

## CUSTOMER DISCRIMINATION AND EMPLOYMENT OUTCOMES FOR MINORITY WORKERS\*

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This paper investigates the effects of customer discrimination on the employment and earnings of minorities, particularly blacks. Data are used from a new survey of employers in four large metropolitan areas in the United States. Our results show that the racial composition of an establishment's customers has sizable effects on the race of who gets hired, particularly in jobs that involve direct contact with customers and in sales or service occupations. Race of customers also affects wages, with employees in establishments that have mostly black customers earning less than those in establishments with mostly white customers.

### I. INTRODUCTION

Empirical studies generally show that, even after controlling for individual productivity characteristics such as education and experience, blacks have lower levels of employment and earnings than whites. The residual earnings gap between races is commonly attributed to labor market discrimination.<sup>1</sup>

Becker [1971] has identified three possible sources of this discrimination: the prejudice of employers, workers, and customers. In his model, employer and coworker discrimination will not persist over time in competitive labor markets; some economists (e.g., Nardinelli and Simon [1990]) therefore conclude that any labor market discrimination that does persist most likely results from consumer prejudice.

In addition to its possible importance in explaining residual gaps in employment and earnings between blacks and whites, the potential presence of customer discrimination in the labor market is of interest for at least two related reasons. First, there is considerable evidence that blacks have been disadvantaged by job suburbanization (for reviews of this evidence see Holzer [1991] or Ihlantfeldt [1992]). However, the reasons for this remain some-

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1. Neal and Johnson [1996], among others, find that much of the racial gap in hourly earnings disappears when they control for racial differences in Armed Forces Qualifying Test (AFQT) scores. But Rodgers and Spriggs [1996] and Cawley et al. [1996] show that different components of the AFQT are rewarded quite differently between whites and blacks, raising questions about whether returns to these measures are really race-neutral. Also, a much smaller part of the racial difference in *employment* rates than wage rates is eliminated by this control.

what speculative. Kain [1968] has suggested that customer discrimination may account for the failure of inner-city blacks to follow jobs to the suburbs.<sup>2</sup>

Second, declining employment in manufacturing and the growth in services employment may have increased the proportion of jobs requiring face-to-face contact with consumers. If consumer discrimination exists, growth in consumer-contact may help to explain recent relative declines in the relative earnings and employment of blacks [Bound and Freeman 1992].

The theoretical effects of customer discrimination have been explored in some detail to date. Blacks could potentially avoid any adverse consequences associated with customer discrimination by segregating themselves into firms that sell only to nondiscriminatory customers [Cain 1986]. To the extent that employees in many sectors (such as manufacturing) have little contact with customers, or that discriminatory consumers do not mind contact with blacks in lower-status occupations (such as blue-collar jobs), there would be a relatively large set of jobs where the hiring and wages of blacks would be unaffected by the discriminatory tastes of white customers.

However, the extent to which blacks can avoid wage losses by segregating themselves in the workplace depends on several factors, such as the relative sizes of sectors in which they do and do not face discrimination and the production technologies of each, as well as the relative sizes of the black and white workforces. Thus, a relative "crowding" of blacks into jobs in the nondiscriminatory sectors may result in lower earnings for them, and perhaps for whites in that sector as well.<sup>3</sup> Furthermore, a

2. Evidence that employer discrimination is greater in the suburbs than in the central city is provided by Holzer [1996]. He shows that the ratio of new hires to job applicants from blacks is significantly lower in suburban than central-city establishments, even though skill needs in the former are generally lower and the relative skills of black applicants there are likely higher. The sources of prejudice underlying the discrimination, however, are not identified. Other causes of the continuing "spatial mismatch" might include transportation difficulties of inner-city blacks or information limitations or both. [Holzer, Ihlanfeldt, and Sjoquist 1994; Ihlanfeldt 1996].

3. Kahn [1991] presents a simple two-sector model with discrimination against blacks in just one sector and perfect mobility for workers of both races. In his model, the wages of blacks might decline in the presence of customer discrimination even with employment segregation, while the wages of whites will generally be unaffected. But imperfect worker mobility or constraints on labor demand in the discriminatory sector might also result in lower wages for whites who continue to work in the nondiscriminatory sector. On the other hand, if whites require "compensating differentials" for work in predominantly black firms or areas [Antos and Rosen 1975], this might counteract any tendency toward lower wages for them in these firms.

variety of other product and labor market characteristics might reduce the earnings of both blacks and whites in these jobs. For instance, firms in predominantly black neighborhoods might have lower capital-labor ratios or less advanced technologies than those in white neighborhoods [Bates 1993]. Their customers are likely to have lower incomes as well, perhaps leading to lower prices and product market rents and therefore lower wages in these firms.

In contrast to previous theoretical work on customer discrimination, the empirical evidence to date can best be described as fragmentary (based on very specific industries and occupations) or indirect. For instance, Kahn and Shearer [1988] analyze customer effects by focusing on the salaries of professional basketball players, while Nardinelli and Simon [1990] do so using the values of baseball cards for white and black players. Other analyses of customer discrimination in specific labor markets include Ihlanfeldt and Young's [1994] work on fast-food restaurants in Atlanta and Neumark's [1996] analysis of customer discrimination by gender in restaurants in Philadelphia. Broader but more indirect evidence appears in Ihlanfeldt and Sjoquist [1991] and Kenney and Wissoker [1994], both of which use the racial composition of residents in subcounty areas as proxies for customer composition of firms located in those areas.

This paper provides some new evidence on consumer discrimination in the labor market obtained from a unique new survey of employers. In contrast to previous work, the data allow for a much more direct examination of the issue across a more representative sample of firms and newly filled jobs. We use explicit information on the race of customers and newly hired employees at establishments, on the degree of contact employees have with the customers, and detailed controls for job and establishment characteristics (including location) to estimate the effects of customer composition on employment. Estimated effects on employee wages by race are provided as well.

## II. DATA AND ESTIMATION ISSUES

The data used in this paper are drawn from a new survey of employers that was administered between June 1992 and May 1994 to 800 employers in each of four large metropolitan areas: Atlanta, Boston, Detroit, and Los Angeles. The survey was administered over the phone to individuals responsible for hiring, and focused on the characteristics of overall employees, vacant

jobs, and the most recently filled job and hired worker at each establishment. Other characteristics of the establishment, such as its size, presence of collective bargaining, and the demographic composition of its applicants and customers, were gauged as well.

The sample of firms surveyed was drawn from two sources: roughly 30 percent were generated by employees who were respondents in a household survey in the same four metropolitan areas; and the rest were generated by lists provided by Survey Sampling Inc. (SSI).<sup>4</sup> The latter sample was drawn *ex ante* to reflect the distribution of workers across establishment size categories in the labor force; such a sample includes many more large establishments than would be found in a truly random sample of all establishments.<sup>5</sup> The sample drawn from the household surveys implicitly reflects this distribution as well. Thus, both samples are already weighted by employer size, permitting analysis of either individual jobs (such as the one most recently filled) at these firms or overall employment without using additional weighting for establishment size. Sample weights, however, are still necessary when analyzing the data to adjust for some nonrandomness in the chosen sample of establishments and jobs.<sup>6</sup> But response rates to the survey among firms that passed the screening averaged 67 percent, and there is little evidence of selection bias or additional nonrandomness induced by response patterns in the data.<sup>7</sup>

The results that we present below were obtained from estimating equations with the following general form

$$(1) \quad R_{jk} = \alpha + \beta CUS_{jk} + \gamma X_j + \delta X_k + \epsilon_{jk},$$

4. For analysis of data from another survey of firms drawn from SSI samples of employers see Barron, Black, and Bergor [1993]. The household and employers surveys in the four metropolitan areas are part of the Multi-City Study of Urban Inequality (MCSUI) funded by the Ford Foundation and the Russell Sage Foundation.

5. Establishments with 1–19, 20–99, and 100 or more workers were drawn to constitute 0.25, 0.50, and 0.25 of the sample, respectively.

6. The sample weights adjust for an underrepresentation of jobs in the sample that require college degrees (since the SSI part of the sample only asked about recently filled jobs that do not require college degrees). Sample weights also adjust for the nonrandomness of the household samples that generated some of the firms. The weights generate random (size-weighted) samples of establishments within each metropolitan area, which have roughly the same number of observations.

