Beauty and Employment: A Field Experiment on Appearance Discrimination in China's Labor Market

Kaidi Wu

Abstract

This article provides direct evidence of appearance discrimination in Chinese context based on an experimental approach. We perform a field experiment to study if people with more attractive faces are more likely to be contacted after submitting a resume on the job search website. We find significant appearance discrimination in Chinese labor market, where attractive applicants are 17% more likely to get a response than unattractive ones. What's more, female candidates are faced with a higher level of appearance discrimination at 27%, which proves the existence of gender discrimination in Chinese labor market. By checking possible channels for appearance discrimination, we find employers' preference the main cause in our experiment. Furthermore, this paper proposes recommendations for both job applicants and policy makers in hope of mitigating such problems.

Keywords: appearance discrimination; field experiment; labor market

Contents

1. Introduction

In modern society, equal pay for equal work has always been cognized as a social ideal. However, in reality, the phenomenon of labor market discrimination exists in a large scale, including the discrimination on the attractiveness of a person's appearance.

Many cases show that appearance discrimination is ubiquitous in Chinese labor market. For instance, from an empirical study, Kuhn and Shen (2010) about 7.7% of the companies require good looks and 2.6% have specific requirement on height in recruitment ads. Among the companies requiring lower education level, such requirement takes up 15% and 9.3% respectively, which shows the importance of appearance characteristics to taking up an occupation. Attractive appearance probably gains a competitive advantage in applying for a job. The Financial Times published an article named "When One Pair of Eyelids Isn't Enough"[1], which points out that appearance discrimination becomes more and more popular in China and Chinese graduates go to take plastic surgeries mostly for better career.

Compared with discrimination on natural conditions, such as gender and hukou, which can't be easily changed, one's looks can be improved by investment in image maintenance. Hence, the recent trend of plastic surgeries among Chinese graduates can be interpreted as the investment in human capital. In view of the nature of appearance as part of human capital, appearance discrimination can lead to serious social problems such as the growing wealth inequality. Second-generation rich kids have easy access to improving physical appearance whereas poor kids have to save for these plans. Rich kids will be more competitive in job market and enjoy better chances for career development with more resources and more attractive appearances and the poor ones will become victims of appearance discrimination, thus exacerbating China's crisis of class solidification and wealth polarization.

Economists have carried out a series of research on the relationship between appearance and labor market outcome. However, researches on appearance discrimination from economic point of view in the context of Chinese labor market are respectively insufficient due to data limitations. Our research is aimed at filling this gap by an experimental approach to examine appearance discrimination in China's current labor market and check the channels of such discrimination. Moreover, we try to provide theoretical basis for enactments of policies concerning labor rights and interests.

This paper studies the impact of applicants' facial beauty on interview invitation rates by conducting a field experiment on a Chinese job search website. Applying the 'CV testing approach', in which researchers design fictitious resumes according to specific requirement of each company (Bertrand and Mullainathan, 2003; Kraft, 2012; Bóo, Rossi

[1]Please refer to `https://www.ft.com/content/f3e12b58-e7ee-11e2-babb-00144feabdc0` for details.

and Urzúa, 2012; Busetta and Fiorillo,2013; Galarza and Yamada, 2014), we publish fake resumes on YingJieSheng.com to attract employers and keep records of invitation letters each resume received from application. We manipulate appearance attractiveness of the applicants by attaching different photos to these resumes and classify resume quality by setting different scholarship records in the resumes.[2] In the experiment, we publish the 16 fake resumes on the website and get invitations from 84 companies with different positions varying from cashier, to accountant, data analyst, research fellow, manager assistant and sales representative.

From the result, we find that appearance plays an important role in job invitation rate. Among all the applicants, the invitation rate of good-looking ones amounts to 44.64% while that of plain-looking ones is only 38.10%. There's a statistically significant 17 percent gap[3] in the invitation rate between the attractive applicants and unattractive applicants. What's more, the level of appearance discrimination varies between different genders. For female candidates, there's a significant greater gap of 27 percent with 44.35% invitation rate among attractive females and only 34.82% among unattractive females. However, in male candidates, the gap is only 9 percent and not significant. Econometric models are further developed and tested to verify the existence of appearance discrimination.

Through the analysis of the effect of resume quality, we find no significant difference in invitation rates among different scholarship records. However, we find significant difference in invitation rate among attractive and unattractive applicants in high quality resumes and no significant difference in low quality resumes. This implies that appearance discrimination can be even more severe among high quality applicants. For job-seekers with solid education background, maybe it's more useful to enhance appearance attractiveness than to further improve minor hard skills. While it is expected that improved implied learning skills may compensate for employers' fear that ugly applicants are deficient in some aspects, this is not the case in our data. The result shows that unattractive applicants with high quality resumes are most vulnerable to labor market discrimination.

There are some other facts revealed in the experiment. First, we classify the employers into different types — equal treatment to appearance, attractive-looking favored ones and unattractive-looking favored ones. According to the statistics, over 85% of the companies are indifferent to males' appearance and 13% prefer good-looking ones. However, for female applicants, only half of the companies treat their appearance equally and 40% show preference to attractive female applicants. This implies that employers are pickier on females' appearance. Second, when categorizing all the positions into front office jobs and back office jobs by specific job requirements, we find no significant difference

[2]Because the website is designed for fresh graduates, scholarships reflect the applicants learning skills while work experience is beyond consideration for sorting criterion under this circumstance.

