



Job Market Analysis of Fresh Graduates in China

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Abstract. In recent years, the employment situation of Chinese university students has repeatedly aroused the concern of the government and the public, and the talk of employment difficulties and unemployment upon graduation has become widespread. This has seriously affected the development of China's education system and social stability. On the one hand, the low employment rate of university graduates in recent years has been caused by a decrease in social demand and the attitudes of university students themselves; on the other hand, the market mechanism itself has not played a good role in allocating resources, i.e. it has led to market failure. This paper will explore the solution to this market failure from the perspective of market matching design. If the design theory of bilateral matching mechanism can be successfully applied to China's graduate job market, it will greatly improve the phenomenon of high job search cost and high default rate in China's current job market, and will further promote the healthy and stable development of China's graduate job market.

Keywords: Job market · Employment rate · Default rate · Matching design

1 Introduction

According to statistics, the number of fresh graduates in China was 6.6 million in 2011, 6.8 million in 2012, and 6.99 million in 2013, with the total number of graduates in 2021 surpassing 9 million and reaching 9.09 million. With the number of fresh graduates waiting to be employed remaining high, the employment situation of fresh graduates from Chinese universities is particularly serious. In the current complex economic environment, the employment of college graduates has been emphasized in the government work report every year, and how to promote employment and increase the employment rate of Chinese college students is a major issue faced by the society.

This paper examines the job market matching mechanism from two perspectives. Firstly, it investigates the existing recruitment mechanism in China's job market, summarizes the main problems and proposes some constructive suggestions and recommendations. The design of the mechanism, which requires recruiters to divide their recruitment activities by sector, is to some extent difficult to implement in practice, and the division of recruiters by sector may also be problematic in practice. However, in the long term, if a mechanism is truly efficient for the market, these issues will be further addressed in the subsequent development and improvement of the mechanism.

2 Literature Review

Research on labour market matching has a long history, dating back as far as 1952 to the US residency matching program. As the market has matured and developed over time, more theory and research has been developed. Sundarshan and Sidney (1981) provided a more comprehensive description of national physician matching programs [1]; Roth (1984) further found that the US residency allocation process was similar to the “deferred acceptance” mechanism described by Gale and Shapley (1962) [2]; this led Roth to suggest that the US residency matching program was a “deferred acceptance” program [3]. Roth (1986) applied Gale and Shapley’s (1962) “deferred acceptance” algorithm to the residency assignment process [4], further demonstrating and refining the use of the “deferred acceptance” algorithm in a market with strict bilateral preferences [5]. In Roth and Peranson (1999) [6], the first extension of the job market matching problem to some aspects of engineering design [7], the importance of computation and experimentation in the market matching mechanism [8], and a further development of the matching mechanism in the light of the new problem of “matching couples to jobs” in the US pharmaceutical market [9]. “McKinney et al. (2005) provides a further comparative study of matching markets, exploring the reasons for the success of matching mechanisms and their broader applicability [10].

3 Mechanisms of the Recruitment Market

3.1 The Current Recruitment Mechanism in China

In China’s fresh graduate job market, the best time for fresh graduates to find jobs is from September to June each year. During this period, employers publish their job requirements for various departments, and the peak recruitment period for fresh graduates is usually from September to December each year, while the following year, from the beginning of the year to June, is the time for companies to make up for unfilled positions or defaulted job seekers. During this period, some SMEs, which are not very competitive, also participate in the recruitment process. Usually the majority of university graduates have completed their job search by December. During this process, a one-to-many bilateral match is made between job seekers and employers.

Based on the recruitment process of Chinese employers, the matching process between Chinese recruiters and job seekers can be described as follows:

- (1) Each employer posts job information and deadline for CV submission;
- (2) Job seekers fill out and submit their CVs based on the job information collected, or attend an on-site campus presentation and submit their CVs;
- (3) After the deadline for CV submission, the employer will screen the CVs according to the requirements and notify the candidates who have entered the written test or interview. Based on the performance of the candidates in the recruitment process, the preferred candidates will be selected for the next round of interviews, and so on;
- (4) The employer will rank the candidates according to their interviews and issue an offer letter to the top Q candidates (Q) and wait for a response from the applicant;

- (5) Within the time limit for response, the job seeker, on the basis of the offer he/she has received or other aspects, will reject the company he/she does not want to enter and accepts the company he/she wants to enter and signs a three-way employment agreement.
- (6) In the following year, from March to June, employers with a large number of vacancies will again fill the vacancies, with the recruitment process as described above. From the above description of the recruitment process in the Chinese job market, it is clear that the Chinese job market is a typically decentralized information matching market. Firstly, in the initial job information gathering process, the lack of a centralized information centre means that job seekers have a serious time consuming problem in searching for matching information.

In addition to paying attention to the job information network in real time, filling out a CV has become a relatively time-consuming part of the job search. According to an incomplete survey, at the peak of the job search period, each job seeker sometimes fills in the CV information more than a dozen times a day, which is time-consuming and labour-intensive. At the same time, there is also the possibility of missing out on job offers due to the different sources of job information.

3.2 Initial Adjustments of the Mechanism

Each recruiting company only conducts one recruitment exercise at this stage and the recruitment time for each industry is relatively concentrated. In view of these characteristics, this paper adopts a time-phased model for the design of the centralised information centre. Job seekers and recruiting companies have strict preferences for each other. Job seekers apply to all acceptable recruiters before the end of each sector. Job seekers have multiple opportunities to default, but due to the relatively high cost of default, job seekers view each choice with relative caution.

