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Getting Hired: Race and Sex Differences

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Abstract

The hiring process is currently probably the least understood aspect of the employment relationship. It may very well be the most important for understanding the broad processes of stratification with allocation by sex and race to jobs and firms. A central reason for the lack of knowledge is that it is very difficult to assemble extensive data on the processes that occur at the point of hire. We analyze data on all applicants to a large service organization in the U.S. in a 16 month period in 1993-1994. We investigate their rating at the time of application, the probability of getting hired, and the ratings achieved one, three, and six months after hire. Overall differences between men and women are (a) negligible in rating received at time of application, (b) small but slightly in favor of women in probability of getting hired, and (c) clearly in favor of women for ratings after hire. The evidence points unambiguously in one direction: women do not come worse out than men in the hiring process in this organization. To the extent there is a difference, it is to the advantage of women. However, if the post-hire performance ratings are free of sex bias, then women should have been hired at an even higher rate. When analyses are done separately by occupation, there are few differences between men and women in getting hired in the three occupations accounting for 94% of hires. In the other two, only 8 and 15 hires were made, making statistical analysis less meaningful. There is however evidence that blacks face a disadvantage in getting hired, and also receive lower ratings after hire. Hispanic men are especially disadvantaged in getting hired.

Getting Hired: Sex and Race Differences*

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Title

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Abstract

The hiring process is currently probably the least understood aspect of the employment relationship. It may very well be the most important for understanding the broad processes of stratification with allocation by sex and race to jobs and firms. A central reason for the lack of knowledge is that it is very difficult to assemble extensive data on the processes that occur at the point of hire. We analyze data on all applicants to a large service organization in the U.S. in a 16 month period in 1993–1994. We investigate their rating at the time of application, the probability of getting hired, and the ratings achieved one, three, and six months after hire. Overall differences between men and women are (a) negligible in rating received at time of application, (b) small but slightly in favor of women in probability of getting hired, and (c) clearly in favor of women for ratings after hire. The evidence points unambiguously in one direction: women do not come worse out than men in the hiring process in this organization. To the extent there is a difference, it is to the advantage of women. However, if the post-hire performance ratings are free of sex bias, then women should have been hired at an even higher rate. When analyses are done separately by occupation, there are few differences between men and women in getting hired in the three occupations accounting for 94% of hires. In the other two, only 8 and 15 hires were made, making statistical analysis less meaningful. There is however evidence that blacks face a disadvantage in getting hired, and also receive lower ratings after hire. Hispanic men are especially disadvantaged in getting hired.

1 Introduction

The disadvantages women face in employment, to the extent these stem from the behaviors of employers, have three main sources. A *first* disadvantage may arise from receiving unequal pay for the same work for the same employer, the aspect attacked by initial legislation in the area, the Equal Pay Act of 1963. This is now believed to be an unimportant source of disadvantage for the gender wage gap (Groshen 1991; Petersen and Morgan 1995).[1] A *second* disadvantage may arise due to unequal access to jobs, through hiring, promotion, transfers, and dismissals, the source addressed by the Civil Rights Act of 1964, Title VII. Analyses of promotions, though not extensive, find little evidence of female disadvantage once the same work is done for the same employer (e.g., Hartmann 1987; Gerhart and Milkovich 1989; Spilerman and Petersen 1999; Petersen and Saporta 2004). Differences in rates of hiring, transfer, and dismissal are however less well understood. A *third* disadvantage may arise from the devaluation of female-dominated work, where typical female jobs receive lower pay even though requirements for the jobs do not make low pay obvious, the source attacked in comparable worth initiatives (e.g., England 1992).[2]

The relative importance of these three sources is not known. But considerable agreement exists that whatever discrimination takes place at initial hiring and assignment may have major effects on subsequent career development. Blau and Ferber (1987, p. 51) write: "Once men and women are channeled into different types of entry jobs, the normal everyday operation of the firm will virtually ensure sex differences in productivity, promotion opportunities, and pay." Many analysts even identify hiring as the ultimate point of disadvantage. Lazear (1991, pp. 13–14) states: "My view is that hiring is most important; promotion is second; and wages are third." Epstein (1992, p. 58) provides a rationale: "most firms prefer to run the risk of litigation with initial hires, instead of with promotion and dismissal." Or as Olson (1997, p. 61) argues: "...one should expect bigotry to manifest itself more in refusals to hire people than in the self-defeating practice of hiring them only to turn around and

[1] One extensive study claims this is incorrect, reporting instead wage gaps at the occupation-establishment level of about 12% (Bayard, Hellerstein, Neumark, and Troske 2003). As carefully discussed in the paper, it relies on potentially inexact measurements of some of the central variables.

[2] Not all sources of the gender gap in employment stem from employers. Important are also the choices men and women make in education, employment, and family behavior, and possibly also coworker discrimination.

fire them." A central reason hiring may be so susceptible to differential treatment is that the processes are hard to document, documentation is usually ambiguous, and a complainant is often lacking. And with less information on applicants than at later promotion, the scope for prejudice likely is wider.

Yet the hiring process, with potentially differential rates of hire and with major subsequent impacts on careers, is not extensively studied. Much has been written about the job interview (e.g., Graves 1999), about initial evaluation and selection, mostly from laboratory experiments (e.g., Olian, Schwab, and Haberfeld 1988; Heilman 1995, p. 8), and some also about conditions at hire (Gerhart 1990). But there is little research using field data with respect to who gets offers of jobs and who does not. A primary reason for this paucity is lack of data. One needs access to information not only about those who got hired but also about the entire applicant pool, so that one can compare hires or those with offers to those without. Such data are difficult to collect. But progress in analyzing hiring discrimination requires both applicant pool and audit studies designs.

Three published studies have gone to the effort of collecting these data. Fernandez, Castillo, and Moore (2000) studied rates of hiring into an entry-level job in a large bank, where the applicant pool was 66% female, and found no female disadvantage in getting job offers. Similarly, Fernandez and Weinberg (1997), in a study of the same bank, but for a wider set of jobs, where the applicant pool was 50% female, found a small female advantage in the probability of getting offers and getting hired. Petersen, Saporta, and Seidel (2000) studied rates of offers into all jobs in a high-technology firm where 25% of the applicants were female, finding no differences between men and women in rates of success in getting job offers or in getting hired. These studies range from about 25 to 66% females in the applicant pool, but no study has yet to capture the situation where the applicants are predominantly female. The findings may hence partially reflect practices in male-dominated or sex-balanced work settings. A fourth study, but not of corporate America, addresses hiring into top positions in a federal bureaucracy department (Power and Butterfield 1997).[3]

[3]Two as yet unpublished studies use applicant pool data and are briefly referred to below (Fernandez and Fernandez-Mateo 2004; Fernandez and Sosa 2004). In addition there is Goldin and Rouse's (2000) study of hiring into symphony orchestras and Neumark's (1996) audit study of restaurants. These studies are discussed below. Several audit studies focus on race (e.g., Turner,

We thus provide a case study of the hiring process into all jobs in a large female-dominated service organization in the State of California. This provides a rare dataset of all applicants that enter the hiring pool, as opposed to only those that are chosen for interviews. One of the authors consulted for the organization, and thus secured permission to analyze the data with confidentiality restrictions limiting identifiable characteristics of the organization.

We use data on an entire applicant pool in the 16 month period April 1993 through August 1994, when 80% of the applicants analyzed were female. We study the evaluation at time of application, who gets hired and who does not, and employee evaluations one, three, and six months after hire. Our focus is on gender. But we also compare the effects of sex to those of race, documenting possible differences in the two forms of differential treatment, which turned out to be important.

It is obviously difficult to assess the generality of the case we present. But it complements and extends the existing case studies using information on entire applicant pools in corporate America, in part because it is more heavily female-dominated, in part because it is in an entirely different industry. Viewed together they provide a more complete record.

