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# Compensating Differentials and the Male-Female Wage Gap: Evidence from the New York State Comparable Worth Study\*

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## Abstract

*This article examines whether women are paid less than men because female-dominated jobs are characterized by more favorable working conditions than jobs dominated by men. We review evidence about whether differences in working conditions are responsible for a portion of the sex gap in wages, including pertinent data from a number of comparable worth studies. The heart of the article is an analysis of data on over 1,600 jobs in the New York State Civil Service System. Fourteen job-content indicators and 15 measures of working conditions are examined. Our findings are inconsistent with the expectations of the compensating differentials hypothesis. Prominent results include (1) both male- and female-dominated jobs are disadvantaged on a similar number of working-conditions indicators; (2) in general, neither men nor women receive wage premiums for working in unfavorable conditions, once other compensable characteristics are taken into account; (3) if female-dominated jobs had the same working conditions that characterize white male-dominated jobs, the sex gap in wages would grow slightly; and (4) female-dominated jobs would slightly improve their relative position if all wage penalties associated with working conditions were assigned a zero score. A power-based model of intraorganizational wage determination is discussed as an alternative to the neoclassical economic paradigm.*

Though the sex gap in wages has declined somewhat in recent years, it remains substantial. In 1986, the earnings of women working full time were 64% of those of comparably employed men (U.S. Bureau of the Census 1987). Measured human-capital characteristics explain only a small proportion of this difference. One prominent line of inquiry attempting to explain gender-based earnings

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inequality has focused on the concentration of women in relatively low-paying occupations. Approximately one-fifth of the sex gap in wages has been associated with sex segregation of occupations (Sorensen 1989), and, when industrial segregation is also considered, the proportion of the wage gap resulting from sex segregation increases to 36%. Thus the low wages associated with female-dominated occupations are not primarily the result of sex differences in measurable human-capital traits (Beller 1982). Jacobs (1989) has further proposed that sex segregation is not simply the result of early-life socialization but rather a consequence of a life-long system of social control that channels and rechannels women into female-dominated fields (see also Epstein 1988; Bergmann 1986.)

Since human-capital and socialization explanations have proven insufficient in explaining occupational segregation, research interest has been increasingly directed to the role of organizational personnel policies and practices (Baron, Mittman & Newman 1988; Baron 1989). The comparable worth movement has made such a shift in its focus on compensation practices in its attempt to elevate the relative pay of female-dominated occupations by correcting for the undervaluation of "women's work" (Remick 1980; Steinberg 1984).

Though most researchers have accepted as a given that women's work is more poorly paid than men's in jobs requiring similar education and experience (Treiman & Hartmann 1981; Reskin 1987; Jones & Rosenfeld 1989), Randall Filer's prominent article in the National Research Council's *Pay Equity: Empirical Inquiries* (1989) maintains that female-dominated occupations in fact are not underpaid. He frames his argument in terms of the economic "compensating differentials" hypothesis, suggesting that women work in "lower paying but otherwise more attractive jobs" and concluding that the wage gap can be accounted for by the wage premium paid to men because of undesirable working conditions in their jobs (1989:154). The implication is that the wage gap that flows from sex segregation is the legitimate result of job differences. Filer holds that sex segregation of occupations is largely voluntary because of differences in "tastes" regarding the importance of working conditions. Wages between female- and male-dominated occupations differ because women choose to take a larger proportion of their total compensation package in nonpecuniary amenities, whereas men opt for a larger proportion of their benefits in wages.

If correct, the conclusion that women's work is not undervalued would be significant, not only for our understanding of the processes of sex segregation but also for our assessment of policy efforts such as comparable worth. Filer is well aware of the policy relevance of his findings. "The results," he cautions, "should serve to give pause before the United States rushes to adopt . . . comparable worth to deal with a perception of gender effects on wages" (1989:164).

In this article we examine Filer's argument directly by testing the proposition that differences in undesirable features of work between male- and female-dominated occupations account for the sex gap in wages. We argue that the compensating differentials argument is flawed both empirically and conceptually. We first review studies that offer compensating differentials as an explanation of the gender gap in wages and then examine in detail the compensation associated with a wide array of working conditions found in New York State

government employment. Specifically, we test whether male-dominated jobs are characterized by more unfavorable working conditions than female-dominated jobs and whether these differences translate into wage differentials that account for the gender gap in wages. In addition, we compile pertinent data on this thesis from a number of comparable worth studies.

We conclude by suggesting that our results are consistent with a power-based perspective on intraorganizational wage-setting. We hold that the ability of workers to obtain compensating differentials depends on the politics of the workplace — that workers receive extra compensation for working in unfavorable or dangerous conditions only when they are powerful enough to insert this claim directly into their labor contract.

This article contributes to related research literature and policy discussions in several respects. First, it adds to the small body of research on the possible contribution of working conditions to the gender gap in wages. It also broadens one's understanding of the role of working conditions in wage determination by examining a wide set of job attributes in a unique data set drawn from the New York State Comparable Pay Study.

Further, the evidence presented contributes to the general question of the role of preferences as an explanation for occupational sex segregation. The compensating differentials hypothesis is the economists' version of the view that women bring different goals and values with them into the labor market. Sociologists and social psychologists have also argued that socialization results in such work-oriented differences in traits (Marini & Brinton 1984), although Jacobs (1989) has found that such differences do not account for the persistence of occupational segregation. An examination of the impact of job characteristics on wages will shed light on whether women's preferences are responsible for their lower pay. Finally, this analysis will contribute to a vigorous, ongoing policy debate regarding the legitimacy and significance of comparable worth as a strategy for decreasing the sex gap in wages.

### Compensating Differentials

The idea that workers receive extra compensation for toiling under unfavorable conditions originated with Adam Smith. In *Wealth of Nations*, Smith's first postulate concerning wage variation is that "the wages of labor vary with the ease or hardship, the cleanliness or dirtiness, the honourableness or dishonourableness of the employment" ([1776] 1976:112). Smith held that workers doing physically onerous or dirty jobs receive extra compensation for their troubles, whereas those employed in the "honourable professions are 'under-recompensed.'" Simply stated, he reasoned that an undesirable feature of a job reduces the supply of individuals interested in that job and that anything that reduces the supply of workers increases the wage employers must pay to fill that position.

Contemporary economists refer to this phenomenon as a "compensating differential" (Rosen 1986) whereby an observed difference in the wages between two jobs may represent monetary compensation for a countervailing differential in working conditions. This reasoning would hold, for example, that garbage

collectors are likely to be paid more than bus drivers net of differences in job requirements. This wage premium is paid because the former position is less pleasant and consequently requires an added wage incentive to induce prospective employees to pursue this line of work. The assumption is that the "utility" of the higher wage to the marginal worker is just sufficient to compensate for the unpleasantness (and associated "disutility") of the less desirable job. While high-income positions may have better working conditions than low-income ones, among jobs with similar entry requirements, higher wages should be observed in jobs with less desirable working conditions.<sup>1</sup> Though most often discussed by economists, the compensating differentials logic is consistent with the logic of the functional theory of stratification (Davis & Moore 1945; England 1988:235).<sup>2</sup>

Can the compensating differentials hypothesis predict which specific job characteristics will be positively rewarded and which negatively? The preferences of the "marginal" worker are considered crucial in determining which working conditions will be associated with a wage premium. Since no one knows who the marginal worker is or what his or her preferences are, in principle it is impossible to predict which job characteristics will be positively or negatively valued. As Robert Smith (1979:346) notes in his review of recent literature on compensating differentials, "Given the variety of human preferences, it is doubtful that [job] characteristics . . . can be claimed, a priori, to be disagreeable at the margin."

Nonetheless, the operationalization of undesirable working conditions has largely rested on plausible assertions relying on face validity. In their reviews of ten articles, all focusing on exclusively male samples, both Brown (1980) and Smith (1979) cite a common list of job conditions economists have isolated as undesirable. These are work requiring heavy physical labor; work involving noise, temperature extremes, dirt, or hazardous materials; repetitious work; fast-paced work; work involving low autonomy; stressful work; job insecurity; work with machines; and work involving risk of injury or death. The implicit assumption is that most workers prefer secure jobs that are clean and safe and do not involve extreme noise and temperature, and in which there is sufficient autonomy to regulate the pace of one's work. In practice, most empirical research selects a subset of these job characteristics, asserts their undesirability, and leaves it up to the reader to judge the reasonableness of such an evaluation.

