The Gender and Race Composition of Jobs and the Male/ Female, White/ Black Pay Gaps*

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Abstract

This study examines human capital, social closure, and status composition explanations of gender and racial wage inequality. Using a 1989 survey of North Carolina employees, this study is the first to include measures of job gender and race composition for a general population sample. Human capital explanations account for a trivial proportion of the gender pay gap. Firm-based social closure accounts for about 12% and job-based social closure for about a quarter of the gender pay gap. Most importantly, job gender composition accounts for 55% of the gender pay gap. The race pay gap is more closely tied to human capital differences (31%) and job closure (38%) than to firm closure (2%). The racial composition of the job explains 21% of the black/white wage gap.

Although there have been modest reductions in U.S. wage inequality, substantial gender and racial earnings inequality remain. Human capital, social closure, and status composition theories provide potential explanations for gender and racial inequality in wages. This article uses these theories to specify an empirical model of the wage determination process and then uses the results of that empirical model to estimate the sources of the gender and race wage gaps.

Human capital explanations suggest that gender and race differences in job placement arise from individual differences in productivity acquired through education, labor force experience, and job tenure (Becker 1957). The assumption is that there is a relatively efficient labor market sorting of individuals into jobs that are commensurate with human capital characteristics. Although human capital explanations of gender and race wage inequality are limited (Cain 1986), they have a long history of providing useful insight into the job allocation process. It is difficult to argue that education, training, and experience are not linked to job requirements. Particularly in the case of race inequality in labor

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process characteristics, it is likely that race differences in human capital acquisition, which reflect historical discrimination and current class advantages or handicaps, provide at least partial explanations of black/white wage inequality (Wilson 1977).[1]

The second theoretical explanation focuses on exclusionary *social closure* processes. The notion of social closure can be traced to Weber (1968), but has its fullest contemporary treatments in Parkin (1979) and Murray (1988). In general, the social closure explanation suggests that status groups create and preserve their identity and advantages by reserving certain opportunities for members of the group. Exclusionary practices reserve the best positions and most desirable opportunities for members of more powerful status groups. An important implication of the social closure argument is that advantaged white male employees seem to benefit from, and thereby struggle for, exclusionary practices (Tomaskovic-Devey 1993).

A well-known organizational closure argument is associated with dual-economy theory (Edwards 1979; O'Connor 1973) as well as neoclassical economic theory's discussion of "tastes" for discrimination (Becker 1957). In general, the argument is that high-resource organizations (i.e., large firms in oligopolistic sectors of the economy) can afford to employ higher-paid white male labor. Women and African Americans are systematically denied access to the most favorable employment organizations. In both the dual labor market and neoclassical traditions, discriminatory behavior by employers is seen as a way to preserve white and male privilege. Employers respond to pressures from advantaged employees or their own discriminatory preferences when they refuse to hire women or members of minority groups.

The parallel argument for job closure is that more highly skilled and otherwise advantaged jobs are reserved for white males (Bonacich 1972, 1976; Cockburn 1988; Edwards 1979; Halaby 1979; Marshall 1974; Walby 1986). Again the general argument is that employers discriminate in hiring, generally with encouragement from white male employees, allocating women and minorities to jobs requiring skills lower than those they may actually have.[2]

The data analysis that follows cannot distinguish the degree to which pressures for exclusionary practices, at either the organizational or job level, come from employers or advantaged employees.[3] The use of the social closure language is important, however, in that it makes explicit the theoretical explanation that it is *exclusionary practices* fostered by advantaged *workers and employers* that create observed patterns of organizational and job segmentation. Simple notions of unreflective employer discrimination based on prejudices are not sufficient. Social closure arguments are about deliberate practices that produce and preserve *advantages.*

The third explanation of why women and men, as well blacks and whites, have different kinds of work tasks and opportunities is that there is a status-based structuring of organizational activity. I call this the *status composition* hypothesis. Here the argument is that jobs that are disproportionately female or black become stereotyped, and the work process itself begins to reflect the devalued master status of typical incumbents (see Acker & Van Houten 1974; Bielby & Baron 1985; Caplow 1954; Treiman & Hartmann 1981). This argument does not concentrate on discrimination against individuals, but against jobs.

According to this argument, jobs and organizational structure may be fundamentally determined by race and gender (Acker 1990; Cockburn 1988; Tomaskovic-Devey 1993; Walby 1986).

The level of sex segregation in employment in the U.S. is quite high (Beller 1984; Jacobs 1989a, 1989b; Rytina & Bianchi 1984). In fact, occupational sex composition has come to represent the dominant (but certainly not exclusive) explanation of the male/female earnings gap in the sociological literature (see Marini 1989 for a fairly complete review of competing explanations). It is well established that both male and female earnings fall as percent female in an occupation rises (e.g., Baron & Newman 1990; Bridges & Nelson 1989; England et al. 1988; Jacobs & Steinberg 1990; Parcel 1989; Sorenson 1989a, 1989b). There is less known about race segregation in employment, but researchers have found that as the percent minority in an occupation rise, earnings tend to decline for minorities and majorities alike (Baron & Newman 1990; Parcel 1989; Semyonov & Lewin-Epstein 1989 [for Israel]; Sorenson 1989a, 1989b).

Previous research on the *status composition* effect on earnings has been necessarily limited in terms of either measurement or sampling. There have been two general approaches to examining the effect of gender or race composition on earnings. In the most prevalent approach, a general population sample of employees is matched with occupational skill data from the *Dictionary of Occupational Titles* and an aggregate national estimate of the race and gender composition for detailed census occupations is derived from public use samples of the U.S. Census of Population and Housing. Two examples are Sorenson (1989a, 1989b) and England et al. (1988). In the second approach, organizational case studies are the domain in which earnings variation is examined using fairly complete job-level gender or race composition and skill information (e.g., Baron & Newman 1990; Bridges & Nelson 1989; Jacobs & Steinberg 1990). The first approach is limited in its approach to measuring the sex and race composition of the job, as well as job skill characteristics. The second approach, relying on organizational case studies, presents problems of generalizability (Filer 1990).

The work of Bielby and Baron (1984, 1986), in particular, suggests that job-level segregation within firms may be quite a bit higher than measures of estimated occupational segregation suggest. Using the index of dissimilarity, Bielby and Baron (1986) estimate that *job-level* sex segregation was 93.4 (where 100 would indicate complete segregation for all jobs, and 0 complete integration) for a diverse, but not random, sample of California establishments in the late sixties. Using three-digit detailed occupational codes, they report that an occupation-based, rather than a job-based, index of dissimilarity measure of sex segregation for their sample was only 75.1. It is striking that the Bielby and Baron (1986) *occupational* segregation measure is only about two-thirds as large as their *job-level* measure of sex segregation in employment. Jacobs reports an index of dissimilarity of 67.6 for *occupational* sex segregation for the entire U.S. in 1970. Substantively, the job-level measure suggests near total sex segregation in employment in 1970, while the occupational measures suggest high, though incomplete, segregation.

Because we have good reason to suspect that aggregate occupational measures substantially underestimate the actual degree of segregation, their use in models predicting income should tend to attenuate coefficient estimates of the

effects of sex segregation on wages. Almost all general population studies (for the exception, see Filer 1989) find that the percent female in the job is associated with lower earnings for both males and females even with extensive job skill and human capital controls. The use of aggregate occupational measures of gender composition most likely attenuates these estimates. Because of this, we can expect that the actual effect of the gender composition of jobs on earnings is higher than that in the reported literature. Sorenson's (1989a) conservative estimate that 20% of the gender gap in pay is a function of the percent female in the job is likely to be a substantial underestimate. Even the higher estimate of 40% reported by Treiman and Hartmann (1981) is likely to underestimate the actual effects of gender composition on earnings in the general population.

The standard practice of using national occupational aggregates probably produces even more substantial underestimates of racial segregation than it does for sex segregation, since race distribution, unlike that of sex, is very spatially uneven. For example, even if nearly all the building custodians in the rural South are black, very few building custodians in the rural North can be of any race but white. National aggregates might make many highly segregated occupations look quite integrated because of this spatial variation in racial distribution. Hence, the conclusion that race composition does not influence wages may be premature. The nonsignificant findings reported by Sorenson (1989a, 1989b) and Parcel (1989) may actually reflect measurement error that attenuates the observed effect of percent black upon earnings. Although based on an organizational case study (the State of California employment system), Baron and Newman (1990) did have job-level measures of race composition. They found that race composition is a significant determinant of earnings even after controlling for twenty major job categories and 99 occupational categories. In fact, reported coefficients suggest that the effect of percent black upon earnings was higher than the effect of percent female in their sample. Unfortunately, this study did not have direct skill measures, but their detailed occupational controls suggest that we can have confidence in the negative association between percent black in the job and earnings levels in the California state civil service system.

The literature has been hampered by inadequate measures of the gender and race composition of jobs for population samples. Even where measures of gender and race composition are improved, we are limited to organizational case studies. The only exception is the series of articles by Bielby and Baron (1984, 1985, 1986), but this research lacked measures of earnings and was not a random sample. This article overcomes these methodological shortcomings through the use of new survey data with direct estimates at the job level of the race and gender composition of a random sample of jobs, as well as measures of job skills and earnings. These data allow the generation of more reliable estimates of the relationship between gender and race composition of jobs and earnings. As such, it represents the first examination of these relationships with job-level gender and race composition data for a general population.

Data, Models, and Variables

DATA

This article uses data collected in 1989 from the North Carolina Employment and Health Survey (NCEHS), a random sample survey of employed North Carolinians aged 18 and older. The response rate for this telephone survey was 72%, and comparisons of sex, race, age, occupation, and industry composition with Current Population Survey data for North Carolina show that the sample data are representative of the North Carolina labor force (Tomaskovic-Devey 1993).[4]

The important innovation in this survey was asking employees to supply information on the gender and race composition of their job. This information was collected using three questions, the first of which asked how many people in the employment establishment had the same job title as the respondent. Following Bielby and Baron (1984, 1985, 1986), the question focused on job title rather than same general duties or tasks since it is the proliferation of titles that seems to enhance segregation in larger firms. Once we knew how many people were in the job, we followed up by asking how many of that total were white and how many were male. Question wording and interviewer instructions as well as evidence of reliability in the measurement of job gender and race composition is discussed in detail in Appendix 4 and in Tomaskovic-Devey (1993).

