

Gender difference of Beijing graduates' employment

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Abstract. A parametric survival model of Weibull analysis for this study indicates that a gender difference of employment existed in Beijing graduates in 2007. This paper finds that the ordinary university female graduates have better job opportunities than the males. The females are more easily to find jobs when they are from social science, law, and management. The female employment is better than males in state-owned enterprise and individual business with small scale. They tend to find jobs in the capital and the metropolis, and have different search modes relative to the male.

Introduction

The problem of unemployed university graduates has become serious in China since university expanded in 1999. The situation of graduates' employment deteriorates gradually particularly for the female graduates. According to the survey from Ministry of Human Resources and Social Security of China in 2010, the female graduate's employment rate is 10% lower than the male at graduation. This paper studies gender difference of employment status using the dataset that MyCos offers.

Literature Review

Many studies show gender difference of employment in labor market. Bratberg and Nilsen (1998) use Norwegian data to find that females have lower reservation wages and find jobs quickly [1]. Bradley and Nguyen (2004) point out the males from high quality schools are less likely to enter the labor market and get jobs compared to the females in England. They are more likely to stay unemployed [2]. Conversely, Zhou (2003) reveals that male graduates find jobs more easily than female graduates in China [3]. Min et al. (2006) also show the percentage of male graduates signing job contracts is 77.1% better than the female's figure of 71.2% [4]. Ghazala (2006) finds that gender gaps in unemployment rates have risen in the past 20 years in European countries [5].

In sum, these studies show that the female are more difficult to find jobs with lower wages. However, different reasons lead to the gender discrimination such as individual characteristics, job search behavior, and labor market structure etc. This paper tests whether gender discrimination occurs in job search by using the data of Beijing graduates' employment status in six months after graduation. A parametric survival model is used to analyze the gender difference in order to describe dynamic procedures of job search and test whether the gender discrimination occurs.

Model

This paper uses parametric survival model (PSM) to analyze the factors to affect job search. PSM requires job search time obey to standard distribution. The formula expresses Hazard rate:

$$H(T_u) = \sigma\alpha(\sigma T_u)^{\alpha-1} \quad (1)$$

$H(T_u)$ is hazard rate which stands for probability of graduates' employment. T_u is job search time. This paper defines 6 months before graduation as the base time of search. σ refers to fixed probability of graduates' employment, $\sigma > 0$. If parameter $\alpha > 1$, hazard rate will increase by time. On the contrary, if $\alpha < 1$, hazard rate decreases. If $\alpha = 1$, hazard rate is constant in each phrase of job search, namely, is σ . Meanwhile keep $\alpha > 0$. The factors embrace university reputation, personal feature, and labor market structure etc. affecting hazard rate and job search time through parameter α .

Data description and summary statistics

Table 1 presents gender difference of factors affecting hazard rate. A total span of job search is 7.21 months. The male graduates' job search time is 0.12 months longer than the female's, but monthly wage is greater than the female's by 327. The male graduates have higher ability index than the female. Most control variables show gender difference significantly. The male graduates from reputed university and college have better employment. The male graduates from natural science and engineering have better employment, and the female graduates from law, management, social science, and other majors have better employment. The employed male has better employment in state-owned enterprises. The female graduates have better employment in NGO, government sector, and joint-venture. They tend to find jobs in metropolis and sectors with smaller employees, and the male would like to be employed in province capital and other cities with numerous employees.

Table1. Gender difference of factors affecting hazard rate

Types of variable	Variable	Mean value	Gender difference of mean value	Z Value
<i>dependent variable</i>	job search time (month)	7.21	0.12**	1.944
	monthly wage	3035	327***	8.38
<i>independent variable</i>	gender (female)	51.20%	---	---
	ability index	0.5173	0.0258***	7.801
<i>control variable</i>	ordinary university	36.65%	-0.1482***	-13.816
	college	6.47%	0.0216***	3.96
	reputed university	56.88%	0.1265***	11.416
	natural science	6.86%	0.0213***	3.71
	engineering	30.47%	0.2606***	26.07
	agriculture	1.28%	-0.0012	-0.49
	medicine	0.89%	0.0014	0.67
	law	7.49%	-0.0216***	-3.63
	management	26.32%	-0.0809***	-8.06
	social science	25.50%	-0.1708***	-17.51
	others	1.18%	-0.0088***	-3.68
	age	21.88	0.23***	9.55
	NGO	1.46%	-0.00796***	-2.90
	state-owned enterprise	31.34%	0.081***	7.64
	private enterprise	27.60%	-0.0063	-0.061
	government sector	15.38%	-0.014**	-1.71
	joint-venture	24.22%	-0.052***	-5.35
	other cities	11.91%	0.064***	8.52
	province capital	9.84%	0.047***	6.80
	metropolis	78.24%	-0.111***	-11.66
	<500	37.35%	-0.074***	-6.61
	>500	62.65%	0.074***	6.61
	reservation wage	1971.65	226.56***	6.45

Notes:***, **, *stand for 1%、5%、10% confidence respectively, and “---” refers to non-existent.