Empirical evidence on the compensating differentials hypothesis remains mixed despite its illustrious pedigree. In his review of compensating differentials literature, Robert Smith (1979) concludes that, except for jobs that involve risk of injury or death, working conditions such as those involving heavy physical labor, low autonomy, or a fast pace often produce negative wage effects instead of the positive ones predicted by the compensating differentials hypothesis. Brown (1980) also reports that the literature contains an "uncomfortable number" of exceptions to the predictions of this hypothesis.<sup>3</sup> Nevertheless, the logic of compensating differentials has recently been employed as an explanation for the difference in pay between male- and female-dominated jobs.

### Compensating Differentials and the Wage Gap

Randall Filer has advanced the most serious empirical effort to demonstrate the importance of working conditions in explaining the sex gap in wages. Filer (1985:427; 1989) asserts that both men and women assess the undesirable features of jobs uniformly but act differently in making job choices, with men attaching more importance to wages and benefits and women to "interpersonal and other non-wage aspects of the job."<sup>4</sup> He further maintains that women are paid less because they work in more pleasant jobs. In his words,

Once compensating differentials for a job's effort, responsibility, fringe benefits, and working conditions are taken into account, there is no significant relationship between an occupation's gender composition and its wages for either men or women. (1989:162)

Filer is not especially concerned with specifying which job characteristics are undesirable *a priori*. Instead, he states, "No preconceived notions of whether these characteristics are 'good' or 'bad' are required. The data will tell us how the marginal worker evaluates them" (1985:428). In other words, if a job characteristic is positively compensated, it must be undesirable. Thus Filer's identification of job characteristics that require a wage premium is decidedly *post hoc*.

Filer's 1985 article analyzes a national sample of men and women from the 1977 Quality of Employment Survey to estimate the effects of 28 different job characteristics, controlling for individual variation in education and experience. Based on a sample of 250 women and 350 men employed in jobs that pay hourly wages, he finds that women generally report more favorable working conditions than men. Further, Filer concludes that, depending on the equation, between 31% and 65% of the gender gap in wages is attributable to differences in job characteristics.

However, closer scrutiny reveals that Filer's estimate of the wage gap attributable to working conditions is based on little statistically reliable evidence. Because of his small sample size, few of the coefficients for job attribute variables Filer reports are statistically significant, raising questions about whether a given job characteristic can be viewed as a basis for compensation. Specifically, only 7 of the 28 coefficients for working conditions are statistically significant for men, and a mere 4 for women. Further, in our reanalysis of the QES data, the introduction of a simple control for occupation substantially reduces the number of coefficients that remain significant and in the direction predicted by the compensating differentials hypothesis.<sup>5</sup> Yet, for purposes of decomposing the sex gap in wages, Filer treats all of these coefficients as if they were meaningful and precise. Since the decomposition of the wage gap sums up the effects of a large number of statistically insignificant coefficients associated with particular job attributes, we consider the analysis suspect.

In his more recent analysis Filer (1989) links the *Dictionary of Occupational Titles* job-characteristic measures (and a series of other measures) to Census occupational data. The unit of analysis is the occupation, and Filer reports a series of analyses on 430 three-digit occupations. He attempts to reduce the effect of sex composition on wages by adding groups of job-characteristic

variables to his equations. Filer claims that once 225 occupational characteristics are controlled, the sex composition of occupations no longer has a statistically significant effect on wages.

Yet this analysis exhibits many of the same flaws as his earlier research. He has introduced so many measures of job content that few are statistically significant, and there is no discussion of the causal ordering of the variables considered. Indeed, as Filer acknowledges, there are nearly as many variables as occupations. Under these circumstances it is inevitable that some of the variables (or combination of variables) are highly correlated with each other as well as with the sex composition of an occupation. Consequently, his analysis no doubt suffers from bias resulting from multicollinearity. We find such an analysis entirely unpersuasive, especially in light of careful analyses that control for numerous working conditions and unmeasured heterogeneity across individuals in a "fixed effects" model and that find a significant depressing effect of percent female on wages (England et al. 1988).<sup>6</sup>

Finally, we are skeptical about the impact of compensating differentials on the wage gap because evidence suggests that compensation typically offered for working conditions constitutes a small fraction of workers' wages. Aldrich and Buchele (1988) note, for example, that skills are typically fourteen times as important as working conditions in the job evaluation systems they examined.

Nevertheless, the conclusion that female-dominated jobs are not underpaid once associated working conditions are taken into account strikes at the heart of the justification for comparable worth. Because this argument is receiving considerable play in policy circles and among economists, a careful examination of the compensating differentials hypothesis is warranted.<sup>7</sup>

### Compensating Differentials: A Test

For the compensating differentials logic to account for the wage gap between men and women, three things must be true. First, male-dominated positions must feature less desirable working conditions than female-dominated jobs. A fair test of this premise would involve measuring a wide array of job characteristics found in both male- and female-dominated jobs. While certain undesirable working conditions are concentrated in male-dominated jobs, occupations dominated by women may have their own set of undesirable working conditions (England & McCreary 1982; Lucas 1974). Previous research on compensating differentials has focused almost exclusively on undesirable working conditions typically found in male-dominated jobs.

Second, jobs must receive a wage premium for such undesirable employment conditions. After controls for entry requirements such as education are introduced, undesirable working conditions should have a positive association with wages. If there were no wage bonus for undesirable working conditions, the presence of such conditions in male-dominated occupations would not be able to account for the male-female pay gap.

Third, the sex gap in earnings attributable to working conditions must be shown to account for a substantial portion of the difference in pay between male- and female-dominated jobs (Filer 1989). In other words, one must show

statistically that little or no sex composition effect persists once working-conditions measures are controlled.

As we elaborate below, the data from the New York State Comparable Pay Study, which include more variegated measures of job attributes than any survey data of which we are aware, constitute an excellent testing ground for assessing the compensating differentials model.

## Data and Methods

In this article we focus on determinants of the wage structure of *jobs* by examining attributes associated with a job that affect the job's salary grade. In the New York State Civil Service system, the job is the appropriate unit of analysis. Like most other public-sector employers and many large private-sector firms that rely on some form of job evaluation for setting salaries, New York State bases its compensation policies exclusively on the job, not the individual. Individual salaries are a strict function of job and seniority. Every employee in a given grade level is accorded the same increment for seniority strictly dependent on years of service. There are no merit raises or other elements of discretion in setting salaries.<sup>8</sup> Thus the determinants of the compensation associated with each job are the determinants of the compensation of incumbents in each job. Consequently, in this context, there is no confounding attributes of individuals and rewards allocated to a position.

To obtain information on job content, Steinberg et al. (1985) sampled all employees in jobs with under 20 incumbents, and 20 incumbents in jobs with 20 or more incumbents. For female-dominated jobs and jobs held by a disproportionate number of minorities, up to 150 incumbents were sampled. The sampling procedure and rationale is described in detail in Steinberg et al. (1985). The New York State Comparable Pay Study surveyed 25,852 incumbents in New York State Civil Service jobs to rate the characteristics of 2,582 jobs.

Employees rated the attributes of their jobs. Pretest results indicate that employee responses correlate highly with those of supervisors (Steinberg et al. 1986). Incumbent responses for each job were averaged, producing highly reliable measures for each. (For some variables, the percentage responding in a particular way was used.) In our analysis we limited our sample to 1,605 jobs held by 4 or more incumbents in order to have a stable measure of percentage female and percentage minority for each job.

