Job markets that work: Challenges of match-making in an emerging economy

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1. Introduction

In their book “The Race between Education and Technology”, Claudia Goldin and Lawrence Katz argue that the twentieth century was the Human Capital century. The United States of America was the first country to invest in mass education at the high school and college level. As a result of this investment, American firms could adopt technology easily, American workers achieved massive increases in productivity, and the American economy became the richest and most innovative economy in the world. Thus, the book argues that the twentieth century could interchangeably be described as the American century as well as the Human Capital century.

At the beginning of the twenty-first century, India and many other developing nations are arguably where America was at the beginning of the twentieth century. Just like the US, the economic balance is shifting from land and manual labor based production in villages to capital and knowledge-based production in towns and cities. The population is relatively young and ready to embrace economic change. Between 1991 and 2011, the number of young adults enrolled in secondary schools jumped two and a half times from 19 million to 51 million, a remarkable transformation in human capabilities. Perhaps the big difference is that large breakthroughs in connectivity have brought the world closer, or in the words of the New York Times columnist Thomas Friedman, “the world is flat”. Free mobility, both for people and

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1 We thank Maya Chandrasekharan for sharing the Babajob data and Ishita Tripathi for extensive assistance.

2 Source: Ministry of Statistics and Program Implementation, Government of India.
things, implies that the benefits to human capital are greater as workers are able to move to where demand is greatest. But so are the pitfalls if the country fails to unlock its human potential. The Economist (2013) worries that “India is squandering [its] demographic opportunity” and bemoans the “armies of guards, peons, delivery boys, ear-dewaxers and men who sit on stools in lifts pressing the buttons.”

Researchers expend significant effort to understand how human capital is created. Major scholarship has stressed the importance of early life health, nutrition and environment, of early and universal enrolment in high quality schools, of ensuring that school inputs add significant value, and of designing school and college curriculum to generate the set of skills that create productive workers. Major public policies directly address these findings. The Janani Suraksha Yojana and the Integrated Child Development Service provide pre-school inputs as well as child nutrition and basic healthcare. The massive Sarva Siksha and Rashtriya Madhyamik Shiksha Abhiyans seek universal elementary and secondary school education. Coupled with these are school-based interventions such as mid-day meals for children and more resources for teachers. Organizations such as the National Skills Development Corporation are trying to increase the supply of training providers especially those focused on refurbishing the workforce with skills that a fast growing nation needs. The net impact of these programs is a workforce that is healthier, better schooled and overall more productive.

While accumulating human capital is important, the development of well functioning markets that unlock this potential is perhaps equally critical. Policymakers often naively assume that once the workers’ capabilities are in place (through the provision of healthcare, education and opportunities for skill development), that employers will be able to quickly and easily use these capabilities. But this is not necessarily the case. Even when workers have well-developed skills to offer, and even when firms and other employers need those skills, well-functioning labor markets are critical for matching workers with open positions. Absent such markets, economies suffer from “mismatch”, where well-qualified workers are unemployed and open positions remain unfilled. The most striking example of this phenomenon is the former Eastern bloc where after the collapse of socialism, the economies failed to leverage the high levels of human capital

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in the most productive manner. Closer to home, the state of Kerala has been a historical leader in important measures of both wellness and capabilities, but lags in converting these into economic productivity. This chapter describes the process of matching in Indian labor markets, focusing on how matching occurs in the job market and how information is exchanged between potential employees and employers. Key to the discussion is to understand the potential sources of mismatch and remedies that can enhance labor market efficiency on the brink of India’s economic takeoff.

Markets that appropriately employ and engage the labor force are critical. Workers must find enough opportunities that use their skills and fulfill their career aspirations. Likewise, employers want a steady and reliable pipeline of motivated employees. In an efficient market, the match between employers and prospective employees should be optimal in terms of what the employer is seeking and what the worker has to offer. In practice, however, achieving an optimal match is difficult because the quality of worker-firm matches is both an inspection good (some aspects of the match quality can be ascertained before hiring) as well as an experience good (some aspects of match quality are only revealed after hiring). For instance, some employers check employees’ educational qualification on résumés, or gauge occupation-specific skills by administering entrance tests and talking to referees, but find out whether employees are lazy or hard-working only after hiring and observing them for a while. Similarly, employees know the potential salary, location and the tasks associated with different positions, but find out about work conditions and the collegiality of co-workers only after joining. If the hire is sub-optimal, both firms and workers pay a price in terms of lost productivity. Finding ways to avoid these situations, specifically through well functioning labor markets, is a very important economic investment.

Labor markets can break down in various ways, but most problems can be traced back to the lack of information. Firms lack information on the availability of workers, both in terms skills and location of the right workers. When they find potential workers, education and credentials signal productivity only imperfectly. Even after a worker joins, the firm does not know if that person can make the transition to higher order tasks and responsibilities. Workers, especially those who are socially or geographically isolated, lack information on where jobs that suit their skills are located. When they find out about the availability of these jobs, salary or title may signal quality
only imperfectly. And similar to the firm’s problem, prospects for career growth are not clear even after joining.

