Is it Sex or Personality?
The Impact of Sex-Stereotypes on Discrimination in Applicant Selection

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Abstract

This paper investigates, whether differential treatment of men and women in the labor market is due to unobservable differences in productivity or if it is motivated by a taste for discrimination. While studies on sex-discrimination typically control for human capital, there is usually no information on personal traits available. We argue, personality might affect productivity just as human capital. To gather the necessary data a field experiment is conducted: Job applications of candidates, who are equivalent in their human capital but differ in sex and indicated personality are sent out in response to job advertisements. We find minor indicators, that signaling a masculine personality might reduce unfavorable treatment of women, nevertheless discrimination prevails even after controlling for personal characteristics.

Keywords: Experimental Economics, Labor Economics, Sex-Discrimination

1 Introduction

Many studies demonstrate the existence of sex discrimination in the labor market. One common approach of such studies is to test for discrimination through a wage decomposition, that combines the estimated coefficients for male wages and the values of the explanatory variables for women (education, job-experience etc.). This enables one to measure what women would earn absent of "discrimination". A disadvantage of this method is that it gives *"no conclusive proof of discrimination as long as all other possible relevant variables have not been identified"* (Bovenkerk, 1992, p. 4), because wage differentials might be driven by productivity differences unobservable for the researcher.

In this paper we investigate, whether differential treatment in applicant selection exists and if personality constitutes such an usually unobservable factor responsible for unfavorable treatment: Are women treated differently *because they are different* or because they are discriminated against?

A standard definition of discrimination is that *"individual workers who have identical productive characteristics are treated differently because of the demographic groups to which they belong"* (Ehrenberg/Smith, 1994, p. 402). The most well-known theoretical framework has been provided by Becker (1957) who modeled discrimination as the result of some majority group members' "taste" against working with members of a minority group.[1]

[1] If employers maximize utility not profits, they will not hire equally and possibly even more productive people from the minority group. Since this type of discrimination does not serve profit-maximizing goals, discrimination should not persist in the long run in a perfectly competitive market where non-discriminatory employers can produce at lower costs. As a result discriminatory tastes should vanish over time.

Previous studies examining discrimination have only controlled for productive characteristics like schooling and experience, assuming that candidates with equal human capital should be equally productive and therefore receive equal treatment by entrepreneurs. But personality might affect productivity just as human capital: For many traditionally male occupations (e.g. manager) stereotypically masculine characteristics – like being ambitious, competitive, dominant – seem to be required. On the other hand stereotypically feminine characteristics – like being gentle, cheerful, friendly – are preferred in traditionally female occupations (e.g. secretary).

When personality matters but is unobservable for the firm at the point of hiring, employers have to form expectations. According to stereotypes, personality correlates with sex and women are considered less masculine but more feminine on the average. Consequently having the choice between two identically qualified applicants of different sex the profit-maximizing employer will choose the man for the male job, because his personality is more likely to fit. If an equally productive woman is treated less favorably than a male competitor, because some productive characteristics are unobservable and employers rely on group averages, then this is called "statistical discrimination" (Phelps 1972, Arrow 1973). Statistical discrimination in sex incongruent occupations has more severe effects for women, since male jobs are typically better paid than female ones. Note that statistical discrimination is not regarded discrimination according to above definition, since workers do *not* have identical productive characteristics *on the average* and employers only make correct profit-maximizing decisions under uncertainty - solely driven by productivity considerations but not discriminatory tastes.

Now consider the case, that a woman can give individuating information about her personality and demonstrate that she does not correspond to her sex stereotype but instead has the stereotypical personal traits of a man: Eliminating the need to draw on stereotypes she should receive equal treatment as an identically qualified male. After all no expectations have to be formed on human capital and personality - and what else might determine productivity!

The goal of this paper is the following: If drawing on sex-stereotypes in a situation of incomplete information is responsible for women's unfavorable treatment in the labor market, this disadvantage should disappear when a female applicant reveals her masculinity. This is tested by comparing the labor market outcomes of man and a masculine women, who are not only matched in terms of human capital, but even in personality. If they are treated differently although their expected productivity is identical, than discrimination has been identified undeniably.

2 Method

"Correspondence Testing", the method applied in this paper, was originally used to measure race discrimination and later adopted by Frith (1982) and Riach/Rich (1995) to examine sex discrimination. Matched letters of applications are sent out in response to job advertisements. The job seekers exhibit identical productive characteristics, but have a male and female name respectively. If one applicant is invited to an interview but another is not, this is assigned to discrimination.

Since both previous experiments have been conducted in England and Australia, where relatively short résumés are common, the employers were not equipped with very detailed information about the candidates and might have been forced to form expectations on the value of variables that have not been controlled for. In particular there was no information on personal characteristics, so – following Heckman (1998) – the significantly differential treatment of men and women that was found might be due to statistical discrimination.