Eighty content characteristics were collected for each job. The items were designed deliberately to capture the widest possible range of work actually done in the New York State system. Every effort was made to measure as completely as possible the range of content of both female- and male-dominated positions, correcting for gender bias in the array of job-content information collected. Specific measures were drawn from (and went beyond) 20 prior job-content surveys used primarily by compensation-consulting firms. Our survey was refined in a pretest of 1,862 respondents. (A more detailed discussion of the survey instrument, rationale for items, and the pilot test is available in Steinberg et al. 1985, Chapters 3 and 4.)

TABLE 1: Variables Selected from the New York State Comparable Worth Study

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A. Salary, sex, and race composition

- 1) MSG or mean salary grade, which is the dependent variable for this analysis
- 2) PFEM or percentage female, which allows a direct test of the effect of sex composition of a job on its salary grade
- 3) PM or percentage minority, which allows for a direct test for potential wage discrimination based on minority incumbency

B. Working-conditions measures

- 1) Unfavorable working conditions, an index based on 6 questions concerning:
    - a) Heat or cold;
    - b) Cleaning others' dirt;
    - c) Fumes;
    - d) Loud noise;
    - e) Strenuous physical activity; and
    - f) Risk of injury
  - 2) Contact with difficult clients, a composite index based on 4 questions concerning the seriousness of client problems; dealing with emotionally troubled clients; the number of patients or inmates served; and handling sick or injured clients
  - 3) Communication with the public, a composite index based on 4 questions concerning answering questions from the public; answering complaints from the public; dealing with upset clients or an upset public; and dealing with nonagency personnel
  - 4) Stress, a composite index based on 6 questions concerning feeling rushed; conflicting demands; telling people what they don't want to hear; feeling pressure to meet deadlines; needing to learn skills just to keep up; and having to make quick decisions
  - 5) Job autonomy, a composite index based on 3 questions concerning freedom to decide how to complete assigned tasks; the order of tasks; and the speed of work
  - 6) Working with sick patients
  - 7) Repetition (doing the same thing repeatedly)
  - 8) Unexpected problems
  - 9) Being told what to do
- 

Fourteen scales were constructed to tap the main dimensions of job characteristics and to avoid problems of multicollinearity. These scales were derived through a factor analysis of the 80 job-characteristic measures. The reliability measures of the factors are unusually and uniformly high (Steinberg et al. 1986:Chapter 7). "Working conditions" was one of the factors. Since we are interested in a more detailed examination of working conditions, we disaggregate this factor for the present analysis. We also include 10 additional job-

TABLE 1: Variables Selected (continued)

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**C. Job-content and educational control variables**

- 1) Management/supervision, a composite index based on 11 questions concerning level of supervision; numbers supervised; prevention of wasted time; hiring and firing responsibility; scope of planning responsibility; estimation of training needs; substitution for boss in supervision; settling job disputes; finding replacements for no-shows; setting operating practices; and keeping employees informed of work policies
  - 2) Education required for position
  - 3) Data entry requirements, a composite index based on 3 questions concerning entering data; editing data; and verifying data
  - 4) Group facilitation, a composite index based on 3 questions concerning planning meetings and workshops; leading meetings and workshops; and giving speeches
  - 5) Computer programming, a composite index based on 4 questions concerning writing original programs; doing systems programming; using packaged programs; and doing systems design
  - 6) Fiscal responsibility, a composite index based on three questions concerning proposing money for agency or facility; spending money within budget; and proposing budget for unit
  - 7) Consequence of error, a composite index based on 2 questions concerning mistakenly hurting good name of agency and mistakenly hurting good name of unit
  - 8) Time effort, a composite index based on 2 questions concerning working overtime and weekends without compensation
  - 9) Dealing with information
  - 10) Writing complexity
  - 11) Experience requirements for position
  - 12) Physical coordination
  - 13) Filing responsibility
  - 14) Responsibility for equipment
- 

content variables not included in the 14 factors. Table 1 lists the variables used.

Our analysis predicts the salary grade for jobs from the attributes of these jobs in a multiple regression framework. The dependent variable is the salary grade associated with each job. As noted above, in the New York State Civil Service, wages are strictly a function of salary grade and seniority.

We included controls for management and supervisory responsibility, education and experience requirements, and other indicators of job skills. Specific variables include management/supervision, data entry requirements, group facilitation, computer programming, fiscal responsibility, consequence of error, time effort, physical coordination, responsibility for equipment, dealing with information, writing complexity, and responsibility for filing.

We present descriptive statistics for the working-conditions index but employ its six components in the multivariate analysis. These measures

encompass the standard questions about hazards and bad physical conditions that have been used in most research on compensating differentials: strenuous physical activity, fumes, risk of injury, working in hot or cold conditions, working near loud noise, and cleaning others' dirt.

Variables 8 through 15 in Table 1 tap other undesirable job attributes that have rarely been included in an analysis of compensating differentials. Measures 8 through 11 — contact with difficult clients, job stress, lack of autonomy, and communication with the public — are factors that combine variables. Single-variable measures are used for working with sick patients, repetition, unexpected problems, and close supervision. We consider each measure to capture an aspect of work that could reasonably be regarded as undesirable.<sup>9</sup>

People who work with difficult clients (such as convicted criminals, troubled youth, and individuals with drug or alcohol problems) or with dying patients experience job burnout because of the nature of their work. Nursing, for example, has an extremely high turnover rate as a result of the high stress levels associated with it (Roberts 1989). Similarly, many jobs involve time pressures, conflicting role demands, and interpersonal communication about undesirable topics. In the Oregon pay-equity initiative, the Comparable Worth Task Force added a job factor to its job evaluation system to encompass these features because of the widely held view among Oregon employees that these job characteristics were undesirable (Acker 1989). We use a similar rationale for including communication with the public as an undesirable working condition. New York State employees interviewed often complained of the difficulty of dealing with public clients (such as workers' compensation claimants, unemployed workers, and other distressed citizens seeking government relief and claiming extenuating circumstances) who were often angry and upset (Steinberg et al. 1985).

As noted above, excessive repetition is a feature of work often included on lists of undesirable job attributes. Unexpected problems is perhaps the most ambiguous measure on our list, in that one would expect it to be associated with challenging jobs with diverse responsibilities. Yet New York State employees often complained of this job feature, which suggests that it might be tapping the classic concern of industrial sociologists about the lack of control over one's job (Blauner 1964). Thus our approach was to add these measures of undesirable job attributes to the ones conventionally used so as to cast our net as wide as possible to include any available measure that might be regarded as undesirable by "the marginal employee" in our test of the compensating differentials hypothesis.

Sex and race composition of jobs are independent variables of particular interest. In several analyses, we contrast female-dominated jobs with white male-dominated jobs, the latter being defined as jobs in which 90% of incumbents are white males. Steinberg et al. (1985) found that the proportion minority and the proportion female in a job each had a relatively small yet discernable negative effect on the job's salary grade. Therefore, to select a set of jobs unlikely to be affected by gender or race composition, 90% white and male was set as the cutoff point. There are 464 New York State jobs that meet these criteria. Female-dominated positions are defined as those in which 67.2% or more of incumbents are female. This figure is about 40% larger than the

proportion of women among all New York State employees, which is 48.4% (Steinberg et al. 1985).

Whereas public-sector wage-setting practices may not seem the most appropriate economic context within which to test propositions about the workings of the labor market, we maintain that this setting represents a fair test of the compensating differentials thesis. Government agencies, though lacking external competition, nonetheless have scarce resources and attempt to allocate them in such a way as to deliver services cost-effectively within political and fiscal constraints (Kelman 1987). Given this motivation, there is every reason to keep compensation as low as is consistent with adequate staffing and motivation. Data indicate that compensation practices in the public sector are sensitive to wage levels associated with what are called "key job titles" in the local labor market (Remick Ginorio & Brtiz:1987; Bridges & Nelson 1988).<sup>10</sup> Further, 1 out of every 5 employed women and 1 out of every 6 employed men work in the public sector (U.S. Department of Labor 1983:71). The importance of the public sector and the size of this case study (it is a "case" employing approximately 170,000 individuals) make this a case of considerable interest. Finally, we believe that testing the compensating differentials hypothesis within one large organization has certain advantages over using national survey data because we are able to remove the confounding effects on wages of organizational variables (Baron & Bielby 1980; Berheide & Steinberg 1989).