This chapter expands on the nature of these problems. Our discussion reveals why firms might prefer one worker even when on paper the match is inefficient. For the workers, can information about new opportunities really lead to better schooling ex-ante or greater income ex-post? Do workers respond to information about opportunities by moving to where there are located? Can firms and workers use social networks to overcome information problems? And can new labor markets, perhaps online, improve match quality?

Labor markets in India are both diverse and segmented. Nonetheless, there are straightforward ways to categorize these markets so that the classifications are useful for our understanding. Each classification yields different insights into the dynamics of how these markets function, and how to devise and target policies to improve their operation.

The employed workforce can be divided into those who work for wage and salaries, and those who work for themselves. National Sample Survey Organization (NSSO) data shows that the working for wages is a largely urban phenomenon, where approximately half the workers are in salaried jobs (see Table 1). This chapter deals primarily with regular wage or salaried employees for two reasons. First, workers who report themselves as self-employed often do so not out of choice but rather due to lack of opportunities in the organized sector. Second, matching problems are most likely to arise for salaried employees.

| Table 1: Percentage distribution of workers of all ages by status in employment (all-India) |
|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Category of persons | Status in employment | | |
| | Self-employed (%) | Regular wage/salaried employees (%) | Casual labor (%) |
| Rural | | | |
| Male | 54.5 | 10.0 | 35.5 |
| Female | 59.3 | 5.6 | 35.1 |
| Person | 55.9 | 8.7 | 35.4 |
| Urban | | | |
| Male | 41.7 | 43.4 | 14.9 |
| Female | 42.8 | 42.8 | 14.3 |
| Person | 41.9 | 43.3 | 14.8 |
| Rural + | | | |
| Male | 50.7 | 19.8 | 29.4 |
Banerjee and Bucci (1995) classify the employed workforce in a different way (see Figure 1). They define employment as either formal or informal. It is important to note that the distinction between the formal and informal sectors is based primarily on the size of establishment and not the type of work performed. Establishments with 20 or more employees are classified as part of the formal wage sector and remaining establishments, employing fewer than 20 workers, fall into informal wage sector. It is common for large enterprises to have internal labor markets where workers receive on-the-job training and have prospects for promotion. In contrast, legal regulation of employment and wages is almost non-existent in the informal sector. The exercise of power within enterprises is personalized and often arbitrary. Workers’ entry into informal positions is restricted primarily by the presence of informal networks that exercise control over the location and scope of operations rather than skills or formal qualifications. Again, while the principles we discuss are universal in nature, formal jobs are more likely to use the structured labor market mechanisms and therefore we focus on these.

![Figure 1: Classification of Indian labor markets. Source: Banerjee and Bucci(1995).](image-url)
Finally, we focus on the private sector. This is not to say that India’s massive public sector is not important. Jobs in the public sector are generally very secure, pay institutionally determined wages and provide an attractive benefits package. Employees in these establishments are protected by government wage and employment legislation and by clear rules and procedures for termination of employment. However, the productivity and profit-maximizing motives of private sector employers are clear and permit straightforward analysis whereas the public sector suffers from multiple missions, which may obfuscate our understanding of labor markets.  

2. Why don’t markets work well?  

Firms and workers universally face challenges to efficiently using human capital. But these challenges place a greater burden on developing economies than developed ones. First, the difficulty of using talent comes bundled with a severe talent shortage. Though India produces as many young engineers as the United States, a report by the McKinsey Global Institute (2012) argued that only 25 percent of them are suitable for employment by multinational organizations. Second, countries such as India start the process of improving labor markets from a low base of labor market efficiency and sophistication. Compared to this, the challenge facing Western economies is how to improve matching in markets that work relatively well already.

This section focuses on five major challenges to matching in India. We investigate (i) how the lack of credible signaling about worker quality can limit who hires which workers, and vice versa; (ii) if lack of reliable information about expected returns to investments in human capital deters workers to invest in the same; (iii) the degree of mismatch between workers’ skills and employers’ requirements; (iv) the effect of a workforce that is spatially disbursed across the country, but where major employers are concentrated in a few places; and (v) the role of social identity on who gets hired and promoted in firms. This is not to say that our list is exhaustive, but the existing research highlights the importance of these issues in labor market success.