There is the issue of how many additional case studies need to be assembled before the record can be considered convincing. To this there is probably no clear answer, but it is probably equally clear that research still is a long distance from reaching a saturation point in data collection, with respect to both the number and types of organizations studied.

One may however object that researchers would only gain access to organizations that have fair hiring practices. In our experience organizations rarely know as much about potential discrimination in these processes as the researchers that analyze the data do.[4] Had the organizations known their potentially problematic practices, access would probably not have been given to the data in this study nor in Petersen, Saporta, and Seidel (2000), both of which report disadvantages for blacks.

Armed with the information from the current and the three existing case studies, with entirely different sex compositions of applicant pools, in very different industries,

Fix, and Struyk 1991).

[4]Even in large universities, with many qualified researchers, knowledge about hiring and promotion practices by sex and race can be limited.

one may begin to speculate on the contours of current hiring practices in midsized to large organizations. We return to this in the conclusion.

2 The Hiring Process

What Employers Do

Hiring involves three distinct processes. The first concerns the recruitment process itself, for example, whether it occurs through newspaper ads, employment agencies, or social networks (e.g., Newman 1978; Bloch 1994; Granovetter [1974]1995). The second concerns who gets hired or gets job offers and who gets turned away when a job is being filled (Bloch 1994). The third concerns the conditions—pay, level, responsibility, fringe benefits, perks, etc.—under which those hired get hired or the quality of the offers given.

We address here, conceptually and empirically, who gets hired and who gets turned away. Not much is known about this. Rather than engaging in elaborate theorizing we shall primarily attempt to give an accurate account of an important but understudied process. Nevertheless, some ideas are needed to cement our approach in the empirical analysis.[5]

Our goal is to assess whether there is evidence of discrimination in who gets job offers. We use the conventional definition of discrimination. For a given applicant pool, discrimination is defined as unequal probabilities of getting hired by sex, holding qualifications constant. The definition of race discrimination is similar. In the present analysis, we hold constant education, age, whether English is the first language, and rating at application. There could also be discrimination in how the applicant pool gets constituted, discussed toward the end of this section.

Most analytic frameworks address the motivations for employers to discriminate, such as prejudice, stereotypes, and statistical discrimination (e.g., England 1992, chap. 2). Our discussion has a different focus. We ask, what are the conditions under which it is feasible to discriminate in the current legal environment? To understand this, with respect to who gets hired and who gets turned away, we focus on three factors that may hinder or facilitate discrimination: The extent to which

[5]We emulate the detective, heeding Sherlock Holmes' dictum: "I have no data yet. It is a capital mistake to theorize before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts." (Doyle 1986, pp. 163–64, in *The Valley of Fear*).

discrimination is easy to document, the ambiguity of the documentation, and on the availability of a complainant that can raise charges and pursue illegitimate treatment.

In terms of who gets job offers or not, discrimination is difficult to document. Information about the applicant pool is rarely available. All that may be accessible to outsiders is information about those hired. As Jencks (1992, p. 53) writes about those not receiving job offers: "They seldom know much about a firm's other applicants, so if a firm does not hire them, they cannot tell whether they have been victims of discrimination."

But even if the relevant information were available, it likely is ambiguous, open to many interpretations. Gerhart (1990, p. 420) writes: "Thus, hiring decisions typically require greater degrees of inference than do performance evaluations due to the relative lack of job-related productivity information." When information is ambiguous, as it mostly will be with respect to quality of applicants, it becomes more difficult to pursue wrongful treatment.

Most problematic is the availability of a complainant. Those not hired and possibly discriminated against will rarely know what occurred. Even when they do, it may be impossible to gather the relevant evidence. When there are many applicants for a job, an added complexity is the potentially large number of comparisons that would need to be made. This is difficult to do for those currently in the organization and infeasible for most rejected employees. Those turned down often have accepted other jobs, in which case the incentive for complaining or filing suits is small. Bloch (1994, p. 1) argues: "Employees are far more likely than applicants to file discrimination lawsuits, and damages awarded to them tend to be greater than those received by applicants."[6]

Aside from what employers do, much hiring occurs through referral networks in which current employees play a major role. Their importance in getting jobs is unambiguously documented for several countries, as reviewed in Granovetter ([1974]1995, pp. 139–182). In the U.S. around 50% of job seekers find their jobs through personal networks. These may be segregated by sex, yielding advantages for men (Hanson and Pratt 1991). But this is not the focus here.

A related question is how the applicant pool gets created, through referral net-

[6]By 1985 most lawsuits were filed by fired employees, followed by current employees (about 10% of cases), with fewest by those not hired (Donohue and Spiegelman 1991, p. 1031).

works, newspaper ads, employment agencies, and more. The set of applicants we observe are drawn from a broader workforce. We have no information on how the organization reaches out to potential applicants or on what makes people apply or not. But recruitment procedures may clearly affect the sex and race composition of the applicant pool. For example, Rees and Schultz (1970) reported how an employer advertized in Polish-language newspapers in order to avoid getting black applicants. So even with no discrimination in who gets chosen from a given applicant pool, there may be discrimination in how the pool gets recruited from the availability pool. Or if there is discrimination in who gets offers and who does not, this may influence who decides to apply. We cannot address these important issues with our data, nor have other studies done so, with the exception of Fernandez and Fernandez-Mateo (2004) for the availability pool by race, and briefly in Petersen, Saporta, and Seidel (2000). Our focus is what happens to the applicant pool once it has been recruited from the availability pool.

Research Evidence

One study, using data on about 35,000 applicants in the 1985–1994 period to a midsized high-technology organization finds no evidence of female disadvantage in rating at first interview or in being hired (Petersen, Saporta, and Seidel 2000). They find major disadvantages to being black and Hispanic, even with controls for age and education. These effects disappear when controlling for access to job information networks, perhaps reflecting that applicants with networks are better matches, or simply that networks matter.

Fernandez and Weinberg (1997) using data on the entire applicant pool to entry-level jobs in a large bank, though not with an emphasis on gender, find that networks are important for whether one gets a job offer or not. They also find a small positive effect of being female, an effect presented but not commented upon. Fernandez, Castillo, and Moore (2000) in a study of the same bank, but for only one job, similarly find a positive impact of being female. Fernandez and Sosa (2004), using data from the same company, vastly expand upon the results with respect to gender differences. The information available in these studies is quite rich.

Another study reports a small female advantage in getting offers to managerial positions in a single department in the federal bureaucracy (Powell and Butterfield

1997), based on 521 applications to 39 job openings. This is probably an organization that pays careful attention to sex and race inequality and has done so for a long time.[7]

Goldin and Rouse (2000) analyze hiring discrimination for positions in eight major American symphony orchestras using information on musicians who competed in live auditions from the late 1950's through 1995. Since 1970, most orchestras have shifted from open to "blind" auditions where the evaluation committee can hear the play, but cannot observe the candidate's sex. Women do worse than men under sex-blind while better under open auditions, in each type of audition round. But for the subset of about 5% of the musicians who participate in more than one sex-integrated audition round of a given type and do so under both open and blind conditions, women do better than men under blind in each of four types of audition rounds while better than men under open conditions in only two. Since the quality of playing is the same under open and blind auditions, this shows disadvantage to women in two of four types of audition rounds when their sex is known. The interpretation of these results depends on how one assesses the two opposite findings and how much weight to attach to an analysis pertaining to a small subset of the musicians.[8] This is also an unusual labor market.

An audit study addresses sex discrimination in restaurant hiring (Neumark 1996). Matched pairs of equally qualified men and women applied for jobs as waiters and waitresses to the same 65 restaurants in Philadelphia. They find that men have much higher success in getting job offers in high-priced restaurants where pay also is high. Women have much higher success in getting offers at low-priced restaurants. Such audit studies provide one important way of studying hiring discrimination. They allow almost perfect control for observables, which no applicant pool data can. Nor does the applicant pool itself adjust to discriminatory behavior of employers. But the pool of auditors need however not reflect the organization's typical applicant or availability pool.