The index of dissimilarity is the standard segregation index in studies of occupational sex segregation (e.g., Beller 1984; Bielby & Baron 1984, 1986; Jacobs 1989a, 1989b; Rytina & Bianchi 1984). Sex and race segregation are quite high in this sample. The segregation indexes can be interpreted as the proportion in either group who would have to change jobs in order to achieve an equal distribution.[5] About 77% of women and 55% of blacks would have to change jobs in order to achieve complete integration. While I am not aware of comparable race segregation figures for twenty years earlier, the sex segregation levels are considerably lower than those reported by Bielby and Baron (1986) at that time. Based on a nonrandom (large manufacturing weighted) sample of California establishments from the late sixties and early seventies, they report an index of dissimilarity for *job-level* sex segregation of 93.4. Importantly, Jacobs (1989a) reports a 15.2% drop in *occupational* sex segregation between 1970 and 1986. The level of sex segregation at the *job* level for North Carolina in 1989 is 17.8% less than the level reported for California in 1969. Although the Bielby and Baron (1984) sample is not, strictly speaking, comparable to this one, being both nonrandom and from California (not North Carolina), it is reassuring that the only two general sample *job-level* sex segregation measures currently available seem to parallel the occupational sex segregation trends toward more gender integration of jobs over the last two decades (Jacobs 1989a, 1989b; see also Beller 1984).

As Bielby and Baron (1986) have shown, segregation is generally much higher at the job level than it is at the occupational level. We should expect that to be the case for this data as well. The gender and race composition of national occupations is not directly descriptive of the North Carolina economy because

the occupational, gender and race distributions are different, so we cannot use the index of dissimilarity to compare occupational and job segregation. However, we can compare occupational and job-based measures directly as they describe the status segregation of the North Carolina labor force. Table 1 describes segregation based on job and occupation measures in the North Carolina sample. We can see that the average man in North Carolina is in an occupation that is nationally 27% female, but a job that is only 8% female. The average woman is in an occupation that is 65% female, but in a job that is 88% female. For this sample the average African American is in an occupation that nationally is only 14% black. African Americans are in jobs, however, that average 54% black. The race composition figures for whites in North Carolina are more comparable at the job and national occupation levels even though the African-American labor force is twice as large proportionally in North Carolina as it is across the nation. Both sex and race segregation are dramatically underestimated when measured at the occupational level rather than the job level.[6]

MODELS

Two similar sets of earnings models will be explored. The first model follows the typical analytic strategy of comparable worth type models. It conceptualizes earnings as a function of productivity or skill-related characteristics and the percent minority and percent female in the job. Though studies vary in their approach, the general functional form of the model is:

$$w_j = b_0 + b_1 J_j + b_2 PF_j + b_3 PM_j + u_j \quad (1)$$

where
j indicates the set of jobs;
w is the jobs hourly (often starting) wage;
J is a vector of job characteristics;
PF and PM are the percent female and minority in the job; and
u is a random error term.

In order to extend this generic model to a general population of jobs with identifiable incumbents, we need to modify equation one to take into account the potential impact of individual level variation in skills, productivity, or organizational value as well as extend the model to include interfirm as well as intrafirm wage variation. The resultant model can be written as follows:

$$w_i = b_0 + b_1 J_i + b_2 PF_i + b_3 PM_i + b_4 HC_i + b_5 F_i + b_6 S_i + b_7 M_i + u_i \quad (2)$$

where
i indicates the set of individuals in the sample of jobs;
HC is a vector of human capital attributes of the individual;
F is a vector of firm characteristics;
S is 1 if the respondent is female;
M is 1 if the respondent is minority; and
the other terms are defined as above.

TABLE 1: Comparisons of Actual Job and National Occupational Status Segregation for the North Carolina Sample of Employees

	Percent Female		Percent Black	
	National Occupation	Actual Job	National Occupation	Actual Job
All employees	49.13	52.39	10.94	21.39
Males	27.92	8.36	9.93	20.79
Females	65.43	88.33	11.71	21.89
Whites	49.52	53.34	10.33	14.35
Blacks	47.45	47.94	13.54	54.34

Equation 2 implies that wage variation across jobs is a function of job-related characteristics, firm characteristics, individual skill-related characteristics, the race and gender composition of the job, and the race and sex of the individual in the job. The model is substantively similar to pay equity type models in that it assumes a single process that sets wages for all jobs. It diverges from pay equity type models in that it needs to control for the additional variation in wages attributable to individual characteristics and differences in firm resources. It is anticipated that the coefficients for percent female and percent minority will be negative and those coefficients will represent the source of the pay gap that is attributable to job *status composition.* The coefficients associated with the vector of human capital traits represent the sources of the pay gaps associated with *human capital investments.* The coefficients associated with the vector of job characteristics will represent the sources of the pay gaps associated with *job-based social closure.* The coefficients associated with the vector of organizational characteristics will represent the sources of the pay gaps associated with *organizational-based social closure.*

It is important to make a conceptual distinction about the interpretation of job characteristics. In pay equity/comparable-worth models, and their academic counterparts, measures of job characteristics are treated as unambiguously representative of real job differences in skill requirements (e.g., Filer 1989; Gerhart & Milkovich 1989; Sorenson 1989a). Many sociologists see jobs not only in terms of skill in production but also in terms of power struggles over control of the organization (e.g., Kalleberg, Wallace & Althauser 1981). The job characteristics measured in this study (complexity, autonomy, training time, required credentials, required experience, supervisory power) are understood to be both the outcome and the playing field for struggles between management and labor and between groups of employees for control of organizational activity. That these characteristics are typically evaluated as embodying varying levels of skill required to do the job is undeniable. The actual organization of jobs is not, however, the unambiguous product of efficiency considerations but represents the outcome of organizational and class politics. Reskin (1988) and Cockburn (1988), among others, provide strong theoretical arguments suggesting that the very definition and evaluation of skill is influenced by the gender of

typical job incumbents. It seems reasonable to expect the same, if perhaps weaker status effect, on work structures for race.

Equation 2 assumes that the earnings process is the same for race and gender groups, but many scholars have noted that the earnings process can be quite different across groups (e.g., Parcel & Mueller 1983). This disparity implies that it is may be informative to estimate equation 2 separately for males and females and for blacks and whites. Equation 2 will be estimated first for the whole sample, and then separately for men and women and for whites and blacks. Although it would be preferable to estimate separate equations for gender/race groups (e.g., black females) sample size is too small for this level of detail.[7]

The equation estimated for the whole sample probably represents the best policy model in that it makes the normative assumption that the earnings process should be the same for blacks and whites and for men and women. Equation 2 estimated separately for each subsample is the more conservative model in that it avoids any differences in measurement quality or earnings processes between men and women and between whites and blacks that might produce misleading results in a model estimated for the whole sample. The model is also conservative, however, in that the progressively smaller sample sizes (especially for the black subsample) will tend to lead to potentially inappropriate decisions to accept the null hypothesis. For this reason, and the comparatively small sample size for the entire project, probability levels as high as .10 will be reported.

All these models assume that all the variables on the right-hand side of the equation are equally exogenous to the earnings determination process. To the extent that this is false, and the gender and race composition of jobs is an important determinant of other job characteristics, models that control for job characteristics will tend to underestimate the impact of gender and race composition on earnings (Cain 1986). In path analytic terms, these models will produce only the direct effects of race and gender composition but will obscure the indirect effects. There is good evidence that gender and race composition influences the organization of work, not just wages (Acker & Van Houten 1974; Glass 1990; Reskin 1988; Tomaskovic-Devey 1993; Walby 1986). Thus, the models are developed by sequentially adding the human capital, job characteristics, and organizational variables to an initial model containing only the gender and race composition of the job in order to produce upper and lower estimates of the contribution of the gender and race composition of jobs to earnings.

VARIABLES

Regressions take the natural logarithm of hourly earnings and untransformed hourly earnings as the dependent variables.[8] The use of hourly earnings as our benchmark for exploring gender and racial earnings inequality is a conservative approach. The gender and racial wage gaps are proportionally larger for yearly earnings than they are for hourly wages. The use of hourly wages ignores real limitations on women and minorities in access to full-time work. At the same time, however, it also controls for differences in labor supply that may be associated with gender or race. See Appendix 1 for means and standard

deviations for whites, blacks, males, and females, and for explanations of measurement for all variables.

Percent female and percent minority in the job are measured as discussed above.[9] Common practice in studies of occupational gender and race composition is to assume a linear relationship between these variables and wages. It is possible, however, that one or more relationship is actually nonlinear. It is also possible that the skewness of gender and race composition measures for subsamples reduces estimation efficiency. Preliminary analyses confirmed the appropriateness of the linear specification for all samples except one.[10] The male subsample showed a nonlinear relationship between percent female and earnings. The reminder of the article focuses on the linear specification for all models. Where the nonlinear specification for the male subsample effects substantive issues, they are discussed.

The indicators of individual human capital are years of education, experience, experience squared and years of tenure with current employer. These are fairly standard measures of human capital. Years of experience is measured as age, minus five, minus years of education, minus tenure with current employer, minus .25 for each reported spell of prolonged unemployment. In addition, experience is deflated by estimates of workforce interruption by sex and age groups based on figures reported in the U.S. Department of Commerce (1987). It is well known that most age-based measures of experience overstate the labor market experience of women since absences from the labor force for childbirth and household responsibilities are missed. Without these deflators the women in this sample have on average slightly more experience than men. After deflating, women have on average almost two years less experience than men, much closer to estimates of actual male/female experience differences. This procedure eliminates the average known male/female measurement error in age-based experience measures and allows us to get better estimates of average wage differences.