## Results

### DISTRIBUTION OF JOB ATTRIBUTES BY SEX-TYPE OF JOB

Our first test of the compensating differentials hypothesis assesses whether white male-dominated jobs are characterized by more undesirable working conditions than female-dominated jobs. Table 2 indicates the means for each undesirable working condition associated with white male-dominated and female-dominated jobs. All differences in means reported in Table 2 are statistically significant ( $p < .05$ ).<sup>11</sup>

If we based our test simply on the working-conditions summary index, we would find that male-dominated jobs have somewhat more undesirable attributes than those dominated by women. This result is not surprising — we note above the connection of this index to conventional measures of hazards historically associated with male-dominated blue-collar jobs. However, when we disaggregate this measure, we find that female-dominated jobs are more likely to be noisy and to involve cleaning others' dirt, whereas jobs dominated by men are likelier to involve working in hot or cold conditions, exposure to fumes, risk of injury, and strenuous physical activity.

Yet, as expected, other undesirable characteristics are concentrated in female-dominated positions, which are more likely to involve working with difficult clients and sick or dying patients as well as less autonomy and more repetition. Male-dominated jobs, on the other hand, are likelier to involve communication with the public and (slightly) more stress.

The productivity-related job content of male- and female-dominated jobs also vary. White male-dominated jobs involve such desirable features as

TABLE 2: Working Conditions and Job Characteristics by Sex Type of Job

		White Male-Dominated (90%+ White Males) (n=533)		Female-Dominated (67.2%+ Female) (n=297)	
		Mean	SE	Mean	SE
<i>Working-conditions variables</i>					
F2*	Unfav. working conds. (index)	.25	.010	.18	.009
MI25	Heat or cold	.24	.009	.09	.005
MI26	Fumes	.25	.009	.17	.011
MI27	Cleaning others' dirt	.11	.007	.15	.011
PI31	Loud noise	.84	.011	.92	.007
MI32	Strenuous physical activity	.20	.009	.16	.011
MI37	Risk of injury	.32	.011	.21	.012
F3	Difficult clients	.16	.007	.28	.015
F4	Communications with public	.75	.009	.68	.012
F10	Stress	.95	.003	.93	.006
F11	Autonomy	.74	.006	.65	.009
MI28	Working with sick patients	.04	.004	.15	.015
MI33	Repetition	.20	.007	.30	.011
MI94	Unexpected problems	.63	.007	.55	.012
MI102	Told what to do	.45	.006	.49	.007
<i>Control variables</i>					
F1	Management/supervision	.49	.010	.34	.012
F5	Education required	.52	.009	.42	.012
F6	Data entry	.37	.013	.42	.018
F7	Group facilitation	.34	.010	.20	.013
F8	Computer programming	.14	.008	.06	.006
F9	Fiscal responsibility	.24	.009	.11	.007
F12	Consequences of error	.70	.006	.54	.010
F13	Time effort	.18	.008	.07	.005
	Information	.55	.006	.40	.008
	Writing	.50	.007	.37	.008
MI40	Experience required	.56	.011	.27	.011
MI44	Physical coordination	.34	.014	.49	.020
MI74	Filing (combined 74&54)	.51	.008	.59	.009
MI96	Responsible for equipment	.58	.011	.42	.014
<i>Other variables</i>					
MSG	Mean salary grade	19.66	.289	12.12	.354
PFEM	Proportion women	.03	.002	.85	.006
PM	Proportion minority	.01	.001	.14	.010

\* Acronym corresponds to that used in the New York State Comparable Worth Study.

managerial, supervisory, and fiscal responsibilities. Because these are productivity-related job attributes rather than working conditions *per se*, we do not consider these measures tests of the compensating differentials thesis.

Thus the first premise of the compensating differentials explanation of women's low wages receives mixed support at best. On the basis of some 25,000 employee reports on job content and conditions associated with 1,605 different jobs held by approximately 170,000 workers, we find that in New York State female-dominated jobs involve somewhat *different* (and not necessarily fewer) undesirable working conditions than jobs dominated by men. Since we don't know how seriously employees view each of these items, this analysis by itself is not definitive. But these data do suggest that male-dominated jobs do not have a monopoly on undesirable working conditions. Yet, as Barry (1987) discovered, compensation may be made for undesirable working conditions in male-dominated jobs though it may not be in jobs dominated by women. We now examine how each of these working-conditions items relates to wage structure.

#### JOB ATTRIBUTES AND WAGES

A second test of the compensating differentials argument examines whether additional wages are paid for jobs that involve undesirable working conditions. In other words, for the compensating differentials thesis to be an accurate predictor of wage premiums, undesirable job attributes would have to be associated with premiums, net of other compensable job attributes such as experience and educational requirements and managerial and supervisory responsibility.

Table 3 presents the results of regression equations that estimate the salary grade associated with each job from working-conditions measures and other compensable job characteristics that serve as control variables. In the first equation, coefficients for 14 control variables and all working-conditions variables, as well as percentage female and percentage minority, are presented. In the second equation, control variables that fail the test of statistical significance are deleted. (Each variable was tested successively in a backward stepwise-regression procedure.) In the third equation, statistically insignificant measures of undesirable working conditions and percentage minority are deleted.

Of the 14 job-characteristic measures considered, the signs of 10 are contrary to the prediction of the compensating differentials model. Only 4 of the measures have the expected positive effect on wages for undesirable working conditions: stress, fumes, handling sick patients, and unexpected problems. Of these, only handling sick patients is statistically significant.

In the analysis restricted to statistically significant variables, we find that jobs that involve working in hot, cold, or noisy conditions, cleaning others' dirt, engaging in strenuous physical activity, and even risking injury — the most direct measure of on-the-job hazard — are each associated with lower wages than are other jobs. Incumbents in jobs with these attributes earn less than those in other jobs with similar educational, writing, and experience requirements, and at similar levels of time effort and supervisory responsibility. Repetitious

TABLE 3: Predicting Mean Salary Grade from Job Requirements, Job Content, Working Conditions, and Sex and Race Composition<sup>a</sup>

	Equation 1		Equation 2		Equation 3	
	b	SE	b	SE	b	SE
Intercept	3.89***	1.09	3.53***	1.06	4.77***	0.77
<i>Control variables</i>						
F1 Management/supervision	4.23***	0.45	4.18***	0.42	4.27***	0.38
F5 Education required	12.03***	0.45	12.13***	0.45	12.08***	0.43
F6 Data entry	0.04	0.29				
F7 Group facilitation	0.65	0.44				
F8 Computer programming	0.29	0.48				
F9 Fiscal responsibility	-0.66	0.47				
F12 Consequences of error	1.71***	0.52	1.75***	0.52	1.88***	0.48
F13 Time effort	1.57**	0.59	1.43**	0.54	1.51**	0.53
Information	4.45***	0.76	4.50***	0.73	4.78***	0.71
Writing	4.67***	0.87	5.23***	0.79	5.42***	0.76
MI40 Experience required	7.65***	0.34	7.61***	0.36	7.63***	0.33
MI44 Physical coordination	-0.09	0.26				
MI74 Filing (combined 74&54)	-1.94**	0.59	-1.73**	0.56	-1.45**	0.51
PI96 Responsible for equipment	0.72***	0.17	0.73***	0.17	0.72***	0.17
<i>Working-conditions variables</i>						
F3 Difficult clients	-0.66	0.57	-0.79	0.56		
F4 Communication with public	-0.53	0.40	-0.51	0.38		
F10 Stress	1.69	0.97	1.75	0.96		
F11 Autonomy	0.25	0.60	0.21	0.59		
MI25 Heat or cold	-1.51*	0.55	-1.50*	0.55	-1.56**	0.53
MI26 Fumes	0.05	0.47	0.01	0.47		
MI27 Cleaning others' dirt	-2.43***	0.69	-2.38***	0.68	-2.87***	0.57
MI28 Working with sick patients	5.05***	0.54	5.06***	0.54	4.71***	0.48
PI31 Loud noise	-1.17**	0.43	-1.18**	0.43	-1.33**	0.42
MI32 Strenuous physical activity	-3.43***	0.62	-3.40***	0.61	-3.15***	0.60
MI33 Repetition	-2.34***	0.50	-2.37***	0.50	-2.48***	0.48
MI37 Risk of injury	-1.09*	0.48	-1.06*	0.48	-1.34***	0.41
MI94 Unexpected problems	0.28	0.45	0.31	0.44		
MI102 Told what to do	-1.42*	0.62	-1.36*	0.62	-1.44*	0.57
<i>Other variables</i>						
PFEM Proportion women	-2.60***	0.26	-2.56***	0.26	-2.56***	0.25
PM Proportion minority	-0.09	0.41	-0.03	0.40		
R <sup>2</sup>	.897		.897		.897	