7. Since SSI provided data on industry, location, and establishment size for all firms, we could test for differences in response rates across these observable dimensions. We found only small or insignificant differences in most cases. The distributions of our establishments across industries and size categories are quite comparable to those found in *County Business Patterns* data in the same areas, and occupational distributions are also comparable to those found in the 1990 Census of Population. For more information see the Appendix to Chapter 1 in Holzer [1996].

where  $R$  denotes race (white, black, or Hispanic) of the last hired worker;  $CUS$  represents variables for the percentages of the firm's customers who are black and Hispanic; and the  $X$  reflect a variety of control variables; while  $j$  and  $k$  denote the last job filled and the establishment, respectively.  $CUS$  is measured by responses to the survey questions, "What percentage of the customers at your firm are \_\_\_?", where the question was asked repeatedly for blacks, Hispanics, and Asians.<sup>8</sup>

While estimating equations for the racial composition of all current employees would be more consistent with the theoretical models discussed above, defining the dependent variable as the race of the last worker hired has a number of advantages. First, the  $X_j$  variables can be used to control more fully for job characteristics (such as skill requirements) that might be correlated with both race of customers and employees, thereby limiting bias from unobserved heterogeneity across firms and jobs. Second, while the race of customers is likely to be endogenous with respect to the racial composition of employees, customers' race should be at least somewhat more exogenous with respect to the race of the last hired worker in the establishment.<sup>9</sup>

Some versions of equation (1) allow for separate effects of customer composition on white, black, and Hispanic employees; in these cases, variables measuring percent black and percent Hispanic among customers are included among the independent variables to allow for cross-group as well as own-group effects. Other equations that attempt to control more completely for unobserved heterogeneity focus only on blacks versus nonblacks among customers and employees. The customer variables are alternatively entered in continuous and categorical form (e.g., 0–24 percent, 25–49 percent, etc.) in all estimated equations, where the latter are used to capture nonlinearities in the customer composition effects.

8. We do not distinguish between whites and Asians in any of this work, since we found little evidence of customer composition effects on employment across these two groups.

9. If the racial composition of customers and the hiring process are time-invariant, there should be no essential difference between the two sets of estimates (except for the possible effects of the job-specific control variables). To the extent that there is variance over time in these measures, the race of the last hired worker would be the more appropriate measure conceptually, as it shows the effect of the current composition of customers on current hiring. In our data the correlation between percent of all employees who are black and the probability that the last worker hired is black is roughly 0.6, potentially indicating some time-variance in the employment process. Of course, there may be unobserved characteristics of establishments that are correlated with race of customers and both measures of employment.

One of the most attractive aspects of our data is that a wide range of controls is included among the  $X_j$  and  $X_k$  variables. The  $X_j$  include one-digit occupation dummies and a variety of dummy variables for the hiring requirements of jobs and the cognitive/social tasks performed on these jobs. The hiring requirements are a set of characteristics that applicants need to have in order to be hired; these include college or high school degree, general or specific experience, references, and previous training. The tasks must each be performed on a daily basis in the job; these include reading or writing of paragraph-length material, arithmetic calculations, direct contact with customers, or computer use.<sup>10</sup> The  $X_k$  include one-digit industry, establishment size, presence of collective bargaining, and geographic location both between and within the various metropolitan areas.

The controls for firm location within the MSA are particularly important, since intrametropolitan location is expected to be highly correlated with both customer composition and the presence of minorities in the pool of labor facing the firm. We therefore include several variables to measure this location: dummy variables for whether the establishment is located within the central city and for whether it is within a quarter mile of a public transit stop; and, most importantly, the average distance of the establishment to the locations of the white, black and Hispanic residents living within the metropolitan area.<sup>11</sup>

To more fully control for the *supply* of minority labor to any particular establishment, controls are included for the fractions of applicants for a job who are black and Hispanic. We also include

10. For more evidence on these variables and their effects on employment outcomes, see Holzer [1996]. Hiring requirements are counted here if the requirements were considered "absolutely necessary" or "strongly preferred."

11. To illustrate the computation of these distances, the average distance between the residential locations of blacks and the  $i$ th firm equals  $B_i * d_i + \sum B_j * d_{ij}$ ; where  $B$  is the fraction of the region's black population living in census tract  $i$  or  $j$ , where  $i$  represents the firm's census tract, and  $j$  represents the other census tracts in the region; where  $d_{ij}$  is the linear distance between the centers of tracts  $i$  and  $j$ ; and where  $d_i$  is the average distance between the center of tract  $i$  and all points in tract  $i$ .

These distances and the other locational variables might conceivably have served as instruments for the customer variables in equations for the racial composition of all employees at the firm. However, it is unlikely that they would be uncorrelated with the error term in these equations, since establishment location may be correlated with discrimination on the part of the employer. This might occur either because discriminatory employers *choose* to locate away from minority populations [Mieszkowski and Mills 1993], because proximity to minorities might raise employer concern about legal actions by minority applicants, or because proximity to minorities reduces negative stereotypes by the employer. For evidence on these issues see Holzer [1996] and Holzer and Ihlanfeldt [1996].

the race of the survey respondent (who was responsible for hiring at the establishment), to control for possible employer prejudice in hiring that might exist independently of customer discrimination effects. But both the race of applicants and respondents might themselves be functions of the racial composition of customers; and both, along with the race of customers, might simply reflect the geographic location of the establishment within the metropolitan area.<sup>12</sup>

Therefore, results are presented for three specifications of each equation: one without any controls for location within the metropolitan area or race of applicants and respondents (but with controls for job and firm characteristics more generally); one that adds controls for location; and one that also adds controls for race of applicants and respondents. These different estimates are provided in an attempt to identify the lower and upper bounds to the true effects.

Despite the controls described above, our results still might be driven by unobserved factors on the demand side of the labor market that are correlated with race of customers, such as differences in skill needs or other sources of employer discrimination. It is also possible that the estimated results are driven by labor *supply* behavior rather than demand, to the extent that our controls for the racial composition of job applicants for specific jobs might be measured with error or correlated with unobserved relative applicant *quality*.<sup>13</sup>

To deal with these possibilities, we include interactions between customers' race and customer contact or occupation or both in some of our estimated equations:

$$(2) \quad R_{jk} = \alpha_2 + \beta_2 CUS_{jk} + \gamma_2 X_j + \delta_2 X_k + \lambda_2 CUS_{jk} \cdot Z_j + v_{jk},$$

where  $Z$  represents either a dummy variable for customer contact or a set of occupation dummies.

These equations enable us to identify the consumer discrimi-

12. The racial composition of applicants to a firm might well reflect the racial preferences of the firm and its customers, since most job search models posit that expected employment outcomes influence how much or where workers search for jobs [Holzer 1988; Holzer et al. 1991]; in other words, the *supply* of workers to a firm adjusts to attributes of demand. The race of the person responsible for hiring might reflect previous hiring patterns, caused in part by customer preferences.

13. The survey question dealing with race of applicants did not explicitly specify the job filled by the most recently hired worker, although the introduction to that section of the survey did state that all questions in that section apply to that job. Comparisons of estimated effects of job characteristics on applications versus employment from blacks suggest that responses capture job-specific components of application rates to a large extent.

nation effect on hiring under fairly weak assumptions on the form of the unobserved heterogeneity. For instance, if we assume that any effects of customer composition on hiring into *noncontact* jobs reflect only unobserved heterogeneity and not consumer prejudices, then the difference between the estimated effects in contact and noncontact jobs yields an estimate of customer discrimination. This “difference-in-differences” (DD) estimate is unbiased so long as no customer contact-specific unobservables are correlated with customers’ race. Similarly, an estimate of consumer discrimination can be obtained by making comparisons of effects across occupations, if we assume that the effects of customer composition on hiring in blue-collar jobs reflects only unobserved heterogeneity. This alternative DD estimate is unbiased so long as no occupation-specific unobservables are correlated with customers’ race.

Finally, we can obtain a “difference-in-differences-in-differences” (DDD) estimate [Gruber 1994; Katz 1996] of customer discrimination from the coefficient on the interaction between customers’ race, contact, and occupation:

$$(3) \quad R_{jk} = \alpha_3 + \beta_3 CUS_{jk} + \gamma_3 X_j + \delta_3 X_k \\ + \lambda_{31} CUS_{jk} \cdot CONTACT_{jk} + \lambda_{32} CUS_{jk} \cdot OCC_{jk} \\ + \lambda_{33} CONTACT_{jk} \cdot OCC_{jk} \\ + \sigma_3 CONTACT_{jk} \cdot OCC_{jk} \cdot CUS_{jk} + \mu_{jk},$$

where *CONTACT* and *OCC* represent contact and occupation, respectively.