Job characteristics include whether the job is directly supervised, the degree of supervisory authority, job complexity, closeness of supervision, union membership, job required credentials, prior experience requirements, and the weeks necessary to learn to perform the job well. This is an unusually broad range of measured job characteristics that can be expected to influence earnings, somewhat independently of the race and gender composition of the job. They represent superior measures to the *Dictionary of Occupational Titles* generally employed in similar models (e.g., England et al. 1988; Sorenson 1989a, 1989b), since they are measured directly at the job level (Glass 1990). The measurement error introduced by using national aggregate skill estimates (i.e., *The Dictionary of Occupational Titles*) instead of job level estimates suggests that existing studies may have underestimated the effects of job characteristics on wages for reasons similar to those discussed above for percent female and percent minority.[11]

Firm characteristics are used to model possible interfirm variation in wages that reflect differences in firm resources (Hodson 1983; Tomaskovic-Devey 1989; Kalleberg et al. 1981). Measures used to model firm variation in resources include dummy variables for twelve industrial sectors, establishment size, and whether or not the firm was a for-profit firm. Previous research on the gender and race composition of jobs has either failed to model firm variation (e.g., Eng-

land et al. 1988) or used only industrial characteristics (e.g., Sorenson 1989a). Although the measures in this study represent an improvement over past research, they are incomplete and may be measured with more error than other variables in the analyses (Parcel, Kaufman & Jolly 1991). It seems reasonable to assume that some variation in earnings associated with firm resources is not captured by these measures. If this measurement error is associated with sex or race, this will lead to some tendency to underestimate firm characteristic effects on earnings inequality.

Findings

Female employees earn on average $3.46 less per hour, or 71% of male employees' earnings. Black employees earn $2.30 less per hour, or 78% of white employees' earnings. The pay gaps are, of course, larger when the self-employed are included in the sample and when monthly earnings, rather than hourly wages, are compared. Females make only 53% of males monthly earnings, reflecting their lower probability of being self-employed and that they work substantially fewer hours on average than males. This is very similar to current national male/female hourly wage gaps (Marini 1989). Blacks make only 64% of white monthly earnings.

Table 2 begins our investigation into the degree to which these observed pay gaps can be attributed to the gender and race composition of jobs. Regression results for the percent female and percent black metric coefficients are reported for five samples and four different models. The samples represent the whole population of jobs, and those subsamples of jobs filled by males, females, whites and blacks respectively. The first set of models reports the gross effects of percent black and percent female on earnings with just these two variables in the model. The next model adds individual human capital characteristics. The third model adds job and firm characteristics to the second one. The final model adds individual sex and race dummy variables. The coefficients for these variables are reported as well. In general, the results are nearly identical for models in which earnings are untransformed or in the natural logarithm form. Only coefficients for percent female and percent black, as well as sex and race, are reported in Table 2. All pooled earnings models are reported in Appendix 2. Subsample earnings models are reported in Appendix 3. Other model results are available from the author.

For the whole population as well as the sex and race subsamples we see that as the proportion minority in the job and proportion female in the job rises, hourly earnings fall. There are two exceptions to this conclusion at the level of gross effects. Among the black subsample the relationship between percent black in the job and earnings is consistently nonsignificant. This may reflect the small minority sample size and limited variation for this variable among blacks. Percent female is not significantly related to earnings among males at the level of gross effects, but it is significant once job characteristics are controlled, reflecting that males tend to enter gender-integrated jobs at higher skill levels.

Once we control for individual human capital characteristics, the effect of percent black is reduced substantially for all models, suggesting that human

capital variation between whites and blacks, as well as between characteristically white and black jobs, accounts for some of the observed association between race composition and earnings. Controlling for human capital difference does not substantially influence the relationship between percent female and earnings.

Controlling for job and firm characteristics reduces the size of the effect of both percent female and percent black in the whole population model. The percent black relationship with earnings is quite weak at this point and only significant for the logged earnings model. The percent female coefficient is now strongly statistically significant for the male subsample, reflecting a higher incidence of gender-integrated jobs among males in the higher skill/power ranges. Overall, percent female is significantly associated with lower wages for all subsamples, even when human capital, firm resources, and an extensive set of job skill/power characteristics are statistically controlled. The effect of percent black is weaker and while significant for the total population and for the male and female subsamples, it is not significant within the race subsamples net of the control variables.

The final set of models adds (where appropriate) race and gender dummy variables. There is a potential problem of multicollinearity between the gender dummy variable and percent female since their zero order correlation is quite high (r=.89). This is not a problem for race and percent black (r=.51). Since the addition of the gender dummy variable to the model has almost no influence on the percent female coefficients (for either earnings or logged earnings), multicollinearity is probably not a problem in these models for this variable. For the whole population model, percent female remains significantly negatively associated with earnings, net of human capital, firm resources, job characteristics, and even the individual's sex. Gender is not significantly associated with earnings in this model. Neither individual's race nor the race composition of the job is significantly associated with earnings net of human capital, job, and firm characteristics. The results from this model are quite consistent with previous general sample findings that the percent female influences earnings net of job and human capital controls but that percent black does not. However, when race dummies are not included in the model, the relationship between percent black and earnings is marginally significant for the whole population as well as for the male and female subsamples.

The results for the subsamples are consistent for percent female. Males and females experience declining real wages as percent female rises. In fact, the male earnings penalty associated with rising percent female is much higher than the female penalty. For every ten percent increase in percent female in their job, male wages decline by 63 cents, yet for the same increase female wages decline by only three cents. Interpreted from the logged earnings models, a ten percent rise in percent female leads to a three percent decline in male wages but only a one percent decline in female wages. Percent female becomes nonsignificant in the model for the black subsample once the female dummy variable is entered. Black females, however, do have significantly lower wages ($2.48) than black males controlling for human capital, job, and firm characteristics. Race composition is consistently nonsignificant in final models, although the race dummy is significant among females.

TABLE 2: Effects of Race and Gender Composition on Hourly Wages and the Natural Logarithm of Hourly Wages for Various Models, Employed North Carolinians, 1989[a]

	All		Males		Females	
	Wages	Ln Wages	Wages	Ln Wages	Wages	Ln Wages
Gross effect						
Percent female	-.037***	-.003***	.008	.0005	-.020*	-.002+
Percent black	-.029**	-.002***	-.041*	-.003***	-.020**	-.002**
Effect net of human capital						
Percent female	-.036***	-.003***	-.020	-.001	-.016*	-.001
Percent black	-.018*	-.002***	-.021	-.002*	-.013*	-.001*
Effect net of human capital, job characteristics, firm characteristics						
Percent female	-.024***	-.002***	-.063*	-.003*	-.013+	-.001
Percent black	-.012	-.0009*	-.028+	-.001+	-.009+	-.001+
Effect net of human capital, job characteristics, firm characteristics, gender and/or race dummies						
Percent female	-.023*	-.002*	-.063*	-.003*	-.012+	-.001
Percent black	-.009	-.005	-.027	-.0008	-.002	-.0002
Minority dummy	-.459	-.069+	-.126	-.043	-1.24*	-.140**
Female dummy	-.120	-.042	—	—	—	—

[a] All tests of statistical significance are one-tailed tests. Metric regression coefficients reported. Complete regression results are available from the author.

Table 3 uses the results of the pay equity type model (all sample) to estimate the effect of race and gender composition on the pay gap between whites and blacks and between males and females. In pay equity studies all job characteristics are seen as legitimate sources of pay variation, while the effects of percent female and percent black are the indicators of institutionalized discrimination to be remedied. Since these studies make the unreasonable assumption that job characteristics are not themselves the result of the gender and race composition of jobs, they undoubtedly underestimate the contribution of gender and race segregation at the job level to earnings inequality. Estimates of the proportion of the gender earnings gap accounted for by job composition in Table 3 are computed by taking the difference in male and female average percent female and percent black and multiplying them by the metric coefficient in the appropriate wage equation. Complete equations are reported in Appendix 2, but the coefficients are the same as those reported in Table 2. The same procedure, using race differences in percent female and percent black are used to produce the dollar value estimates for race reported in Table 3.[12]

TABLE 2: Effects of Race and Gender Composition on Hourly Wages and the Natural Logarithm of Hourly Wages for Various Models, Employed North Carolinians, 1989[a] (Continued)

	Whites		Blacks	
	Wages	Ln Wages	Wages	Ln Wages
Gross effect				
Percent female	-.040***	-.003***	-.023**	-.003**
Percent black	-.026+	-.002**	.006	.0001
Effect net of human capital				
Percent female	-.038***	-.003***	-.024***	-.003***
Percent black	-.016	-.001*	-.001	-.0007
Effect net of human capital, job characteristics, firm characteristics				
Percent female	-.027***	-.002***	-.016*	-.002*
Percent black	-.018	-.0008	.003	-.0006
Effect net of human capital, job characteristics, firm characteristics, gender and/or race dummies				
Percent female	-.036*	-.002**	.006	-.0001
Percent black	-.018	-.0008	.003	-.0007
Minority dummy	—	—	—	—
Female dummy	.968	.000	-2.48*	-.212+

+ $p \leq .10$ * $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

The gross effect of percent female on earnings suggests that 86% of the gender pay gap is associated with the gender composition of the job. Once individual human capital is controlled, 83% of the pay gap remains associated with the gender composition of the job. This number can be interpreted as an upper bound estimate. If all job and firm characteristics that affect earnings and are associated with individual's sex were the product of gender composition, a clearly improbable assumption, than we could attribute 83% of the gender gap in earnings among employees in North Carolina in 1989 to the gender composition of jobs. The effect of gender composition net of human capital, job, and firm characteristics accounts for $1.92 or 56% of the original pay gap between male and female employees.[13] Race composition has only a trivial relationship to the male/female pay gap.