[3]The gap is also called beauty premium in the following context.

in the discrimination level of attractive and unattractive applicants. This violates the common view that facial attractiveness is more important in front office jobs and reveals to us that appearance discrimination is universal across occupations, thus proving the existing discrimination is "pure discrimination" rather than discrimination on inferred productivity. Based on these results, potential channels of beauty premium are further discussed to find out the possible cause of appearance discrimination in the context of Chinese labor market. Recommendations are provided for job seekers to improve their chances of success in recruitment and for policy makers to build a more equal labor market.

The rest of the paper is organized as follows: Section 2 provides a literature review of previous study concerning appearance and labor market outcome. Section 3 lays out the experiment design. Section 4 presents the experiment results. Section 5 provides interpretation of the key results and Section 6 shows the policy implications from various perspectives. Section 7 gives a conclusion of the study. The appendix contains additional details and tables.

2. Literature Review

There has been a series of studies carried out on the relationship between appearance and labor market outcome since Robert Quinn (1978) first advanced systematic economic argument for the effect of beauty on labor market.

Most of the early empirical research are based on an non-experimental approach to discuss appearance discrimination by employment or earnings regressions. A positive relationship between attractiveness and wage is verified in many empirical studies(Kennedy, 1989; Frieze, Olson, Russell, et al, 1991; Hamermesh and Biddle, 1994; Hamermesh, Meng, Zhang, et al, 1999). The weakness of such regression approach lies in two aspects. First, the proxies adopted in these analyses do not adequately capture group differences in productivity, in which the "unexplained" differences cannot be interpreted as discrimination (Neumark, 2010). Second, such non-experimental studies are faced with a complex work of the identification of the causal relationship between attractiveness and labor market outcome due to biases like the potential reverse causality from wage to appearance attractiveness (Bertrand and Mullainathan, 2004).

Experimental approach is also adopted by many economists to study labor market discrimination, including laboratory experiment and field experiment.

One kind of lab experiment is to simulate recruitment scenario and invite participants to play the role of recruiters and applicants. The method is adopted to verify the negative impact of an ugly face (Tang, 2009; Liang 2014). However, since the participants are mostly students, the reliability of the results is questioned. The other kind

of lab experiment is the imaginary screening process[4]. Adopting this method, Marlowe, Schneider and Carnot (1996) find appearance and gender biases in financial institutions. Watkins and Johnston (2000) find attractiveness an advantage for female applicants with mediocre application quality. Even if the problem of reliability can be solved by inviting real hiring managers, lab experiments are faced with the difficulty of acquiring a large sample which includes various occupations from different industries, thus making it hard to connect to the whole economy.

In view of all these defects, economists turn to the field experiment approach which is widely viewed as providing the most convincing evidence on discrimination (Riach and Rich 2002; Pager 2007). Relevant field experiments can be categorized into two categories – audit study[5] and correspondence study[6]. Audit studies have been carried out to investigate race discrimination in the hiring market(Mincy 1993; Bovenkerk, Gras and Ramsoedh 1995; Neumark 1996). Although this method captures the final results of recruitment, it has been criticized because applicants from different groups may not appear identical to employers. Correspondence study / CV testing approach addresses the criticism by using fictitious paper applicants whose qualification can be made identical across groups. This method is adopted in many recent literatures to test appearance discrimination in the labor market of Argentina, Germany, Italy, Peru (Bóo, Rossi and Urzúa, 2012; Kraft, 2012; Busetta and Fiorillo, 2013; Galarza and Yamada, 2014). However, it is hard to control all factors concerning productivity in these studies. Group differences in the variance of unobservable determinants of productivity can still generate spurious evidence of discrimination in either direction (Heckman and Siegelman, 1993).

The first contribution of our study is to examine appearance discrimination in Chinese hiring market through the CV testing approach. We ensure the identity of paper applicants by conducting the experiment on a job search website where all CVs sent through this website are required to include same information and use the same format. To circumvent the problem of the variance of unobservable determinants, we set the applicants fresh graduates without work experience in job market to minimizing the variance of unobservable determinants.

Experiments carried out on Chinese labor market focusing on appearance discrimination is relatively insufficient. Reviewing the institutional background of China's economy, the competitive job search market didn't come into being until the break down of unified placement of graduates in 1996. The recent 20 years witnessed the development of

[4]Real supervisors and managers are invited to evaluate the resumes of a subset of job applicants. All the resumes have a photo attached and have the same level of qualifications. The managers are asked to report the likelihood with which they would offer an interview to the applicants and the likely salary they intend to offer.

[5]Hire and train actors with identical productivity characteristics but different identity to participate in the recruitment process.

[6]Submit paired CV to job ads and collect callbacks, which is also called "CV testing approach" in Jowell and Prescott-Clarke (1970).

hiring market in China's transition from a planned economy to a socialist market economy. Compared with mature labor market in western countries, the level and channels of appearance discrimination may show great difference in Chinese labor market.

There are several channels through which one's appearance affects his/her opportunity of being hired. Kraft (2012) carried out a literature research and concludes three potential explanations for the source of the "beauty premium": productivity-based, signaling-based and preference-based. Productivity-based channel sees an employee's beauty as a productive factor for the firm, which is easy to understand, since beauty matters in various kinds of social interactions (Solnick and Schweitzer, 1999; Andreoni and Petrie, 2004; Wilson and Eckel, 2006). The signaling-based approach establishes relationship between beauty and intelligence, as beauty functions as a signal that indicates intelligence (Zebrowitz et al., 2002; Kanazawa and Kovar, 2004). Preference-based explains beauty premium as the result of employers' preference of attractive candidates over unattractive candidates.