Estimation

A Weibull robust regression is used to analyze the factors affecting hazard rate in graduate's employment. Table 2(1) demonstrates that the female's hazard rate is only 92.48% against the males, and the female's search time is 19.76% longer than the male's.

Table2. Hazard rate and job search time

Variable	Weibull robust regression (1)		Weibull robust regression (2)	
	Coefficient of hazard rate	Coefficient of marginal job search time	Coefficient of hazard rate	Coefficient of marginal job search time
<i>gender (female)</i>	0.9248*** (0.0267)	0.1976*** (0.0733)	0.9147*** (0.0273)	0.2242*** (0.0752)
<i>ordinary university</i>	0.9046*** (0.0284)	0.2551*** (0.0804)	0.9065*** (0.0293)	0.2482*** (0.0822)
<i>college</i>	0.7577*** (0.0545)	0.7344*** (0.1992)	0.7653*** (0.0565)	0.7029*** (0.2025)
<i>ability index</i>	---	---	0.8206** (0.0839)	0.4977* (0.2576)
<i>control variables</i>	Yes	yes	Yes	yes
<i>sample number</i>	5534		5534	
<i>log likelihood</i>	-3280.6234		-3080.1396	
<i>α value</i>			2.7912 (0.0351)	

Notes:***, **, *stand for 1%、5%、10% confidence respectively, and “---“ refers to non-existent.

Table3. The female and male graduate's job search time distribution

Duration (month)	female			male		
	employment number	percentage	cumulative percentage	employment number	percentage	cumulative percentage
<i>1-5 omitted</i>						
<i>6 (graduation)</i>	490	17.31	38.76	439	16.24	31.62
<i>7</i>	638	22.54	61.31	760	28.11	59.73
<i>8</i>	443	15.65	76.96	525	19.42	79.14
<i>9</i>	211	7.46	84.42	189	6.99	86.13
<i>10</i>	104	3.67	88.09	108	3.99	90.13
<i>11</i>	111	3.92	92.01	82	3.03	93.16
<i>12</i>	79	2.79	94.81	79	2.92	96.08
<i>13</i>	59	2.08	96.89	44	1.63	97.71
<i>14</i>	63	2.23	99.12	44	1.63	99.33
<i>15</i>	24	0.85	99.96	15	0.55	99.89
<i>16</i>	1	0.04	100.00	3	0.11	100.00
<i>Total number</i>	2830			2704		

Table 2(2) shows that gender's marginal search time is changed into 22.42% when ability index is controlled. The female's hazard rate is only 91.47% of the males, and search time increases 2.66%. In regression (2), ordinary university graduates own lower hazard rates than graduates from reputed university, is 90.65% of the latter, but search time is 24.82% longer than the latter. College graduates' hazard rate is 76.53% of reputed university graduates', and search time is 70.29% longer than the latter. The female graduates have disadvantages over the male not only in the probability but also in starting wages. Therefore, the female graduates suffer discrimination.

Table 1 and Table 3 show gender difference of factors reflecting different search modes. This paper finds that the ordinary university females have better job opportunities than the males. They are more easily to find jobs from social science, law, and management. The female employment is better than males in state-owned enterprise and individual business. The female tend to find jobs in the capital and the metropolis. The female search jobs in early time; they are more successful to find jobs before graduation. The male's hazard rate exceeds the female particularly at 1 and 2 month after graduation with 28.11% vs. 22.54% and 19.42% vs. 15.65%. $\alpha = 2.7912$ is bigger than 1,

which presents the female and the male's hazard rates accelerate over time.

Conclusion

This paper uses parametric survival model to analyze the gender difference. Furthermore, using marginal search time analyzes the extent of gender difference. This paper finds that there is gender discrimination in job search. The employment probability for the female is smaller than the males. This result is consistent to the previous conclusion. The search span for the female expands at 22.42% if ability is considered. It shows that the male have higher ability to find jobs. However, the female and the male have different search modes.

Reference

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