The gross effect of percent black on earnings suggests that 50% of the race pay gap is associated with the race composition of the job. Once individual human capital is controlled, only 31% of the pay gap is associated with the race composition of the job. This number can be interpreted as an upper bound estimate. If all job and firm characteristics that effect earnings and are associated

TABLE 3: Percent of Pay Gap Associated with Percent Black and Percent Female for Pooled Pay Equity Type Models, Employed North Carolinians, 1989

	Gender		Race	
	Dollar Value	Percent of Gap	Dollar Value	Percent of Gap
Gross effect[a]				
Percent female	2.96	86	-.20	-9
Percent black	.03	1	1.16	50
Effect net of human capital[b]				
Percent female	2.88	83	-.20	-9
Percent black	.02	1	.72	31
Effect net of human capital, job characteristics, firm characteristics[c]				
Percent female	1.92	56	-.13	-6
Percent black	.01	0	.48	21

[a] Corresponds to equation 1 in Appendix 2
[b] Corresponds to equation 2 in Appendix 2
[c] Corresponds to equation 3 in Appendix 2

with individual's race were the product of race composition, again an improbable assumption, than we might attribute 31% of the race gap in earnings among employees in North Carolina in 1989 to the race composition of jobs. The effect of race composition net of human capital, job, and firm characteristics accounts for $0.48 or 21% of the original pay gap between white and black employees.[14] Gender composition has a small relationship to the white/black pay gap, slightly favoring blacks.

The most conservative reading of these data might lead us to accept the null hypothesis that suggests a minimal effect of the race composition of jobs on earnings. I am not willing to do that, however, since these are conservative, or lower bound, estimates of the contribution of gender and race composition to male/female and white/black earnings inequality. Because the models used to evaluate these effects control for an important array of job characteristics that might themselves be influenced by the gender and race composition of the jobs, it is quite probable that the actual impact of race and gender segregation on earnings is underestimated in these final models. Recent empirical studies have demonstrated that the gender and race composition of jobs may profoundly influence the labor process (Glass 1990; Tomaskovic-Devey 1993). I found that for both men and women as percent female in the job increases, there is a decrease in supervisory authority levels, managerial responsibility, and internal labor market opportunity, controlling for job skill levels. As percent black in the job increases, whites have lower autonomy, task complexity, managerial

responsibility, and supervisory authority than other whites, again controlling for job skill. Thus, pay equity type models with their assumption that job characteristics and race and gender composition are equally exogenous to the wage setting process will tend to lead us to underestimate the consequences of gender and race segregation on wage inequality (Tomaskovic-Devey 1993).

Table 4 decomposes the pay gap into its constituent parts for the pay equity type model. This is accomplished in the same manner as in Table 3, except that it is done for all coefficients in the model and the contribution to the pay gap that results from different mean levels of the predictor variables is summed within the three categories of human capital indicators, firm indicators, and job characteristics.[15] Notice that the reported levels for percent female and percent black are identical to those in the bottom panel of Table 3.

The male/female pay gap in this sample is almost totally explained by this model. About 56% of the pay gap can be attributed to the gender composition of the job even after extensive controls for human capital, job characteristics, and firm characteristics. Job characteristics explain an additional 28% of the pay gap between male and female employees. Firm level segregation is associated with 13% of the pay gap. Human capital characteristics are only trivially (3%) associated with the pay gap. In terms of the original theories of gender wage inequality, human capital theory provides a very weak explanation while organizational based social closure is stronger but still relatively weak. Most gender inequality in wages can be attributed to job-based social closure and the organizational evaluation of the worth of a job based on its gender composition.

The pattern for the black/white pay gap is quite different. Black/white differences in mean levels of job characteristics explains 38% of the pay gap. Human capital differences explain an additional 31% of the pay gap. Only 21% of the pay gap is attributable to race composition from these models. Firm characteristics play a trivial role in creating the black/white pay gap.[16] Theoretically, this suggests that firm-based racial social closure as described in the dual economy literature is not particularly accurate (see also Hodson 1983). It may be the case that omitted variables lead to some level of underestimating the effects of organizational segmentation on the wage gap. Job-based social closure and human capital differences are the major explanations of racial wage inequality. The organizational devaluing of jobs with many minority incumbents seems to be somewhat important as well.

Table 5 reports the same general decomposition of the pay gap as Table 4, but uses the separate male and female and the white and black regression models rather than the pooled model to produce estimates of the share of the pay gap attributable to each source. When separate models are used to accomplish this task it is often referred to as direct regression standardization (Goldberger 1984). Because there is no reason to prefer one equation over another, an average (weighted by sample size) of the two results for each subset of variables is used to describe the portion of the pay gap attributable to those variables. The differences in estimates from the separate earnings equations are reported, however, since they have some substantive interest.[17]

The decomposition of the gender gap in earnings reported in Table 5 is quite similar to that reported in Table 4, except that the relative contribution of percent female to the gender gap in earnings is much higher, 82%.[18] As can be

TABLE 4: Proportion of Pay Gap Attributable to Race and Gender Composition, Human Capital, Job and Firm Characteristics From Final Pooled Pay Equity Type Model, Employed North Carolinians, 1989[a]

	Male/Female Dollar Pay Gap	Proportion of Gap (%)	White/Black Dollar Pay Gap	Proportion of Gap (%)
Total	3.46	100	2.30	100
Percent female	1.92	56	-.13	-6
Percent black	.01	0	.48	21
Human capital	.12	3	.70	31
Job characteristics	.95	28	.88	38
Firm characteristics	.44	13	.04	2
Unexplained	.02	1	.33	14

[a] All results are from within sex and race category mean substitution into equation 3 of Appendix 2.

seen from the separate dollar estimates from the male and female equations, this represents the very high dollar penalty in the male equation associated with high percent female jobs.[19] The estimate reported in Tables 3 and 4 that 59% of the pay gap is associated with gender composition is no doubt closer to the truth. The other decompositions of the pay gap reported in Table 5 are quite similar to those in Table 4. It is interesting to note the large difference in estimates for job characteristics between the male ($1.14) and female ($0.56) equations. Generally, male job characteristics are compensated at double the rate of identical job characteristics among females, even controlling for the gender composition of jobs.

The estimates in Table 5 for the decomposition of the race pay gap are also almost identical to those in Table 4. The effect of percent black on the black/white earnings gap is estimated to be a little higher here ($0.57, 25%) than it was in the pooled model ($0.48, 21%). The other estimates are quite similar. The estimates of the contribution of human capital differences between whites and blacks to the pay gap are quite different in the white ($0.82) and black ($0.34) equations. This reflects a general pattern of lower returns to human capital among the black working population.[20]

Conclusion

There is ample theoretical reason to expect that gender and racial job composition profoundly influence the organization and rewards of work (Acker & Van Houten 1974; Cockburn 1988; Reskin 1988; Walby 1986; Williams 1987). The way the status composition process influences individual gender and racial inequality is indirect, that is, through the disadvantaging of jobs that are typically but not always held by subordinate status people. Social closure

TABLE 5: Proportion of Wage Gaps Attributable to Race and Gender Composition, Human Capital, Job and Firm Characteristics from Group Specific Regression Models, Employed North Carolinians, 1989[a]

	Male/Female Dollar Wage Gap			
	Male Equation	Female Equation	Average[b] Two Equations	Proportion of Gap $3.46 (%)
Percent female	5.04	1.04	2.84	82
Percent black	.03	.01	.02	1
Human capital	.23	.06	.14	4
Job characteristics	1.14	.56	.82	24
Firm characteristics	.64	.40	.51	15

[a] Regression results for the separate sex and race categories reported in Appendix 3 are used for this procedure. The difference in means between men and women are substituted into both the male and female wage equations to estimate within equations the size of the wage gap attributable to sex differences in levels of the independent variables. The same procedure is used for race differences.
[b] Averages are weighted by sample size for each source equation.

processes tend to sort women and minorities into low quality jobs. When a job becomes organizationally associated with women or a minority group, it may further disadvantage that job relative to other positions with similar skill requirements or power resources. Both processes, status closure and status composition, together create the systems of advantage and disadvantage in workplaces that we sometimes call patriarchy and racism.

The devaluing of jobs because they are usually held by members of low status groups is a *status composition process.* The denial of access to "better" jobs is a *status closure process.* The latter is one of the primary sources of job segregation, while the former is one of the consequences of that segregation. Together these processes produce most gender and racial inequality in the workplace.

At a minimum, 56% of the hourly earnings gap between men and women employees in North Carolina can be attributed to the gender composition of jobs. This estimate is quite a bit higher than Sorenson's (1989a) recent estimate of 20%. In her models, however, 39% of the white male/white female and 48% of the white male/minority female pay gaps went unexplained. If much of the unexplained portion of the pay gap was in fact attributable to the gender composition of jobs but missed in her models because of the use of aggregate measures of gender composition, then the estimates are not too far apart. The portion of the male/female earnings gap attributable to the gender composition of jobs is somewhat more comparable to the estimate of Treiman and Hartmann (1981) of 40%.

TABLE 5: Proportion of Wage Gaps Attributable to Race and Gender Composition, Human Capital, Job and Firm Characteristics from Group Specific Regression Models, Employed North Carolinians, 1989[a] (Continued)

	White/Black Dollar Wage Gap			
	White Equation	Black Equation	Average[2] Two Equations	Proportion of Gap $2.30 (%)
Percent female	-.15	-.08	-.14	-6
Percent black	.72	-.15	.57	25
Human capital	.75	.37	.69	30
Job characteristics	.82	.97	.84	37
Firm characteristics	.02	.04	.02	1

Though the effects of race composition on earnings were weaker than the effects of gender composition, this study did find significant race composition effects on earnings in models that control for human capital, job characteristics, and firm resources. The models suggest that, at a minimum, 21% percent of the race gap in earnings among North Carolina employees in 1989 may be attributable to the racial composition of jobs. This is almost four times larger an effect than that reported by Sorenson (1989a). Though the use of job-level measures of race composition does seem to have strengthened the observed association with earnings (relative to more aggregate occupational measures), the associations are still fairly weak. Job characteristics and human capital differences are more important determinants of race differences in earnings than is the race composition of employment.