\* p&lt;.05    \*\* p&lt;.01    \*\*\* p&lt;.001

<sup>a</sup> OLS regression analysis

work and being told what to do are also negatively compensated. For only one job measure — dealing with sick or dying patients — is there evidence of positive compensation associated with an undesirable job characteristic. Ironically, since this attribute is found disproportionately in female-dominated jobs, it cannot explain the gap between men's and women's wages. To do so, other positively compensated attributes would have to be concentrated in male-dominated occupations.

We next test for interaction effects between sex composition of the job and undesirable working conditions to determine whether the latter might be compensated for in either male or female-dominated jobs but not across-the-board. Table 4 presents regression analyses conducted separately for white male-dominated jobs (90%+ white male) and female-dominated jobs (67.2%+ female). In general, the sign of each of the working-conditions measures is the same for both male- and female-dominated jobs: traits that are negatively valued for male-dominated jobs are also negatively valued for female-dominated jobs. The exceptions run counter to what would be predicted by the compensating differentials explanation of the gender gap. Male-dominated jobs seem to be more heavily penalized than jobs dominated by women for undesirable working conditions that are differentially found in the former, such as working in noisy and physically strenuous jobs. Indeed, we find that in New York State employees in white male-dominated jobs are actually negatively compensated for the two job conditions that have conventionally been most associated with the compensating differentials argument: risk of injury and work involving strenuous physical activity. Similarly, female-dominated jobs are more heavily penalized for repetitious work, an attribute more prevalent in these jobs.

As a final test, we repeat this analysis for the jobs included in each of the three collective bargaining units. In New York State government employment, each of the bargaining units represents a "natural" break in job groupings. One union, for example, represents clerical, operational, and nonprofessional institutional service jobs; a second bargains for entry-level positions requiring a bachelor's degree and/or the so-called women's professions; a third unit represents nonunionized managerial and professional employees. We carried out this analysis because we suspected that, while compensating differentials might not account for wage differences between a heavy equipment operator and an assistant commissioner of the Office of General Services, they might explain wage differences between nonexempt male- and female-dominated jobs in which the differences in wages are less extreme.

The results presented in Table 5 indicate that, with one interesting exception, compensating differentials do not explain these differences. Within each bargaining unit, most undesirable working conditions are associated with lower wages, controlling for all other job attributes. The exception is that, among the lowest-tier jobs, which include craft and construction workers, risk of injury becomes positively associated with wages. This is worth highlighting, since it foreshadows our discussion of the complexities of assuming that compensating differentials, as opposed to political manipulation, are the basis for wage-setting practices.

In all of these equations, the extraordinarily high  $R^2$  should also be noted.

TABLE 4: Predicting Mean Salary Grade from Statistically Significant Variables, White Male-Dominated vs. Female-Dominated Jobs<sup>a</sup>

		White Male-Dominated (n=533)		Female-Dominated (n=297)	
		b	SE	b	SE
Intercept		9.10***	1.36	-2.76	1.69
<i>Control variables</i>					
F1	Management/supervision	3.72***	0.60	2.83**	0.97
F5	Education required	10.32***	0.80	8.58***	1.11
F12	Consequences of error	2.35**	0.84	2.84**	0.95
F13	Time effort	1.35	0.81	3.82	2.01
	Information	2.03	1.24	6.30***	1.57
	Writing	7.07***	1.26	10.50***	1.84
MI40	Experience required	6.67***	0.54	6.38***	0.89
MI74	Filing (combined 74&54)	-3.64***	0.87	2.96*	1.21
PI96	Responsible for equipment	1.07**	0.33	0.04	0.34
<i>Working-conditions variables</i>					
MI25	Heat or cold	-1.27	0.80	-2.13***	1.88
MI27	Cleaning others' dirt	-3.26**	1.01	-4.97***	1.44
MI28	Working with sick patients	2.47*	1.16	3.66***	0.87
PI31	Loud noise	-2.13***	0.64	1.41	1.08
MI32	Strenuous physical activity	-5.20***	1.07	0.49	1.19
MI33	Repetition	-0.46	0.97	-2.90**	0.94
MI37	Risk of injury	-1.16	0.68	-0.36	1.10
MI102	Told what to do	-2.96**	1.01	-2.83*	1.15
R <sup>2</sup>		.886		.877	

\* p&lt;.05    \*\* p&lt;.01    \*\*\* p&lt;.001

<sup>a</sup> OLS regression analysis

Equation 3 in Table 3, on which subsequent analyses are based, explains the overwhelming majority of the variance in salary grades ( $R^2=.897$ ). These results are thus strong in their explanatory power and robust across subgroups.

#### EXPLAINING THE SEX GAP IN WAGES

The third test of the compensating differentials explanation determines whether the difference in pay between women and men can be accounted for by the wage effects of undesirable working conditions. We find that the explanation fails to meet this test as well: net of all factors examined, the proportion of women in a job continues to depress the wage associated with it. Therefore,

TABLE 5: Predicting Mean Salary Grade from Statistically Significant Variables Only, by Bargaining Unit<sup>a</sup>

		Unit 1		Unit 2		Unit 3	
		b	SE	b	SE	b	SE
Intercept		1.54	1.04	9.29***	0.89	13.58***	1.92
<i>Control variables</i>							
F1	Management/supervision	4.21***	0.73	2.70***	0.41	0.71	0.65
F5	Education required	5.74***	0.86	5.83***	0.54	8.08***	0.76
PI96	Responsible for equip.	0.68*	0.28	0.29	0.18	0.03	0.27
F12	Consequences of error	0.94	0.66	0.48	0.53	3.83***	0.93
F13	Time effort	-3.48**	1.34	0.07	0.04	3.56***	0.71
	Information	4.26***	1.17	3.11***	0.78	2.30*	1.14
	Writing	3.36*	1.44	5.37***	0.83	-1.99	1.33
MI40	Experience required	6.67***	0.65	3.82***	0.38	6.88***	0.54
MI74	Filing (combined 74&54)	2.17**	0.72	-0.42	0.66	-4.28***	1.09
<i>Working-conditions variables</i>							
MI25	Heat or cold	0.09	0.66	-1.52**	0.58	-1.32	1.26
MI27	Cleaning others' dirt	-1.90***	0.57	-1.83*	0.80	-4.32*	2.08
MI28	Handling sick patients	0.17	0.62	2.73***	0.59	10.55***	0.90
PI31	Loud noise	-0.07	0.47	-0.19	0.45	0.47	1.54
MI32	Strenuous phys. activity	-0.89	0.68	-2.35***	0.69	-8.77***	1.72
MI33	Repetition	-1.10*	0.55	-1.01	0.56	-0.55	1.25
MI37	Risk of injury	1.35*	0.64	-0.63	0.41	0.48	0.88
MI102	Told what to do	-0.94	0.73	-1.04	0.64	0.04	1.06
<i>Sex composition variable</i>							
PFEM	Percent female	-1.07**	0.36	-1.22***	0.28	-1.76***	0.50
R <sup>2</sup>		.606		.544		.718	

\* p&lt;.05    \*\* p&lt;.01    \*\*\* p&lt;.001

<sup>a</sup> OLS regression analysis

even when these content and context factors are taken into account, the greater the presence of women in a job, the lower the salary accorded it. The percent minority does not remain statistically significant once job-content controls and other job characteristics are included in the analysis. But a detailed test of whether the race gap in wages is accounted for by the compensating differentials thesis is beyond the scope of this article (see Berheide et al. 1987a; Berheide et al. 1987b).<sup>12</sup>

First we note that working conditions explain only a small proportion of the variance in wages in New York State. Productivity-related variables account for 86% of the variation in salary grades, and adding working conditions to the analysis adds only 3% to the explained variance. This suggests that working conditions are unlikely to account for the substantial sex gap in wages in this employment system. Our findings are consistent with those of Aldrich and Buchele (1988), indicating the small weight accorded to working conditions relative to skills in existing job-evaluation systems. We summarize the practical significance of our results by considering the results of three hypotheticals which indicate how much impact working conditions has on the sex gap in wages.