The second contribution of our study is to complement current study focusing on Chinese labor market, where the cultural background makes appearance discrimination potentially a serious problem that damage equal employment opportunity and the institutional context makes experimental research on appearance discrimination insufficient. We identify the main cause of appearance discrimination by checking the above channels to provide basis for policy making.

To sum up, this study focuses on job-hunters' facial attractiveness and adopt the method of field experiment to study appearance discrimination in order to provide empirical evidence of the existence and seriousness of appearance discrimination in Chinese labor market and complement this field of economic study. In addition, we check the mechanism of appearance discrimination in Chinese context and provide implications for job applicants and policy makers.

3. Experiment Design

3.1. Experiment Platform

The platform we conduct the field experiment on is a Chinese job search website YingJieSheng.com. This website is designed for fresh graduates who seek their first job in the labor market and also for companies recruiting fresh graduates. There are several advantages of this website.

First of all, YingJieSheng.com is the leading online recruitment website focused on graduates and students in China. It has established partnership with over 300 China's top 500 enterprises and more than 15 thousand renowned companies. Representativeness can be ensured in the result of the experiment. Second, since this is a website targeted

for fresh graduate job seekers, we don't need to include work experience in the resumes. Because work experience plays an important role in recruitment and can be so various among realistic job seekers, restricting to fresh graduate without work experience can exclude the impact of work experience on call-back rates and focus us on the influence of one's appearance. Third, the website provides a resume builder for the applicants, so we only need to select from certain options or enter the content for given items and then the system will automatically generate resumes in a uniform format. This makes it possible to hold constant demographic and other characteristics among the applicants without lowering credibility of the resumes.[7] What's more, on the demand side, there's also an applicant tracking system to pre-sort pubic resumes before they are forwarded to each company. The resumes that satisfy the basic requirement of specific employer make it passed the automated first round selection of that company. Then the managers view these CVs and send invitation letters to those who are qualified in second round selection to see if they are interested in the company's positions. Hence, if we set basic conditions [8] the same in the resumes, we can ensure they all pass or all don't pass the first round selection. Then we can attribute the gap in invitation rate to other factors including facial beauty. Fourth, we can set target industry, occupation and location so that only these companies can view our resumes from the website. This makes it convenient for us to restrict occupational categories to study the occupational difference in appearance discrimination level. Last but not the least, the resumes are published on the website automatically, employers who are interested will send invitation letters with specific position information to corresponding account, so we don't have to search for positions manually which can save us a lot time and energy.

3.2. Photo Collection and Classification

The first step of the experiment is to collect photos for the resumes to use in the experiment. We randomly download photos from the advertisement websites of photo studios in order to circumvent the problem of portrait rights. To match the identity of college graduate, we look for photos of young people in formal wear who seem to be 20-25 years old. We download 32 photos with 8 attractive ones and 8 unattractive ones from each gender. Here, the judgment of attractiveness is out of the photo seekers subjective feeling.[9]

The next task is to make the formal classification of the facial attractiveness of our candidates. We attach the 32 photos to questionnaires and hand them out to 100 ran-

[7]Hiring managers may be skeptical to the authenticity of the resumes when they receive many similar resumes at a time, but since the website only offers fixed options to many items in resume building process, it wont appear weird on this platform.

[8]These conditions include educational background, home city, English proficiency and so on.

[9]Although such judgment may not be precise, we only need to ensure the difference in attractiveness in this stage. Further classification will be made to select proper photo to use in the experiment.

domly chosen individuals. These people are asked to determine whether the person in the photo is attractive or not through a 5-point scale rating ranging from plain (1 point) to extreme attractive (5 point). The 8 photos scored most and 8 photos scored least from male candidates and female candidates respectively will be used in the experiment. This method is credible since within a culture at a point in time, there is tremendous agreement on beauty standards and these standards change fairly slowly over time (Hamermesh and Biddle, 1994) and individuals tend to have similar judgments about what makes a beautiful person (Patzer, 1985).[10]

3.3. Creating Resumes

The second step is to design the details of the resumes. The details include identity information, education experience, awards, student union events and language ability.

For identities, we pick names from the most frequent Chinese names since 2010[11] so as to avoid the impact of odd names and rarely used characters. Birthdays are randomly assigned to the candidates within the year of 1994 when most fresh graduates are born when the experiment is carried out. We apply 16 email addresses since an email address is required to activate account on the website.[12] 16 mobile phone numbers are also applied because phone numbers are required in the resume. In addition, its necessary to track the responses in all forms of contact in case some companies choose methods of contact other than sending invitation letters to the website account out of certain reasons.

In the case of educational experience, to exclude the impact of education background, all the applicants are undergraduates from Wuhan University majoring in finance and their Hukou are located in Wuhan. Student union events are randomly chosen from realistic events took place in student union of Wuhan University. English proficiency is getting a pass on CET-6[13], which is a necessary condition of graduating from Wuhan University.

There are several reasons for such design. First, the researchers are from Economics and Management School of Wuhan University. We have a good knowledge of specific school events and have easy access to authentic resumes from realistic job-seekers from the University, which make fictitious resumes in our experiment look more authentic to

[10]There is another method widely applied in relevant research called validated measures of attractiveness (Florencia López Bóo, Martín A. Rossi, Sergio Urzúa, 2012) which is based on golden ratios for facial beauty. However, this method is tested mostly by Europeans or Americans, whether it applies equally to Asian faces under Asian judgment has not been verified.

[11]The result comes from a statistical report of name frequency `http://www.gywb.cn/content/2014-10/27/content_1785753.htm`

[12]The email addresses are registered on 163.com and 126.com. And the addresses are the combination of name and birthday, such as mqli0715@163.com. This is also a common method to set the email address.