This article confirms what scholars have long suspected, that gender segregation at work is the primary source of wage inequality between men and women. Discrimination in hiring and promotion that limits women's access to desirable jobs is a secondary but still substantively important source of gender earnings inequality. Together, gender composition and social closure practices account for 84% of the gender gap in hourly wages in this sample. Organizational practices are profoundly gendered. Most jobs have a gender status that influences their organizational evaluation over and beyond any skill or organizational power based considerations. When women compete for desirable, typically male jobs, then exclusionary closure practices become powerful as well. Human capital differences between men and women are empirically trivial sources of gender wage inequality.

Racial wage inequality is not tied strongly to the race typing of jobs, although race typing of jobs does occur and does influence organizational compensation practices. The most important source of racial wage inequality in this study is the exclusion of African Americans from desirable jobs. The finding that differential access to desirable jobs is the most important source of racial wage inequality among the employed is consistent with patterns of unemploy-

ment. Nationally, and in North Carolina, African Americans have unemployment rates about twice as high as white Americans. Discrimination in hiring and promotion is the dominant source of black-white labor force inequality. The second most important source of black-white wage inequality are human capital differences. Historical discrimination in access to education and work experience has favored whites and disadvantaged blacks in the accumulation of human capital credentials. Wilson (1977) points out that African Americans have been further disadvantaged in that historical discrimination produces *intergenerational social class* disadvantages as well, which can be expected to reproduce human capital disadvantages even in the absence of contemporary labor market discrimination. Because there is evidence of contemporary racial labor market discrimination, the best description of racial wage inequality is that it is primarily a result of contemporary discrimination in hiring and promotion, and secondarily of past social practices that have led to racial differences in human capital acquisition. North Carolina is a southern state, where until quite recently state-supported racial inequality was both legal and socially expected. In other regions of the U.S. where the racial organization of economic activity has been less historically important, the relative contribution of human capital and job exclusionary closure practices may be reversed.

There are other important historical differences in job segregation based on race and gender that may also account for the differences in the processes that generate earnings inequality. Prior to the civil rights movement we can expect that race-based job segregation was nearly total, at least in the U.S. South. That is, in 1960 race employment segregation probably looked much like Baron and Bielby's estimate of job-level sex segregation for 1969. Today, race-based job segregation (index of dissimilarity = 55) is much lower than job sex segregation (index of dissimilarity = 77), at least in this sample. This suggests that the creation of jobs tied to racial groups has been of declining importance in workplaces. Gendered work, while somewhat reduced, remains a dominant organizational pattern in most workplaces. The declining importance of racially organized work would seem to parallel the decline in white-black wage inequality since 1960 (Cain 1986). The stability of gendered work is consistent with the relative stability of the male/female earnings gap (Marini 1989). It would also seem likely that if models similar to those in this study could be estimated for 1960 job data, the effects of race composition on earnings might have been considerably higher.

It may also be the case that national occupational sex typing contributes to the job level creation of sex segregated employment. Because African Americans (and other minorities) are typically smaller proportions of the labor force than women and are distributed geographically unevenly across the country, occupations are much less likely to develop a national racial stereotype that might influence local job level hiring decisions.

There are policy implications of these differences in the processes that generate the gender and race wage gaps. Most of racial earnings inequality reflects differences in human capital development and race based sorting into differently skilled jobs. This suggests that enhanced education and labor market access, and affirmative action programs will be the most efficacious routes to reducing black/white earnings differences. Gender inequality is much more

directly tied to the devaluation of women's work. Gender segregation must be eroded, or its impact negated, perhaps through comparable worth initiatives, if the large male/female wage gap is to be reduced.

Earnings are primarily attached to employment positions, secondarily to the people who fill those positions. Race and gender earnings inequalities, like earnings inequality, generally reflect two basic social processes. The first is the organizational process that leads to variations in job quality and job earnings. The second is the allocation of individuals to jobs and inequalities in compensation within jobs that reflects individual (rather than job) characteristics.

The organizational process that leads to job earnings inequality can be conceptualized as being driven by three main social forces: organizational resources, job power, and the status composition of jobs. Organizational resources represent the size of the pie to be distributed (Hodson 1983; Tomaskovic-Devey 1989). Job power and status composition processes determine how that pie gets sliced within workplaces (Kalleberg et al. 1981; Tomaskovic-Devey 1993). This study's findings of substantial racial and gender job composition effects on earnings should make clear that jobs and organizational processes can have a gendered or racial character, independent of individual job incumbents. The result is a stratification structure of jobs embedded in organizational gender, racial, and power contexts.

The second process can be described as a job-status attainment process within labor markets.[21] It is here that human capital, race, gender and other individual credentials and attributes influence the flow of information about jobs, application decisions, and the reactions of employers, supervisors, and co-workers to job applications and candidates for promotions or raises. It is during this job status attainment process that individual gender and racial inequalities are distributed. The proximate causes of racial and gender inequality are selection processes that use race and gender as screening devices. Women and minorities tend to end up in jobs that are disadvantaged in terms of both their status composition and job power attributes. Males and whites often end up in relatively advantaged jobs. Why? The mainstream explanation of human capital differences is only a small part of the answer, particularly for gender. It is the conclusion of this article that the dominant explanations are of *status-based social closure,* in which employers and advantaged employees try to monopolize access to the most desirable jobs, and status segregation in employment in which the *status composition* of a job conditions organizational evaluation of the job's worth. Interestingly, organizational segmentation is not a dominant source of gender and particularly racial wage inequality. This suggests quite clearly that most gender and racial inequality happens through social closure at the job level. Job sorting becomes earnings inequality because the jobs that are typically filled by men and whites tend to have more organizational power and are organizationally favored because of their typical gender and race.

The reader should remember that the empirical conclusions presented here are based on a random sample of employee jobs in North Carolina in 1989. Relative to other studies, this one is unique in that it has job-level status composition measures for a random sample of a general population of jobs. Although this is a considerable advantage, much remains unknown. For example, are the levels of gender and race employment segregation in North

Carolina comparable to national levels? It would seem reasonable to expect that they are more nearly comparable for gender than for race. This assumes that the social meaning of gender and gendered jobs is nearly constant across places (although see McPherson and Smith-Lovin [1986] and Rogers and Gudy [1981]), an assumption that cannot be made about race (Fossett, Galle & Burr 1989). Is the earnings process described here comparable to a national model? The similarity to Sorenson's (1989a, 1989b) research suggests that it may well be for gender. Again, race effects may be higher in this sample not only because of the use of better measures of race job composition, but because racial inequality is higher in the U.S. South. These questions can only be answered satisfactorily when similar data can be collected for other U.S. regions, the nation, and other parts of the world.

Notes

1. It is not necessary to accept the human capital argument that employers compensate productivity to use and interpret human capital variables. The working assumption of this research is that employers typically use past employment and educational credentials as screening devices to make educated guesses about future productivity and "trainability," and also as sorting mechanisms to order the queue of job applicants.

2. The theory of statistical discrimination (Arrow 1973a, 1973b; Bielby & Baron 1986; Phelps 1972) argues that employers discriminate against minorities and women based on perceived differences in training costs. It is a theory of job skill based social closure. It differs from the social closure based approach advanced in this article in several respects. Most important for current purposes, the theory of statistical discrimination sees the source of discrimination in *employers* attempts to preserve their profit advantages. The theory of social closure sees the sources of discrimination in employer and *advantaged employees* attempts to preserve their material and status advantages. There is ample historical and contemporary evidence that both employers and advantaged employees are actors in workplace discrimination (Cohn 1985; Tomaskovic-Devey 1993; Walby 1986; Williams 1987; Wilson 1977).

3. I present evidence elsewhere (Tomaskovic-Devey 1993) that race based social closure is more closely tied to employer practices of skill discrimination, and that gender based social closure is tied to employee competition for desirable job characteristics.

4. The analyses that follow are weighted to represent a random sample of jobs. The original sampling protocol required that at stage one we take a random sample of households. Within households, we took a random sample of employed adults and interviewed them about their primary jobs, yielding a random sample of employed adults. To overcome any sampling bias introduced by the over sampling of one-worker households, each observation is weighted relative to total household employment size. The sampling weight = j/J where j is the number of jobs in the household and J is the average number of jobs across all households.

5. The formula for the index of dissimilarity = $\left[.5 \sum \left| \left(n_1/N_1 - n_2/N_2\right) \right| \right] * 100$ where n_1 and n_2 refer to the number of people in the job in status categories 1 and 2 (e.g., male and female) and N_1 and N_2 refer to the total number of people in those status categories.

6. The simple correlation between percent female in the job and the corresponding occupational measure for this sample is .62. The correlation between job and occupation percent black is .31.

7. The black male and black female subsamples have only 50 and 65 observations respectively. Since the models estimated require 26 degrees of freedom, error variance is generally too high to obtain stable estimates from these small samples. It would, of course, be preferable to estimate separate models for each sex-race subgroup. As we will see in Table 2 individual sex and race is generally nonsignificant net of the theoretical model

advanced in this article. The one exception is the race dummy in the final female subsample equation, and the gender dummy in the final black subsample equation. This suggests that the model is least accurate for predicting the wages of black women.

8. Respondents were asked to report their monthly job earnings from wages, tips, bonuses and overtime, but were allowed to respond in either hourly, weekly, biweekly, monthly or yearly earnings units. Respondents were also asked their normal hours of work per week. All earnings units (except hourly and weekly) were first standardized to weekly earnings and then divided by hours worked per week to arrive at hourly wage.

9. In this article percent black and percent minority, and black and minority are used interchangeably. Strictly speaking, they are not the same but almost all minorities in North Carolina are black. In our sample, 96% of minorities are black, 2% are American Indians, and 1% each are Hispanics and Asians.

10. In one set of preliminary analyses all final models were estimated with dummy variables typically female (black), balanced, and typically male (white) replacing the linear sex and race composition measures. Model fit was not improved nor were any nonlinear patterns detected. A second set of analyses added squared sex and race composition measures to identify possible nonlinear patterns. In no case did the addition of the two squared terms increase model fit. For the male subsample only, however, a weak (p=.10) nonlinear pattern for the relationship between percent female and wages was detected. This pattern suggested that the effect of percent female on male wages is flat until percent female reaches 30% of job incumbents, after which male wages fall rapidly as jobs become increasingly female.