2.1 Credible signals about worker quality

Consider a steel mill that is trying to select a new accounts officer. The steel mill is able to observe and infer applicants’ productivity only imperfectly. For example, the mill will be able to

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4 Labor markets can alternatively be divided between blue-collar workers whose job requires manual labor or white-collar workers who carry out professional, managerial or administrative work. Workers can also be differentiated between entry-level versus experienced hires. Finally, job location in rural or urban can also offer a way to classify workers.
determine easily if applicants have the right university and professional credentials, and also verify applicants’ past employment history. But knowing whether an applicant will fit in the work culture is very difficult. Also, will an applicant easily learn the particular nuances of accounting in the steel industry, or require extensive training? Finally, will the applicant be motivated to complete work quickly, or shirk spending long hours at the tea shop? For applicants, many of whom have similar qualifications and credentials, one way to differentiate themselves from the competition is to convince the recruiter that they are adaptable to the firm culture, will not require training and are highly motivated. Absent credible signals of differentiation, the steel mill might pick a less-than-perfect candidate. If this happens each time a worker is hired, the mill will suffer a productivity loss, and potentially lose faith in market-based hiring. This lack of *credible signaling* about worker quality (and vice versa) is a major challenge in labor markets in India.\(^5\)

In such a scenario, a credible action, or signal, can convince the employer that the applicant is a cut above everyone else. For instance, an applicant might take a costly steel industry-specific accounting course that, while adding little to accounting skills, might signal her particular willingness to work in the steel industry. The employer will recognize this applicant’s extra effort and select her instead of many other applicants with similar characteristics but who have no industry specific credentials.

Credible signaling and screening processes are important for achieving efficient and stable market-based outcomes. Skill acquisition in the form of academic degrees and vocational training certificates may serve as good signals to potential employers. From a policy perspective, evaluating the credibility of these signals and their impact on productivity after hiring is essential.

When signaling based on formal credentials is unreliable or simply missing, as is the case in many labor markets in India, trust, networks and reputations of both employees and employers is another way to overcome the information problem, a theme we explore more in detail in Section 3.1.

### 2.2 Information about returns to human capital investments

\(^5\) It also offers a potential explanation for little or no salary differentiation for low skill jobs.
The flip side of workers signaling to employers is the perceived value of the industry or job to workers. Workers invest in industry or job-specific skills when they have precise and credible information about the returns to those investments. Only if expected (rather than actual) returns are high will workers invest the time, money and effort to be trained in specific skills. For example, if a student does not know about job opportunities in sun-rise sectors such as biotech or information technology, but is only familiar with careers that her friends or family members have pursued, then she might never invest in biotech or IT-specific skills even if they yield high returns.

Evidence for this dynamic is uncovered by two compelling experiments, both conducted by Robert Jensen from the University of Pennsylvania. These experiments asked if credible knowledge about returns to industry specific investments changed individual behavior. In the first of the two experiments, Jensen provided three years of recruiting services to help young women in randomly selected rural Indian villages get jobs in the business process outsourcing (BPO) industry (Jensen 2012). The BPO industry was new that time and thus the experiment expanded labor market opportunities for women. The study reports that young women who had access to the recruiting services were 5-6 percentage points less likely to get married or have children during the three year period of the intervention, choosing instead to enter the labor market or obtain more schooling or post-school training. They also aspired to work more steadily throughout their lifetime.

This dynamic happens not only in India. Jensen’s second experiment provided information to students at a randomly selected set of schools in the Dominican Republic about the earnings students can expect after completing high school. Relative to those not provided with information, these students on average completed 0.20-0.35 more years of secondary school over the next four years than those who did not receive this information. These findings suggested that providing credible information about expected returns can potentially change an individual’s labor market investment and career choices.

Nonetheless, conveying reliable information on expected returns is challenging. First, estimates based on averages may not convey person-specific returns to skills. The problem is further complicated because a comparison of the returns to various types of investment to human capital (say schooling, vocational training or language skills) must be made to infer optimal choice.
However, some of these skills are in fact complementary. For example, while knowing/speaking English can raise earnings by up to 24% in India; this increase is much more pronounced when coupled with high education (Azam et al 2013). From a policy perspective, these complementarities must be accounted for when designing skill development programs so that training is comprehensive and effective.

### 2.3 Skill matching

Using data from Babajob.com, a blue-collar job portal, Figure 2 shows net supply of workers with various blue-collar skills in the city of Bangalore. What is striking is the large differences in supply and demand in a number of categories. The portal depicts a significant deficit of workers for house help and sales services, but a surplus of engineers, machinists and IT professionals in the city. Thus, Bangalore has a skills mismatch between available job openings and potential workers’ abilities in different occupations.

**Figure 2: Excess supply of candidates versus jobs in different categories in Bangalore. Source: Babajob.com**

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6 We calculate the fraction of applicants versus the fraction of job openings in each category and report the percentage difference. This normalizes for an overall shortage of jobs compared to job seekers in the city.