The DDD estimate is unbiased under even weaker assumptions than the DD estimates; namely, there exist no occupation-specific differences between contact and noncontact jobs by the fraction of customers who are black. But since the DDD estimates are based on differences across small cells and attribute a great deal of the observed effects of customer race on employment to heterogeneity (as we note below), we put less emphasis on these results.<sup>14</sup>

14. The results presented here differ from earlier preliminary estimates of customer effects on hiring [Holzer 1996; Holzer and Ihlanfeldt 1996] by focusing on Hispanics as well as on blacks, including better controls for other characteristics of jobs and establishments, allowing for nonlinear effects of customer race on hiring, and using DD and DDD estimates to eliminate the effects of unobserved heterogeneity.

### III. EMPIRICAL RESULTS

#### *A. Summary Statistics*

Table I presents summary data on the racial composition of customers in each of the four metropolitan areas.<sup>15</sup> The data include means (and standard deviations) on the percentages of each establishment's customers who are black or Hispanic. Also reported are the distributions of establishments across quartile categories of black and Hispanic customers. The data are presented for all firms and separately by central city/suburbs for the full sample and for each MSA. All means and tabulations are sample-weighted.<sup>16</sup>

The results show that blacks and Hispanics constitute approximately 19 percent and 12 percent, respectively, of the customers in the full sample of establishments. Thus, a strong majority (over two-thirds) of the customers in these firms are white. Indeed, blacks constitute fewer than a fourth of all customers in over 70 percent of the establishments, while the comparable number for Hispanics is over 80 percent.

Percentages of black customers are somewhat higher in Atlanta and Detroit than in Boston and Los Angeles, while the opposite is true for Hispanics. Black customers are also more heavily concentrated in firms located in the central cities than in the suburbs.<sup>17</sup> All of these characteristics strongly parallel the presence of blacks and Hispanics in the relevant residential

15. As noted in the table, 2206 and 2164 establishments reported the percentage of customers who are black and Hispanic, respectively. Missing values on customer's race resulted from nonresponse and the fact that the customer composition questions were added to the survey after some firms had already been interviewed. The means of all variables included in our analysis are highly similar between the beginning sample of 3200 establishments and the above smaller samples.

16. Roughly 9 percent of all establishments originally had sample weights either above 5 or below 0.1 in value. These outlier weights have virtually no effect on any of our results except for those in the mostly minority customer categories, where sample sizes are fairly small. Therefore, we have capped all sample weights above 5 (and below 0.1) at those values. Small variations in the level of the caps (e.g., changing the upper cap to 3 or 7) have virtually no effect on estimated outcomes, while capping reduces the effect of having mostly black customers on employment outcomes by a few percentage points relative to no capping.

17. The "suburbs" are defined as all areas outside of the primary central city in each metropolitan area, including other central cities (e.g., Pontiac and Dearborn in the Detroit MSA, Marietta in the Atlanta MSA, and Cambridge and others in Boston) and heavily black residential areas outside of the central cities. When the latter are omitted from suburban areas, the percentages of black customers in the suburbs declines from 16 percent to just under 15 percent.

TABLE I  
 RACIAL COMPOSITION OF CUSTOMERS: SUMMARY STATISTICS

	All 4 MSAs			Atlanta			Boston			Detroit			Los Angeles		
	TOT	CC	SUB	TOT	CC	SUB	TOT	CC	SUB	TOT	CC	SUB	TOT	CC	SUB
<b>Blacks</b>															
Mean	.185	.239	.166	.262	.324	.239	.130	.222	.110	.210	.394	.181	.135	.145	.128
(S.D.)	(.211)	(.234)	(.196)	(.236)	(.267)	(.216)	(.166)	(.215)	(.142)	(.243)	(.256)	(.222)	(.157)	(.148)	(.163)
Distribution:															
.00-.24	.704	.603	.739	.541	.462	.571	.815	.612	.861	.651	.377	.696	.810	.760	.843
.25-.49	.191	.224	.180	.279	.277	.280	.123	.221	.101	.206	.187	.209	.151	.196	.121
.50-.74	.072	.104	.061	.124	.144	.117	.050	.119	.034	.088	.217	.067	.027	.040	.019
.75-1.00	.033	.069	.020	.055	.116	.032	.012	.048	.004	.056	.219	.029	.012	.004	.017
Sample size	2206	654	1552	622	191	431	571	119	452	429	96	333	584	248	336
<b>Hispanics</b>															
Mean	.124	.148	.115	.058	.050	.061	.095	.121	.088	.044	.056	.042	.274	.253	.288
(S.D.)	(.189)	(.198)	(.184)	(.074)	(.069)	(.076)	(.137)	(.134)	(.138)	(.066)	(.054)	(.068)	(.261)	(.259)	(.262)
Distribution:															
.00-.24	.827	.769	.847	.960	.961	.960	.898	.851	.909	.977	.951	.981	.519	.551	.499
.25-.49	.113	.155	.099	.036	.034	.036	.078	.124	.068	.020	.049	.015	.291	.281	.297
.50-.74	.034	.038	.033	.004	.005	.004	.009	.009	.009	.003	.000	.004	.111	.083	.130
.75-1.00	.025	.038	.021	.000	.000	.000	.015	.017	.014	.000	.000	.000	.079	.085	.075
Sample size	2164	647	1517	615	189	426	553	117	436	407	92	315	589	249	340

All means are sample-weighted. CC and SUB refer to firms located in the central city and suburbs of each metropolitan area, respectively.

populations for these areas.<sup>18</sup> Interestingly, even in the central cities, blacks are 50 percent or more of customers in just 17 percent of all establishments (a figure that rises to 44 percent in central city Detroit). The comparable figure for Hispanics is 8 percent (and 17 percent in Los Angeles).

The predominance of white customers in the vast majority of establishments accounting for new employment could lead to major negative effects on the employment or earnings of minority workers. Even if the preferences of minority consumers are as strong as those of whites, the relatively small number of establishments that have majorities of customers who are black or Hispanic (as well as the lower incomes of these minority groups) implies that whites may be less disadvantaged by consumer discrimination than minority groups may be.

Table II presents sample-weighted means on the percentages of newly hired workers who are black or Hispanic by the percentages of customers who are members of each group. Also presented are means on race of new hires by whether the job involves direct contact with customers and by occupation. The customer contact variable is based on a survey question for how frequently individuals in the job "talk face-to-face with customers or clients;" we define a dummy variable that equals one when jobs involve daily or weekly customer contact and zero otherwise.<sup>19</sup> Differences in minority employment rates between establishments with many and few minority customers, between jobs with and without customer contact, and between blue-collar and other occupations are also presented (along with standard errors), as are implied DD estimates between race of customer category and customer contact or occupation. These DD estimates, which are unadjusted for other covariates, provide a comparison set of estimates to the regression-adjusted estimates presented below.

The results show that the hiring of blacks or Hispanics rises quite dramatically with the percentages of customers who are

18. For instance, blacks and Hispanics constitute an (unweighted) average of roughly 17 percent and 12 percent of the respective populations in these four metropolitan areas.

19. The survey question inquired whether contact occurred at least daily, weekly, monthly, or not at all. The distribution of responses across these categories was roughly 0.70, 0.06, 0.02 and 0.22; thus, the estimates of consumer discrimination we present below changed very little when we redefined the contact variable as daily versus nondaily contact or any degree of contact versus none. A separate question was also asked regarding contact with customers over the phone. When we allow our variable to include this type of contact, results are also quite similar to those reported here (since the two contact variables are highly correlated).

TABLE II  
 MINORITIES AMONG LAST WORKER HIRED: MEANS (STANDARD ERRORS)

	Blacks					Hispanics				
	All jobs	Black customers:				All jobs	Hispanic customers:			
		.00-.24	.25-.49	.50-1.00	Diff.		.00-.24	.25-.49	.50-1.00	Diff.
All jobs	.176	.099	.253	.561	.462 (.070)	.150	.094	.340	.566	.472 (.118)
By customer contact:										
Without	.170	.122	.272	.466	.344 (.079)	.183	.146	.472	.500	.354 (.119)
With	.179	.090	.247	.580	.490 (.029)	.139	.075	.313	.576	.501 (.051)
Difference	-.009 (.019)	-.032 (.019)	-.025 (.052)	.114 (.082)	.146 (.084)	-.044 (.019)	-.071 (.019)	-.159 (.081)	.076 (.128)	.147 (.129)
By occupation:										
Professional/managerial	.117	.069	.180	.441	.372	.094	.056	.226	.299	.243
Clerical	.178	.102	.265	.537	.435	.148	.088	.285	.709	.621
Sales	.183	.041	.223	.598	.557	.103	.035	.320	.724	.689
Service	.306	.173	.407	.753	.580	.153	.103	.369	.559	.456
Blue-collar	.164	.128	.234	.450	.322	.261	.192	.635	.653	.461
Difference relative to Blue-collar:										
Prof./mgt.	-.047 (.025)	-.059 (.024)	-.054 (.069)	-.009 (.103)	.050 (.106)	-.167 (.026)	-.136 (.025)	-.409 (.097)	-.354 (.141)	-.218 (.143)
Clerical	.014 (.025)	-.026 (.024)	.031 (.065)	.087 (.099)	.113 (.102)	-.113 (.026)	-.104 (.025)	-.350 (.087)	.056 (.125)	.160 (.127)
Sales	.019 (.029)	-.087 (.025)	-.011 (.072)	.148 (.098)	.235 (.102)	-.158 (.027)	-.157 (.024)	-.315 (.112)	.071 (.139)	.228 (.141)
Service	.142 (.032)	.045 (.034)	.173 (.077)	.303 (.093)	.258 (.098)	-.108 (.029)	-.089 (.028)	.266 (.115)	-.094 (.157)	-.005 (.159)