11. The job skill measures are all derived from self-reports of employees. This procedure has some advantages and disadvantages for the project at hand. Relative to the *Dictionary of Occupational Titles* or some other secondary source of occupational characteristics the self-reports are much more likely to capture the actual *job-level* experience, rather than some more aggregate and so more error prone occupational measure (Glass 1990). In addition, the range of job skill dimensions explored through self-reports is much broader than that available in any secondary source. On the other hand, there may be measurement distortion introduced by self reports rather than some more objective on site job evaluation. If this were the case, the distortion would have to be seriously correlated with race or sex to affect the conclusions of this article. Bielby and Bielby (1988) and Smith (1979) suggest that, at least for sex, this is unlikely to be a source of bias. In a large study of New York State government jobs Jacobs and Steinberg (1990) report that self-reports of job attributes were very highly associated with manager's ratings.

12. The formula for these decompositions are:

$$\beta\, Percent\ Female(\chi\, Percent\ Female_{male} - \chi\, Percent\ Female_{female})$$

$$\beta\, Percent\ Black(\chi\, Percent\ Black_{white} - \chi\, Percent\ Black_{black})$$

where β is the estimated regression coefficient from the appropriate model and χ is the mean value for that variable for the subsample in the subscript.

13. The final (all sample) models were also estimated with an additional measure of the national three-digit occupational sex composition. In these models national occupational sex composition was not significantly associated with wages, but the still significant job sex composition coefficient was reduced somewhat. Job sex composition in these models accounted for 43% of the gender gap in earnings, while occupational sex composition accounts for only 11%. This suggests, reasonably enough, that there is some national occupational sex typing, but that the primary effect of sex typing on wages is at the job level.

14. When we add national occupational race composition measures to this final (all sample) model the estimates of job race composition are not changed. Occupational race composition is, however, significantly associated with wages. Since the national measure is almost unrelated to actual race segregation in North Carolina this effect on wages probably reflects a national pattern where African Americans are sorted into lower paying occupations. That pattern certainly holds in North Carolina as well, where job based social closure (see Table 4) is the dominant explanation of the race wage gap.

15. The general formula is $\sum_i [\beta X_{ij}(\chi_{ij\ male} - \chi_{ij\ female})]$ or $\sum_i [\beta X_{ij}(\chi_{ij\ white} - \chi_{ij\ black})]$ where X_{ij} refers to ith variables within the j vector of variables, and χ refers to the mean values of all X's for the subsample. For example, the human capital vector of variables includes education, experience, experience squared, and employer tenure.

16. Decompositions using the ln wage models lead to substantially similar interpretations for both the sex and race pay gaps. Decompositions from these equations are available from the author.

17. The formula is identical to that reported in note 15, although it is applied to the separate male/female or black/white equations. The difference between male and female means are plugged into both the male and female earnings equations. The decomposition method was probably first used by Duncan (1968), but has become widespread more recently. There are helpful illustrations in Cain (1986), Sorenson (1989), and Daymont and Andrisani (1984). This procedure has become fairly standard in the human capital literature with the exception that results tend to be estimated for the male (white) equations only (see discussion in Daymont & Andrisani 1984). Reporting only the white or male equations is premised on the argument that this model represents nondiscrimination. As can be seen from Table 5, the female and black equations estimate consistently smaller impacts of human capital and job characteristics on the pay gap than the white and male equations. Job and human capital characteristics that are typically associated with white males are disproportionately rewarded. Thus the white (male) equation produces an unduly conservative estimate of labor market inequality. The differences between the results in the two equations is often interpreted as discrimination in returns to assets (Parcel & Mueller 1983). The standard method for decomposing this discrimination effect can be found in Parcel and Mueller (1983), Daymont and Andrisani (1984), and Winsborough and Dickenson (1971).

18. Since the average male is in a job 8% female, and the average female is in a job 88% female, that 80% mean difference represents about a five dollar earnings difference in the male equation (80 * \$0.063) but only about one dollar in the female equation (80 * \$0.013). The large difference in the earnings penalty between male and female equations is striking and at least partly reflects the fact that most women are in high percent female jobs and most men in very low percent female jobs. The comparison across an 80% range, while an accurate portrait of the mean difference between men and women in the sex composition of the job, in no way describes their average experience within same sex equations.

19. The male equation was identified as possibly requiring a nonlinear specification of the relationship between percent female and wages. The effect of this alternative specification on the wage gap estimates reported in Table 5 is to shift the male equation result from \$5.04 to \$9.58. That is, a man in a job 88% male makes on average \$9.58 more per hour than one in a job 8% male. The use of the linear specification underestimates the contribution of sex composition to the wage gap relative to the nonlinear specification.

20. Decomposition based on the ln wage models lead to similar conclusions for both the sex and race wage gaps. In both cases, however, the status composition effect is weaker. Percent female explains only (31%) of the sex gap in ln wages. Percent black explains only 15% of the race gap in ln wages. In wage inequality comparisons between groups the use of logged wage models must be treated with some caution. Since the primary consequence of logging an earnings distribution is to truncate the right tail of that distribution, and earnings inequality by definition is about relative access to the right tail of the earnings distribution, logging will always reduce observed earnings inequality. The rank importance of theoretical explanations is unchanged, however, in these ln wage models. The sex composition of jobs remains the most important explanation of the sex gap in earnings. The race composition of jobs trails job characteristics and human capital characteristics as an explanation of the race pay gap.

21. The words *job* and *labor market* are used deliberately to signify the differences from a traditional status attainment approach which treats the employment attainment processes as *occupational* and *societal*.

APPENDIX 1: Measurement, Means, and Standard Deviations for All Variables[a]

	All	Males	Females	Whites	Blacks
Hourly wage	9.93	11.83	8.37	10.33	8.03
	(8.11)	(10.93)	(4.11)	(8.69)	(3.99)
Ln wage	2.15	2.30	2.02	2.19	1.98
	(.51)	(.53)	(.45)	(.51)	(.45)
Percent female	52.39	8.36	88.33	53.34	47.94
	(44.54)	(18.38)	(21.25)	(44.55)	(44.43)
Percent black	21.39	20.79	21.89	14.35	54.34
	(29.39)	(29.89)	(29.01)	(22.99)	(33.48)
Education (years)	13.19	13.27	13.12	13.28	12.78
	(2.40)	(2.65)	(2.18)	(2.37)	(2.52)
Firm tenure (years)	7.21	7.20	7.22	7.47	6.02
	(7.60)	(7.98)	(7.29)	(7.70)	(7.06)
Experience[b] (years)	8.48	9.52	7.64	8.70	7.48
	(9.16)	(10.41)	(7.90)	(9.30)	(8.41)
Experience^2	155.65	198.59	120.58	161.97	126.04
	(287.67)	(380.69)	(171.79)	(292.37)	(263.78)
Autonomous[c]	0.07	.08	.06	.08	.01
Supervisory authority[d]	1.32	1.56	1.12	1.42	.83
	(1.98)	(2.12)	(1.80)	(2.04)	(1.57)
Job complexity[e]	8.08	8.29	7.91	8.19	7.56
	(1.70)	(1.62)	(1.75)	(1.70)	(1.66)
Closeness of supervision[f]	5.99	5.88	6.07	5.87	6.52
	(1.80)	(1.74)	(1.85)	(1.77)	(1.84)
Union member (yes=1)	.09	.10	.08	.09	.11
Job required credential[g]	5.53	5.75	5.35	5.71	4.69
	(2.67)	(2.67)	(2.65)	(2.67)	(2.48)
Prior experience required (yes=1)	.66	.73	.61	.68	.60
Weeks to learn job[h]	43.88	62.83	28.42	47.63	26.36
	(65.94)	(79.70)	(46.81)	(70.53)	(32.51)
Establishment size[i]	3.88	3.89	3.87	3.85	4.01
	(1.89)	(1.98)	(1.82)	(1.90)	(1.88)
For profit firm (yes=1)	.71	.73	.69	.71	.68

[a] Standard deviation not reported for dichotomous variables.
[b] Experience is measured as age minus education, minus 6, minus current firm tenure, minus .25 for each reported spell of unemployment. In addition, following U.S. Department of Commerce (1987) all experience measures are deflated to take into account average male and female work force interruptions. The deflators for men are: younger than 29 =.977, age 30 to 45 =.947, age 46 and older =.991. The deflators for women are: younger than 29 =.947, age 30 to 45 =.834, age 46 and older =.773.
[c] Coded 1 if does not report to a supervisor.

APPENDIX 1: Measurement, Means and Standard Deviations for All Variables[a] (Continued)

Sector	All	Males	Females	Whites	Blacks
Extractive	.008	.014	.003	.008	.010
Construction	.061	.121	.011	.062	.056
Manufacturing	.283	.284	.282	.278	.310
Transportation/utility	.038	.070	.013	.040	.030
Wholesale trade	.034	.050	.021	.035	.030
Retail trade	.152	.121	.177	.161	.112
Business services	.102	.060	.136	.106	.081
Personal services	.022	.028	.018	.021	.030
Social services	.203	.111	.278	.204	.198
Public administration	.135	.141	.061	.085	.143
N	654	294	360	539	115

[d] Six item scale (reliability = .90) made up of questions about presence and degree of supervisory and managerial authority.

[e] Four item scale (reliability = .54) made up of questions about task variety, routinization, repetitiveness and standardization.

[f] Four item scale (reliability = .64) made up of questions about discriminating freedom, work pace discretion, closeness of supervision, and task autonomy.

[g] What level of formal education do you think is needed for a person to do your job? None, some grade school, complete grade school, some high school, high school degree, trade school or apprenticeship, some college, junior college degree, four year degree, specialized four year degree, graduate degree.

[h] How long (in weeks) would it take a qualified new person to learn your job reasonably well?