The average number of defaults is about 1–2;

- (1) The timing of job offers to candidates is random;
- (2) There are no cases where different companies in the same industry schedule their recruitment at the same time in order to compete for talent.
- (3) There is a separate waiting list for job seekers and recruiting companies, which is used when the supply and demand sides are not sure whether to accept each other. This is used when the supplies and demands are unsure whether to accept each other. Initially, both parties have zero seats, and during the course of the algorithm, there can only be at most one seat in the job seeker's waiting list and one seat in the recruiter's waiting list $q \leq Q_{fi}$.
- (4) The job seeker retains only one offer from the recruiter at any one time, i.e. when he/she receives a new offer, he/she needs to make an immediate decision to either reject it, accept it or keep it in the waiting seat. With the above definition and description, the Job Market Information Centre matching mechanism is designed as follows:

Firstly, the Job Market Information Centre (JMI) compiles the recruitment times for each industry based on the concentration of recruitment in each industry in the past autumn, and divides the recruitment time slots for each industry accordingly, with each recruiting company posting job offers within the recruitment time slots defined by the JMI.

Secondly, according to the job information provided by the employment information, graduate job seekers submit their CVs to the companies they wish to work for, and those who will not be accepted by the company under any circumstances are first removed from the matching process at this stage.

Finally, after the first round of written tests, each recruiting company determines whether to proceed to the interview process based on the ranking of the candidates. Usually, the interview process is divided into several rounds to check whether the candidate's performance in each round meets the company's needs, but basically, before the final round of interviews, the companies have already decided who they want to recruit, and since the companies have to bear the potential risk of the candidate defaulting, theoretically, before the last round of interviews, more candidates than the number of Q_{fi} of the company's job requirements are assessed to The company is therefore theoretically assessing more candidates than the number of $q \leq Q_{fi}$ required for the job before the final interview to compensate for the risk of shortage of staff due to default.

4 Problems with the Mechanism

There are also some problems in the current matching mechanism of the recruitment market.

- (1) China's labour market has not yet formed a bilateral matching mechanism similar to that of foreign countries. The channels for fresh graduates to find jobs are mainly the recruitment information released by major enterprises in schools, but also directly through social recruitment or campus dual selection fairs.

Firstly, there is a serious time consuming problem for job seekers in finding the job information due to the lack of a unified and centralized information hub during the initial job information collection process. In addition to real-time attention to the employment information network, filling out a CV has become a relatively time-consuming part of the job search. Secondly, China's job market has a long and unstable recruitment process. Job seekers often accept offers from companies because they only have a few or even no offer within the time frame set by the employer for consideration, but as more companies announce their willingness to hire, job seekers, despite accepting the offer, may participate in other companies and reject the originally accepted employer, thus causing a breach of contract.

- (2) Another issue is the default rate. According to statistics, the default rate of employment agreements for fresh graduates in China continues to rise at a rate of 5–10% per year. Frequent defaults by job seekers increase their own employment costs (for fresh graduates who have signed a three-party employment agreement, each company imposes a penalty on defaulters, usually half or more of the company's monthly salary) and invariably increase the recruitment costs of the employer, resulting in a brain drain.

- (3) There is also a serious information asymmetry between companies and university students. In recent years, the number of college graduates is on the rise, in order to quickly and effectively select outstanding talent, companies often set a higher threshold of entry when recruiting, such as only recruiting students graduated from “985” and “211” universities, without provincial honors or above are not included this makes those students who are actually very good do not have the opportunity to enter the interview process, so that companies miss out on talent that may be very suitable for the recruitment position.
- (4) Students cannot apply their knowledge. At present, most universities place too much emphasis on the teaching of theoretical knowledge and neglect the training of students’ practical skills. At the same time, due to a series of objective factors such as insufficient funding and few opportunities for cooperation with enterprises, they are unable to provide students with a good platform for combining theory and practice.

5 Solutions for the Existing Problems

The government should balance the allocation of educational resources and reasonably regulate the job market. Due to the different requirements for engineering majors, engineering students need more hands-on skills, so universities set up special laboratories for engineering students to practice. The government should balance the allocation of resources between engineering and social science majors in universities and build a platform for social science students to link theory with practice, so that they can have a more comprehensive and in-depth understanding of knowledge.

The society should provide true and accurate employment information and maximize the role of recruitment platforms. The society should actively implement employment policies and provide comprehensive and safe employment information and consultation platforms for university students, so as to effectively overcome the blindness of university students in employment and improve the employment rate of graduates. At the same time, third-party recruitment service platforms should give full play to their role as a link between corporate recruitment and university students’ job search.

6 Conclusion

This paper reviews the application of bilateral matching mechanisms in the labour market at home and abroad, and analyses and designs the job market for university graduates, which is currently a major concern of society, with the aim of applying the more advanced market design theories from abroad to the job market in China. For above mentioned problems, for example, high default rate, not forming a mature bilateral matching mechanism, etc., the government and the companies, even the job seekers in the society should do their best to promote a better job market environment.

There are some shortcomings in the design of the graduate job market matching mechanism proposed in this paper, so further researches need to be made.

Authors’ Contributions

This paper is independently completed by Jiajie Yao.

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