All means are sample-weighted. Standard errors appear in parentheses under estimates of "differences" in sample means. Differences across customer racial categories (in the fifth and tenth columns) reflect differences between categories with the highest (.50-1.00) and lowest (.00-.24) percentages of customers from each group. Sample sizes are 2036 for blacks and 2001 for Hispanics.

members of each group. Specifically, the percentages of new hires who are black or Hispanic each rise from about 10 percent to 60 percent as we move from customers who are predominantly white to those who are mostly black or Hispanic, respectively.

Furthermore, these differentials by race of customers are larger (by about fifteen percentage points for both blacks and Hispanics) in jobs involving direct contact with customers than in jobs without such contact. These DD estimates are significant at the 5 and 13 percent levels for blacks and Hispanics, respectively. Within occupational groups, the differences in black employment across customer categories are significantly larger (at the 1 percent level) in the sales and service categories than in blue-collar jobs. The difference in clerical jobs is also larger than the difference in blue-collar jobs, but this DD estimate is only half the size as those for sales and service jobs and is not quite significant at the 10 percent level. The differences in employment across customer categories within occupational groups for Hispanics are larger in clerical and sales jobs (but smaller in professional/managerial jobs) relative to the blue-collar category. These differences are all statistically significant at the 10 percent level. Overall, the DD estimates of Table II by both customer contact and by occupation suggest that customer discrimination effects on employment can be found even after controlling for unobserved heterogeneity across jobs and establishments.

The differences in minority employment rates between contact and noncontact jobs and between white-collar/service and blue-collar jobs are generally negative in establishments with predominantly white customers and positive in establishments with predominantly black or Hispanic customers.<sup>20</sup> These estimates imply that customer discrimination can be found among both white and minority customers, a point which we discuss in more detail below.<sup>21</sup>

20. Given that a large majority of establishments have predominantly white customers, we further subdivided this category into subsamples with 0.00–0.04 black customers, 0.05–0.09 black customers, etc. No significant differences across these subsamples were observed in the difference or DD estimates, although the presence of black employees (especially in contact jobs) generally rises with their representation among customers across these subsamples.

21. The unweighted data were also used to compute Table II. Results were obtained similar to those reported in Table II, except that the difference in the employment rate of blacks between contact and noncontact jobs in establishments with predominantly black customers is roughly seventeen percentage points with the unweighted data, instead of the eleven-point difference found in Table II. This increases the DD estimate by customer contact from 0.15 to 0.20. The sample weights appear to place relatively greater weight on those establishments with predominantly black customers in which white employees have been hired into contact jobs.

TABLE III  
EFFECTS OF CUSTOMER COMPOSITION ON RACE OF LAST HIRE

	Whites			Blacks			Hispanics		
	1	2	3	1	2	3	1	2	3
A. Continuous customer measures									
Percent customers:									
Black	-.625 (.051)	-.538 (.053)	-.314 (.056)	.704 (.041)	.629 (.043)	.357 (.046)	-.079 (.037)	-.090 (.039)	-.043 (.041)
Hispanic	-.297 (.064)	-.272 (.064)	-.044 (.067)	-.194 (.052)	-.192 (.052)	-.131 (.054)	.492 (.047)	.463 (.048)	.175 (.049)
$R^2$	.244	.261	.327	.251	.265	.333	.284	.295	.368
B. Categorical customer measures									
Percent black:									
.25-.49	-.116 (.026)	-.093 (.026)	-.053 (.025)	.126 (.021)	.103 (.021)	.059 (.020)	-.009 (.019)	-.010 (.019)	-.006 (.019)
.50-.74	-.296 (.039)	-.250 (.039)	-.149 (.038)	.338 (.031)	.298 (.032)	.194 (.031)	-.043 (.028)	-.048 (.029)	-.045 (.028)
.75-1.00	-.544 (.053)	-.475 (.054)	-.276 (.055)	.598 (.043)	.541 (.044)	.309 (.045)	-.054 (.039)	-.065 (.040)	-.033 (.041)
Percent Hispanic:									
.25-.49	-.039 (.034)	-.029 (.034)	.007 (.033)	-.080 (.027)	-.076 (.027)	-.070 (.026)	.119 (.025)	.105 (.025)	.063 (.024)
.50-.74	-.134 (.055)	-.122 (.055)	-.012 (.053)	-.063 (.044)	-.062 (.044)	-.054 (.043)	.197 (.041)	.185 (.041)	.066 (.039)
.75-1.00	-.304 (.064)	-.268 (.064)	-.075 (.066)	-.102 (.052)	-.111 (.052)	-.039 (.053)	.406 (.047)	.379 (.047)	.113 (.048)
$R^2$	.241	.259	.328	.252	.267	.337	.280	.292	.368

Sample size is 1978. Column 1 estimates include controls for MSA, collective bargaining, establishment size, performance of tasks (arithmetic, computer use, reading/writing, customer contact), hiring requirements (college or high school diploma, general or specific experience, previous training, references), industry and occupation dummies, and use of Affirmative Action in hiring (along with some dummies for missing values). Column 2 equations add controls for location in the central city, being within a quarter mile of a public transit stop, and average distance of the establishment to the white, black, and Hispanic populations in the MSA. Column 3 adds controls for race of applicants and survey respondent. Estimated equations are sample-weighted.

### B. Equations for the Race of the Last Worker Hired

Table III presents results from estimated versions of equation (1). Reported are the estimated effects of customer racial composition on the probability that the last hired worker was white, black, or Hispanic obtained from linear probability models estimated for all three groups.<sup>22</sup> To facilitate comparisons between the esti-

22. For some discussion of the properties of linear probability models with multiple outcomes relative to multinomial logit equations, see Ehrenberg and Marcus [1980]. Coefficients on any variable sum to zero across the three equations.

mates of Table II and the regression-adjusted estimates, all of the regression results reported below are based on the weighted data (although all equations were also estimated with the unweighted data).<sup>23</sup>

The results from equations in which the percentages of customers who are black or Hispanic enter in continuous form are reported at the top of the table, while the results with the quartile dummy variables appear at the bottom. One column of estimates is presented for each of the three specifications described above: i.e., column 1 omits controls for location within the MSA and race of applicants and respondents; column 2 includes controls for location within the MSA; and column 3 includes all of these variables. Controls for other establishment and job characteristics are included in all three specifications.<sup>24</sup>

The means of these control variables by the four customer racial categories are presented in Appendix 1, while the coefficients on these control variables from the specification in column 3 appear in Appendix 2.<sup>25</sup> While the correlations among race of customers, location, and race of applicants/respondents are relatively high, a fair amount of independent variation can still be observed in the customer variables.<sup>26</sup>

23. The results presented in Table III (difference estimates) and Table V (DD estimates by occupation) are virtually unaffected by sample weighting, while those presented in Table IV (DD estimates by customer contact) are somewhat reduced by weighting, which is consistent with Table II. Standard errors on all estimates are largely unaffected by weighting, suggesting that the latter has not induced heteroskedasticity.

24. The sample size for all regressions in Table III is 1978, which is the number of firms that reported race of last worked hired and both percent black and percent Hispanic customers. The sample size for the regressions in Table IV through VI is 2036, which is the number of firms that reported race of last hire and percent black customers.

25. The means in Appendix 1 suggest that establishments with predominantly black customers are somewhat larger and more unionized, have lower task and hiring requirements, are more likely to be in retail trade and have sales/service occupations, are more likely to be located in the central city (near public transit and the black residential populations), and have many more black applicants and survey respondents than those with predominantly white customers. The regression coefficients in Appendix 2 suggest that most of these characteristics contribute to the relatively greater employment of blacks in these establishments, thus reducing the estimated effects of having black customers.