[i] About how many people work for your organization at the location where you work? I mean all types of workers in all departments? Response categories: less than 10; 10 to 25; 26 to 50; 51 to 100; 101 to 500; 501 to 1,000; 1001 to 10,000; more than 10,000.

APPENDIX 2: Pooled Regressions (All Employees) of Hourly Earnings on the Race and Gender Composition of Job, Human Capital, and Job and Firm Characteristics

	Equation 1[a]		Equation 2		Equation 3	
Percent female	-.037	(.01)	-.036	(.01)	-.024	(.007)
Percent black	-.029	(.01)	-.018	(.01)	-.012	(.01)
Education	—	—	1.06	(.12)	.59	(.17)
Firm tenure	—	—	.31	(.04)	.23	(.04)
Experience	—	—	.27	(.07)	.18	(.07)
Experience^2	—	—	.005	(.02)	-.004	(.002)
Autonomous (yes = 1)	—	—	—	—	1.23	(1.13)
Supervisory authority	—	—	—	—	.07	(.15)
Job complexity	—	—	—	—	.38	(.19)
Closeness of supervision (yes=1)	—	—	—	—	.18	(.16)
Union member (yes = 1)	—	—	—	—	2.99	(.99)
Job required credential (yes=1)	—	—	—	—	.12	(.16)
Prior experience (yes = 1)	—	—	—	—	.13	(.63)
Weeks to learn job	—	—	—	—	.02	(.004)
Establishment size	—	—	—	—	.51	(.17)
For profit firm (yes = 1)	—	—	—	—	2.37	(.99)
Sector						
Extractive	—	—	—	—	.86	(3.26)
Construction	—	—	—	—	2.11	(1.75)
Manufacturing	—	—	—	—	1.75	(1.40)
Transport/utility	—	—	—	—	7.27	(1.86)
Wholesale trade	—	—	—	—	1.48	(1.97)
Retail trade	—	—	—	—	1.67	(1.45)
Business services	—	—	—	—	.99	(1.50)
Personal services	—	—	—	—	.61	(2.21)
Social services	—	—	—	—	1.07	(1.11)
(Public admin. excluded)						
Constant	12.45	(.53)	-5.25	(1.89)	-6.82	(3.32)
Adjusted R^2	.048		.204		.303	

(N = 654)

[a] Regression coefficient (standard error)

APPENDIX 3: Regression Hourly Wage Models for Sex and Race Groups[a]

	Male		Female		White		Black	
Percent female	-.063	(.032)	-.013	(.009)	-.027	(.008)	-.016	(.008)
Percent black	-.028	(.202)	-.009	(.007)	-.018	(.015)	.003	(.010)
Education	.88	(.32)	.19	(.13)	.72	(.21)	.22	(.19)
Firm tenure	.26	(.08)	.13	(.03)	.22	(.05)	.17	(.06)
Experience	.14	(.14)	.06	(.06)	.19	(.08)	.07	(.09)
Experience^2	-.002	(.004)	-.001	(.002)	-.004	(.002)	-.001	(.003)
Autonomous (yes = 1)	2.99	(2.12)	-1.28	(.85)	1.09	(1.25)	1.07	(3.13)
Supervisory authority	-.41	(.30)	.21	(.12)	-.11	(.18)	.30	(.21)
Job complexity	1.12	(.40)	-.08	(.13)	.51	(.23)	-.17	(.26)
Closeness of supervision	-.41	(.33)	-.04	(.10)	-.27	(.19)	.17	(.18)
Union member (yes = 1)	6.76	(1.95)	-.38	(.69)	3.63	(1.21)	1.40	(1.16)
Job required credential	-.22	(.32)	.51	(.11)	-.01	(.19)	.44	(.19)
Prior experience (yes = 1)	-.19	(1.35)	.38	(.41)	.17	(.76)	-.33	(.66)
Weeks to learn job	.02	(.008)	.007	(.004)	.02	(.005)	.03	(.01)
Establishment size	1.01	(.34)	.15	(.12)	.54	(.20)	.25	(.20)
For profit firm (yes = 1)	3.30	(2.95)	.89	(.57)	2.77	(1.16)	-.78	(1.23)
Sector								
Extractive	2.13	(5.49)	-3.24	(3.29)	-.38	(3.98)	6.90	(3.57)
Construction	-2.36	(3.71)	-2.31	(1.94)	-2.72	(2.13)	.61	(1.91)
Manufacturing	-2.88	(3.39)	-1.75	(0.99)	-2.06	(1.69)	.36	(1.64)
Transport/utility	6.70	(3.81)	5.80	(1.80)	7.40	(2.26)	4.58	(2.03)
Wholesale trade	-1.08	(4.16)	-3.38	(1.57)	-2.25	(2.35)	2.00	(2.33)
Retail trade	-1.71	(3.64)	-3.08	(1.00)	-2.07	(1.77)	.54	(1.64)
Business services	2.71	(3.82)	-.66	(1.01)	.68	(1.81)	1.26	(1.72)
Personnel services	1.50	(4.52)	-1.76	(1.68)	-.46	(2.73)	-.97	(2.20)
Social services	-2.81	(2.28)	-1.30	(.83)	-1.46	(1.37)	.02	(1.20)
(Public administration excluded)								
Constant	-16.96	(6.17)	5.34	(2.65)	-7.98	(3.97)	-.32	(4.72)
N	294		360		539		115	
Adjusted R^2	.298		.339		.292		.435	

[a] Regression coefficient (standard error)

APPENDIX 4: Reliability and Validity of the Gender and Race Composition of Jobs Measures

The methodological innovation in the North Carolina Employment and Health Survey was to actually ask employees in a general population survey to report on the gender and race composition of jobs. Can people accurately provide this information? Much thought went into developing the survey items and survey protocols for the interviewers in order to increase the reliability of the measures. After having been asked to focus on their primary job, how many hours they worked in a typical week, and for a job description the respondent was asked the following three questions:

(1) Thinking about the work that you do, in your workplace how many people, including yourself, have the same general *job title* as you?
(2) Of these how many are men?
(3) About how many of these are white?

All respondents were able to answer the first question. About 4% of respondents failed to provide information on the gender composition of jobs, and 5% did not provide the race composition information.

Comparisons with known population distributions help to further the reliability and validity of the gender and race composition measures. If the gender and race composition measures are reliable they should produce estimates of the gender and race composition of occupations that are comparable to those that actually exist in the North Carolina population of employed adults. I compared estimates of the gender and race composition of major occupations for North Carolina with survey data from the Current Population Survey and from the North Carolina Employment and Health Survey's questions on race and gender composition (see Tomaskovic-Devey 1993). The estimates of occupational gender and race composition based on the two different methods are very similar.

Interviewers were given detailed verbal and written instruction on the goals of the questions and possible reliability problems. The most important were around issues of job titles and job and establishment size.

Many jobs do not have formal job titles. This suggests that the first question might have been more easily approached by asking about the respondent's *job* rather than *job title*. Bielby and Baron (1986), however, report that job titles are important methods for creating gender segregation among otherwise similar jobs in bureaucratic settings. Thus, the formal question was written with the phrase *job title* and interviewers were warned that some respondents might need to be probed about their *job*. The issue of job and establishment size refers to the reasonableness of the second two questions. When a person works in a job with ten incumbents an accurate estimate of the number male or number white is quite plausible. When a worker works in a job with one hundred or two hundred incumbents (e.g., machine operators in factory settings), or a smaller job that is spatially dispersed across a large establishment (e.g., personal secretary in a corporate headquarters), then the ability of the average respondent to supply a specific number is suspect. In cases where respondents had trouble estimating the number of incumbents by sex and race, interviewers were prompted to ask for the approximate percent white or male in the job. Debriefings after the project left the field suggests that probes were almost never necessary.

APPENDIX 4: Reliability and Validity of the Gender and Race Composition of Jobs Measures (Continued)

Although field methods were set up to reduce reliability problems associated with the absence of job titles, job size and establishment size it seems plausible that measurement error may be larger in informal workplaces (i.e., no job titles), in jobs with more incumbents, and in larger establishments. Since all three of these variables are also likely to be associated with earnings directly or indirectly, regression estimates of the relationship between gender and race job composition on earnings may be inefficient. This potential source of error in model estimation can be directly tested with the data available. If the reliability of the gender and race composition measures is higher in more formalized workplaces, smaller jobs and smaller establishments, and this bias effects regression estimation, than measures of these three concepts should be associated with the absolute value of the residual of the regression of wages on job status composition and any appropriate control variables. I examined the *absolute value* of the residuals since I was hypothesizing more error in measurement, not a bias in a particular direction. Using three different model specifications to estimate residual wages I found that formalization of the job and job size are not related to the residuals in the hypothesized directions. Neither slippage in the frame of reference (between job titles and some more vague notion of jobs) or the number of incumbents in the job effect the reliability of the wage regression estimates. The final hypothesis, that residual error variance would be higher in larger establishments where accurate gender and race composition estimates may be hampered by physical distance, produced ambivalent findings. The partial correlation between establishment size and absolute residual error variance is positive in all cases, but significant above the .05 probability level and below the .10 probability level. This weak finding suggests that in larger establishments, gender and race composition may be measured with more error, but that the effect on model estimation is marginal at best. Since increased measurement error variance tends to attenuate observed associations I may be underestimating the effects of gender and race composition of jobs on wages in larger establishments. Since African-Americans are employed in significantly larger establishments than white North Carolinians this bias may explain why race composition has a consistently non-significant relationship with earnings within the black subsample. A more detailed explanation of the logic and estimation of these reliability analyses is available from the author.

References

Acker, Joan. 1990. "Hierarchies, Jobs and Bodies: A Theory of Gendered Organizations." *Gender and Society* 4:139-58.

Acker, Joan, and Donald R. Van Houten. 1974. "Differential Recruitment and Control: The Sex Structuring of Organizations." *Administrative Science Quarterly* 19:152-64.

Arrow, Kenneth. 1973a. "The Theory of Discrimination." Pp. 3-33 in *Discrimination in Labor Markets*, edited by O. Ashenfelter. Princeton University Press.