[7]An earlier study uses data on all 20,576 applicants to an insurance company in 1981 (Kirnan, Farley, and Geisinger 1989). They find that while 26.6% of males are hired only 17.6% of females are. There is no control for education, age, or other personal characteristics. The findings may reflect less favorable conditions faced by women in the early 1980s.

[8]For the 7,065 musicians on which these results are based, only about 364 contribute to the analysis showing disadvantage to women in two of four types of audition rounds. This is the subset of musicians that participated in sex-integrated auditions under both open and blind conditions for a given type of audition round (see Goldin and Rouse 2000, Tab. 5 and n. 38).

The evidence on the impact of social networks by sex is limited (Granovetter [1974]1995, pp. 147, 169–177). The two recent empirical studies find no disadvantage to being female in the hiring process, with or without controls for position in social networks. Petersen, Saporta, and Seidel (2000) and Seidel, Polzer, and Stewart (2000) find that blacks and Hispanics are at a major disadvantage. This is entirely due to lack of access to job information networks. Using survey data, this is also shown in Holzer (1987, pp. 449–52).

Our focus is on gender. However, in the empirical analysis we also include results for racial groups. Ethnic minorities are often disadvantaged in employment and hence constitute relevant comparisons groups. But unlike women, they are less favorably distributed on the class or socioeconomic structure by birth, while women cut across all class distinctions. Ethnic minorities thus face double disadvantages: first from ethnic discrimination and second from class backgrounds with fewer economic or cultural resources and network connections to employers. One may thus expect ethnic minorities, considered as one group compared to whites, to face larger disadvantages in the employment process than women, considered as one group compared to men.

3 Data

We have access to information on all applicants to a large service company in the State of California over a 16 month period of April 1993 through August 1994. The data include all applicants, not just those that were interviewed or hired. Such applicant pool datasets are limited to a few previous studies such as Fernandez and Weiberg (1997), Fernandez, Castillo, and Moore (2000), and Petersen, Saporta, and Seidel (2000). The percent black, Asian, and Hispanic in the workforce in the local labor market was 8, 21, and 14.

The company considers itself to be quite attractive to work for. Approximately 90% of extended offers are accepted. There is a central human resources function that maintains data on all applicants, scores an applicant screening test, and keeps data on performance ratings on hired applicants. One of the authors served as a consultant to the organization and secured access to the applicant data with confidentiality restrictions limiting the disclosure of identifiable information about the organization. Applicants apply for specific jobs in the company, not to the company as such. So

there is no built-in steering process of applicants into various types of jobs.

All applicants are required to complete the screening test. Once completed, one has the right to apply for the job, usually by filling out an application form. On the basis of the test and application, the hiring or local human resource departments choose applicants for interviews and make subsequent hiring decisions. The score on the screening test is provided to the person conducting the job interview. In the period studied, there were 6,421 applicants and 387 hires.

The screening test was created by testing current employees and building a predictive model of performance based upon psychological and skill-based factors. One set of questions taps into skills relevant for the job. Another set relates to personality characteristics such as initiative, assertiveness, ability to deal with conflicts, and various attitudes. The California Labor Code requires that pre-employment screening devices not have adverse impact, unless it can be justified by job requirements. In line with the legal environment, the organization was careful to design a pre-employment screening device that contained no adverse impact, using an outside consulting company and in-house psychometricians. Scales were designed so that specific items that had large negative effects on a particular race or sex were omitted or balanced out with additional items with large positive effects on the final instrument. The resulting scale was intended to center the ratings for each race and sex at the same mean to comply with the legal environment.

We cannot distinguish those applicants that applied to more than one job. Fernandez, Castillo, and Moore (2000) report that 9.6% of the applicants are repeat, while Fernandez and Weinberg (1997) report that 16% are. In those studies, repeat applicants did not have higher rates of getting offers.

We have access to the following variables on the applicants: sex, age, years of education, race, whether or not English is their first language, occupation applied to (five groups), and their rating at the time of application, on a scale of low (=0), medium (=1), and high (=2). We know whether the applicant was hired or not. For hired applicants, we also know supervisor performance ratings one, three, and six months after hire, on a scale from low of 1 to a high of 7. Some applicants left the company before evaluations at three or six months and we know who quit and who remained. The rating/evaluation made after hire is an average of the ratings provided

by three of the employee's supervisors and assesses relative job performance.

The post-hire performance ratings were not constructed to minimize sex or race differences, and may contain whatever sex and race biases supervisors may have, or may just reflect performance differentials. Among the applicants that got hired, there were subsequent differentials in performance ratings by sex and race. It is unclear whether these differences reflect actual performance differences or discriminatory evaluations. The application screening test thus creates a scale which predicts higher post-hire performance for some groups than the groups subsequently receive in performance ratings.

Unfortunately, we can only distinguish hired from non-hired applicants, but cannot separate out those applicants that received offers of employment and then subsequently rejected the offer. As stated above, about 90% of extended offers are accepted. Only 6.0% of applicants are hired. Thus about 0.6% of all applicants received offers they rejected. These are correctly put into the group of non-hired applicants. But preferably, if the data allowed, one should treat these as a separate group and also analyze the probability of receiving an offer but rejecting it.

4 Results: Getting Hired

Descriptive Statistics

Table 1 gives a wealth of information. Of the 6,421 applicants, 80.6% are female, an entire 24.6% do not have English as their first language, and 32.2% are in technical and professional occupations. Only 6.0% of the applicants are hired, 5.1% of the men and 6.2% of the women, as can be seen from lines 1 and 2, columns 1–3. Men and women have the same average age and education. Hired applicants differ in many ways from those not hired. The percentage with English as first language is much higher among hired applicants. The rating at application is much higher among hired than non-hired applicants, with averages of 1.42 versus 1.12 (on a scale of 0, 1, and 2).

(Table 1 about here)

Regarding race, whites comprise 46.2% of the applicants and an entire 52.2% of hires, with correspondingly lower percentages for minorities. There is thus an

advantage to being white in the hiring process, on which we elaborate below.

Table 1 describes the entire organization. But these processes may vary by occupation. It may for example be the case that there is no disadvantage to being female in the lower-level occupations, custodial and clerical, but some disadvantage in the services, technical, and professional occupations. Table 2 gives descriptive statistics separately by occupation.

(Table 2 about here)

Table 2 is revealing in several ways. Of the 387 hires, 364 or 94% occur in three of the five occupations, clerical, service, and technical. In these, the percent female among applicants are 88.4, 89.6, and 72.5. Women are hired at a lower rate than men in clerical but at a higher rate in service and technical occupations. In the remaining two occupations, women are hired at higher rates in custodial but at a lower rate in the typically male-dominated professional occupations. But in these two occupations, the number of people hired is very low, 8 and 15 respectively, making convincing statistical analysis difficult. Female advantage versus disadvantage does not correspond closely to whether occupations are more low level, that is, custodial and clerical, versus at a higher level, that is, services, technical, and professional.

There are some variations between occupations in how men and women differ in qualifications and demographic characteristics. Mean education is the same for men and women in the occupations, but the percent with English as first language is much lower for women in custodial and service occupations and somewhat lower in professional occupations. Average age is somewhat higher for women than men in custodial occupations but with few differences in the other four occupations.