What would happen to wages for female-dominated jobs if the sex bias in wage-setting were removed? Specifically, how much change would we observe in wages associated with female-dominated jobs if the negative effect of sex composition of occupations were removed? Note that this is the sex composition effect that remains after both productivity and working-conditions measures are controlled. For this and subsequent hypotheticals, we use the equation common to all jobs as the framework for wage determination (equation 3 in Table 3). In this model, a 100% change in the percent female with a job reduces its associated wage by 2.56 salary grades. Since the average female-dominated job is held by 85% women, removing this presumably discriminatory effect would increase the wages for female-dominated jobs by 2.18 salary grades, or 18% of its base pay. The ratio of wages for female-dominated jobs to white male-dominated jobs would increase from 61.6% to 72.3%. Thus using this equation as the basis for a comparable worth remedy would result in a 27.9% reduction in the gap between the wages for male- and female-dominated jobs.

Second, what would be the effect on wages for female-dominated jobs if these jobs were characterized by the same working conditions as male-dominated ones? We hold the education, experience, and responsibility measures for female-dominated jobs constant and substitute men's means for the working-conditions variables in calculating the salary grade of female-dominated jobs. This substitution results in a *reduction* in wages for these jobs from an average salary grade of 12.12 to 11.87, or 60.4% of the salary of white male-dominated jobs. If women in the New York State Civil Service worked in conditions more like those in which men do, their wages would *decline* slightly, since working conditions generally have negative effects on wages: since men have somewhat higher levels of these negatively valued job attributes, substituting their levels for women's reduces women's remuneration relative to men's.

Third, what would be the effect of eliminating the negative effect of working conditions on wages of both men and women?<sup>13</sup> On the face of it, it makes no sense for employees to lose money for performing unpleasant tasks or tolerating undesirable conditions. If we removed the negative effect of all working conditions, what would be the effect on the wages of female-dominated jobs relative to those of white male-dominated jobs?

We set all the negative coefficients of working conditions found in Table 3, equation 3, equal to zero and remove the effect of the sex composition of jobs. We find that the average salary grade of female-dominated jobs increases substantially from 12.12 to 17.35. At the same time, the average salary grade of

TABLE 6: Summary of Comparable Worth Studies

<i>Study</i>	<i>Population of Jobs</i>	<i>Control Variables</i>	<i>Working-conditions Measures</i>	<i>Sign</i>	<i>R<sup>2</sup></i>
Iowa	<i>All state jobs</i>	Knowledge; Experience; Complexity; Guidelines; Contacts; Mental demands; Supervision; Scope; Consequences of error	<i>Hazards; Environment; Physical demands</i>	- - -	Not available
Wyoming	<i>All state jobs with 5 or more incumbents</i>	Service; Age; Knowledge; Skills; Experience; Supervision	<i>Equipment;<sup>a</sup> Working conditions</i>	- +	.83 (- for female-dominated jobs)
Suffolk County, N.Y.	<i>All county jobs with 3 or more incumbents</i>	Education; Experience; Supervision; Analytic skills; Clerical; Dexterity;	<i>Risk; Eyes hurt; Public contact; Phys. demands; Noise; Stress; Sit/stand</i>	- - - + + -	.84
Wisconsin (pilot study)	<i>283 jobs</i>	Knowledge; Consequences of error; Effect of actions; Job complexity; Amount of discretion; Contacts	<i>Working-conditions; Stress;</i>	- -	.97
Michigan	<i>All state jobs</i>	Decision Making; Clerical; Technical; Service; Supervision	<i>Equipment; Atypical hrs.; Routine; Physical effort; Public contact; Hazardous cond.</i>	- + - - + +	.71 to .77
Montana	<i>All state jobs</i>	Length of service; Skills; Knowledge; Experience	<i>Working with Equipment</i>	-	.79
Florida	<i>Stratified sample of 312 jobs</i>	Supervisory; Responsibility; Education; License; Evaluation; Research	<i>Working with machines</i>	-	.74

<sup>a</sup> The terms "equipment" and "machines" are often used as proxies for working conditions, since such variables as noise, physical efforts, and hazards are often associated with the operation of machinery. It should be noted that this usage focuses on the machines operated by men and ignores the fact that overall women are more likely to work with machines than men (Form and McMillen 1983).

white male-dominated jobs rises from 19.66 to 23.63. While the absolute increase is similar, it constitutes a larger fraction of women's wages. Thus we find that the wages of both women and men would increase as a result of such a program but that women's wages would increase more than men's. The ratio of the salary grade of female-dominated jobs to white male-dominated jobs would increase from 61.6% to 73.4%. Most of this change, it should be noted, is caused by the removal of the sex composition of jobs: only a slight positive increment results from the "zeroing out" of negatively valued working conditions.

Even though incumbents in some female-dominated jobs receive a relative salary advantage because they deal with sick and injured patients, their salaries are deflated because of their tendency to clean up after others and to work in noisy settings. Repetition and being told what to do also contribute to a reduction in their wages. In New York State government employment, therefore, removing the negative impact of the range of undesirable working conditions found in jobs would slightly improve women's wages relative to men. Once again, these results are inconsistent with the predictions of a compensating differentials approach to the sex gap in wages, since that approach predicts wage bonuses and not wage penalties for working in undesirable conditions.

Corroborating evidence was culled from a number of state and local comparable worth studies, all of which have explicit measures of working conditions as well as productivity-related job-content measures. Though these studies, which are often methodologically sophisticated and professionally conducted, have not found their way into the research literature and were not constructed to test the compensating differentials thesis, they do constitute direct evidence of the effect of working conditions on wages. Each study measures job content differently and each controls for different variables.

Table 6 summarizes the results of seven such studies, lists the measures of working conditions for each, and indicates whether these conditions were positively or negatively compensated. It also notes the population of jobs covered by the analysis, the control variables included, and the explanatory power of each equation.

These studies generally find that undesirable working conditions are *negatively* related to wages after appropriate controls are introduced. Only 6 of the 22 working conditions coefficients reported in Table 6 are in the positive direction predicted by the compensating differentials thesis. In 3 of the studies, the results are entirely inconsistent with compensating differentials. Moreover, the evidence indicates that, while productivity-related and other job characteristics account for some of the gender gap in wages, female-dominated positions remain undervalued even after these effects are removed.

## Discussion

The three basic tests of the compensating differentials argument fail to receive support in this analysis. The results are directly at odds with the compensating differentials explanation of the gender gap in wages. Male-dominated positions do not have a monopoly on undesirable working conditions. There are countless

undesirable features of work, and many of these are concentrated in female-dominated jobs. Further, in general, neither men nor women are positively compensated for working in unpleasant or unsafe conditions. The majority of the measures of undesirable working conditions have a negative effect on wages, net of education, experience, responsibility, and other productivity-related job attributes. We did find that trade and construction workers receive some additional compensation for risk of injury on the job relative to those in the same bargaining unit, and that health workers receive additional compensation for working with sick or injured patients. As we will elaborate below, we view these exceptions to be grounded in particular political circumstances rather than an indication of some general economic imperative requiring the compensation of workers in undesirable settings. As a rule, undesirable working conditions have been penalized in the compensation policy of the New York State government. Finally, a significant negative gender coefficient remains in all the equations estimated. Thus, even after all the factors considered are taken into account (factors that explain 90% of the variance in wages), women's work remains significantly undervalued. Each of the links in the compensating differentials chain fails to receive support in our analysis. Putting women in jobs with the same working conditions as men would not reduce the sex gap in wages, while eliminating the perverse effects of working conditions on wages would benefit women slightly more than men.