____. 1973b. "Some Mathematical Models of Race in the Labor Market." Pp. 83-102 in *Racial Discrimination in Economic Life*, edited by A. Pascal. D.C. Heath.

Baron, James N., and Andrew E. Newman. 1990. "For What It's Worth: Organizations, Occupations and the Value of Work Done by Women and Non-Whites." *American Sociological Review* 55:155-75.

Becker, Gary S. 1957. *The Economics of Discrimination*. The University of Chicago Press.

Beller, Andrea. 1984. "Trends in Occupational Segregation by Sex, 1960-1981." Pp. 11-26 in *Sex Segregation in the Workplace: Trends, Explanations, Remedies*, edited by Barbara F. Reskin. Washington, D.C.: National Academy Press.

Bielby, William T., and James N. Baron. 1984. "A Woman's Place is with Other Women: Sex Segregation within Organizations." Pp. 27-55 in *Sex Segregation in the Workplace: Trends, Explanations, Remedies*, edited by Barbara F. Reskin. Washington, D.C.: National Academy Press.

____. 1985. "Organizational Barriers to Gender Equality: Sex Segregation of Jobs and Opportunities." Pp. 233-51 in *Gender and the Life Course*, edited by Alice S. Rossi. Aldine.

____. 1986. "Men and Women at Work: Sex Segregation and Statistical Discrimination." *American Journal of Sociology* 91:759-99.

Bielby, Denise D., and William T. Bielby. 1988. "She Works Hard for Her Money: Household Responsibilities and the Allocation of Work Effort." *American Journal of Sociology* 91:759-99.

Bonacich, Edna. 1972. "A Theory of Ethnic Antagonism: The Split Labor Market." *American Sociological Review* 37:547-59.

____. 1976. "Advanced Capitalism and Black/White Race Relations in the United States: A Split Labor Market View." *American Sociological Review* 41:34-51

Bridges, William P., and Robert L. Nelson. 1989. "Markets in Hierarchies: Organizational and Market Influences on Gender Inequality in a State Pay System." *American Journal of Sociology* 95:616-59.

Cain, Glen G. 1986. "The Economic Analysis of Labor Market Discrimination: A Survey." Pp. 693-785 in *Handbook of Labor Economics*, edited by O. Ashenfelter and R. Layard. Amsterdam: North-Holland.

Caplow, Theodore. 1954. *The Sociology of Work*. University of Minnesota Press.

Cockburn, Cynthia. 1988. *Machinery of Dominance: Women, Men and Technical Know-How*. Northeastern University Press.

Cohn, Samuel. 1985. *The Process of Occupational Sex-Typing*. Temple University Press.

Daymont, Thomas N., and Paul S. Andrisani. 1984. "Job Preferences, College Major, and the Gender Gap in Earnings." *The Journal of Human Resources* 18:408-28.

Duncan, Otis Dudley. 1968. "Inheritance of Poverty or Inheritance of Race?" Pp. 85-110 in *On Understanding Poverty*, edited by Daniel Patrick Moynihan. Basic Books.

Edwards, Richard. 1979. *Contested Terrain*. Basic Books.

England, Paula, George Farkas, Barbara Stanek Kilbourne, and Thomas Dou. 1988. "Explaining Occupational Sex Segregation and Wages: Findings from a Model with Fixed Effects." *American Sociological Review* 53:544-58.

Filer, Randall K. 1989. "Occupational Segregation, Compensating Differentials, and Comparable Worth." Pp. 153-70 in *Pay Equity: Empirical Inquiries*, edited by Robert T. Michael, Heidi I. Hartmann, and Brigid O'Farrell. Washington, D.C.: National Academy Press.

____. 1990. "Compensating Differentials and the Male-Female Wage Gap: A Comment." *Social Forces* 69:469-73.

Fossett, Mark A., Omer R. Galle, and Jeffrey A. Burr. 1989. "Racial Occupational Inequality, 1940-1980: A Research Note on the Impact of Changing Regional Distribution of the Black Population." *Social Forces* 68:779-96.

Gerhart, Barry A., and George T. Milkovich. 1989. "Salaries, Salary Growth, and Promotions of Men and Women in a Large, Private Firm." Pp. 23-41 in *Pay Equity: Empirical Inquiries*, edited by Robert T. Michael, Heidi I. Hartmann, and Brigid O'Farrell. Washington, D.C.: National Academy Press.

Glass, Jennifer. 1990. "The Impact of Occupational Segregation on Working Conditions." *Social Forces* 68:779-96.

Goldberger, Arthur S. 1984. "Reverse Regression and Salary Discrimination." *The Journal of Human Resources* 19:293-318.

Halaby, Charles N. 1979. "Job-Specific Sex Differences in Organizational Reward Attainment: Wage Discrimination vs. Rank Segregation." *Social Forces* 58:108-27.

Hodson, Randy. 1983. *Workers' Earnings and Corporate Economic Structure*. Academic Press.

Jacobs, Jerry A. 1989a. "Long-Term Trends in Occupational Segregation by Sex." *American Journal of Sociology* 95:160-73.

____. 1989b. *Revolving Doors: Sex Segregation and Women's Careers*. Stanford University Press.

Jacobs, Jerry A., and Ronnie J. Steinberg. 1990. "Compensating Differentials and the Male-Female Wage Gap: Evidence from the New York State Comparable Worth Study." *Social Forces* 69:439-68.

Kalleberg, Arne L., Michael Wallace, and Robert P. Althauser. 1981. "Economic Segregation, Worker Power, and Income Inequality." *American Journal of Sociology* 87:651-83.

Marini, Margaret Mooney. 1989. "Sex Differences in Earnings in the United States." *Annual Review of Sociology* 15:348-80.

Marshall, Ray. 1974. "The Economics of Racial Discrimination: A Survey." *Journal of Economic Literature* 12:849-71.

McPherson, J. Miller, and Lynn Smith-Lovin. 1986. "Sex Segregation in Voluntary Associations." *American Sociological Review* 51:61-71.

Murray, Raymond. 1988. *Social Closure: The Theory of Monopolization and Exclusion*. Oxford University Press.

O'Connor, James. 1973. *The Fiscal Crisis of the State*. St. Martin's Press.

Parcel, Toby L. 1989. "Comparable Worth, Occupational Labor Markets and Occupational Earnings: Results from the 1980 Census." Pp. 134-52 in *Pay Equity: Empirical Inquiries*, edited by Robert T. Michael, Heidi I. Hartmann and Brigid O'Farrell. Washington, D.C.: National Academy Press.

Parcel, Toby L., Robert L. Kaufman, and Leeann Jolly. 1991. "Going Up the Ladder: Multiplicity Sampling to Create Linked Macro-to-Micro Organizational Samples." *Sociological Methodology* 21:43-79.

Parcel, Toby L., and Charles W. Mueller. 1983. *Ascription and Labor Markets: Race and Sex Differences in Earnings*. Academic Press.

Parkin, Frank. 1979. *Marxism and Class Theory: A Bourgeois Critique*. Columbia University Press.

Phelps, Edmund S. 1972. "The Statistical Theory of Racism and Sexism." *American Economic Review* 62:659-66.

Reskin, Barbara F. 1988. "Bringing the Men Back In: Sex Differentiation and the Devaluation of Women's Work." *Gender and Society* 2:58-81.

Phelps, Edmund S. 1972. "The Statistical Theory of Racism and Sexism." *American Economic Review* 62:659-66.

Reskin, Barbara F. 1988. "Bringing the Men Back in: Sex Differentiation and the Devaluation of Women's Work." *Gender and Society* 2:58-81.

Rogers, David L., and Willis J. Gudy. 1981. "Community Structure and Occupational Segregation, 1960 and 1970." *Rural Sociology* 46:263-81.

Rytina, Nancy F., and Suzanne Bianchi. 1984. "Occupational Reclassification and Changes in Distribution by Gender." *Monthly Labor Review* 107:11-17.

Semyonov, Moshe, and Noah Lewin-Epstein. 1989. "Segregation and Competition in Occupational Labor Markets." *Social Forces* 68:379-96.

Smith, Robert. 1979. "Compensating Wage Differentials and Public Policy: A Review." *Industrial and Labor Relations Review* 32:339-59.

Sorenson, Elaine. 1989a. "Measuring the Effect of Occupational Sex and Race Composition on Earnings." Pp. 49-70 in *Pay Equity: Empirical Inquiries*, edited by Robert T. Michael, Heidi I. Hartmann and Brigid O'Farrell. Washington, DC: National Academy Press.

____. 1989b. "The Crowding Hypothesis and Comparable Worth." *The Journal of Human Resources* 25:55-89.

Tomaskovic-Devey, Donald. 1989. "Organizational Stratification and the Size of the Pie: Environmental Constraints on Organizational Income Streams." Paper presented at annual meeting of American Sociological Association, San Francisco, August.

____. 1993. *Gender and Race Inequality at Work: The Sources and Consequences of Job Segregation.* ILR Press.

Treiman, Donald J., and Heidi I. Hartmann (eds.). 1981. *Women, Work and Wages: Equal Pay for Jobs of Equal Value.* Washington, DC: National Academy Press.

U.S. Department of Commerce, Bureau of the Census. 1987. "Male-Female Differences in Work Experience, Occupation and Earnings: 1984." *Current Population Reports*, p. 7010. Government Printing Office.

Walby, Sylvia. 1986. *Patriarchy at Work.* University of Minnesota Press.

Weber, Max. 1968. *Economy and Society*, edited by Günter Roth and Klaus Wittich. Bedminster Press.

Williams, Bruce. 1987. *Black Workers in an Industrial Suburb: The Struggle Against Discrimination.* Rutgers University Press.

Wilson, William J. 1977. *The Declining Significance of Race.* University of Chicago Press.

Winsborough, Halliman, and Peter Dickenson. 1971. "Composition of Negro-White Income Differences." *Proceedings of the Social Statistics Section. American Statistical Association* 1971:6-8.