7 Reporting on this mismatch has been predominantly anecdotal, since very few firm or household surveys show empty positions or unemployed workers whose unemployment can be directly linked to skill mismatch.
How important is the skills mismatch, both from the perspective of market participants (firms and workers) as well as the perspective of policy makers? Won’t the market automatically adjust wages so that workers shift occupations thereby eliminating the mismatch? Should policymakers just focus on attaining higher skill levels for the workforce regardless of occupational choices made by them? The last argument fails to account for the tacit nature of skills in each occupation. For instance, the nature of clerical skills might be very different in a manufacturing versus services setting. It is for this reason, workers’ training and skills should be congruent with the specific requirements of their job or for which there is demand in the labor market. With such a match, firm productivity will be maximized and workers will also find investments in skill acquisition worthwhile.

This mismatch is not restricted to Bangalore or blue-collar markets such as Babajob. Despite the large labor pool, India suffers from skill mismatch in many ways. One way is a mismatch in the level of skills. Some workers are overqualified, capable of handling more complex tasks than their current jobs require. Others are under-qualified, overwhelmed by the requirements of their jobs. This is not just a question of qualifications on paper but an issue of performance in practice. CRISIL (2009) defines an employable individual as one who has the necessary skill sets to undertake a job, requiring minimal additional training. Absent this, the employer has to make costly investments either to train existing employees or in replacing them with different ones. The NASSCOM-McKinsey report (2009) finds that only about 25% of technical graduates and 10-15% of general college graduates in India are suitable for employment in the offshore IT and BPO industries respectively. Bapna et al (2013) also point out that the rapid economic growth in the last decade masks underlying weaknesses of a higher education system where a majority of college graduates are unemployable.

Another distinction is in the type of skills. According to a report by Oxford Economics (2012), “The India auto industry is projected to be short of 300,000 skilled personnel by 2020, while in the oil and gas sector, demand for petro physicists exceeded supply by almost 80% in 2010.” The agricultural sector continues to suffer from disguised unemployment. 49 percent of India’s employed population remains occupied in the agricultural sector even though the sector currently contributes to less than 20 per cent to GDP (NSSO Report 68th Round). Surplus labor in agriculture could potentially be more productive elsewhere, boosting aggregate GDP. On the
A possible reason for this mismatch is the gap between students’ innate abilities and interests and what they train for, or an “aspirations mismatch”. An obsession with professions like engineering, medicine, IT and chartered accountancy, while neglecting science, social sciences and the humanities is commonplace. A possible reason for these student decisions might be traced back to information shortages. With scarce knowledge about the value of different professions, students just follow their peers who are the often their only sources of information. This is mirrored by the colleges, universities and training institutes, which follow each other in offering “hot” courses regardless of the talents of the students or sometimes the needs of industry, simply because that is what peer institutions offer. Besides the emotional toll on young people, this obsession has another unintended effect. The lack of professional diversity could threaten India's future competitive edge if demand shifts away from the professions that are currently hot.

While much policy attention has focused on hard skills such as the knowledge and requisite training needed to perform a particular job, soft skills such as how well the employee can manage and work with people, trustworthiness, motivation and organizational fit are also potentially important determinants of productivity. Moreover, soft skills are intangible and harder to determine before the employee is hired. But how critical are these attributes for job success? Langer et al (2008) examine this question in the case of project managers in IT and IT-enabled services firms. Using data on 530 IT outsourcing projects involving 209 project managers, they find that while hard skills such as technical or domain expertise may be essential in a project manager, soft skills such as tacit knowledge of organizational culture and client are more critical for project success.

Despite these findings, employers routinely emphasize hard skills while hiring. The major reason is that hard skills are easily observable and verifiable during the hiring process. Evidence in support of this explanation emerges from a number of studies on educational institutions. Using data on the graduate management students at the Indian School of Business, Jain and Kapoor (2013) find that grade point average (GPA) in core courses was the main predictor of post-
program earnings. Similarly, using placement data from the Indian Institute of Management at Ahmedabad, Sujoy Chakravarty and E. Somanathan (2008) observe that the main determinants of the starting salary of graduates from the post-graduate diploma program are the first-year GPA, GPA in communications courses and prior work experience.

These studies have important implications. Specifically, they highlight an additional dimension of “skills” where both soft skills and hard skills are important for worker productivity. Yet, if firms only screen candidates on hard skills due to difficulty in measurement and verification, then there might be mismatch in the kinds of employees they hire. In the long run, not only will firm productivity be lower, but students themselves might overinvest in hard skills, leading to persistent skill imbalances.

Finally, a fast-changing global economy also requires workers who adjust quickly to changing technologies and skill requirements. But India suffers from a deficit of precisely this type of worker – highly educated with advanced degrees or vocational training – those who can quickly retool for employment in high growth skill-biased sectors. According to a NSSO report (2009-10), about 44 per cent of the literates of age 15 years and above had either a secondary-school education or above, and only about 11 per cent of the persons of age 15 years and above were graduates and above. Among the persons of age 15 years and above, only 2 per cent had technical degrees or diplomas or certificates. Workers without college education concentrate in manual task-intensive jobs such as food service, cleaning and security. Such jobs are numerous but offer low wages, precarious job security and few prospects for learning or upward mobility. An article in the Economist (2013) describes Frontline, a professional security service provider in Patna.