Multivariate Analysis: Entire Organization

Turning to the multivariate analyses, Table 3 shows the effects of sex and race on the rating received at time of application, from regression analyses for four different models in lines 1–4, where each model sequentially adds control variables relative to the previous model. The dependent variable is coded 0, 1, or 2, from low, medium, to high, with mean 1.13 and standard deviation .76.[9]

[9]The corresponding results using an ordered probit model is available upon request from the authors. They show the same substantive results. Presenting these would complicate notation,

(Table 3 about here)

Before discussing the numbers a guide is needed for how to read Table 3 and, with minor and obvious modifications, subsequent Tables 4–6. The columns give the effects of being male, black, Asian, and Hispanic. The first line gives the effects from a regression controlling only for sex and race. The reference group is female and white. The second line adds controls for age and education, but reporting only the effects of sex and race. And so it continues: Control variables get sequentially added to the variables in the previous line, but only the effects of sex and race are reported. This saves space and shows the evolution of the sex and race effects as additional variables are controlled.[10]

In each of the four regressions in Table 3 the effect of being male is (a) not significantly different from zero at the 5% or any reasonable level of significance and is (b) vanishingly small, for all practical purposes equal to zero, in relationship both to the scale of the variable and the variable's subsequent effect on getting hired. There is thus no difference between men and women in the overall rating they receive, nor is there a difference once one takes into account other relevant factors.

Neither does race matter much for the rating received at application, reflecting that the scale by construction minimizes adverse impact. On a scale of 0, 1, and 2, blacks receive a rating of about .05 lower than whites, about a fifteenth of a standard devation. It is significantly different from zero at the 5% level but of small magnitude, in relationship both to the scale for the variable and the variable's subsequent effect on getting hired. Asians also receive a lower average rating of about .06 (line 1), but once whether English is first language or not is taken into account (line 3), the difference becomes insignificant and practically equal to zero.

Panel A of Table 4 presents the effects of sex and race on the probability of getting hired, using a logit model, from five different specifications (lines 1–5), where each model sequentially adds control variables relative to the previous model. Men have a somewhat lower probability of getting hired in the first three of five models, though not one that is significantly different from zero at the 5% or 10% level. But once

exposition, and reporting considerably without yielding additional insight.

[10]In the multivariate analyses in Tables 3–6 we excluded 261 observations for which we lacked information on one or more of the independent variables. This leaves data on 6,160 rather than 6,421 applicants and 371 rather than 387 hires.

one gets to line 4, with controls for occupation, the male disadvantage disappears, there is no difference in the probability of being hired between men and women. The overall difference between men and women is thus due to men applying for jobs where fewer hires are made. Going back to Table 1, it is clear what goes on. From columns 2–3 we see that 48.9% of the men and 28.2% of the women applied to technical and professional jobs. From columns 8 and 9 we see that 37.5% of the men and 20.2% of the women are hired into those jobs. The distribution of occupational positions of hires thus favors female applicants somewhat.

(Table 4 about here)

Turning to race, blacks clearly have a lower probability of getting hired, an effect of about –.25 for the logit coefficients. It is significantly different from zero at the 5 or 10% levels in four of the five formulations. In terms of partial effects, when the probability of getting hired among whites with a given set of characteristics is .05, then the estimate in the second line of Table 4 implies that the hire probability among blacks with the same set of characteristics is .037, clearly lower.[11] Asians are also less likely to be hired, but once English as first language is controlled (line 3), the disadvantage totally disappears. The point estimates of being Hispanic are negative in all five specifications, but none of the effects is significantly different from zero at any reasonable level and are substantively small.

Panel B of Table 4 reports the same logit analyses as in Panel A but also includes interaction effects between sex and race (cols. 4–7). Only the interaction effects of male and Hispanic reach statistical significance at the 5 and 10% levels. Hispanic males do quite poorly. According the estimates from the last line of Panel B, when the hire probability is .05 among white males with a given set of characteristics, then it is .013 among Hispanic males with same characteristics; a partial effect of –.037 on the hire probability.[12] None of the other coefficients reach statistical significance.

[11]This probability was computed as follows. The reference probability for whites with the given set of characteristics was set to P_W=.05, yielding a logit of L_W=ln[.05/(1 − .05)] = −2.9444. The partial effect of being black is –.3092, yielding a logit for blacks with the same characteristics of $L_B = L_W - .3092 = -3.2536$. To get the hire probability for blacks, one takes the anti-logit of L_B, namely $P_B = 1/[1 + \exp(-L_B)]$=.037.

[12]The procedure for computing the hire probability among Hispanics is the same as in the note above. Among whites the hire probability and logit are P_W=.05 and L_W=–2.9444. The partial effect of being Hispanic is –.0023 and the interaction effect of Hispanic and Male is –1.3831, yielding a logit for Hispanics with the same characteristics as the chosen group of whites of $L_H = L_W -$

There are small sex differences among whites. Black women do somewhat worse than white women, at each level of control. Asian and Hispanic women do about as well as white women, after English has been controlled. Black males do about as well as white males.

Multivariate Analysis: By Occupation

The above analysis pertained to hiring patterns in the entire organization, controlling for occupation. As mentioned above, one may ask whether these processes vary by occupation. The descriptive statistics were given in Table 2. Here we expand the multivariate results by reporting them separately by occupation.

To see if the processes vary by occupation we estimated the same models as in Table 4 but now separately for each occupation. As in Table 4, we report in Table 5 only the effects of sex and race in each occupation. Line 1 in Panel A gives the effect of being male and of race on getting hired for applicants in custodial occupations, while line 2 gives the same effects for applicants in clerical occupations, and so on. Panel B gives the same set of effects but after having controlled for age and education, and so on for Panels C and D. No blacks or Hispanics were hired into professional occupations, even though there were applicants from these groups. They were hence dropped from the analysis pertaining to that occupation. When included, their coefficients are estimated at about –15, and the other coefficients are very close to those reported.

(Table 5 about here)

In the entire table, of the 20 sex coefficients, only one reaches statistical significance at the 10% level, in clerical occupations (Pan. A), with a coefficient of .3840. In terms of size of nonsignificant coefficients, men are at a big disadvantage in custodial occupations. There is a moderate negative effect of being male on being hired in service occupations, and a moderate positive effect for men on being hired

$.0023 - 1.3831 = -4.3298$. The Hispanic hire probability then becomes $P_H = 1/[1 + \exp(-L_H)]$= .013. The partial derivative of the hire probability with respect to being a Hispanic male, evaluated at P_W=.05, is –.066 [=(–.0023 –1.3831)×.05×(1–.05)], a derivative which strictly is not defined for a binary independent variable. Some may interpret this partial derivative as implying that the probability drops with –.066, from .05 to a negative probability of –.016. We have therefore instead computed the partial effect on the actual probability, which is –.037 rather than –.066, avoiding any possibility of misinterpretation as a negative probability.

in professional occupations. Some of these effects are illustrated substantively below. For clerical and technical occupations the differences between men and women are smaller.

Note that the results for professional occupations are based on very few cases. There were 469 applicants for the professional jobs, 169 men and 300 women, but only 15 hires, 8 men and 7 women (a hiring rate of 3.2%). These are small numbers and percentages on which to base statistical analyses. No blacks or Hispanics were hired into professional jobs.

To illustrate what the results mean, consider the service occupations. From Panel C, for white women with average age and education (i.e., 35.9 and 15.1, see Tab. 2, Pan. C, col. 3), whose first language is English, the estimated hire probability is .1211, while for men with same characteristics it is .0647.[13] The partial effect of being male on the hire probability is thus –.0564, comparable to the male effect of –.044 (=.049–.093) in the descriptive statistics in Table 2 (Pan. C). In custodial occupations, if the probability of getting hired among women with a given set of characteristics is .05, then the estimate in Panel C implies that the hire probability among men with the same set of characteristics is .0162, yielding a partial effect of –0.0338.[14]

Summary

In summary, there is hence no evidence that women are discriminated against in the rating they receive at time of application or that they are discriminated against in the likelihood of getting hired. Women are at some advantage in overall hire probability, but this disappears once occupation is controlled. There are thus practically no differences between men and women on these accounts.