26. For instance, in regressions in which the dependent variables are the percentages of black or Hispanic customers, including independent variables for location within the MSA alone generates an  $R^2$  of 0.07 or 0.10, respectively; the locational and other racial variables (i.e., those for applicants and respondents) together generate 0.31 or 0.35, respectively. In the quartiles of the sample with the lowest and highest distances to the black population, black customers average 0.23 and 0.13 of the total, respectively, and percentages of establishments with predominantly white customers are 0.63 and 0.81. In quartiles with the lowest and highest percentages of black applicants, black customers average 0.08 and 0.36 of the total, respectively, and percentages of establishments with predominantly white customers are 0.88 and 0.37.

The results of Table III show that the presence of black or Hispanic customers at an establishment has significant positive effects on the hiring of employees from these groups and significant negative effects on the hiring of whites. The magnitudes of these effects are somewhat reduced when controls are added for location and decline even more when the other racial variables are included, but the effects remain statistically significant.<sup>27</sup> These results suggest that consumer discrimination contributes to the racial segregation of the workforce, as predicted by the theoretical models found in the literature.

The estimated coefficients indicate that a twenty-percentage-point (or roughly one-standard-deviation) increase in the fraction of customers who are black increases the probability that blacks will be hired by seven–fourteen percentage points (or 17–35 percent of a standard deviation in hiring). For Hispanics the comparable effects are two–eleven percentage points (or about 5–28 percent of a standard deviation).<sup>28</sup> The own-group estimates for blacks are larger than those for Hispanics (relative to the reference group of white customers in each case), which suggest the possibility of stronger antipathies between whites and blacks than between whites and Hispanics (although we cannot directly infer from these estimates the actual prejudices of each racial group of customers).

The estimated effects of Hispanic customers on the hiring of blacks as well as black customers on the hiring of Hispanics are both negative and significant with the former effect being somewhat larger than the latter. These estimates are at least consistent with greater dislike between the two minority groups than between either of them and whites (the reference group), and also with greater dislike of blacks among Hispanics than vice versa.

The estimates using the quartile categories for racial composition of customers as independent variables show that effects of customer racial composition rise monotonically for both blacks and Hispanics, with employment probabilities being significantly higher than for the omitted group (i.e., customers who are no more

27. The large declines in the magnitudes of estimated effects as we add controls between columns 1 and 3 suggest that even better controls for skill requirements and location could further reduce these estimates. On the other hand, since the customer composition variables are undoubtedly measured with some error, the estimates presented in Tables II and III likely understate the true effects of these variables.

28. The sample-weighted standard deviations on the employment of blacks and Hispanics are 0.409 and 0.393, respectively.

that one-fourth black or Hispanic) in each category. The results also suggest some nonlinearity in these effects: specifically, the probability of hiring each minority group rises substantially at establishments where the group's customers constitute three-fourths or more of the total.

Although not reported for reasons of space, separate estimates were also generated for particular subsets of the sample. First, the sample was stratified by whether or not the firm is part of the retail trade sector. Results did not differ significantly between the retail trade and other sectors, even though the customers in the former sector are more likely to be private consumers rather than the owners or employees of other businesses.<sup>29</sup> Second, separate estimates by gender reveal that the racial composition of customers has somewhat larger effects on the hiring of black and Hispanic females than their male counterparts, which may reflect the greater tendency of females to be found in jobs with direct customer contact. Finally, separate equations were estimated for each of the four metropolitan areas. Estimated customer composition effects are highly similar across these areas.<sup>30</sup>

### *C. DD and DDD Estimates by Customer Contact or Occupation or Both*

To the extent that consumers prefer dealing with employees who are members of their own racial group, this should matter more in some kinds of jobs than in others. For instance, white customers may not mind dealing with blacks in a low-status occupation, such as those within the blue-collar category. It also seems plausible that the racial composition of customers will matter more for hiring into jobs that involve direct contact with customers, especially in occupations (such as sales or some service jobs) where there is greater intensity of face-to-face interaction.

Tables IV and V therefore present DD estimates of the effects of customer racial composition on employment from equation (2) above, which include interactions between customer racial categories and customer contact or occupation. In each case we present results from two estimated equations, corresponding to the first

29. The same survey question for race of customers was asked of all establishments. For wholesale trade or manufacturing firms, this question likely refers to those individuals at other companies (including proprietors) who work as purchasers.

30. More details on all of these estimates are available from the authors.

TABLE IV  
EFFECTS OF BLACK CUSTOMERS ON THE HIRING OF BLACKS:  
BY CUSTOMER CONTACT

	Difference (D) estimates		Difference-in differences (DD) estimates: by customer contact	
	1	2	1	2
Percent black customers:				
.25-.49	.109 (.020)	.043 (.020)	.082 (.042)	.015 (.040)
.50-1.00	.407 (.026)	.217 (.028)	.272 (.061)	.143 (.058)
Customer contact	.000 (.019)	.011 (.018)	-.019 (.022)	-.003 (.021)
Percent black customers by contact:				
.25-.49	—	—	.036 (.048)	.037 (.045)
.50-1.00	—	—	.165 (.066)	.092 (.063)
$R^2$	.226	.312	.228	.313

Columns 1 and 2 here contain the same control variables as columns 1 and 3 in Table III. Sample size is 2036. Estimated equations are sample-weighted.

and third specifications used in Table III (i.e., omitting or including within-MSA location and other racial characteristics of the establishment). Cell sizes for the interactions are too small to separately consider Hispanics in the analysis. Results are therefore presented from estimated linear probability models in which the dependent variable is one if a black is hired and zero otherwise.<sup>31</sup>

In Table IV we present simple “difference” (D) estimates and DD estimates based on interactions between customer racial composition and the dummy variable for customer contact; the coefficients on the interaction terms indicate the difference in effect customers’ race has on contact in comparison to noncontact jobs, and therefore equal the DD estimates. The results show D estimates that are fairly comparable in magnitude to those of

31. In order to maintain cell sizes and be consistent with Table II, we combine firms in the top two categories of percent black customers into a single category. Sample sizes in Tables IV through VI are also expanded somewhat above that in Table III, since we no longer need to omit observations that have missing values for Hispanic customer shares.

TABLE V  
EFFECTS OF BLACK CUSTOMERS ON THE HIRING OF BLACKS:  
BY OCCUPATION OR CONTACT

	Difference-in-differences (DD) estimates: by contact or occupation			
	1	2	3	4
Percent black customers:				
.25-.49	.040 (.057)	.005 (.054)	.034 (.057)	-.000 (.054)
.50-1.00	.169 (.083)	.058 (.079)	.176 (.084)	.060 (.080)
Customer contact	-.017 (.022)	-.003 (.021)	-.016 (.022)	-.002 (.021)
Occupation:				
White-collar	-.053 (.026)	-.048 (.025)	—	—
Prof./manag.	—	—	-.052 (.031)	-.053 (.029)
Sales	—	—	-.087 (.075)	-.075 (.033)
Clerical	—	—	-.041 (.030)	-.034 (.029)
Service	.003 (.036)	-.002 (.034)	.002 (.036)	-.002 (.034)
Black customers × contact:				
.25-.49	.025 (.049)	.033 (.046)	.036 (.050)	.043 (.047)
.50-1.00	.128 (.067)	.061 (.064)	.117 (.069)	.057 (.066)
Black customers × occupation:				
White-collar				
.25-.49	.045 (.056)	.007 (.053)	—	—
.50-1.00	.126 (.077)	.104 (.073)	—	—
Prof./manag.				
.25-.49	—	—	.003 (.065)	-.023 (.062)
.50-1.00	—	—	.052 (.090)	.042 (.086)
Sales				
.25-.49	—	—	.051 (.070)	.009 (.067)
.50-1.00	—	—	.200 (.090)	.150 (.085)

TABLE V  
(CONTINUED)

	Difference-in-differences (DD) estimates: by contact or occupation			
	1	2	3	4
Clerical				
.25-.49	—	—	.074 (.062)	.029 (.059)
.50-1.00	—	—	.131 (.086)	.120 (.081)
Service				
.25-.49	.138 (.073)	.067 (.070)	.136 (.073)	.065 (.070)
.50-1.00	.265 (.096)	.234 (.091)	.267 (.091)	.234 (.091)
$R^2$	.231	.314	.232	.317

Sample size is 2036. Columns 1 and 3 here contain the same control variables as column 1 in Table III, while columns 2 and 4 here contain the same controls as column 3 in Table III. Omitted occupational category is blue-collar. Estimated equations are sample-weighted.

