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CALIFORNIA COMPARABLE WORTH TASK FORCE

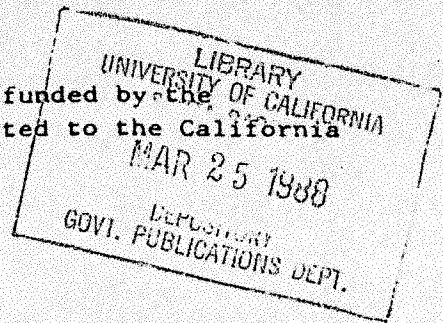
MINORITY REPORT, 1985

by

Donald J. Treiman and Phyllis W. Cheng

August 19, 1985

The printing of this minority report is privately funded by the authors, and not funded by taxpayer dollars allocated to the California Comparable Worth Task Force.



SEP 3 1985

Tanner

MEMORANDUM

TO: Governor George Deukmejian
 California State Legislature
 The Public

FROM: Donald J. Treiman *Donald J. Treiman*
 Phyllis W. Cheng *Phyllis W. Cheng*

SUBJECT: CALIFORNIA COMPARABLE WORTH TASK FORCE MINORITY REPORT

Enclosed please find our California Comparable Worth Task Force Minority Report pursuant to ACR 37 (Resolution Chapter 111, Statutes of 1983).

Since the publication of this report is privately funded by the authors, we have only limited copies available. However, you are welcome to reproduce this report with our full permission.

Should you have any questions or comments, please direct them to the address and phone numbers below.

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CALIFORNIA COMPARABLE WORTH TASK FORCE

MINORITY REPORT

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I. INTRODUCTION

This minority report is submitted to the California Legislature pursuant to Assembly Concurrent Resolution 37 (Tanner, Resolution Chapter 111, Statutes of 1983). Under ACR 37, the Commission on the Status of Women was requested to establish a statewide task force on equal pay for work of equal value charged with the following tasks:

- o To address the elimination of pay inequities for women workers in the private sector.
- o To identify barriers and impediments to full implementation of the principle of equal pay for work of equal value in the California workplace.
- o To propose and evaluate solutions for eliminating employment inequities for women workers in California.
- o To provide the Legislature with recommendations on needed changes in California law to reduce wage discrimination in the public and private sectors.

Eleven members were appointed to the California Comparable Worth Task Force: three by the Governor, three by the Senate Rules Committee, three by the Speaker of the Assembly, and two--the authors of this minority report--by the Commission on the Status of Women. The Task

Force met for 15 months to consider the above tasks and to develop a final report to the Legislature.

At the conclusion of its deliberations, the Task Force developed a set of recommendations that was supported in concept by eight of its 11 members, including the two authors of this minority report, and in part by the three other members. However, when members of the Task Force requested the opportunity to include signed footnotes clarifying or taking exception to specific language in the report, a six member majority of the Task Force rejected this request, as well as a subsequent request to include minority reports as part of the Task Force submission to the Legislature. In addition, the majority refused to allocate funds for the preparation, printing, and distribution of separately submitted minority reports.

The Task Force majority action necessitated the preparation of this minority report. The authors feel strongly that the views expressed herein need to be aired publicly for a number of important reasons:

1. We take exception to a number of specific recommendations of the majority, considering them to be poorly thought out and not helpful to the goal of achieving pay equity.

2. The Legislature and the public should have the benefit of a range of viewpoints on pay equity, a complex and important issue affecting the public interest.

3. The right of all opinions, including minority opinions, to be heard is at the foundation of American values, embodied in the First Amendment to the Constitution. We are deeply disturbed by the majority's attempt to suppress differences of opinion among Task Force members and to depict a document endorsed by six of 11 members as if it represents a unanimous consensus.

II. AREAS OF AGREEMENT

The authors of this report are strongly committed to the concept of pay equity--the idea that pay rates, including pay rates for different jobs, should not be based on the sex or race of incumbents--and endorse legislative action to implement pay equity in both the public and private sectors. We are in general agreement with the Task Force majority report in the following areas.

1. The wage disparity between women and men is indisputable. Both national and California statistics show that among full time workers women average about 60 per cent of the pay of male workers. Minority women receive even less. Moreover, the pay gap between women and men shows no sign of diminishing over time. Women's salaries have averaged approximately 60 per cent of those of men for at least the last 30 years. There is no reason to take seriously the slight upturn of the ratio over the last three or four years; similar variability around 60 per cent has occurred in the past.

2. Occupational segregation by sex is pervasive and shows little sign of diminishing. Both nationally and in California women constitute more than 80 per cent of all clerical workers, more than 60 per cent of all service workers, about 70 per cent of all teachers, and 97 per cent of all nurses, even though women constitute only about 44 per cent of the labor force. Nearly two-thirds of all working women would have to change jobs to equalize the distribution of women and men across the U.S. Census detailed occupational classification. In sharp contrast to occupational segregation by race, which has been decreasingly steadily for the last 40 years, occupational segregation by sex has declined only slightly. Thus there is no reason to expect the pay gap between male and female workers to be substantially diminished in the near future as a simple result of the movement of women into predominantly male jobs or the movement of men into predominantly female jobs.