There are race differences. Blacks are at a small but clear disadvantage in getting hired. Hispanic men are at major and significant disadvantage in getting hired.

[13]For the model for service occupations in Panel C of Table 5, the estimated constant and the effects of age, education, and English as first language are –1.2085, –.0591, .0456, and .6598, not presented in table but used for computing the two reported probabilities. For women we then get the estimated logit as $L_F = -1.2085 - .0591 \cdot 35.9 + .0456 \cdot 15.1 + .6598 \cdot 1$ and the probability $P_F = 1/[1 + \exp(-L_F)]$=.1211. For the male probability, compute first the male logit by adding the male logit coefficient (–.6888) to the female logit L_F, yielding $L_M = -2.6706$, and then convert this sum into the probability, yielding $P_M = 1/[1 + \exp(-L_M)]$=.0647.

[14]The computation is based on same procedure as in notes 11 and 12.

When analyses are done separately by occupation, there are few differences between men and women in hire probability in the three occupations accounting for 94% of hires. In the other two, only 8 and 15 hires were made, making statistical analysis less meaningful. Blacks are however at a disadvantage in getting hired: much more likely than other groups in custodial occupations, but then significantly and much less likely in service occupations, insignificantly and less likely by a small margin in clerical and technical occupations, and then not hired at all in professional occupations. Nor were any Hispanics hired into professional occupations.

5 Results: Post-Hire Performance Evaluations

We discussed in Section 3 how the applicant test is designed to equalize scores across sex and race groups. In spite of equal scores on the test, hiring rates are higher for women than men and for whites than blacks and Hispanics. For men, the disadvantage is due to sex segregation on occupation applied for. These hiring differences might be interpreted as discrimination possibly against men but more clearly against blacks and Hispanics.

One may however ask, and hence pose as an alternative explanation, whether these differences in hiring rates could be justified by better performance by women and by whites once hired? What might appear then to be discrimination against men and especially against blacks and Hispanics may in fact be due to differences in predicted job performance, as assessed not through the application screening test, but through a subsequent job interview.

To recall, while the application screening test centers the mean scores to be the same for both sexes and races, free of any adverse impact, there is no such requirement for the post-hire performance evaluations. These can vary by sex and race, not being designed to minimize race and sex differences, and may clearly reflect actual performance differences, but may also reflect race or sex biases that supervisors have. It is important to keep in mind that we here look at differences in performance ratings in an already highly selected group, consisting of about 5 percent of the initial applicants.

Turning then to the hired applicants, Table 6 shows regression equations predicting their ratings one, three, and six months after initial hire, from five different

models in lines 1–5, where each model sequentially adds control variables relative to the previous model. The rating runs from a low of 1 to a high of 7, with mean of about 5.5 and standard deviation of about 1.0.[15] One month after hire men have an average rating that is one third of a point below the rating of women, also when controlling for several relevant variables. In all five equations this difference is significantly different from zero at the 5% level. The difference amounts to about a third of a standard deviation in rating, perhaps not a big difference, but nevertheless a difference.

(Table 6 about here)

After three months, men still have a lower rating than women, between a tenth and two-tenths of a point or standard deviation. In no case is this difference significantly different from zero at the 5% or 10% level. After six months, men have a rating that is about half of a point below the rating of women, or half of a standard deviation. In all five regression equations, the difference is significantly different from zero at the 5% or 10% level.

There is thus no evidence that women are discriminated against in the ratings they receive after hire. Nor is there evidence that they perform less well. There is clear evidence that men receive lower performance ratings than women, particularily six months after hire. This may reflect lower actual performance, or alternatively, the ratings may be biased against men, which is conceivable, given the female-dominated work setting.

Turning to race, the situation is clear. At each evaluation point blacks receive lower average ratings than whites, with about half a point or half a standard deviation. In each specification at each of the three time points, their lower rating is significantly different from zero at the 5% level. The effects of being Asian and Hispanic are overall small, and irrespective of small or big, never significantly different from zero at any reasonable level of significance.

The racial results call for a comment. Although the initial screening device was designed to avoid racial adverse impact, we observe a negative effect for blacks in the performance ratings one, three, and six months after hire. This can be attributed to

[15]Note that rating after hire, unlike rating at application, is a continuous variable. It is the average of three separate ratings, each on an integer scale of 1 to 7.

two possibilities. Since performance ratings are completed by management, any racial biases it has are included in the ratings. The lower rating for blacks could simply reflect that management has a biased view of blacks. Alternatively, there may be no biased or discriminatory view, but rather the organizational setting may not be equally well suited to each race succeeding, with blacks actually performing less well. Since the pre-employment screening device equalizes the predicted performance of each race it may create unrealistic expectations for post-hire performance.

In summary, there is thus evidence that women perform better than men, and that whites perform better than blacks. If the performance ratings are free of sex and race bias, these differentials may help explain why women and whites have higher rates of getting hired, in so far as the organization is able, through the job interview, to predict who will be a good performer. One may surmise that there even may be reverse discrimination against women and against whites in getting hired. Had the organizations hired even more women and even more whites, and correspondingly fewer men and blacks, the post-hire performance differentials between the sexes and races may have been smaller, to the extent that one then may have ended up hiring more marginal female and white workers and fewer marginal male and black workers, thus lowering the average performance of the former and raising it for the latter groups. If however the performance ratings are biased against men and blacks, then those groups are hired at too low a rate; the application screening tests rate them at the same level as other groups, the post-hire performance evaluations incorrectly give them too low ratings, and their hiring rates are lower than they should be. We cannot distinguish these two possibilities: actual performance differences versus biased evaluations.

6 Discussion

The hiring process is currently the least understood aspect of the employment relationship. It may very well be the most important for understanding the processes of stratification with allocation to jobs and firms of men and women, of whites, blacks and other minorities, and so on. Probably the most important reason for the lack of knowledge is that it is very difficult to assemble extensive data on the processes that occur at the point of hire.

We analyzed data on all applicants to a large service organization in the State of California in a 16 month period in 1993–1994. We investigated their rating at the time of application, whether they got hired or not, and the ratings received one, three, and six months after hire. Our primary focus is on gender, but we report also, for comparison, effects of race.

Overall differences between men and women are (a) negligible in rating received at time of application, (b) small but slightly in favor of women in probability of getting hired, and (c) clearly in favor of women for ratings after hire. The evidence points unambiguously in one direction: there is no disadvantage to being a women in getting hired in this organization, ignoring for the moment the possibe role of post-hire performance differentials by sex. To the extent there is a difference, it is to the advantage of women, an advantage that however disappears once control is made for occupation applied to. When analyses are done separately by occupation, there are few differences between men and women in getting hired in the three occupations accounting for 94% of hires. In the other two, only 8 and 15 hires were made, making statistical analysis less meaningful.

What there is evidence for is that blacks are at some disadvantage in getting hired and in ratings subsequent to hire. This is beyond question. At the largest disadvantage in getting hired we find Hispanic men. Whether this is due to legitimate factors or not we cannot assess from the available information. Among such factors are the type of education and experience applicants have.

Given our earlier discussion, it is not surprising that blacks appear to be at a disadvantage. If there is a dividing line, it is between blacks on one side and whites as well as other ethnic groups on the other, not between men and women.

The lower post-hire performance ratings of men and of blacks may explain why women and whites are hired at somewhat higher rates. The organization may be able, through the job interview, to predict who will be a good performer given the organizational context and constraints, leading it to hire fewer men and fewer blacks. If these performance ratings are free of sex and race bias, then there is even evidence of reverse discrimination against women and whites. The organization should have hired even more women and whites. However, it could also be the case that the post-hire performance ratings are biased against men and blacks, in which case they

suffer double penalties, lower rates of hiring and worse evaluations once hired.