Table III for blacks. A comparison of columns 1 and 2 of Table IV indicates that the inclusion of the full range of control variables reduces the magnitude of the D estimates by more than one-half, but they remain highly significant. In comparison to the D estimates, the DD estimates are about half as large in magnitude, but are both at least marginally significant when comparing jobs at establishments with predominantly black versus predominantly nonblack customers.<sup>32</sup> Race of customers, therefore, is found to have a stronger effect on the hiring of blacks into contact in comparison to noncontact jobs.

A second set of DD estimates is obtained by interacting the categories of customer racial composition with sets of occupational dummy variables. These appear in Table V. The DD estimates by occupation reported in columns 1 and 2 of Table V are based on dummy variables for jobs in white-collar and service occupations, with blue-collar jobs serving as the reference category. The DD estimates in columns 3 and 4 disaggregate white-collar jobs into sales, clerical, and professional/managerial categories.

32. For ease of exposition, establishments with predominantly black customers and those with predominantly nonblack customers are henceforth identified as "black customer establishments" and "white customer establishments," respectively.

Once again, the estimates show significant effects of the race of customers on hiring. Customer's race has stronger effects on the hiring of blacks into white-collar and service occupations than into blue-collar jobs. These DD estimates are obtained from equations that also include interactions between race of customers and customer contact, which continue to generate significant effects on the hiring of blacks in these equations.

The coefficient estimates reported in Tables IV and V can also be used to disentangle nonblack prejudice against blacks from black prejudice against nonblacks. Since the *noninteracted* contact and occupational variables in these equations represent the effects of contact or occupation on the hiring of blacks in white consumer establishments, we would expect to find *negative* effects of these variables when white customers are prejudiced. If black customers are prejudiced, we would expect that the sum of a DD estimate and the corresponding contact or occupational noninteracted effect would be *positive* for black consumer establishments. These estimates correspond to the difference between means in contact and noncontact jobs or between blue-collar and other occupations reported in Table II for white customer and black customer establishments, respectively.

The results of Table IV show only small and insignificant negative effects of customer contact on the hiring of blacks in white consumer establishments. The roughly three-percentage point difference in the hiring of blacks between contact and noncontact jobs in Table II is reduced by controlling for other variables to about two percentage points in column 1 and less than one percentage point in column 2.<sup>33</sup> In contrast, adding these estimates to the DD estimates indicates positive effects of customer contact in black customer establishments equal to nine-fifteen percentage points. Taken alone, these results suggest that black customers, but not white customers, are prejudiced against workers who are not members of their own racial group.

However, this view is modified by the occupational results presented in Table V. Consider first the results contained in columns 1 and 2, which include occupational dummies for all

33. The percentage of jobs with customer contact varies somewhat by occupation: it is 0.89 in sales, 0.82 in professional/managerial, 0.80 in service, 0.73 in clerical, and 0.53 in blue-collar jobs. But the results of Table IV are virtually unaffected by omitting controls for occupation. Without these controls, the coefficients on the noninteracted contact variables rise to just  $-0.022$  and  $-0.006$  in the last two columns of Table IV, and there is also little change in the coefficients on the interacted variables.

white-collar jobs and service jobs. The estimated coefficients on the noninteracted occupation dummies show that the hiring of blacks into white-collar jobs is lower than into blue-collar or service jobs in white customer establishments. The addition of these estimates to the DD estimates shows that the hiring of blacks into both white-collar and service jobs is higher in black customer establishments. Hiring into white-collar jobs is thus symmetric across the white and black customer sectors—i.e., negative relative to blue-collar jobs in the white sector and positive in the black sector, with roughly similar magnitudes across the sectors. This symmetry suggests customer prejudice in both sectors toward employees in white-collar jobs. In contrast, the absence of such symmetry in hiring into service jobs suggests an absence of customer discrimination in the white customer sector toward employees in these jobs.

In columns 3 and 4 the white-collar category is broken down into its primary subcategories (i.e., professional/managerial, clerical, and sales). The estimated coefficients on the noninteracted variables show that the hiring of blacks in white customer establishments is lower into all white-collar jobs in comparison to blue-collar jobs. The negative effect on sales is particularly strong. In black customer establishments the hiring of blacks is higher into sales and clerical jobs, but is the same (column 3) or slightly lower (column 4) into professional/managerial jobs. Again, the sales effect is relatively strong.

Of course, the higher skill requirements of white-collar jobs may at least partly account for the lower tendency of blacks to be hired in these jobs in the white customer establishments. However, in these establishments, the negative effect on the hiring of blacks into sales jobs (eight–nine percentage points) is considerably greater than that observed for professional/managerial (five points) or even clerical jobs (three–four points), although skill requirements are higher in the latter two occupations than in sales.<sup>34</sup> Moreover, the symmetrical hiring of blacks into sales jobs between the white and black customer establishments belies the argument that skill differentials alone are driving the results for this occupational category, and suggests customer discrimination in both sectors.

34. Average starting wages are significantly higher in both professional/managerial and clerical jobs than in sales jobs in these data. While the latter more frequently involve customer contact and use of arithmetic, the former categories involve more reading/writing and computer use, as well as greater educational/experience and training requirements at the time of hiring [Holzer 1996].

Our final estimates of consumer discrimination come from the DDD estimators that appear in Table VI. These are obtained by estimating versions of equation (3), which contain a complete set of two-way interactions plus a set of three-way interactions among race of customers, contact, and occupation; the coefficients on the latter set of variables constitute the DDD estimators.<sup>35</sup> These estimates thus compare the hiring of blacks between contact and noncontact jobs within occupation and customer racial categories.

In contrast to the D and DD estimates, the DDD estimates are of the wrong sign and are not significant for white-collar jobs between white customer and black customer establishments. However, since white-collar jobs largely involve customer contact, cell sizes are small for noncontact jobs within the white-collar category, especially among establishments with predominantly black customers.<sup>36</sup> Hence, little confidence can be placed in these results.

However, other results reported in Table VI are of interest. First, the results show a contact effect within blue-collar jobs in black customer establishments but not in white customer establishments. Second, the estimated coefficients on the interactions of the service and contact variables indicate that the hiring of blacks is lower into service jobs involving contact than into service jobs not involving contact in white customer establishments. The addition of these effects to the DDD estimates for service jobs indicates a symmetrical effect of roughly equal magnitude in black customer establishments.

Overall, these results show fairly clear evidence that the hiring of blacks is affected by the racial composition of customers across establishments, and that customer discrimination can be found among both black and white customers. For black customers we find strong overall effects on hiring into jobs involving customer contact, especially white-collar and service jobs. For white customers the evidence is more limited to particular occupations, such as sales jobs and service jobs with customer

35. The occupational groups are white-collar, service, and blue-collar. The disaggregation into sales versus other white-collar jobs could not be done for the DDD estimates, since there are so few sales jobs that do not involve direct contact with customers.

36. For the entire sample of establishments, 80 percent of all white-collar jobs involve customer contact. Among establishments with predominantly black customers, this percentage rises to 88 percent, with 160 of the total 182 white-collar jobs requiring customer contact.

TABLE VI  
EFFECTS OF BLACK CUSTOMERS ON THE HIRING OF BLACKS:  
BY OCCUPATION AND CONTACT

	Difference-in-differences-in-differences (DDD) estimates: by contact and occupation	
	1	2
<b>Percent Black customers:</b>		
.25-.49	-.030 (.075)	-.049 (.071)
.50-1.00	.109 (.117)	.018 (.112)
<b>Customer contact</b>	-.002 (.041)	.008 (.039)
<b>Occupation:</b>		
White-collar	-.058 (.041)	-.051 (.039)
Service	.132 (.067)	.082 (.063)
<b>Black customers × contact:</b>		
.25-.49	.149 (.099)	.130 (.094)
.50-1.00	.219 (.146)	.124 (.139)
<b>Black customers × occupation:</b>		
White-collar		
.25-.49	.212 (.094)	.138 (.090)
.50-1.00	.269 (.139)	.201 (.132)
Service		
.25-.49	-.015 (.131)	-.043 (.124)
.50-1.00	-.111 (.235)	-.012 (.223)
<b>Contact × occupation:</b>		
White-collar		
	.005 (.048)	.002 (.046)
Service		
	-.165 (.077)	-.108 (.073)
<b>Black customers × contact × occupation:</b>		
White-collar		
.25-.49	-.239 (.117)	-.186 (.111)
.50-1.00	-.191 (.167)	-.130 (.159)
Service		
.25-.49	.170 (.158)	.123 (.151)
.50-1.00	.407 (.260)	.265 (.247)
$R^2$	.238	.318

Sample size is 2036. Columns 1 and 2 here contain the same control variables as columns 1 and 3 in Table III. Omitted occupational category is blue-collar. Estimated equations are sample-weighted.

contact. Although these occupational categories together account for only about a fourth of all jobs in the predominantly white-customer sector, it is important to remember that this sector accounts for over 70 percent of all establishments, while those with mostly black customers account for just 10 percent.