“Frontline is also a symptom of a colossal failure. For it is not supplying labor for a manufacturing boom of the kind that helped so many in China, South Korea and Taiwan out of poverty, or for the IT services at which India has excelled. Instead it offers relatively unproductive service-sector jobs—in particular, security guards.”

The implications are clear. Economic growth clearly depends on a workforce with better training that can adapt to manufacturing or other higher quality jobs. It is essential to train the labor force for the right set of capabilities.
Companies’ concerns are that they are competing to hire the best. They make heavy investments in trying to raise the skill levels of its employees. An experienced employee who is good at his job will be sought after by competitive firms and might decide to switch companies. However, it might happen that the acquired skills at old job are not that easily applied to the new workplace. Skills might be too specific to particular jobs and not transferable across work-environments. But in a dynamic and competitive labor market, skills acquired by labor force should be more transferable. This will reduce friction and cases of potential mismatches.

2.4 Geographical matching

The Babajob.com data show the supply and demand of blue-collar jobs across the country (see Figure 3). Supply of entry-level blue collared workers is more widely spread across the country, but the demand is concentrated mostly in a few urban pockets. This difference in where jobs are compared to where workers are located is called geographical mismatch. The persistence of geographical mismatch, especially in the presence of large returns from moving is a mystery.

![Figure 3: Supply (left) and demand (right) of workers by district. Source: Babajob.com](image)

Investigating this mystery is an important topic of research. In a traditional economy, individuals are tied both to their parents’ occupation and the place where they are born. But the emergence of a market economy allows individuals to seek jobs and locations that are best suited for their talents. Since economic growth is India has been uneven (concentrated mostly in urban agglomerations), a large number of individuals ought to be migrating around the country,
especially from rural to urban areas. But spatial mobility in India is surprisingly low\(^8\), leading to sub-optimal matching between employers and employees. Deshingkar and Anderson (2004) find that approximately 28.4 percent of the population is estimated to live in urban areas in India and this figure is about 15 percent lower than in countries with comparable GDP per-capita. Moreover, a recent NSSO round on migration (2007-08) reports that the movement of households in India is largely confined within the state\(^9\). This is a particularly serious concern since a large number of young workers over the next decade will come from states with weak education, employability and employment indicators. According to the Indian Labor Report (2009), “Between 2010 and 2020, for instance, UP, Bihar, and MP will account for 40% of the increase in the 15-59 year olds in the country. But, they will account for only 10% percent of the total increase in income. During the same period, Maharashtra, Gujarat, TN and Andhra are expected to account for about 45% of the increase in GDP.” Transitioning the labor force from backward states and into more developed regions is thus a key policy concern.

Why is spatial mobility in India so low? One answer is individuals’ preferences are an important constraint to mobility, i.e., some people simply do not want to move. Sometimes physical assets like land holdings tie people down. But there might be other more context-specific reasons to remain in one place. Exploring these reasons, Kaivan Munshi of Cambridge University and Mark Rozenweig of Yale University argue that the existence of caste networks which are an important source of credit and occupational skills have led to the persistence of low spatial mobility in rural India (Munshi and Rozenweig 2009). Each household rooted in a caste network can select between either participating in the network but then forgo the benefits of mobility, or out-migrate at the cost of losing network benefits. Without access to alternative credit or occupational training of comparable quality, most households choose to stay in close proximity of their fellow caste members. Conversely, households experiencing big boosts in education, income or opportunities no longer need their caste network and migrate for better opportunities.

Caste networks place tacit restrictions on the occupational choices of people. An individual belonging to a particular jati (or caste) will choose the jati’s traditional occupation to reap

\(^8\) In contrast to low levels of permanent migration, seasonal and temporary migration from villagers to cities is widespread.

\(^9\) Over 78 percent of migrant households in rural areas and 72 percent of the migrant households in the urban areas in India have residence within the state.
network benefits, even when his ability in that specific occupation is comparatively low. It is not surprising, therefore, that such individuals are less productive and skillful than outsiders with greater industry-specific ability. Another consequence of the difference between insiders and outsiders is who stays and who remains in the industry. Outsiders might exit as soon as they find that they are not particularly suited to the industry, whereas a person embedded in the social network would stick to the traditional vocation even in the face of considerable adversity.

Continuing with the historical pattern of networking within the jati thus shrinks the space of economic opportunities available to individuals. To see if this really true, Munshi and Rozenweig (2006) examine data from a survey of 4900 households belonging to the Maharashtrian community residing in the Dadar neighborhood of Mumbai. They find that male working class-lower caste-networks continue to channel boys into local language schools that lead to the traditional occupations, despite the fact that returns to non-traditional white collar occupations rose substantially in the 1990s. In contrast, girls from the same castes, who historically were not professionally active, take full advantage of the opportunities that became available in the new economy by switching rapidly to English schools.