We were surprised that there is no penalty to being female. Perhaps this reflects changes in the 1990s in hiring in large organizations? Perhaps it reflects that this is a female-dominated organization? On this we can only speculate. What is not speculation however, is that whatever disadvantage, if any, women later may accrue in this organization, it is not traceable to what happened at initial appointment. Rather it may be due to what supervisors subsequently do in promotion and similar decisions and perhaps more importantly to the adaptations women later make to family obligations.

It is difficult to say how representative this particular organization is and hence how generalizable our results are to practices in other organizations. The results are however similar to those obtained in the three other case studies of larger organizations using data on entire applicant pools in corporate America, two on a large bank, the third on a midsized high-technology organization, with very different sex compositions of their applicant pools (Fernandez and Weinberg 1997; Fernandez, Castillo, and Moore 2000; Petersen, Saporta, and Seidel 2000). Our results complement and extend these studies. They show no disadvantage to being female in getting hired. In addition comes the study from the federal bureaucracy, also showing a small advantage to being female in getting job offers (Powell and Butterfield 1997).

The similarities between the organizations are indeed striking. Most likely thus, the results from the three private-sector case studies are quite generalizable to other midsized to large organizations in services, banking, and high-technology. These comprise an important segment of organizations. Across the three studies, the organizations cover the entire spectrum from female- to male-dominated in terms of sex composition of their applicant pools, from an entire 80% female in the present organization, to 66% in Fernandez, Castillo, and Moore (2000), to 50% in Fernandez and Weinberg (1997), and to only 25% in Petersen, Saporta, and Seidel (2000). That the present organization is female dominated appears not to affect the results. Although both the present and the high-tech study control for a rather limited set of variables, the similarities in results between the two and with the banking study which controls for more variables, makes one more confident in the relevance and

perhaps generalizability of the findings.

Two studies use different types of research designs. Goldin and Rouse (2000) show a mixed pattern of results for hiring into symphony orchestras, with females doing worse under blind than open auditions, but for those who audition under both conditions, women do better than men under blind auditions in each of four audition rounds but better under open in only two rounds. Neumark (1996) finds clear sex differences, based on audit data, different from applicant pool data, allowing somewhat different inferences. Both pertain to much smaller and entirely different types of organizations and labor markets from that studied here and in the other case studies.

Taken as a whole, the balance of the evidence, albeit from a limited number of studies, is that hiring discrimination against women in mid-sized to large companies today possibly no longer is a major problem, as it may have been in the early 1980s (see Kirnan et al. 1989). Perhaps this is due to the long-term effects of legal constraints, perhaps it is due to extensive changes in the culture in how women are treated in the workplace.

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TABLE 1
Characteristics of All Applicants, of Applicants Not Hired, and of Hired Applicants

		All Applicants			Not Hired Applicants			Hired Applicants		
		All	Men	Women	All	Men	Women	All	Men	Women
Variable		1	2	3	4	5	6	7	8	9
Percent Female		80.6			80.4			83.5		
Percent Hired		6.0	5.1	6.2						
Age[a]	Mean	34.3	33.8	34.4	34.4	32.9	34.6	32.5	31.9	32.6
	SD	10.5	10.5	10.5	10.6	10.5	10.6	9.2	10.1	9.0
	Min	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	Max	72.0	72.0	72.0	72.0	72.0	72.0	60.0	60.0	60.0
Education[b]	Mean	14.1	14.2	14.1	14.1	14.2	14.1	14.2	14.1	14.2
	SD	1.8	1.9	1.8	1.8	1.9	1.8	1.8	1.9	1.7
	Min	6.0	9.0	6.0	6.0	9.0	6.0	10.0	10.0	10.0
	Max	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Percent English[c]		75.4	76.0	75.3	74.4	75.4	74.7	84.2	87.5	83.6
Occupation										
Custodial	Percent	4.3	14.4	1.9	4.5	14.9	1.9	2.1	4.7	1.6
Clerical		45.0	26.8	49.3	44.8	25.7	49.4	47.8	48.4	47.7
Service		18.5	9.9	20.6	17.9	9.9	19.9	27.1	9.4	30.7
Technical		24.9	35.4	22.4	25.3	35.9	22.7	19.1	25.0	18.0
Professional		7.3	13.5	5.8	7.5	13.6	6.0	3.9	12.5	2.2
Race										
White	Percent	46.2	43.1	46.9	45.8	42.5	46.7	52.2	53.1	52.0
Black		16.7	19.2	16.0	16.8	19.1	16.2	15.0	21.9	13.6
Hispanic		12.4	12.9	12.2	12.4	13.4	12.2	11.1	3.1	12.7
Asian		21.5	21.5	21.6	21.7	21.6	21.7	19.1	18.7	19.2
Other		2.5	2.9	2.4	2.5	2.9	2.4	2.3	3.1	2.2
Evaluation/Rating[d]										
At Application	% Low	23.0	23.8	22.9	24.1	24.5	23.9	7.5	10.9	6.8
	% Medium	40.1	37.6	40.7	39.9	37.6	40.4	43.4	37.5	44.6
	% High	36.7	38.3	36.3	35.9	37.6	35.4	49.1	51.6	48.6
	Mean	1.13	1.15	1.13	1.12	1.13	1.11	1.42	1.42	1.42
	SD	.76	.78	.76	.77	.78	.76	.63	.67	.62
After 1 month	Mean							5.5	5.3	5.6
	SD							1.1	1.1	1.0
	Min							1.0	2.6	1.0
	Max							7.0	7.0	7.0
After 3 months	Mean							5.5	5.4	5.5
	SD							1.0	0.9	1.0
	Min							2.0	3.6	2.0
	Max							7.0	7.0	7.0
After 6 months	Mean							5.5	5.0	5.6
	SD							1.1	0.9	1.1
	Min							1.8	4.0	1.8
	Max							7.0	6.5	7.0
N		6,421	1,244	5,177	6,034	1,180	4,854	387	64	323

Note: The data are taken from a large service organization, covering all applicants and all hirees into the organization in a 16 month period, April 1993 through August 1994. In the table, 'SD' stands for standard deviation, 'Min' for minimum, and 'Max' for maximum. Note that the percentages in a row in the table, for occupation, race, and evaluation/rating at application, do not always sum to 100.0 due to rounding errors.

[a]In the data, the age information is given in intervals, 20–25, 26–30, and so on. We assigned the midpoint of the interval in computing the means and standard deviations, and the bottom and top age in an interval when computing the minimum and maximum age.

[b]Education is measured in years of education, from 6 (only elementary school) to 17 (a university degree).

[c]This is the percent that has English as their first language.

[d]At the time of application employees are assigned a rating of low, medium, or high, above coded 0, 1, and 2. For those hired, ratings are done 1, 3, and 6 months after employment, on a continuous scale that runs from a low of 1 to a high of 7.