[13]CET-6 stands for College English Test, a national English level test in China. A pass on this exam is required to graduate from most Chinese colleges.

the employers. Second, plenty of evidences show Hukou, the Chinese special system, has significant impact on the labor market. Specially, graduates from rural China, classified as non-urban Hukou, appear to have lower probability of being employed (Wen, Wang, Moffatt 2008). Since our attention is mainly concentrated on appearance discrimination, we set Hukou the same across all applicants to eliminate such influence.

Since we also take interest in the impact of candidates' overall qualities on employment, we set different scholarships for our candidates since scholarship is a good indicator of a students comprehensive quality. The competition for scholarships takes many elements into account, such as moral performance, academic performance and social practice results.[14] We categorize the resumes into two categories C with or without scholarship record. In the following context, we denote resumes with scholarship record as high quality ones and those without scholarships as low quality ones.

To sum up, we faked 16 fictitious resumes out of 8 categories — male and female, attractive and unattractive, high quality and low quality. Details are listed in Table 1.

Our target industry is financial related and we set no restriction on occupations. We restrict working place to Beijing, Shanghai, Guangzhou, Shenzhen and Wuhan, five metropolises where many large corporations are located in order to minimize disturbance to regular recruitment of small companies.

Table 1: Basic Information of 16 Fictitious Applicants

Male	Female	Appearance	Quality
Junjie Guo	Zixuan Zhu	Attractive	High
Zhiyuan Hu	Sitong Ma	Unattractive	
Rui Wu	Kexin Sun	Attractive	
Hao Chen	Han Zhou	Unattractive	
Bowen Zhao	Xinyi Xu	Attractive	Low
Haoyu Wang	Chenxi Yang	Unattractive	
Zixuan Zhang	Zihan Liu	Attractive	
Yuze Huang	Mengqi Li	Unattractive	

3.4. Measuring Responses

The experiment lasted from Mar 13, 2016 to Sept 22, 2016[15]. Over the seven month duration of the experiment, we kept track of call-backs through all means of contact and

[14] At Wuhan University, these three elements take up 10%, 70% and 20% in the overall rating respectively.

[15] The period proves to include both tight and slack labor market for students with most invitation letters sent from March to May and less in the following period.

kept a detailed record of recruiting positions[16]. We measure whether a resume receives invitation letter from certain company and document the information of all the invited positions for later data analysis.

3.5. Strengths and Weaknesses

The strengths of the field experiment lie in three aspects — credibility, measurability and representativeness.

Compared with theoretical analysis of labor market discrimination, our research combines empirical data to verify the existence of appearance discrimination which makes the result more convincing. There are also empirical studies carried out using households survey data[17] However, survey data won't provide all the information needed in the analysis, the most important of all, we can't acquire personal photos to measure facial attractiveness. To circumvent the difficulty with conventional survey data, some researchers turned to quasi-experiments. They simulate recruiting scenario in a lab and find out evidences of the relationship between appearance and employment. For example, Tang (2009) finds out when structural evaluation method which focuses less on appearance is adopted in an interview, the impact of appearance will decrease but interviewers' prejudice against ugly interviewees will not dissipate. Liang (2014) simulated recruiting scenario and found out applicants with more attractive appearances have greater advantages and such advantages become more remarkable in female jobs. However, the role of employers is played mostly by students in such experiments, whether employers will make the same choice in real economy is not ensured. By contrast, our field experiment is carried out in real labor market and the invitations are made by hiring managers from a large amount of companies, so the result can reveal discrimination in real economy to a great extent. In addition, thanks to the convenience and low cost of the internet-based experiment, we can collect a comparably bigger amount of samples than traditional empirical research methods.

However, there are also defects we have to state in our study.

What we should note first is that we measure appearance discrimination merely by the call-back rates of each candidate. It just reveals discrimination in the first stage of recruitment whereas the impact of one's facial beauty on job offers and income is not included in our experiment.

Another issue can't be neglected is the possibility of underestimating the level of appearance discrimination. Firstly, the bank of resumes used in the experiment has exactly

[16]Results show there are a few companies which directly send interview invitation by text message instead of send an invitation to apply for their position first. Position details are included in invitation letters.

[17]Jiang and Zhang (2013) use Chinese Health and Nutrition Survey data to investigate the impact of one's figure on labor income.

equal educational background throughout the experiment period. In the experiment process, any company can view these resumes if they pass the company's automated first round selection. Chances are companies will send invitation letters to all our applicants if these resumes are overqualified to their requirement. Then the discrimination level may be underestimated under such circumstance. Secondly, we only record crude data of invitation in the very first stage of recruitment procedure, employers are possibly not so picky in the first round selection. Although the estimated discriminate level can be inaccurate, if we still find significant difference in call-back rates even with the possibility of underestimated discrimination level, then the existence of appearance discrimination can still be confirmed.

What's more, we only investigate discrimination on recruitment of fresh graduate. Although graduates take up the biggest proportion of job-seekers in the labor market every year, other groups are also important in the market. In addition, we only study one channel for job search, other channels such as recruitment meeting are not included in the research due to resource restrictions. These omissions may affect the final result.

Last but not least, we can't completely avoid the problem of portrait right in this experiment. Here are two solutions recommended for subsequent research. One way is to sign contracts with volunteers who are willing to provide their personal photos. The other is to hire technicians to synthesize photos from web photos.