2.5 Social identity

Social identity affects a recruiter’s choice of who to hire. Judging a prospective candidate on the basis of preferred social parameters biases the recruiting process and impedes efficient employee-employer matches. In this section, we specifically examine how employers discriminate on the basis of caste, religion and gender and what are its resulting costs to productivity.

Scheduled Castes, Scheduled Tribes and Other Backward Classes are under-represented in skilled occupations relative to their proportion in the population. Furthermore, these historically disadvantaged groups also have worse economic outcomes in terms of wages and access to career growth opportunities. A 2007 study published in the *Economic and Political Weekly* uses data from the National Sample Survey to reveal that SC/ST employees in urban salaried jobs in India receive 31% lower wages than others, with 15% of this differential unexplained by human capital endowments and other observable characteristics (Madheswaran and Attewell 2007).
To what extent does the under-representation and differential wage structure of social groups within the same occupation follow from discrimination by employers? And what drives this discrimination? Some commentators argue that it is the lack of suitably qualified people from these groups that is responsible for their worse economic outcomes. Hiring firms will rationally discriminate against low caste applicants if they believe (say based on prior experience) that the expected productivity of low caste applicants is less than expected productivity of high caste applicants. In this case, racial stereotypes might help infer employee productivity ex-ante, a phenomenon also called statistical discrimination. In contrast, taste-based discrimination occurs when an employer is willing to bear productivity losses in order to avoid hiring individuals from a certain social background.

Correspondence studies are a particularly useful tool to isolate the difference between taste-based and statistical discrimination. For example, to see if caste affects applicants’ job search outcomes, comparable résumés (in terms of education, skill and experience) are sent in response to job wanted advertisements. The only observable difference between the résumés is the name, which might serve as a proxy for caste, religion or gender. Differences in callback rates for the two types of applicants reveal the extent of discrimination.

This technique was used by Zahra Siddique of the University of Reading while conducting a study in Chennai to see if caste mattered in the city’s job market (Siddique 2011). She sent job applications in response to 523 vacancies in customer services and front office/administration. Specifically, she sent two résumés for every vacancy, one with an identifiably high caste surname and the other with a low caste surname, but otherwise identical. The analysis showed that low caste applicants need to send 20% more résumés than high caste applicants to get the same number of callbacks. Interestingly, the callback rates were found to vary by recruiter background. The high caste applicants were found to be disproportionately favored by firms with smaller scale operations and low caste applicants favored by firms with larger scale operations. This finding is consistent with commitments made by large firms to actively hire from historically disadvantaged groups.

The economists Abhijeet Banerjee, Marianne Bertrand, Saugato Dutta and Sendhil Mullainathan conducted a similar study in Delhi to analyze whether software firms and call centers discriminate against equally skilled members of historically disadvantaged caste groups
(Banerjee et al. 2009). They found no evidence of discrimination against non-upper-caste applicants for software jobs, but large and significant differences between callback rates for upper castes and Other Backward Castes (and to a lesser extent SCs) in case of call center jobs. A possible explanation for these observed differences may lie in the nature of skills required in the two sectors. Call center jobs require lower education and technical training than software jobs. However, call centers need employees with good spoken English and soft skills compared to software firms, which recruiters attempt to surmise from the applicant’s caste.

Similar to caste discrimination, gender discrimination suggests poorly functioning labor markets. According to the NSS 68th Round report (2011-12), the labor force participation rate for Indian men (55.6%) is more than double than women (22.5%). Women face many barriers in obtaining productive employment, ranging from lower access to health, higher education, skills and vocational training to gender-stereotyping in occupational choice that limits their employment and career growth opportunities. As a result, they are disproportionately employed in certain industries and job roles such as basic agriculture, sales and elementary services and handicraft manufacturing. This occupational segregation in jobs with low pay and authority levels limits their overall access to income, status and power. Even for those who manage to overcome initial hurdles get stuck once they reach the “marzipan” layer just below senior leadership. Failure to provide nearly half the population with uninhibited access and an equal footing in the labor market is a gross under-utilization of human resources that negatively impacts both current productivity as well as future growth in human capital.

3. Improving labor markets

The previous section outlined major challenges to well-functioning labor markets. The analysis that follows directly points to ways to improve the performance of these markets. Improving labor markets to improve the match between workers and jobs is necessarily a micro problem that defies large-scale solutions. No single national labor market exists, in India or elsewhere. Instead, labor markets are invariably industry and location specific, so overarching policy prescriptions are difficult and possibly undesirable. Many commentators have argued that the

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10 See for example, the discussion in Field, Jayachandran and Pande (2010).
government should improve the quality and scale of tertiary education, and develop mechanisms to validate the qualifications and accreditation of training providers and institutions. Also important is the role of industry as a partner with colleges to enhance professional training and skill development. Particularly important are platforms where industry and academia can discuss industry trends and share manpower requirements. However, the next two sections outline lessons for market participants and policymakers that are relatively underappreciated in the debate.