TABLE 2
Characteristics of All Applicants, of Applicants Not Hired, and of Hired Applicants, by Occupation

		All Applicants			Not Hired Applicants			Hired Applicants		
		All	Men	Women	All	Men	Women	All	Men	Women
Variable		1	2	3	4	5	6	7	8	9
PANEL A:		CUSTODIAL OCCUPATIONS								
Percent Female		35.4			34.6			62.5		
Percent Hired		2.9	1.7	5.1						
Age	Mean	33.9	31.9	37.5	33.8	32.0	37.3	36.3	30.0	40.0
Education	Mean	12.6	12.7	12.4	12.6	12.7	12.4	12.0	12.7	11.6
Percent English		68.6	75.4	56.1	68.8	75.6	55.9	62.5	66.7	60.0
Percent White		27.1	24.6	31.6	27.5	24.4	33.3	12.5	33.3	0.0
Rating at Application	% Low	21.7	22.9	19.4	22.3	23.3	20.4	0.0	0.0	0.0
	% Medium	46.6	45.8	48.0	46.5	46.0	47.3	50.0	33.3	60.0
	% High	29.6	29.6	29.6	29.0	29.0	29.0	50.0	66.7	40.0
N		277	179	98	269	176	93	8	3	5
PANEL B:		CLERICAL OCCUPATIONS								
Percent Female		88.4			88.8			83.2		
Percent Hired		6.4	9.3	6.0						
Age	Mean	33.4	30.5	33.7	33.5	30.8	33.8	31.5	27.1	32.4
Education	Mean	13.7	13.9	13.7	13.7	13.9	13.6	14.0	14.4	13.9
Percent English		80.2	78.7	80.3	79.8	77.6	80.0	85.9	90.3	85.1
Percent White		41.9	35.9	42.7	41.8	35.0	42.6	44.3	45.2	44.2
Rating at Application	% Low	26.0	23.1	26.4	27.1	24.4	27.4	9.2	9.7	9.1
	% Medium	39.1	38.9	39.1	38.9	38.9	38.9	41.1	38.7	41.6
	% High	34.9	38.0	34.5	33.9	36.6	33.5	49.7	51.6	49.4
N		2,888	334	2,554	2,703	303	2,400	185	31	154
PANEL C:		SERVICE OCCUPATIONS								
Percent Female		89.6			89.2			94.3		
Percent Hired		8.8	4.9	9.3						
Age	Mean	35.7	34.1	35.9	36.1	34.2	36.3	32.1	33.3	32.0
Education	Mean	15.1	14.9	15.1	15.1	14.9	15.1	15.0	15.3	15.0
Percent English		66.3	67.5	66.2	64.7	66.7	64.5	82.9	83.3	82.8
Percent White		48.7	45.5	49.1	47.6	44.4	47.9	61.0	66.7	60.6
Rating at Application	% Low	19.8	22.0	19.5	21.2	23.1	21.0	4.8	0.0	5.1
	% Medium	41.1	41.4	41.0	40.7	41.9	40.6	44.8	33.3	45.5
	% High	39.1	36.6	39.4	38.0	35.0	38.4	50.5	66.7	49.5
N		1,188	123	1,065	1,083	117	966	105	6	99
PANEL D:		TECHNICAL OCCUPATIONS								
Percent Female		72.5			72.2			78.4		
Percent Hired		4.6	3.6	5.0						
Age	Mean	33.4	33.9	33.2	33.4	33.8	33.2	34.0	35.6	33.6
Education	Mean	13.9	14.0	13.8	13.9	14.1	13.8	13.5	12.8	13.7
Percent English		71.8	71.1	72.0	71.2	70.8	71.4	82.4	81.3	82.8
Percent White		48.3	44.5	49.7	47.8	44.1	49.2	59.5	56.3	60.3
Rating at Application	% Low	21.3	26.8	19.1	22.0	27.4	20.0	6.8	12.5	5.2
	% Medium	39.1	30.9	42.2	38.8	30.9	41.8	44.6	31.3	48.3
	% High	39.6	42.3	38.5	39.1	41.7	38.1	48.6	56.3	46.6
N		1,600	440	1,160	1,526	424	1,102	74	16	58
PANEL E:		PROFESSIONAL OCCUPATIONS								
Percent Female		64.1			64.7			46.7		
Percent Hired		3.2	4.8	2.3						
Age	Mean	39.7	41.7	38.6	39.7	41.6	38.7	38.0	42.5	32.9
Education	Mean	16.3	16.2	16.4	16.4	16.2	16.4	15.5	15.4	15.7
Percent English		86.1	90.5	83.7	85.9	90.0	83.6	93.3	100.0	85.7
Percent White		69.9	71.4	69.0	69.8	71.3	68.9	73.3	75.0	71.4
Rating at Application	% Low	20.3	19.6	20.7	20.5	19.4	21.2	13.3	25.0	0.0
	% Medium	43.8	41.1	45.3	43.5	40.6	45.1	53.3	50.0	57.1
	% High	35.7	39.3	33.7	35.8	40.0	33.4	33.3	25.0	42.9
N		468	168	300	453	160	293	15	8	7

Note: For description of data see Sections 3 and 4. See notes to Table 1 for additional details on data and variables.

TABLE 3

Effects of Sex and Race on Rating at Application, Controlling for Other Variables That Are Sequentially Added. All Applicants. (Estimated Standard Errors in Parentheses)

Variables Sequentially Added	Male	Black	Asian	Hispanic
	1	2	3	4
No Other Controls	.0156 (.0146)	−.0526*(.0244)	−.0692*(.0248)	−.0032 (.0304)
Age, Education	.0106 (.0246)	−.0589*(.0279)	−.0893*(.0253)	−.0108 (.0314)
English	.0100 (.0246)	−.0541*(.0279)	−.0307 (.0317)	.0009 (.0321)
Occupation	.0023 (.0260)	−.0401 (.0281)	−.0220 (.0318)	.0234 (.0322)

*Significantly different from zero at the 5 percent level.

Note: For description of data see Sections 3 and 4. The dependent variable is the rating at hire, coded 0 (=low), 1 (=medium), and 2 (=high). The estimates are obtained by ordinary least squares. An ordered probit model gives the same substantive results as above. Line 1 includes only the dummy variables for sex and the race groups, with female and white being the reference category. Lines 2–4 sequentially add the following variables: Age and education as two continuous variables (in line 2); whether English is primary language (=1) or not (=0) (in line 3); and occupation as four dummy variables (in line 4). The five occupational groups are custodial, clerical, service, technical, and professional.

TABLE 4

Effects of Sex and Race on Getting Hired, Controlling for Other Variables That Are Sequentially Added. All Applicants. (Estimated Standard Errors in Parentheses)

Variables Sequentially Added	Male	Black	Asian	Hispanic	Male and Interaction of Black	Male and Interaction of Asian	Male and Interaction of Hispanic
	1	2	3	4	5	6	7
Panel A:	Without Interaction Effects of Sex and Race						
No other Controls	–.2007 (.1429)	–.2216 (.1535)	–.2421†(.0248)	–.2263 (.1729)			
Age, Education	–.2067 (.1433)	–.3092*(.1576)	–.3318*(.1421)	–.2880†(.1770)			
English	–.2112 (.1434)	–.2839†(.1579)	.0360 (.1728)	–.1699 (.1759)			
Occupation	.0158 (.1502)	–.2964†(.1594)	–.0099 (.1750)	–.1618 (.1808)			
Rating at Application	.0066 (.1508)	–.2719†(.1598)	–.0051 (.1755)	–.1746 (.1815)			
Panel B:	With Interaction Effects of Sex and Race						
No Other Controls	–.0798 (.1945)	–.2597 (.1760)	–.2115 (.1523)	–.0027 (.1805)	.2265 (.3722)	.1408 (.3711)	–1.5470*(.7558)
Age, Education	–.1083 (.1950)	–.3301†(.1789)	–.3143*(.1555)	–.0669 (.1851)	.2426 (.3728)	–.0994 (.3779)	–1.5349*(.7561)
English	–.1159 (.1950)	–.3060†(.1791)	.0516 (.1844)	.0487 (.1875)	.2500 (.3730)	–.1028 (.3787)	–1.5119*(.7565)
Occupation	.0970 (.2005)	–.3232†(.1805)	.0118 (.1863)	.0213 (.1885)	.2109 (.3769)	–.1131 (.3803)	–1.4623†(.7598)
Rating at Application	.0477 (.2014)	–.3163†(.1812)	.0096 (.1867)	–.0023 (.1894)	.3292 (.3789)	–.0471 (.3819)	–1.3831†(.7614)

*Significantly different from zero at the 5 percent level.
†Significantly different from zero at the 10 percent level.