Furthermore, this imbalance between establishments by race of customers may be growing over time. Since businesses have been relocating from predominantly black areas to predominantly white areas, it may be harder for blacks to find jobs in which they face no customer discrimination. Of course, the black population is leaving traditional ghetto areas as well [Mieszkowski and Mills 1993]; customer discrimination might grow more important over time only to the extent that jobs are fleeing these areas more rapidly than people. But evidence that we have for two of our four metropolitan areas suggests that this is, in fact, the case.<sup>37</sup>

The discrimination experienced by black workers due to the preferences of white customers is therefore likely to have more negative effects on their wages and employment than any discrimination experienced by white workers due to black customers, as whites are able to find employment in sectors where no customer discrimination against them exists. Moreover, the fact that black workers, on average, face more limited demand for their labor in the nondiscriminatory sector for other reasons (such as relative skill deficiencies and perhaps other sources of discrimination) also suggests greater costs to them than to whites from customer discrimination.

#### *D. Wage Effects*

To investigate the effects of customer preferences on wages, results are presented in Table VII from estimated equations of the following form:

$$(4) \quad W_{ijk} = \lambda + \eta CUS_{jk} + \phi X_j + \rho X_k + \delta X_i + \gamma_{ijk},$$

where the dependent variable is the log of the starting hourly wage of the newly hired worker. We generate separate estimates for samples of blacks and nonblacks, and then use these to

37. Our tabulations on data from 45 planning areas in Atlanta and 120 political jurisdictions in Detroit suggest that the percentages of overall employment located in predominantly black areas in Atlanta and Detroit were 0.27 and 0.31, respectively, in 1980 and 0.19 and 0.22 in 1990. The percentages of overall population located in these areas were 0.23 and 0.32 in 1980 and 0.17 and 0.29 in 1990, thereby implying more rapid declines in employment than in population. More information on these data is available from the authors.

TABLE VII  
EFFECTS OF BLACK CUSTOMERS ON LOG (STARTING HOURLY WAGE)

A. Continuous customer measures						
	Nonblacks		Blacks		Difference	
1.	-.111		-.184		-.073	
	(.062)		(.061)		(.087)	
2.	-.150		-.263		-.113	
	(.063)		(.065)		(.091)	
3.	-.150		-.167		-.017	
	(.068)		(.067)		(.095)	
B. Categorical customer measures						
	Nonblacks		Blacks		Difference	
	.25-.49	.50-1.00	.25-.49	.50-1.00	.25-.49	.50-1.00
1.	-.021	-.048	-.105	-.102	-.084	-.054
	(.025)	(.044)	(.038)	(.038)	(.045)	(.058)
2.	-.028	-.071	-.128	-.150	-.100	-.079
	(.025)	(.044)	(.039)	(.040)	(.046)	(.059)
3.	-.026	-.066	-.114	-.103	-.088	-.037
	(.026)	(.046)	(.038)	(.040)	(.046)	(.061)

Separate equations have been estimated for nonblacks and blacks, with sample sizes of 1432 and 442, respectively. Each row represents a different specification, with control variables in each row corresponding to those of comparable columns in Table III. Each equation also includes additional controls for the age, education, and gender of the newly hired worker. Estimated equations are sample-weighted.

calculate the effects of customer composition on the racial difference in wages. In addition to the  $X_j$  and  $X_k$  control variables included in equation (1), equation (4) also includes the age, education, and gender of the newly hired worker ( $X_j$ ). The variable for race of customers ( $CUS$ ) appears alternatively in both continuous and categorical form. Results from three specifications appear in the three rows of Table VII, which correspond to those used in Table III. Including controls for other racial characteristics of firms in some equations but not others enables us to determine whether or not customer composition per se affects employee wages, or only affects them indirectly by reallocating blacks into predominantly black firms.<sup>38</sup>

The results of Table VII suggest that the wages of employees are lower in establishments where customers are predominantly

38. We estimated some versions of the wage equation using percent of all employees at the establishment who are black rather than percent of applicants, but the latter actually had a larger effect on wages than the former.

black. This is true for both black and nonblack employees, and for both employees who do and do not work in jobs that involve direct contact with customers.<sup>39</sup> For instance, the wages of black employees are roughly 17–26 percent lower at establishments with only black customers than at those with only white customers; comparable estimates for nonblack employees are 11–15 percent.

Since the negative effects of customer race on wages for workers who are not black are generally smaller than for blacks, the estimated racial gap in hourly wages rises with the presence of black customers. But these increases are not statistically significant, and they disappear altogether once we control for the race of applicants to establishments.

The lower wages of workers at establishments with many black customers is partly accounted for by observable characteristics of the firms and the jobs at those establishments, and the large effects of black applicants on the wages of black workers suggests that their wages are reduced by the “crowding” of black workers into such establishments. However, wages paid at these establishments are lower even after controlling for these observables, regardless of employee race or whether or not employees have customer contact. These factors suggest that other characteristics of these establishments (such as lower capital-labor ratios, worse technology, or lower product market rents) are responsible for the residual effects on wages.

Under any of these scenarios, the tendency for customer discrimination to reallocate black workers to predominantly black firms would result in lower wages for those workers, even if the effect of customer discrimination on wages at such establishments is indirect. Moreover, nonblacks employed in these firms will also experience lower wages, to the extent that black and nonblack labor are substitutable inputs.<sup>40</sup> Alternatively, the lower wages of both blacks and nonblacks could simply be capturing lower

39. Separate equations were estimated for employees in positions involving and not involving direct customer contact on a daily or weekly basis. Results for the effects of customer race on wages are very similar across the two samples.

Our estimates do not allow for the possibility that the wages of blacks who are hired into firms with predominantly nonblack customers might be reduced because they are reallocated from sales to other jobs. But given the relatively low wages of sales jobs in this sample (paying wages that are only marginally higher than those in laborer or service jobs in this category), this effect is likely to be very small.

40. Tables I and II imply that only about 5 percent of nonblack new hires work at establishments with predominantly black customers, while for blacks the comparable figure is 35 percent.

unobserved skills among the workers who fill the jobs at these establishments.<sup>41</sup>

#### IV. CONCLUSION

Using data on employers in four large metropolitan areas, our results indicate that the racial composition of customers at an establishment affects who gets hired. Specifically, the larger the fraction of minority customers, the higher is the probability that workers from that minority group will be hired. These results are apparent even in models with detailed controls for skill requirements on jobs and establishment location. In general, these effects are stronger for blacks than for Hispanics, and are therefore consistent with the evidence reported in previous studies.

The magnitudes of these effects are found to vary by occupational category and the degree of direct contact with customers on the job. We find that these effects are strongest in jobs with significant contact with customers, especially sales and service jobs. We also find evidence of discrimination among both white and black customers. While the estimated effects for establishments with black customers are larger and are found in a broader range of jobs, these are relevant for only a small (and declining) fraction of all establishments. For this reason (as well as other difficulties that limit their opportunities in nondiscriminatory parts of the labor market), customer discrimination is likely to have more serious negative consequences for black workers than any such discrimination against white workers. Consistent with this, the wages of blacks (and also nonblacks) who work in firms with predominantly black customers are also reduced relative to those who do not.

To the extent that customer discrimination affects employment outcomes by race, there are reasons to believe that these effects may be growing more important over time. First, the secular shifts in employment over time from blue-collar to white-collar/service jobs and from the manufacturing to the retail trade/service sectors may have increased the extent of customer contact for employees. Indeed, we have estimated that these changes increased the fraction of jobs with direct customer contact in our four metropolitan areas by at least 6 percent between 1980

41. For instance, Hirsch and MacPherson [1994] suggest that the lower wages of blacks in predominantly black occupations largely reflects typically unobserved heterogeneity across workers or jobs or both.

and 1990.<sup>42</sup> A given set of customer preferences might therefore imply greater employment effects over time because of greater customer contact with employees. Second, as noted above, the percentage of establishments with predominantly black customers appears to be declining over time, as businesses flee predominantly black areas in cities (more rapidly than does the population of those areas).

Of course, if customer preferences for members of their own race (or antipathy to members of other races) are declining over time, this would tend to counteract the increases in customer effects suggested by the above changes. Survey data show some declines in expressions of racially discriminatory viewpoints over time [Farley et al. 1994], although it is unclear whether these declines would apply to customer behavior.