We have even deeper problems with the compensating differentials approach. We believe that the general pattern of wage penalties associated with undesirable working conditions, as well as the occasional wage premium, can be explained by a model of wage determination that begins not with preferences but with an analysis of the politics of wage determination in a firm or an organization. The ability of specific groups of employees to obtain additional compensation for working in undesirable conditions depends on their ability to legitimate a claim of entitlement and their power to insert this claim into their organization's compensation policy. Once a claim has been inserted into the compensation practices of enough employers in a local labor market and not found to be economically deleterious, it becomes institutionalized into most wage structures in that local labor market.

For example, consider the positive compensation accorded for increased risk of injury on the job within the nonexempt bargaining unit. Though a complete account of the struggle over wages of craft and construction workers is beyond the scope of this article, several developments that contributed to the definition of such jobs as requiring compensating differentials should be noted. New York State workers benefited from both the national struggles associated with the formation of the American Federation of Labor as well as union efforts to obtain some control of job-evaluation systems after World War II (Rayback 1966). As a result of employee pressure on employers, Hay Associates, whose job-evaluation system is popular and widely imitated, modified their job-factor guide charts to include undesirable working conditions (Glasner 1986). The Hay system has typically defined undesirable working conditions as encompassing strenuous physical activity, risk of injury, and extremely unpleasant physical environments, which are most often associated with male-dominated blue-collar jobs. The evolution of the Hay Guide Chart had less to do with an objective

assessment of the need to create economic incentives in the face of a labor shortage than with the ability of craft and construction workers to use such arguments to legitimate higher wages on their behalf. Moreover, while Hay Associates always use the Know-How and Problem Solving Guide Charts in performing job evaluations, they use the Working Conditions Guide Chart only when explicitly requested.

No doubt New York State blue-collar workers inherited the shift in their wage structure that resulted from decades of conflict over their wage contract. At the same time, it is not coincidental that the union leadership is dominated by craft and construction workers, even though the majority of its members are disproportionately female clerical and institutional service workers.

Indeed, a number of studies testing the compensating differentials model find a wage premium associated with undesirable working conditions only for union workers. Olson (1981), for example, notes that his analysis produces a positive wage coefficient when the risk of a fatal accident interacts with union status (see also Duncan & Stafford 1980). Whereas Olson infers from this result that union members collectively place a higher value on life than nonunion members, we suggest that union members instead may have a greater capacity to translate commonly held preferences into higher wages. We interpret this evidence as more consistent with a political model of wage determination than with a compensating differentials interpretation.

This alternative interpretation of the determinants of wage premiums is consistent with the "new structuralism" in sociology which views intrafirm dynamics as mediating the connection between individual attributes and socioeconomic rewards (Baron & Bielby 1980; Kalleberg & Berg 1987; Baron 1989). For example, Bridges and Nelson (1988) find that in large bureaucratic settings "non-economic influences on pay levels are not merely minor deviations from market or productivity-based considerations, but are central determinants of the wage structure" (1988:10), especially for jobs without direct external parallels. Bridges and Nelson conclude that the lower pay accorded to female-dominated jobs may result from the limited political resources of women within public-sector wage-determination processes. It is also consistent with institutional approaches to wage determination among economists, in which power is treated not as an exogenous variable but as a "central component of the workings of the economy" (Woodbury 1987:1782; see also Klein 1987). Post-Keynesian economists such as Eichner (1976) and Appelbaum (1979) have long held that "wages depend largely on the respective bargaining power of business and labor, and on . . . normative factors" (Appelbaum, 1979:105).

Recent experience with comparable worth initiatives is especially instructive in that they reveal the way political arrangements affect efforts to reform the wage structure. Steinberg (1987) shows that in New York State one of the motives for undertaking a comparable worth study was to satisfy a long-standing union demand that clerical jobs be reclassified upward. During the New York study, decisions about the definition of female-dominated jobs and jobs held by a disproportionate number of minorities, the nondiscriminatory pay standard, and job-content factors and factor weights were the subject of lengthy and often heated negotiations between management, labor, and the feminist proponents conducting the study. The poststudy implementation of wage

adjustments was filled with political manipulation and conflict, which included unilateral managerial reworking of the statistical analysis to minimize equity adjustments and threats to one union of wage cuts in the male-dominated jobs it represented.

In Oregon, Acker (1989) found that managers and unions were able to reproduce class and gender hierarchy in the wage structure even during an initiative whose goal was a substantial reduction in such inequalities. After more than four years of intense conflict among labor, management, and feminists, only feminists fell short of their goals for modifying the wage structure. The general power resources and specific access to decision making available to labor and management was simply not open to feminists (see also Nelson & Evans 1989).

We maintain that workers' efforts to receive supplemental compensation for working in undesirable conditions generally involves a process of conflict in a context of unequal power similar to what is being observed in comparable worth initiatives. Workers are not without power, however, and one source of power not often discussed in the literature is the legitimation of employee demands by recourse to an argument that carries compelling face validity. Risk, noise, and other negative job attributes can be translated into wages most often when workers are powerful enough to introduce such issues into discussions regarding wages, often through unions or other workplace pressure groups, and when there is a basis for constructing a plausible and effective rationale.

This process at the organizational level parallels the one that occurs in the political arena when employees demand that the state intervene in the setting of the terms and conditions of their employment contract (Steinberg 1982). Given a commitment to *laissez-faire*, the state would only intervene in circumstances regarded as "extraordinary," where the legal assumption of bargaining equality was visibly violated. During the Progressive Era, for example, labor standards legislation specifying working hours or prohibiting nightwork was extended to women, minors, and males who succeeded in arguing that they worked in physically dangerous conditions. Thus men who worked in underground mines obtained statutory rights to an 8-hour day, whereas men who worked in bakeries were denied such rights because their jobs were not viewed as dangerous. Even women's rights were limited by the industry or occupation in which they worked: it took decades of vigorous political action by women to extend the right to a 48-hour work week from manufacturing to retail sales. The labor standard laws extended to women were the result of a conscious strategy by groups such as the National Consumers League, collaborating with unions, to use the ideology of women's biological inferiority as a power resource to extend to them rights legally denied men. In general, the inclusion of particular types of work under the umbrella of protection was the result of the political success of these unions in defining specific types of work as deserving this designation, as workers failed to achieve a universal entitlement to protection.

Thus a political or what might be called "negotiated" model of wage determination does not assume that undesirable working conditions automatically translate into wages, even if there is a shortage in the supply of workers. In the case of labor shortage, a number of outcomes is possible.

Employers might raise wages to attract a larger pool of workers, in which case a number of other categories of workers may also obtain wage increases on grounds of equity or by attempting to show that they are also in great demand. Alternatively, the tasks involved might be redefined to minimize or alleviate the shortage. In a large bureaucratic setting with an elaborate division of labor, those with power have been known to reorganize their work to have tasks that are viewed as "dirty" or "routine" handled by others (Hughes 1971; Joffe 1987). A labor shortage might present itself as an opportunity to a group endeavoring such a strategy. We suggest that power arrangements will affect the conditions of work, its content, and its assessment for purposes of compensation. Indeed, from the perspective of the sociology of work, undesirable working conditions may be a sign of lack of power, indicating that the job is unlikely to receive high wages.

Future research needs to develop specific independent measures of power that can be employed to empirically explain wage patterns that cannot be explained by the imperatives of economic efficiency and utility maximization underlying the compensating differentials perspective. Comparable worth efforts may be a strategic vantage point for such case studies because the political struggles over comparable worth raise questions regarding what makes a job "deserving" of additional compensation. Study of such initiatives can also inform us of the conditions under which employees will actually obtain wage increases once they are viewed as underpaid.