In Austria, on the contrary, a large number of documents is required of the serious applicant. Consequently the vast amount of information largely cancels out the possibility of statistical discrimination. Furthermore, in this study strong indicators for personal characteristics were given, attempting to provide an entrepreneur with complete information in *all* relevant dimensions. Detailed application material was constructed for three candidates of identical human capital: a male, a masculine female and a feminine female. The gender identity was manipulated by indicators such as hobbies and photographs. According to a pretest all three applicants were perceived as equally social desirable, while the „feminine female" was perceived to possess less masculine but more feminine traits than the other two. The „masculine female" and the male candidate only differed with respect to sex.

From early 1998 to fall 1999 job applications of the three candidates were sent out to vacant positions in the Greater Viennese Area. Two male and two female occupations were tested: Network technician, computer programmer, secretary and accountant.

Since the male and the masculine female are equivalent in all possibly productive characteristics (human capital and personality), they should be treated the same. If one of the two was invited to an interview but the other was not this was attributed to discrimination.

If personality matters, then - absent of discrimination - the relative success of the feminine female should depend on the sex stereotype of an occupation: In traditionally female professions femininity is particularly acknowledged, consequently the feminine female should be most successful while the other two should fare less but equally well. In traditionally male professions „masculinity" is highly valued, so we expect the feminine woman to be the least successful, while the male and masculine female are treated equally favorably.

3 Results

The experimentally gained data is presented to give a systematic comparison of the success-rates of different applicants (m = male, mf = masculine female, ff = feminine female) for the different tested occupations.

3.1 Masculine occupations

As was argued, the masculine female, who proves to obtain the required masculine characteristics, should be treated like the male applicant, while the feminine female should fare less successful since she does not provide these traits. Her unfavorable treatment would base on a profit-maximizing decision and could not be assigned to discrimination. Consequently in absence of discrimination, when personality matters, we expect our applicants to be treated according the following order: $m = mf > ff$. Different results either imply, that personal traits are *not relevant* (when all people are treated the same: $m = mf = ff$), or that real discrimination exists (when the male and masculine female are treated differently: $m \neq mf$).

In the case of *network technicians* the man proved to be the most successful followed by the masculine female and the feminine female. From the 117 enterprises tested, 73 % contacted the male applicant, 63 % the masculine female and 58 % the feminine female for an interview.

The results are set out in Table 1, which allows for a pairwise comparison of applicants for every occupation tested. The top line of each job category always compares the results of

the male applicant with those of the masculine female, the second line the male with the feminine female and the bottom line the masculine with the feminine female.

Looking at the results for network technicians and comparing column 4 and 5 in Table 1 we find, that the second person is always treated unfavorably more often than the first, what leaves us with a positive net-discrimination against the second person. Nevertheless this difference is only *significant* when comparing the man with the two women – but not when comparing both women with each other. Although the masculine female appears somewhat more successful than the feminine (she suffers a lower net-discrimination in comparison to the male), the hypothesis that the two women are treated the same can not be rejected (see line 3). This implies, the applicants have been treated in the following order: m > mf = ff.

In the occupational group of *programmers* applicants in general turned out overwhelmingly successful. With a probability of more than 80 % an applicant was invited to a job interview, what means that our candidates were considered sufficiently attractive for almost any job-opening. Out of a number of 88 firms 81 % contacted the male, 85 % the masculine female and 81 % the feminine female for an interview. Even a systematic reduction of the applicants' human capital (from a high to a poor university degree to eventually holding a moderate high school degree only) did not cause any change in employers' behavior. No differences in treatment have been observed, all applicants have been doing equally well m = mf = ff.

The reason for this high general acceptance is to be found in the extremely tight labor market in this occupation, caused besides others by Y2K. While with an excess supply of workers a taste for discrimination is not punished by lower profits – for each female applicant an equally qualified male is available –, profit-maximizing is more binding in a tight labor market: When employees are scare there is no room for being choosy in terms of gender if a certain productivity has to be guaranteed! This observation is compatible with the predictions of Becker's (1957) taste for discrimination model.

3.2 Feminine occupations

We argued, that the feminine female should receive favorable treatment, since she has identical human capital but scores highest in feminine traits. The masculine female as well as the male applicant should fare less successful, since they lack these required characteristics. Consequently we expect the following order: m = mf < ff.

Equal treatment of all candidates (m = mf = ff) would suggest, that personality does not matter in the occupation under investigation, differential treatment of the male and masculine female (m ≠ mf) indicates the existence of a taste for discrimination.

For *accountants* we find no evidence for differential treatment. In total 149 firms were contacted, out of which 43 % got in touch with the feminine female while an equal percentage of 40 % were interested in meeting the male and the masculine female applicant respectively. Even though the feminine women was slightly more successful than her competitors, the hypothesis of equal treatment could not be rejected and all applicants have been treated the same: m = mf = ff.