4. Results

4.1. Summary Statistics Analysis

We obtain 1344 samples in total from the experiment and the results of invitation rates are listed in Table 2. In the square brackets are sample sizes of each category. The first row shows overall feedback rates. Attractive applicants have 44.64% chances of getting an invitation letter whereas the chances of unattractive applicants only amount to 38.10%. The difference in invitation rate is 6.54 percentage points, or a 17% gap, which can be ascribed to the difference in attractiveness. From the result of significance test shown in the last column, this gap is proved to be statistical significant. That is to say attractive applicants get 10 invitation letters every 22 scans from employers whereas it takes at least 26 reviews for unattractive applicants to get 10 invitations on average.

4.1.1. Occupation Types

To separate appearance discrimination from preference-based type to productivity-based type, we divide the whole sample of offered positions based on requirements of facial beauty in each category. There is a variety of occupations included in the experiment. By close investigation on the position description offered in invitation letters, we categorize

these occupations into two kinds — front office job and back office job. Front office job includes sales representatives/sales workers/receptionist/consultant and so on. Back office jobs are positions like data analyst, researcher and accountant.

Row 2 and row 3 present the results of front office jobs and back office jobs separately.For front office jobs, the overall invitation rates for attractive applicants and unattractive applicants are 42.57% and 36.15% respectively. The 18 percent gap is not significant on 5% level. The results for back office jobs are similar. In the full sample, attractive applicants have a 45.57 percent chance of receiving an invitation letter and unattractive applicants have a 39.06 percent chance of being invited. The 17 percent gap is proved not significant.

Table 2: Mean Invitation Rates By Facial Attractiveness

	Invitation Rate for All Applicants	Invitation Rate for Attractive Applicants	Invitation Rate for Unattractive Applicants	Ratio	Difference
Sample:					
All resumes	41.37%	44.64%	38.10%	1.17	6.54%
	[1344]	[672]	[672]		(0.0136)
Front Office	39.36%	42.57%	36.15%	1.18	6.42%
	[592]	[296]	[296]		(0.1099)
Back Office	42.32%	45.57%	39.06%	1.17	6.51%
	[768]	[384]	[384]		(0.0679)
Male	43.15%	44.94%	41.37%	1.09	3.57%
	[672]	[336]	[336]		(0.3502)
Female	39.58%	44.35%	34.82%	1.27	9.53%
	[672]	[336]	[336]		(0.0115)
High Quality	42.41%	46.13%	38.69%	1.19	7.44%
	[672]	[336]	[336]		(0.0510)
Low Quality	40.33%	43.15%	37.50%	1.15	5.65%
	[672]	[336]	[336]		(0.1355)

Notes:
1. The table displays the invitation rates for the entire sample and subsamples. Column 1 to column 3 show invitation rates for all applicants, attractive applicants and unattractive applicants separately. The ratio and difference of invitation rates of attractive and unattractive applicants are listed in column 4 – 5.
2. In brackets under invitation rate in each cell is the sample size. And the number in brackets from column 5 shows the p-value for a proportion test with the null hypothesis that invitation rates are equal between attractive and unattractive groups.

4.1.2. Gender

We break down the sample by gender and the results are listed in row 4 and row 5. Row 4 shows the invitation rate of male applicants. The overall invitation rate among male candidates is 43.15%, slightly higher than average level (41.37%). And the

invitation rates of attractive and unattractive male applicants are 44.94% and 41.37% respectively. This means attractive male applicants have 9 percent higher opportunity of being invited to a position than unattractive applicants. However, the difference in invitation rate is not statistically significant. Among female applicants, invitation rates are lower no matter in an overall level or in separated categories. This may reveal the preference over female workers of sampled companies. For attractive female applicants, the invitation rate is 44.35%, while for unattractive female applicants the invitation rate is only 34.82%. Attractive females are 27 percent more likely to receive an invitation letter than unattractive females and such difference is statistically significant.

4.1.3. Applicant Quality

Row 6 and row 7 break down the full sample into high quality group and low quality group. The overall invitation rates of these two groups are 42.41% and 40.33%, indicating higher quality can improve invitation rate to some extent. In the high quality resume group, invitation rate of attractive applicants (46.13%) is 19 percent higher than that of unattractive applicants (38.69%). In low quality group, corresponding invitation rates are 43.15% and 37.50%, respectively. The gap in invitation rate between attractive and unattractive applicants in low quality group is 15 percent. However, this gap is not significant in statistical test.

4.1.4. Discrimination on Employers Level

In this section, we analyze discrimination on the employer level instead of applicant level. We divide employers into three different types – equal treatment, attractive favored and unattractive favored, based on the number of invitation letters they send to fictitious applicants. The "equal treatment"[18] type sends invitation letters to equal amount of applicants from different attractiveness level. The"attractive favored" type send more invitations to attractive applicants than unattractive applicants. And Unattractive favored type invites more unattractive applicants than attractive applicants.

Detailed statistics of invitation rates are depicted in Table 3. The first column shows the fraction of each type of employers on an overall level. 82.41% of sampled companies are indifferent to applicants' appearance. Companies that invite all fictitious applicants contribute the most to such high fraction of equal treatment. The fraction will be even higher if we are able to include no response employers in our data. Employers who prefer attractive candidates take up 14.29% and unattractive applicants are favored by only 3.57% sampled employers. By testing whether employers' preferences of attractive applicants over unattractive ones and unattractive applicants over attractive ones

[18]To be more precise, for each gender group, the "equal treatment" includes 0G+0B, 1G+1B, 2G+2B, 3G+3B and 4G+4B, where "G" stands for attractive looking candidates and "B" for unattractive looking ones.

are symmetric, we find the difference in the fraction of these two types is statistically significant at 5% significant level.