3.1 Social networks

Using social networks means both that current employees take direct hiring decisions or make referrals for friends, relatives and acquaintances towards open positions. Selecting employees through social networks is often maligned as substituting for either quality or fairness in the hiring process. But these social networks also hold the key to solving several problems afflicting labor markets, including the lack of information, moral hazard concerns and the high costs of finding qualified applicants.

Consider for instance, the account manager position at the steel mill discussed in Section 2.1. If an existing employee is able to testify to the high motivation or quality of a particular applicant, then the mill has additional information that can be used to make an informed decision and improve match quality.

To test if this process actually works, Lori Beaman from Northwestern University and Jeremy Magruder from the University of California Berkeley conducted an experiment in Kolkata (Beaman and Magruder 2011). In their experiment, they created temporary job positions where “employees” had to take a survey and carry out simple tasks requiring either cognitive skills or effort. After completion, they were offered financial rewards if they returned with a referral. This reward could either be a fixed sum for the referee or a fixed sum plus bonus that varied with the referrals’ performance on the same task. The study found that referees were 8 percentage points (off a base of 15 percentage point relative referral) more likely to refer coworkers over relatives when their pay depended on the referral’s performance. This finding indicates the tradeoffs confronting employees between referring more productive versus socially proximate individuals. Beaman and Magruder also found that productive employees under the bonus scheme
recommended other productive participants, suggesting that while employees can effectively screen applicants to enhance firm productivity, they will do so only if properly incentivized.

Recruiting through referrals can also help mitigate the employer’s moral hazard concerns. For instance, social networks are used extensively in industries where worker discipline is important, but the firm lacks tools for necessary enforcement. The informal, low-skilled sector in developing nations is a typical such setting. Using primary data on unskilled migrants from Uttar Pradesh, Amrita Dhillon, Vegard Iverson and Gaute Torsvik show that employees only refer high-quality, disciplined applicants if, for example, the referee might lose their job if the applicant underperforms (Dhillon, Iverson and Torsvik 2013). Using the cycle rickshaw rental market in Bilaspur, Chhattisgarh as an example, Tarun Jain and Ashima Sood of the Indian School of Business offer further arguments in favor relationship-based hiring (Jain and Sood 2012). Their study shows the paradoxical outcome that garage owners who rent out rickshaws actually prefer to rent to rural migrants to the city rather than local city residents. They argue, and show using survey data that these out-of-network migrants have fewer alternative employment options compared to locals from the area, face higher penalty of default and hence are deemed as more trustworthy by the garage-owners.

The broad lesson which can be drawn from these studies is that for referrals through social networks to be effective in the hiring process, the referee should have incentives that are aligned with the firm. In the absence of such incentives, insiders might recommend without due diligence or recommend less qualified but socially close applicants, lowering productivity for the firm.

A related question is what types of social ties help in the job search and matching process. This is perhaps a more relevant question at a time when online platforms allow information about job openings to be available widely among job seekers. While users spend hours on professional networking sites such as LinkedIn, is a large number of connections always a good idea, or does managing more connections impede the job search process?

Rajiv Garg and Rahul Telang, researchers from Carnegie Mellon University, tried to answer this question by collecting data from 109 educated, white-collar workers who lost their jobs at various organizations in the US. They asked questions on job search strategies, online and offline social networks and job outcomes (leads, interviews or offers). The study found that weak
connections (other than close friends and family members) help job seekers find new leads, but the close friends and relatives helped in converting these leads to job offers. Another finding was that too many frivolous network connections reduced the effectiveness of close friends and relatives, suggesting that online popularity might actually cut into offline effectiveness.

Broadly, reputations are critical to ensuring efficient relationship and network based hiring. The earliest recruits are close acquaintances, even family. As the market expands to incorporate lesser known and more distant agents, transaction and monitoring costs increase disproportionately. At that point, hiring workers from outside the network makes more sense.\footnote{While we suggest that firms and workers could use social networks to improve matching, these policies should coincide with complementary policies that give workers with low or absent initial social capital a foot in the door.}

3.2 Market design

The role and nature of intermediaries in the Indian job market is evolving. When the need for specialized workers and the stakes associated with hiring was low, word-of-mouth was sufficient for filling positions. The stakes are higher in the modern economy, the markets more segmented and therefore firms need to reach further and consider a wider set of workers for hiring. This is the realm of broad labor market platforms - employment exchanges, placement agencies, print media advertisements and web portals.