In addition to the various caveats stated above regarding econometric issues, a few more of a conceptual nature deserve mention. First, our results reflect employers' *perceptions* of customer preferences, and these perceptions may not be accurate. Nevertheless, the exact source of the discrimination does not change its effects on relative labor market outcomes. Second, it is possible that there are real differences in the quality of services that customers receive between members of their own racial group and those of others, if the employees themselves have biases (or even differing levels of comfort with customers of different racial groups). In this case, it may be inappropriate to label the labor market effects of customer preferences as "discrimination." Finally, we note that our analysis is limited to four large metropolitan areas in the United States, and may not necessarily generalize to the country overall.

Despite these caveats, our results suggest that the racial composition of customers has real effects on relative employment outcomes of whites and blacks. These effects, and how they are changing over time, certainly merit further study.

42. These calculations are based on the percentages of employees in one-digit occupation-by-industry cells in our employer data who had customer contact, weighted by the distribution of overall employment across these cells in 1980 and 1990. We estimated that the percentages of jobs with such contact rose from 68.5 to 72.8 percent over that time period. To the extent that the degree of customer contact might be rising within as well as between one-digit occupations and industries, our estimate is a lower bound to the true growth rate of employee contact with customers.

APPENDIX 1: SUMMARY STATISTICS ON INDEPENDENT VARIABLES  
OF TABLE III BY RACE OF CUSTOMERS

	Share of customers who are black:				Total
	.00-.24	.25-.49	.50-.74	.74-1.00	
MSA:					
Atlanta	.224	.429	.479	.478	0.290
Boston	.288	.166	.181	.091	0.250
Detroit	.173	.190	.240	.331	0.187
Collective bargaining	.164	.153	.139	.725	0.157
Collective bargaining missing	.036	.076	.151	.054	0.053
Estab. size:					
1-19	.391	.343	.244	.444	0.373
20-49	.190	.154	.229	.332	0.091
50-99	.104	.116	.118	.081	0.106
100-499	.200	.227	.212	.079	0.202
Missing	.017	.010	.019	.003	0.015
Tasks:					
Arithmetic	.694	.688	.662	.522	0.685
Computer	.535	.602	.616	.479	0.551
Read/write	.679	.671	.678	.653	0.677
Customers	.736	.799	.804	.915	0.759
Required:					
College diploma	.235	.201	.188	.190	0.224
High school diploma	.779	.792	.721	.745	0.776
General experience	.715	.691	.669	.653	0.705
Specific experience	.672	.638	.604	.546	0.656
References	.772	.743	.730	.752	0.763
Vocational training	.429	.439	.374	.399	0.426
Industry:					
Construction	.018	.015	.013	.000	0.017
Nondurable manuf.	.087	.057	.014	.037	0.074
TCU	.058	.053	.072	.002	0.056
W. trade	.074	.057	.044	.017	0.067
R. trade	.133	.242	.277	.289	0.169
FIRE	.065	.095	.055	.119	0.072
Services	.435	.427	.471	.485	0.438
Public	.019	.006	.013	.021	0.016
Missing	.006	.016	.003	.000	0.008
Occupation:					
Prof./manag.	.269	.229	.187	.214	0.254
Clerical	.265	.280	.303	.144	0.266
Sales	.131	.194	.247	.287	0.157
Service	.116	.139	.159	.178	0.126
Affirmative action	.565	.665	.605	.583	0.588
Aff. act. missing	.007	.000	.006	.000	0.006
Central city	.220	.316	.391	.527	0.261
Near public transit	.623	.681	.813	.809	0.654
P. transit missing	.081	.069	.057	.046	0.075
Distance to blacks (miles)	16.736	14.994	14.179	12.564	16.075
Distance to whites (miles)	20.733	20.149	20.466	20.327	20.588
Distance to Hispanics (miles)	18.775	17.607	18.076	18.163	18.480

APPENDIX 1: (CONTINUED)

	Share of customers who are black:				Total
	.00-.24	.25-.49	.50-.74	.74-1.00	
Distance missing	.101	.092	.029	.028	0.091
Black applicants	.142	.309	.462	.725	0.217
B. apps. missing	.224	.222	.229	.112	0.220
Hispanic applicants	.127	.088	.073	.049	0.113
H. apps. missing	.205	.202	.213	.079	0.201
Black respondent	.048	.065	.169	.363	0.071
Hispanic respondent	.043	.048	.039	.002	0.042
N	1302	391	180	105	1978

APPENDIX 2: COEFFICIENTS (STANDARD ERRORS) ON CONTROL VARIABLES FOR TABLE III

	Whites	Blacks	Hispanics
MSA:			
Atlanta	.096 (.032)	.039 (.026)	-.135 (.024)
Boston	.131 (.029)	-.025 (.024)	-.106 (.022)
Detroit	.040 (.046)	.041 (.037)	-.081 (.034)
Collective bargaining	-.050 (.030)	.021 (.024)	.030 (.022)
Collective bargaining missing	.071 (.041)	-.060 (.033)	-.011 (.030)
Estab. size:			
1-19	.087 (.033)	-.121 (.027)	.034 (.024)
20-49	.081 (.035)	-.123 (.029)	.042 (.026)
50-99	.028 (.039)	-.058 (.032)	.030 (.029)
100-499	-.006 (.034)	-.066 (.027)	.072 (.025)
Missing	.132 (.078)	-.131 (.063)	-.001 (.057)
Tasks:			
Arithmetic	.088 (.020)	-.074 (.017)	-.014 (.015)
Computer	-.010 (.021)	.008 (.017)	.003 (.016)
Read/write	.008 (.021)	-.013 (.017)	.005 (.015)
Customers	-.001 (.023)	.005 (.019)	-.004 (.017)
Required:			
College diploma	.057 (.027)	-.043 (.021)	-.015 (.019)
High school diploma	.069 (.025)	-.018 (.021)	-.051 (.019)
General experience	.028 (.022)	-.013 (.018)	-.014 (.016)
Specific experience	.031 (.022)	-.006 (.018)	-.025 (.016)
References	-.004 (.022)	-.019 (.018)	.023 (.017)
Vocational training	-.014 (.020)	.007 (.016)	.007 (.015)
Industry:			
Construction	.045 (.076)	-.022 (.062)	-.023 (.056)
Nondurable manuf.	-.018 (.045)	.009 (.037)	.009 (.033)
TCU	-.068 (.050)	.115 (.041)	-.048 (.037)
W. trade	-.015 (.048)	.030 (.039)	-.015 (.035)

## APPENDIX 2: (CONTINUED)

	Whites	Blacks	Hispanics
R. trade	-.029 (.042)	.044 (.034)	-.015 (.031)
FIRE	-.034 (.048)	.031 (.039)	.004 (.036)
Services	-.026 (.038)	.014 (.031)	.011 (.028)
Public	-.202 (.079)	.112 (.064)	.090 (.058)
Missing	-.019 (.015)	.036 (.086)	-.016 (.077)
Occupation:			
Prof./manag.	.124 (.033)	-.040 (.027)	-.084 (.025)
Clerical	.069 (.031)	-.002 (.026)	-.067 (.023)
Sales	.107 (.035)	-.037 (.029)	-.070 (.026)
Service	.004 (.036)	.052 (.029)	-.056 (.026)
Affirmative Action	-.001 (.020)	-.025 (.016)	.016 (.015)
Aff. Act. missing	-.123 (.119)	.168 (.096)	-.090 (.087)
Central city	-.076 (.024)	.021 (.019)	.055 (.017)
Near public transit	-.005 (.022)	.024 (.018)	-.018 (.016)
P. transit missing	.050 (.036)	-.047 (.029)	-.003 (.027)
Distance to blacks (miles)	-.000 (.003)	-.004 (.002)	.004 (.002)
Distance to whites (miles)	-.010 (.006)	.006 (.004)	.003 (.004)
Distance to Hispanics (miles)	.011 (.004)	-.002 (.003)	-.008 (.003)
Distance missing	-.016 (.062)	.053 (.050)	-.037 (.045)
Black applicants	-.393 (.403)	.406 (.033)	-.013 (.030)
B. apps. missing	.004 (.040)	.017 (.033)	-.021 (.029)
Hispanic applicants	-.005 (.001)	-.072 (.046)	.603 (.042)
H. apps. missing	-.148 (.041)	.068 (.033)	.080 (.030)
Black respondent	-.060 (.037)	.122 (.030)	-.062 (.027)
Hispanic respondent	-.012 (.046)	-.020 (.037)	.032 (.034)
Intercept	.628 (.088)	.151 (.072)	.221 (.065)

Each equation corresponds to the third column, top panel of Table III. Omitted occupation and industry categories are blue-collar and durable manufacturing, respectively.

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