Furthermore, we separate applicants into different gender group to see if employer preferences differ between genders. The results are listed in column 3 to column 8. The fraction of each group for male applicants is very close to that of the whole sample, with 85.71% equal treatment, 13.10% attractive favored and 1.19% unattractive favored. However, for female applicants, the fractions prove to be very different. The equal treatment type takes up only about a half (54.76%) of all companies. 40.48% employers prefer attractive female candidates whereas only 4.76% invite more unattractive females than attractive ones. The difference between the fraction of attractive favored and unattractive favored types in are both very statistically significant in different gender groups.

Table 3: Mean Invitation Rates By Employer Preference

Sample		Equal Treatment	0G+0B	1G+1B	2G+2B	3G+3B	4G+4B
	Male	85.71%	40.48%	7.14%	0%	0%	38.10%
ALL		[72]	[34]	[6]	[0]	[0]	[32]
82.14%	Female	54.76%	28.57%	0%	0%	1.19%	25.00%
[69]		[46]	[24]	[0]	[0]	[1]	[21]
		Attractive Favored	Differ 1	Differ 2	Differ 3	Differ 4	
	Male	13.10%	13.10%	0%	0%	0%	
ALL		[11]	[11]	[0]	[0]	[0]	
14.29%	Female	40.48%	39.29%	0%	1.19%	0%	
[12]		[34]	[33]	[0]	[1]	[0]	
		Unattractive Favored	Differ 1	Differ 2	Differ 3	Differ 4	
	Male	1.19%	1.19%	0%	0%	0%	
ALL		[1]	[1]	[0]	[0]	[0]	
3.57%	Female	4.76%	4.76%	0%	0%	0%	
[3]		[4]	[4]	[0]	[0]	[0]	
	H0: AF=UF(all)		H0: AF=UF(male)			H0: AF=UF(female)	
	P=0.0148		P=0.0027			P=0.0000	

Notes:
1. The table displays the distribution of invitation from employer's level. Employers are divided into three types-equal treatment, attractive favored and unattractive favored. "Equal treatment" includes employers that send invitation letters to equal amount of attractive applicants and unattractive applicants. "Attractive favored" includes employers that send more invitation letters to attractive applicants. On the contrary, "Unattractive favored" implies employers who send more invitations to unattractive applicants.
2. "xG+yB" means a company invites x attractive applicants and y unattractive applicants. "Differ 1" in attractive favored group indicates the employer send one more invitation to attractive candidates than unattractive candidates.
3. The first column shows the fraction of each type in an overall scale. Columns on the right display the results by gender.
4. In the parenthesis is corresponding number of employers of that type.
5. The last row displays the result of proportion test with corresponding null hypothesis on the head. "AF" stands for attractive favored type and "UF" stands for unattractive favored type.

4.2. Regression Analysis

4.2.1. The Model

To further investigate the impact of additional variables on appearance discrimination, we adopt the probit model and estimate the following equation:

$$Pr(Inv = 1|Attr, Fro, Gen, Qual) = \Phi(\beta_0 + \beta_1 * Attr + \beta_2 * Fro + \beta_3 * Gen + \beta_4 * Qual)$$

where the dependant variable represents the conditional probability of receiving an invitation letter on facial attractiveness, position type, gender and inferred personal quality. Independent variables *Attr, Qual, Gen, Fro* respectively take the value 1 if the applicant is attractive, high-quality, female, and the offer is from a front-office job.

Table 4: Basic Probit Estimation of Invitation Rate

Dependent Variable: 1 = Invited; 0 = Not Invited	*Coefficient*
Attractive (1 = Attractive; 0 = Unattractive)	0.169**
	(0.0691)
Front (1 = Front Office Job; 0 = Back Office Job)	-0.0346
	(0.0694)
Gender (1 = Female; 0 = Male)	-0.0922
	(0.0691)
Quality (1 = With Scholarship; 0 = Without Scholarship)	0.0535
	(0.0691)
Observations	1,344

Note: * ,** and *** represent 10%, 5% and 1% levels of significance respectively.

The results are reported in Table 4. There is clear evidence that applicants with more attractive faces have a higher probability of being invited to a position. And the effects of occupation type, gender and personal quality are not significant.

4.2.2. Robustness

To test the robustness of appearance discrimination, we divide the sample into subsamples according to occupation type. In front-office jobs, daily communication with customers and colleagues plays an important role in work. Hence, appearance attractiveness may add to professional capability. For such positions, the preference for attractive looks can be reasonable to some extent. However, if appearance discrimination is also significant in positions where facial beauty is not relevant to productivity, then we can confirm the robustness of appearance discrimination in our result.

From Table 5, we find the effect of facial attractiveness is significant no matter in the pooled sample or in subsamples separated by job characteristics.

Table 5: Robustness Test

VARIABLES	(1) All Invitation	(2) Front Office Invitation	(3) Back Office Invitation
Attractive	0.169**	0.178*	0.162*
	(0.0691)	(0.103)	(0.0935)
Front	-0.0346		
	(0.0694)		
Gender	-0.0922	0.110	-0.259***
	(0.0691)	(0.103)	(0.0935)
Quality	0.0535	0.0597	0.0486
	(0.0691)	(0.103)	(0.0935)
Observations	1,344	608	736
Pseudo R square	0.0047	0.0055	0.0109

Note: * ,** and *** represent 10%, 5% and 1% levels of significance respectively. Standard errors are reported in the parentheses.