The most severe unequal treatment is found in the occupation of *secretaries*. Out of 123 firms contacted, the masculine female was invited by 46 % of all employers followed by the feminine female with 44 %. The male applicant was clearly defeated with a success-rate of only 20 %. From Table 1 one can see that the male was treated unfavorably significantly more often than the females at the 1 % level. In 32 % (30 %) of all cases he was not invited for an interview, while the masculine (feminine) female was. On the other hand he only received

beneficial treatment in 6 % (7 %), where he was invited, but his female competitor was not. At the same time the hypothesis, that the two women with differing personality received equal treatment, could not be rejected: m < mf = ff.

1 Applicants	2 both failed in %	3 both succ. in %	4 1st invited, 2nd not (discr. ag. 2nd) in %	5 2nd invited, 1st not (discr. ag. 1st) in %	6 net-discr. against 2nd (4) – (5) in %	7 χ^2	8 sig.
A) masculine occupations							
Network technicians **N = 117**							
m – mf	20.51%	56.41%	16.24%	6.84%	9.40%	4.48	*
m – ff	22.22%	52.99%	19.66%	5.13%	14.53%	9.96	**
mf – ff	29.91%	51.28%	11.97%	6.84%	5.13%	1.64	
computer programmers **N = 88**							
m – mf	9.09 %	76.14 %	5.68 %	9.09 %	- 3.41 %	0.69	
m – ff	7.95 %	70.45 %	11.36 %	10.23 %	1.14 %	0.05	
mf – ff	10.23 %	76.14 %	9.09 %	4.55 %	4.55 %	1.33	
B) feminine occupations							
Accountants **N = 149**							
m – mf	46.31 %	25.50 %	14.09 %	14.09 %	0 %	-	
m – ff	42.28 %	24.83 %	14.77 %	18.12 %	- 3.36 %	0.51	
mf – ff	48.99 %	31.54 %	8.05 %	11.41 %	- 3.36 %	0.86	
secretaries **N = 123**							
m – mf	47.97 %	14.63 %	5.69 %	31.71 %	- 26.02 %	22.26	**
m – ff	49.59 %	13.82 %	6.50 %	30.08 %	- 23.58 %	18.69	**
mf – ff	44.72 %	34.96 %	11.38 %	8.94 %	2.44 %	0.36	

Table 1: Results of Correspondence Testing for all occupations.

Where there is one degree of freedom, the critical value of chi squared at the 5 % level of significance is 3.84 (at the 1 % level $\chi^2 = 6.63$). One star (*) denotes that one person is treated unfavorably more often than the other at the 5 % level, two stars (**) at the 1 % level.

3.3 Determinants of differential treatment

In the next step we tried to investigate, which factors determine the differential treatment of applicants. It might be the case, that women are discriminated more severely e.g. in more prestigious positions or that they are considered as less suitable for jobs with particular requirements.

All the available information from the job-advertisements was coded in a number of variables that captured e.g. requirements on human capital and personal characteristics and indicated, whether the actual text of the ad was addressed to women or men specifically instead of being formulated in a sex-neutral way.

Running an ordered Probit-estimation to analyze which variables determine the relative success of a candidate in comparison to another, the following was found:

The variables capturing the *sex specific formulation* of an ad clearly have the strongest impact on differential treatment. If an advertisement is using a male instead of a sex-neutral term for a vacant position, this increases the male's chances in comparison to the females', while a female term leads to a preferential treatment of women to that of men.

This result indicates, sex-specific terminology is not used coincidentally in job-advertisements. If the male form is used an actually male applicant is looked for, on the other hand a female form implies that a female employee is preferred. So the common argument, that male terminology is used for convenience only intending to include females, is not supported here.

Nevertheless there is an interesting effect of a female's "manliness" observable: A male job-term does not lead to an equally strong unfavorable treatment of the masculine female in comparison to the male than the feminine female, even if we find no significant impact comparing the masculine with the feminine female.

4 Conclusions

The question of this paper is whether it is perceived differences in personal traits what drives women's labor market outcomes relative to men's. Our experiment allows to compare the hiring chances of a man and woman who are matched not only in human capital but even in personality. If there is no discrimination, the masculine female should be treated like the male in all cases, while the feminine female should receive preferential or unfavorable treatment depending on the sex type of the occupation. Here we find the opposite to be true. Significant differential treatment was found in the occupations of the network-technician and secretary – both times the two women were treated the same, while the man was either significantly more or less successful. This means that differential treatment is not driven by gendered personal characteristics but solely by biological sex. We find some minor indicators that signaling a masculine personality might reduce unfavorable treatment of women in male professions, nevertheless the effect of personality does not reach significance when comparing the two women.

Differential treatment in the labor market prevails even after controlling for personal characteristics, indicating that it is not differences in productivity but discrimination what leads to sex differences in labor market outcomes.

For a full version see: http://www.economics.uni-linz.ac.at/members/weichsel/work/paper/sexdiscrimination.PDF

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