## Notes

1. A related but not inconsistent economic argument suggests that desirable working conditions and fringe benefits are positively associated with income. The logic is that at high incomes, employees would prefer the marginal dollar to be spent on a more pleasant work setting, whereas at low incomes the worker would prefer the marginal dollar to be taken as wages. For example, an executive making \$100,000 would more likely prefer an air conditioner and pile carpeting in his or her office costing \$1,000 than making \$101,000 without these amenities, whereas a furnace mechanic might prefer an extra \$500 in wages rather than have the firm implement safety procedures that would cost \$500 per worker. Thus the higher the wage, the larger the proportion of benefits associated with workplace amenities, and the lower the wage, the fewer perquisites and the less desirable the working conditions. Taken together, these two arguments suggest that (1) across salary levels, wages should be positively associated with working conditions; and (2) within a more restricted range, wage differences for jobs with the same entry requirements should be compensated by nonmonetary differences.
2. Davis and Moore explicitly argue that the "burdens" of training for certain positions generate a need for additional rewards; the same logic would suggest that jobs with undesirable working conditions need additional compensation to provide sufficient motivation for individuals to perform them.
3. Several longitudinal studies find that individuals' income and working conditions change over time in a manner consistent with the compensating differentials logic (Olson 1981; Duncan & Stafford 1980; Duncan & Holmlund 1983; Allen & Sumner 1986). However, though workers may attempt to improve their individual positions in a way that improves their total pecuniary and nonpecuniary rewards, this does not mean that the structure of wage compensation for jobs is consistent with the compensating differentials logic.
4. This assertion contradicts evidence which Filer himself cites that indicates men and women place money in the same position on a list of features of work they value (Walker, Tausky & Oliver 1982; see also O'Farrell & Harlan 1982).

5. We reestimated Filer's equation, introducing controls for professional and other white-collar occupations into the analysis. (These limited occupational controls help to more effectively control for job content and to test the robustness of the results.) While we were unable to reproduce his results exactly, we were able to obtain the same  $R^2$  and coefficients that closely parallel those Filer reports. (Filer reports that his sample included "about 350 men and 250 women," making an exact replication difficult. We obtained 364 men and 246 women for the overall analysis, which reduced to 316 men and 215 women because of missing cases for the detailed job-characteristic measures.) We found that the control for occupation significantly changes the pattern of relationships obtained. For men, 8 of the 28 coefficients change sign, whereas for women, 5 do. Our scorecard now reads 30 coefficients consistent with compensating differentials, 26 against. For statistically significant variables, only 2 are consistent with compensating differentials, and 7 are inconsistent. The coefficient on the number of job hazards, a variable emphasized by Filer in making his case, is substantially reduced in this analysis and is thus no longer statistically significant. We further examined the 14 components of Filer's job-hazard index and the 12 different measures that comprise the bad physical conditions index. We decomposed each index into its component parts and analyzed the effect of each on wages, controlling for the same variables as Filer as well as our two occupational controls. For hazards, 9 of the 14 measures have a negative sign for men, and 6 do for women. For bad physical conditions, 10 of the 12 measures have a negative sign for men, and 9 do for women. Thus, even in Filer's own data, it is hardly universal that wages positively compensate for the undesirable aspects of people's jobs. Even for measures for which a compensating differentials argument might be most plausible, support for the thesis is mixed. Other analyses of the Quality of Employment Survey have obtained results that question that the compensating differentials thesis explains the sex gap in wages (Barry 1987; Glass 1987).

6. Assuming the interpretability of Filer's coefficients in either article, we question the plausibility of his *post hoc* approach. When one examines the specific job characteristics that are positively or negatively associated with wages, it is difficult to create a consistent explanation of employee preferences. Why, for example, did he find that variety was positively compensated while autonomy was negatively compensated? Further, fringe benefits, adequacy of resources, and job security have all been viewed by other economists as desirable job features. Yet, according to Filer's logic, positive wage coefficients indicate their undesirability. Filer also treats such characteristics as the greater use of skill and autonomy — characteristics differentially found in male-dominated managerial work — as necessitating extra compensation because they are more demanding work attributes. This assessment contradicts most job-evaluation systems which positively reward such job features on grounds of productivity, not because they are undesirable job requirements. The finding is also contradicted by a direct measure of job effort in his data set indicating that male-dominated jobs on the whole involve less effort than those held by women. Filer's arbitrary classification of job attributes is an example that supports our broader argument that what constitutes an undesirable working condition is socially constructed and politically manipulated (see Steinberg [1990] for a discussion.)

7. Even before the publication of the National Academy of Science's piece, for example, Filer's analysis had been introduced into the public-personnel literature. Citing Filer, Barton Gethman (1987) has argued that even when male- and female-dominated jobs have the same number of points on a productivity index, male-dominated jobs might nonetheless deserve higher pay if they have undesirable working conditions. In Gethman's view, the gender gap in wages may make good economic sense because it simply may reflect men's added compensation for countervailing nonpecuniary differences in women's favor. In making this argument, he assumes that comparable worth studies have not included measures of working conditions. This assumption is inaccurate in that all comparable worth studies of which we are aware have explicit measures of working conditions as well as productivity-related job-content measures.

8. Most New York State employees fall within what New York State terms the competitive jurisdiction. However, a small proportion of employees have "noncompetitive" jobs, for which salaries vary by individual as well as job.

9. Keep in mind that our labeling of working conditions as desirable or undesirable is meant to be plausible, not definitive. As we will discuss below, many laborers are drawn to their work because it involves strenuous, physical outdoor work. In addition, many nurses find the

application of their technical and human-relations skills to sick and dying patients an important nonpecuniary reward of their work (Remick 1984a). Nevertheless, either type of work has its undesirable side: laborers must carry out strenuous physical activity for long periods of time and nurses suffer emotional and physical overload. For the compensating differentials hypothesis, what is crucial for compensation is how the marginal worker views a given job attribute.

10. "Key" or benchmark jobs are common classes such as carpenter, laborer, legal secretary, or personnel analyst that are easily found in many firms in a labor market. In setting levels of compensation, firms typically survey the wages paid by other firms for these key jobs and develop their own wage structures to remain competitive. This salary-setting procedure is followed by both public- and private-sector employers.

11. Although the issue of statistical significance is technically moot, since we have a complete census of jobs and not a sample, we use statistical significance heuristically to indicate variables likely to be of substantive interest. Also, since this survey represents a measurement of job content at one point in time, a somewhat unconventional use of statistical significance would be to view this census as a one-time sample of jobs from a sampling frame of the same job at several points in time.

12. Studies have differed in the impact of percentage minority on wages. Consistent with our findings, Sorensen (1989:60), using national data, found percentage minority to be insignificantly related to wages. Baron (1989:118-20) found a significant and negative impact of percentage minority, although the wages lost as a result of minority composition of a job were substantially less than those lost because of gender composition (see also Parcel 1989:147). Several comparable worth studies have also found minority composition of a job class to have a significant negative impact on wages (Hubbard and Revo-Cohen 1986). In New York State, the insignificant minority coefficient can be attributed in part to the fact that state policymakers in the 1960s unilaterally upgraded these jobs in a time of relative prosperity that allowed them to express their commitment to civil rights. Indeed, policymakers feared that the results of the New York State Comparable Pay study would reveal that these jobs had been arbitrarily "overvalued."

13. To date, comparable worth efforts using this approach have typically kept the negative coefficients as they are or, at best, set to zero the (typically negative) effect of sex composition on wages after controlling for legitimate job-content characteristics. Yet, though this explicit negative value associated with female jobs may be the most blatant source of bias, it is not the only such source in compensation systems. For example, to the extent that a compensation system undervalues "emotional overload" and that such work is concentrated in female-dominated settings, the compensation system may remain biased against women in a way that would not be corrected by a comparable worth plan that uses such equations uncorrected, especially equations that reveal that such attributes are negatively valued. We believe that efforts to confront pay inequities in the workplace should examine not only the sex discrimination embodied in the effect of percent female on wages but also other sources of gender-based discrimination in compensation systems. We consider each of the perverse negative effects of undesirable working conditions as falling into this category (see also Berheide & Steinberg 1989).

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