5. Discussion

With verified appearance discrimination,we carry on result analysis checking potential mechanisms of its existence to find out the specific root of appearance discrimination in China's labor market. Besides, to explore more details in our experiment data, we further classify the full sample by gender and implied quality. We will discuss some interesting findings in our results and try to provide some explanations in this section. The regression results of all subsamples together with the basic model are shown in Table 6.

5.1. Checking Possible Discrimination Channels

Our experiment isolates the effect of appearance attractiveness from other labor characteristics by holding constant background information with a mere difference of scholarship level within each attractiveness category. The existence of appearance discrimination is verified significant on an overall level.

Currently, there are three theories to account for the different treatment as a function of physical attractiveness.

The first one is productivity-based, which proposes that good looks should strongly imply social competence because of (a) the perception that attractive individuals elicit positive reactions from others, (b) the perception of true connection between attractiveness and social competence, and (c) the media portrayal of attractiveness as critical to heterosexual popularity and social attention (Eagly, Ashmore, Makhijani et al, 1991). Other research concerning height premium finds out good looks bring about confidence that increases negotiating skills, communication chances that improves verbal skills and

Table 6: Subsample Probit Estimation

Variables	(1) Front Office Invitation	(2) Back Office Invitation	(3) Females Invitation	(4) Males Invitation	(5) High Quality Invitation	(6) Low Quality Invitation
Attractive	0.178*	0.162*	0.249**	0.0914	0.191*	0.146
	(0.103)	(0.0935)	(0.0983)	(0.0975)	(0.0976)	(0.0979)
Front			0.152	-0.218**	-0.0289	-0.0403
			(0.0986)	(0.0981)	(0.0980)	(0.0983)
Gender	0.110	-0.259***			-0.145	-0.0389
	(0.103)	(0.0935)			(0.0976)	(0.0979)
Quality	0.0597	0.0486	-0.000149	0.107		
	(0.103)	(0.0935)	(0.0983)	(0.0975)		
Obs	608	736	672	672	672	672
Pseudo R2	0.0055	0.0109	0.0097	0.0076	0.0067	0.0028

Note: * ,** and *** represent 10%, 5% and 1% levels of significance respectively. Standard errors are reported in the parentheses.

so on that make attractive job-hunters more comfortable in the process of job interviews and wage negotiations (Persico N, Postlewaite A, Silverman D, et al, 2004). The interactive relationship between good-looking employees and clients accumulates special human capital for the company. Bosman et al (2000) used data from advertising industry and proved that the more attractive supervisors are, the higher profits the company earns. Whats more, the increase in income is far more than supervisors personal beauty premium.

Another theory takes appearance discrimination as preference-based, which states that discrimination works through the preferences from employers. The confidence of attractive employees and their subconscious sense make them overestimate work competence of good-looking employees. In addition, good-looking employees helps enhance corporate image. This is important since in Chinese culture, "face" can be more important than anything. Several experiments were carried out to find out the share of different factors that cause the discrimination (Morris, 2007; Cawley et al,2009; Rosenblat and Mobius, 2006). In the experiment, attention was restricted to jobs that facial characteristics didn't count in completing the work. However, facial characteristics still lead to wage difference significantly indicating that employer's preference is the main reason for appearance discrimination.

The third explanation is from a psychological perspective. It claims that appearance attractiveness can serve as a signal for intelligence when there is no other observable implication for intelligence quality(Kanazawa and Kovar, 2004). Laboratory experiments have been carried out and find the assessment of intelligence is not independent of the assessment of facial beauty. In their experiment, 24 individuals were shown a set of

photos and were asked to assess whether the photographed individual is intelligent or not. The photographed people already had both their beauty and their intelligence measured in a previous study. The results verified a positive correlation between beauty and measured intelligence. Based on these theories, Kraft (2012) provides evidence that strongly supports signaling as the source of the "beauty premium" in the labor market of Italy.

5.1.1. The Productivity Based Discrimination

In our study, to test the first plausible explanation for appearance discrimination in which facial beauty serves as a productive factor for the firm, we classify all sampled positions into two kinds—front office job and back office job, based on job requirements. Front office job requires a lot of customer and coworker interaction where appearance plays a role in enhancing cooperativeness and trustworthiness (Eckel and Wilson, 2004) whereas back office jobs don't require as much social interaction. If appearance discrimination mainly comes from implied productivity, the common expectation would be that attractiveness matters more in front office jobs. That is to say, invitation gap would be bigger in this kind of jobs. According to our experiment data, we can't find evidence of significant variance in invitation rates between these two types of job. As is shown in Table 5, facial attractiveness shows significance in both groups. Obviously, our result doesn't comply with the suggested channel. Consequently, we can conclude that, currently in Chinese labor market, appearance discrimination exists in a vast scale and the severity does not vary much across occupations.

5.1.2. The Preference Based Discrimination

Finally, we manage to verify the second channel by testing statistics of invitation rate on the employer level. Separating the sampled employers into three types – equal treatment, attractive favored and unattractive favored, we find significant difference in invitation rates in all three types no matter in the full sample, in male applicants or in female applicants. The result provides strong empirical support for employer discrimination-based explanation.

There are many reasons why employers discriminate on job applicants over their appearances. First of all, as has been stated above, pretty face implies better communication skills or at least ameliorates communication with colleagues. This trait is helpful for creating harmonious working atmosphere in every workplace. Secondly, industrial competition is so fierce nowadays that they prioritize applicants with good look to maintain good corporate image, no matter in what position. This also account for the uniform appearance discrimination across occupations.