Note: For description of data see Sections 3 and 4. The dependent variable is whether the person gets hired (=1) or not (=0). The estimates are coefficients from a binary logit model. See note to Table 1 for description of variables. In Panel A, line 1 includes only the dummy variables for sex and the race groups, with female and white being the reference category. Lines 2–5 sequentially add the following variables: Age and education as two continuous variables (in line 2); whether English is primary language (=1) or not (=0) (in line 3); occupation as four dummy variables (in line 4); and rating at application as one continuous variable (in line 5). The five occupational groups are custodial, clerical, service, technical, and professional. We also estimated the models using dummy variables for the rating at application. The results were the same as above. In Panel B, the variables are the same as in Panel A, but we add interaction terms between sex and race.

TABLE 5

Effects of Sex and Race on Getting Hired For Each Occupational Group, Controlling for Other Variables That Are Sequentially Added In Panels A Through D. All Applicants. (Estimated Standard Errors in Parentheses)

	Male	Black	Asian	Hispanic
Occupation	1	2	3	4
PANEL A:	Controlling For Sex, Race, and Occupation			
Custodial	–1.1787 (.7985)	1.6351 (1.147)	0.4445 (1.414)	0.1658 (1.429)
Clerical	0.3840†(.2128)	–0.1385 (.2070)	0.1382 (.1948)	–0.3931 (.2614)
Service	–0.6214 (.4359)	–0.8420†(.4397)	–0.9594*(.2880)	0.5220†(.3054)
Technical	–0.2163 (.2913)	–0.1651 (.3466)	–0.7842*(.3727)	–0.2938 (.4169)
Professional	0.7665 (.5308)		0.7979 (.6055)	
PANEL B:	Age and Education Added to Variables in Panel A			
Custodial	–1.3212 (.8625)	1.5892 (1.159)	0.2198 (1.484)	–0.1259 (1.482)
Clerical	0.3147 (.2142)	–0.2093 (.2099)	0.0145 (.1988)	–0.4385†(.2653)
Service	–0.6955 (.4392)	–1.0121*(.4534)	–1.2303*(.2970)	0.2978 (.3291)
Technical	–0.2004 (.2918)	–0.1855 (.3491)	–0.6987†(.3764)	–0.3173 (.4210)
Professional	0.7657 (.5463)		0.6685 (.6572)	
PANEL C:	English As First Language Added to Variables in Panel B			
Custodial	–1.1606 (.8750)	1.4137 (1.178)	–0.4920 (1.676)	–0.5000 (1.556)
Clerical	0.3138 (.2148)	–0.1906 (.2100)	0.3571 (.2341)	–0.3178 (.2685)
Service	–0.6888 (.4399)	–0.9785†(.4554)	–0.7890*(.3688)	0.4201 (.3353)
Technical	–0.2103 (.2902)	–0.1658 (.3500)	–0.4763 (.4554)	–0.2522 (.4269)
Professional	0.7026 (.5455)		1.2561†(.7315)	
PANEL D:	Rating at Application Added to Variables in Panel C			
Custodial	–1.0382 (.9072)	1.4754 (1.189)	0.0145 (1.661)	–0.3343 (1.567)
Clerical	0.2804 (.2167)	–0.1845 (.2108)	0.3698 (.2351)	–0.3351 (.2696)
Service	–0.6638 (.4415)	–0.9138†(.4574)	–0.8044*(.3683)	0.3968 (.3367)
Technical	–0.2255 (.2929)	–0.1351 (.3507)	–0.4241 (.4593)	–0.2247 (.4278)
Professional	0.7116 (.5468)		1.2505†(.7321)	

*Significantly different from zero at the 5 percent level.
†Significantly different from zero at the 10 percent level.

Note: For description of data see Sections 3 and 4. The dependent variable is whether the person gets hired (=1) or not (=0). The estimates are coefficients from a binary logit model. They are computed separately for each of the five occupations. Panel A includes only the dummy variables for sex, the race groups, with female and white being the reference category. The models in Panels B–D sequentially add the following variables to those in Panel A: Age and education as two continuous variables (in Panel B); whether English is primary language (=1) or not (=0) (in Panel C); and rating at application as one continuous variable (in Panel D). Thus, the model in Panel B contains in addition to age and education all the variables in Panel A; the model in Panel C contains in addition to English as first language all the variables in Panel B; the model in Panel D contains in addition to rating at application all the variables in Panel C. For sex, the reference category is female. For race, the reference category is white. There were both black and Hispanic applicants to professional occupations, but no blacks or Hispanics were hired into these. They were hence dropped from the analysis pertaining to that occupation. When included in the logit analysis, the coefficients for being black and for Hispanic are about –15, indicating that the hire probabilities for these groups are zero, with the other coefficients in the analysis close to those reported in the table.

TABLE 6
Effects of Sex and Race on Ratings One, Three, and Six Months After Hire, Controlling for Other Variables That Are Sequentially Added. Hired Applicants.
(Estimated Standard Errors in Parentheses)

Variables Sequentially Added	Male	Black	Asian	Hispanic
	1	2	3	4
PANEL A:	Rating After One Month			
Sex, Race	−.2926*(.1459)	−.5286*(.1553)	−.1760 (.1428)	−.0077 (.1790)
Age, Education	−.2940*(.1464)	−.5306*(.1635)	−.1935 (.1464)	−.0053 (.1871)
English	−.2957*(.1465)	−.5289*(.1636)	−.1233 (.1670)	.0187 (.1866)
Occupation	−.3463*(.1519)	−.5750*(.1664)	−.1605 (.1722)	.0512 (.1868)
Rating at Application	−.3553*(.1521)	−.5719*(.1669)	−.1563 (.1729)	.0571 (.1880)
PANEL B:	Rating After Three Months			
Sex, Race	−.1097 (.1992)	−.5698*(.2076)	−.2048 (.1874)	.0929 (.2184)
Age, Education	−.0706 (.2038)	−.5745*(.2185)	−.1708 (.1922)	.1164 (.2314)
English	−.0712 (.2026)	−.5495*(.2176)	.0561 (.2272)	.1630 (.2314)
Occupation	−.2371 (.2014)	−.5361*(.2167)	−.0662 (.2263)	.1545 (.2251)
Rating at Application	−.2378 (.2023)	−.5366*(.2174)	−.0669 (.2271)	.1530 (.2275)
PANEL C:	Rating After Six Months			
Sex, Race	−.5634†(.3065)	−.8583*(.3024)	−.0278 (.2544)	.0886 (.2783)
Age, Education	−.5019 (.3091)	−.6435*(.3100)	.0532 (.2532)	.3168 (.2877)
English	−.5024 (.3104)	−.6443*(.3112)	.0289 (.3154)	.3114 (.2917)
Occupation	−.5503†(.3133)	−.7049*(.3140)	−.0663 (.3249)	.2899 (.2928)
Rating at Application	−.5377†(.3128)	−.6647*(.3150)	−.0534 (.3244)	.3281 (.2939)

*Significantly different from zero at the 5 percent level.
†Significantly different from zero at the 10 percent level.

Note: For description of data see Sections 3 and 5. The three dependent variables (in Panels A–C) are the ratings one, three and six months after hire, among hired applicants, coded on a continuous scale from 1 (=low) to 7 (=high). It obtained as the average of three separate ratings, each on an integer scale of 1 to 7. The estimates are obtained by ordinary least squares. Line 1 includes only the dummy variables for sex and the race groups, with female and white being the reference category. Lines 2–5 sequentially add the following variables: Age and education as two continuous variables (in line 2); whether English is primary language (=1) or not (=0) (in line 3); occupation as four dummy variables (in line 4); and rating at application as one continuous variable (in line 5). The five occupational groups are custodial, clerical, service, technical, and professional. We also estimated the models using dummy variables for the rating at application. The results were the same as above.