The idea of a market platform is simply to provide a place where employers and employees can meet. While sensible in theory, the success of any given platform depends critically on getting the operational details right. Naukri.com and Babajob.com are some of the few Indian portals to get this matching right, largely by mirroring the model of their Western counterparts such as Monster.com. But the success of these online exchanges masks the fact that most exchanges in the country are barely functional. For example, the Delhi employment exchange is one of the largest employment exchanges in India with over 6.5 lakh unemployed workers registered. But the chances that the Delhi employment agency will match them with a job are abysmally low and the costs associated with each match exceedingly high. According to a Times of India article (2004) on the Delhi employment exchange, “The success rate is as low as 0.5% […] It takes Rs 43478 for the government to look for a sarkari job for you.”
To improve on this performance, some states are innovating with more local exchanges that provide wider range of services and target specific kinds of workers. Following the success of a pilot project that placed 1700 out of 3500 registered youths, the government of Rajasthan has set up seven Rural Employment Exchanges (REXs) across the state. The REX centers will help prepare candidate résumés, provide entry level assessment and counseling services, refer skill training programs, including soft skills, and then reassess the candidates (Times of India, 2009). The government hopes that a well-functioning comprehensive skills program within the exchange will improve the employability of the workers and achieve higher match success.

Other kinds of market platforms include social media sites that double up as recruiting tools. Many social media sites such as LinkedIn and Facebook enable their members to post information on themselves such as previous job, geographic location, years of work experience and educational qualifications. Freeman (2002) proposes that the Internet can reach out to a much larger and diverse pool of candidates and break down “old boys’ network”. By showing job openings in non-proximate locations, social media can also break down geographical barriers and help individuals compete for jobs with local applicants, improving match quality. In short, the ground is ripe for developing new policy and innovation tools that can bring these online platforms to workers who primarily reside in the offline world.

Beyond platforms, intermediaries such as employment contractors can potentially help employers improve assessments of candidate quality especially if they have continuing relationships with candidates (Benner et al 2001). The need to preserve their own reputation with the prospective employers incentivizes them to put in effort in screening. Moreover, intermediaries might have access to candidates beyond the reach of employers using traditional media or market platforms. Similarly, candidates might use intermediaries to learn of job openings that are far away or in industries they did not previously consider.

However, employment contractors and other intermediaries might care more about the speed of matching at the expense of match quality. Bidwell (2010) found that professionals who were hired from the outside through an executive search firm or employment agency performed worse than those who were promoted from the inside or hired from the outside through employee referrals. The study concluded that the hiring organization might have placed too much trust in
the intermediary and underestimated the challenges that “intermediated” hires might face in the new work environment.

Nonetheless, research is scant on the role of intermediates in other workplace aspects. For example what does career development mean when the person with the most influence over your next job is a search consultant? Should firms hire employees to create a given set of competencies, for example, or engage a leased employee firm to provide them with “non employee” workers? What are the workplace dynamics when employees hired from several different sources on different terms are expected to perform the same job? Firms and policymakers should tread carefully before endorsing a larger role for intermediaries in the market.

4. Conclusion

The discussion in this chapter revolved centrally on the match between a job and a worker. Sandwiched between questions of how to increase demand for workers, and how to improve worker capabilities in the first place, the issue of efficient matching between jobs and workers is key for the economic potential of the country to be realized. Our discussion is market-centric, examining threats to market performance that arise on the basis of missing information, mismatch between firms and workers, or due to social dynamics pervasive in society. While public policies can alleviate some of these concerns, we also believe that there are opportunities for entrepreneurs to come up with creative solutions to market problems.

Much of the discussion in this chapter is based on painstaking research by academics deeply interested in Indian labor markets. But many of the papers cited in this chapter are micro-studies, in contrast to large-scale national datasets at the disposal of labor economists studying the United States or Europe. The next wave of research on Indian workers and firms awaits the release of administrative data by the government. In particular, data on all workers and the firms they are employed in (of the kind that is available on Danish and Norwegian employers), as well as earnings data using Social Security records that is available on United States workers, would offer major insights beyond those possible with the National Sample Surveys and the Annual Surveys of Industry. In the meantime, researchers should develop ways to exploit the large growth in data from private sources, especially online and digital businesses.
This chapter restricts its attention on a few labor market topics that are important in the Indian context. But higher quality, publicly available data will also allow researchers to explore many other topics that, after examination, might turn out to be equally if not more important. These topics might include the role of occupational licensing and labor unions, macroeconomic factors affecting either investments in human capital or aggregate demand, incentives for setting up and running efficient labor markets, the role of compensation structure on matching, corruption in the matching process, the impact of labor regulation and laws and the dynamics of large scale domestic and international migration.

As researchers, we are optimistic that India will be able to invest in the human capital of the next generations to power the country’s economy. But we have a more guarded view whether India will be able to use this human capital efficiently, since we observe large opportunities for improvement in how current labor markets work. We hope that the attention of researchers, policymakers and entrepreneurs will focus on these to realize the opportunity of the twenty-first century.
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