5.1.3. The Beauty-IQ Approach

For the third suggested channel, we isolate intelligence impact by setting different level of scholarships among the applicants since scholarship is a good indicator of academic performance, in which intelligence plays an important role, and has little direct connection to one's appearance. From data investigation, the gap in invitation rate between high quality group and low quality group shows no significant difference, which suggests that intelligence level does not matter much in our case. Furthermore, valuing scholarship level as an instrument variable for IQ level, we find no significance of the impact of IQ level on invitation rates in any subsample we set up, as shown in Table 6. So this channel failed to account for appearance discrimination in Chinese market, specifically Chinese graduate job search market.

5.2. Other Facts

5.2.1. The Gender Gap

By gender analysis, taking a second glance at Table 2, the invitation gap is 9 percent among male candidates and 27 percent among female candidates, which means the return of an attractive face for a woman job seeker is three times as much as that of male candidate. On the other hand, the loss from an unattractive face for females is also three times as much as that of males. What's more, from model (3) and (4) depicted in table 6, the beauty premium is significant only in female group, revealing more severe appearance discrimination toward female job seekers.

Another interesting finding is the gender gap in different kind of positions. From model (2), the regression result of back office job sample, female applicants shows significant disadvantage in search for back office jobs. However, in model (4), male applicants receive significant fewer invitation to front office positions. Such phenomenon may result from the traditional gender stereotype in Asian countries, where males are assumed to be more competent at technical jobs while females are considered to be of good affinity and careful considerations.

5.2.2. Tradeoff Between Investment In Skills and Appearance

It is proved in our study that appearance discrimination combined with gender discrimination makes plain-looking and ugly-looking female job seekers most vulnerable in the labor market among all job candidates. The fact validates enhancing facial beauty as an effective approach to raising competitiveness in job market. In view of the conventional human capital investment in developing job skills, we try to compare the cost effectiveness of these approaches.

We investigate the impact of candidates' quality on his chances of being invited in

recruitment. From the statistics, attractiveness gap in invitation rates in high quality group and low quality group are 19 percent and 15 percent respectively. And the gap is significant in high quality group but not significant in low quality group[19]. This implies that appearance discrimination is even more severe in candidates with more solid backgrounds. For low quality and unattractive candidates, the benefit of enhancing competence in a small amount (invitation rate improves from 37.50% to 38.69%) is no bigger than the benefit of improving ones looks (invitation rate improves from 37.50% to 43.15%). And the cost of improving personal skills is often higher than that of simply doing make-ups or even taking small plastic surgeries.

In this sense, investment in improving facial attractiveness can be more cost efficient than the investment in enhancing personal skills such as adopting a foreign language or learning advanced computer skills. Our findings offer an economic explanation for the recent trend of plastic surgery among Chinese graduates. Although the issue of plastic surgeries is controversy, the experiment result suggests that undergraduates should not overlook physical appearance while pursuing knowledge and observable skills on campus to become more employable in the job market.

6. Policy Implications

Discrimination in the labor market has always been a heated social topic in China. However, compared with discrimination on race, gender, disability, the overall existence of appearance discrimination has not aroused enough awareness until recently. In these years, this problem raised more concern from social media whereas there are still no relevant laws and regulations enacted to protect the rights of the appearance discriminated. Several countries have taken measures to alleviate the problem, such as the implementation of compulsory anonymous resumes that forbid applicants from including a photograph, their age, gender and marital status[20]. These are good precedents for the prevention of discriminatory hiring practices.

At present, Chinese law only includes ethnic discrimination, racial discrimination, gender discrimination, religious discrimination, disability discrimination and hukou discrimination in the context of job discrimination. Other factors affecting the equality in hiring practices such as appearance, height and age should also be included in the Chinese Employment Promotion Act to prevent these even acquiesced discrimination in the labor market.

Apart from the perspective of legislation, measures can also be taken in execution.

[19]The significance level is set at 10% here.

[20]For France, see *USA Today*, December 6, 2004, "Anonymous resumes may fight discrimination in France." For Germany, see *Spiegel Online International*, August 25, 2010, "German pilot project aims to reduce discrimination." For the United Kingdom, see *The Guardian*, January 1, 2010, "Call for anonymous CVs to stop job interview sexism and racism."

Anti-discrimination committees are set up to deal with complaints of labor discrimination in many places such as the Great Britain, the US, Canada, Hong Kong and so on. The establishment of anti-discrimination agency is in need to ensure the enforcement of anti-discrimination laws.

In addition, though there are already vocational skill training programs carried out by the government to help the unemployed, the effect of these programs is unclear. According to our findings, current training programs which only aim at improving job skills at the minor level cannot compensate for the loss of those appearance-discriminated. Larger effective training program are in need to help the vulnerable groups in Chinese labor market.

7. Conclusion

This paper studies appearance discrimination in Chinese labor market by carrying out a field experiment. From the experiment results, attractive job applicants receive more invitation letters than unattractive applicants. And this phenomenon of appearance discrimination exists across different occupations. Detailed investigation shows the discrimination is even more severe in female applicants. The combination of appearance discrimination with gender discrimination strongly affects the employment of unattractive female job applicants.

By checking potential channels for appearance discrimination, it is found out that employers' preference is the main source of such discrimination in Chinese labor market. The presented evidence suggests that small improvements in personal quality won't compensate for the loss caused by unattractive appearance. For job applicants, to stay competitive in the labor market, they should lay emphasis on maintaining a good look when endeavor to improve personal skills. For policy makers, there should be relevant laws and regulations enacted to combat the inequality at social level.

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