impact on the other coefficients in the regression suggest that this is not a serious matter.

unobservable worker traits we cannot, a priori, rule out that referral through strong tie connections benefit employers by screening for such traits.

$$Y_i = \beta_0 + \beta_1 D_{JH_i} + \beta_2 D_{JV_i} + \beta_3 D_{NHH_i} + \beta_4 D_{NOR_i} + \beta_5 D_{NCOVi_i} + \alpha_j X_i + \gamma_k D_i + v_i \qquad (2)$$

We also introduce 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. These observables are also included in the coefficients α_j and the vector X in equation (2).

If the advantages to employers of recruitment (i) through strong tie networks or (ii) through staff in more prestigious jobs mainly are manifested through screening for migrant unobservables, the strong tie and prestigious job coefficients should substantially weaken once these four unobservables are controlled for.

As seen in column 1 in table 7b, however, the impact of controlling for these unobservable as well as the 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.

At the same time, workplace referral does involve some screening, given the positive and significant coefficient for the jugar dummy. A person who in local parlance is a ‘jugari’ (see footnote 15) is thus more likely to be recruited through workplace referral.

There is also a suggestion that referral, because of the strongly positive age 12 and below dummy and irrespective of whether it occurs through a strong tie or a person in a prestigious job may act as an insurance mechanism for very young migrants.

Table 7b: Testing rival explanations; Probit with workplace referral as dependent variable

Variable	Model		
	High jobs, strong ties and referral as screening devices	*Workplace clustering reflects social preferences*	*Bakery sector 'fixed' effect*
Referee has prestigious job	0.425*** (0.051)	0.3909*** (0.032)	0.333*** (0.023)
Referee is vendor	-0.156 (0.106)	-0.236*** (0.102)	-0.337*** (0.104)
Referee is member of migrant's household	0.300*** (0.055)	0.258*** (0.068)	0.212** (0.089)
Referee is migrant's relative	0.322*** (0.093)	0.289** (0.101)	0.257** (0.106)
Referee is migrant's covillager	0.222*** (0.042)	0.219*** (0.045)	0.188** (0.062)
'Raven'-score	-0.003 (0.027)	0.007 (0.027)	-0.002 (0.027)
Dummy=1 if migrant is person with 'jugar'	0.155** (0.061)	0.143** (0.063)	0.119* (0.071)
Dummy=1 if migrant is person with social talent	-0.026 (0.083)	-0.026 (0.077)	0.107 (0.092)
Dummy=1 if migrant is person with practical talent	-0.102 (0.078)	-0.079 (0.097)	-0.058 (0.088)
Age at migration	-0.012* (0.007)	-0.010 (0.006)	-0.005 (0.006)
Age below 12 at migration (Dummy=1, if Yes)	0.172** (0.051)	0.195*** (0.042)	0.192*** (0.039)
Yrs of schooling	0.003 (0.003)	0.008*** (0.0034)	0.005** (0.002)
Ansari		0.169*** (0.056)	-0.005 (0.055)
Dummy=1 if village is Kasba Kotra		0.010 (0.045)	0.0002 (0.046)
Agriculture/Construction (Dummy=1 if migrant job is in agriculture or construction)			-0.387** (0.180)
Bakery (Dummy=1 if migrant job is in bakery)			0.253*** (0.056)
Pseudo R^2	0.2562	0.2715	0.3391
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.

Responding to Manski's (2000) incisive insight that different social effects may give rise to similar patterns in data (even in a data-set as in-depth as ours) consider the preference-based rival explanation for workplace clustering: rather than acting as a screening or worker disciplining device, workplace clustering of family/relatives could simply reflect preferences for working together.

We are able to test and 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, namely the Ansaris, along with a village dummy to control for village level variation in social cohesion and family relations with coefficients captured by γ_k in equation (2). 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 7b.

Note that excepting the weak tie probability, other probabilities of interest now shrink in size. The coefficient on relatives also becomes 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 in section 6, 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 the bakery sector. Column 3 in table 7b) report 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. These coefficients and sectoral dummies are also included in γ_k and the vector of dummy variables D in equation (2).

These two sectoral dummies are both statistically significant, the bakery dummy is positive and significant at the 1 % level. The coefficients of interest all shrink in size and become weaker but do, in all instances, remain statistically significant at least at the 5 % level. Put differently, while the strong tie and high job effects observed are stronger in the bakery sector they also extend beyond this particular sector. This is consistent with the descriptive statistics reported in section 6 and lends support to our moral hazard hypothesis. Note that the Ansari dummy turns insignificant once we control for sector of work.[29], [30]

8. Conclusion

In this paper we suggest and test the hypothesis that employers use social networks to find new workers because it restrains misbehavior at the work place. If – indeed – curbing moral hazard problems is an important reason for the use of network recruitment we argue that one ought to observe the following:

(i) a high prevalence of work place referrals,

(ii) strong social ties between the referee and the recruit and

(iii) referees holding relatively prestigious positions at the work place.

We contrast these predictions with an in-depth primary data set covering low- and unskilled migrants from Western Uttar Pradesh (India). Our data squares well with the moral hazard story. Our case is not decisive; there are other concerns that may explain the prevalence of workplace referrals. We do, however, address the main rival explanations and although they may partly explain the prevalence of workplace referral, they do not alter our conclusion: For migration into low- and unskilled jobs, moral hazard is a relevant problem that employers use workplace referrals to overcome.

[29] Conditional on workplacereferral, the percentage of first migrants recruited through co-villagers in bakeries is 18 %, while the corresponding figure for other sectors is 10 %.

[30] The fact that we are covering an extensive time period makes it pertinent to scrutinise possible time trends in referral incidence: the prevalence of referral could be increasing, for instance because of a growing number of social connections at the village level. Adding dummies for the time periods pre-1970, 1970-1979, 1980-1989, 1990-1999 and 2000 onwards make no difference to the reported results.

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