3. The higher the proportion of women in an occupation, the less it pays. All studies that have examined this question come to the same conclusion. An important implication of this fact, not clearly recognized in the majority report, is that it is a mistake to focus on female-dominated jobs only. The difference in average pay between jobs done entirely by men and those in which, say, 35 per cent of incumbents are women, is as likely to reflect discrimination as is the difference in average pay between jobs in which 35 per cent and 70 per cent of incumbents are women.

4. Part of the wage gap is attributable to discrimination. At most, half of the difference between men's and women's average pay rates can be attributed to differences in the experience, training, and productivity of male and female workers. And differences in the requirements and demands of jobs that tend to be done mainly by men and jobs that tend to be done mainly by women cannot account fully for the propensity of jobs to pay less the higher the proportion female. This evidence, together with an historical pattern of overt wage discrimination against women, convinces us that whenever a difference in the average pay of male and female workers in an enterprise, or an association between the proportion female and the pay rates of different jobs in an enterprise, is observed, discrimination should be suspected in the absence of explicit evidence to the contrary.

5. Changes are needed in California law to promote pay equity. Ambiguous language on pay equity under California law needs to be clarified. In addition, new laws need to be enacted to implement pay equity. (See below for a more detailed specification of required legislation.)

6. Employer-employee cooperation is essential in achieving pay equity. In the process of achieving pay equity, whether through job evaluation studies or at the bargaining table, it is important to have both employer and employee participation. Moreover, it is important to permit flexible approaches to the measurement of pay discrimination that are tailored to the needs of individual enterprises.

7. Jobs can be compared using proper job evaluation methodology.

Employers routinely evaluate the worth of jobs relative to one another for the purpose of pay setting. Thus, it is disingenuous to claim that it cannot be done. But existing job evaluation methodology must be adjusted to remove sex and race as "compensable factors" and must be applied in such a way as to avoid stereotypic judgments based on the sex or race of job incumbents.

8. Education, child care, and affirmative action can contribute to employment equity. The promulgation of required regulations, the enactment of laws and appropriations to conform to federal standards, and proper enforcement of laws regarding women's educational equity would have a positive effect upon pay equity. The provision of child care services for working parents would be supportive of single heads-of-households and two-income families. Affirmative action and its enforcement continue to be important in eliminating occupational segregation by sex and race.

III. AREAS OF DISAGREEMENT AND ALTERNATIVES

While the authors agree with the general thrust and some recommendations of the Task Force majority report, we disagree with others of its recommendations. In this section we state our own position and indicate the reasons for our disagreement with the majority report.

1. The goal of legislation should be to achieve pay equity in both the public and private sectors. It is important to distinguish between pay equity and comparable worth. Pay equity refers to the absence of pay differentials between jobs based on their sex or race composition. Comparable worth refers to the practice of paying jobs in proportion to their worth to the employer, as measured by such indicators as the skill it takes to do them, the amount of responsibility they entail, the effort they involve, and the working conditions under which they are performed.

Most enterprises currently base pay differentials on such factors as the skill and responsibility demands of jobs--in that sense, most employers already accept the principle of comparable worth, whether they realise it or not. But many enterprises also pay jobs done mainly by women less than similarly demanding jobs done mainly by men, reflecting the historical practice of valuing women's work less than men's work. Pay differentials based on gender, or on the gender composition of jobs, are no longer acceptable. Yet they persist, rooted in traditional pay relationships between jobs. It should be the goal of legislation to correct discrimination of this kind, by requiring that gender (and race or ethnicity) not be bases of pay differentials, either explicitly or implicitly. This is what we mean by pay equity.

Pay equity is a more appropriate object of legislation than is comparable worth, strictly defined, for two reasons. First, pay equity--the absence of pay differentials between jobs based on their sex or race composition--is, or should be, the ultimate goal, whereas paying jobs according to their evaluated "worth" is at best an indirect way of reaching that goal and, moreover, does not guarantee the elimination of sex discrimination. In our judgment, the majority report has lost sight of the central issue, the elimination of pay inequities based on sex or race, which indeed is the "civil rights issue of the 80s," in its preoccupation with dictating to employers how they should design their compensation systems. Second, a legislative mandate that jobs be paid strictly according to their worth could open the way for endless argument and litigation regarding the relative worth of jobs, entirely independently of their sex or race composition: is an electrician worth more than a plumber?; is a nutritionist worth more than a nurse?; etc.

Adopting pay equity as a goal still leaves us with a measurement problem--how to decide in any particular instance whether pay practices are discriminatory in the sense used above. To do this, it is reasonable to exploit the methodology of job evaluation. The basic procedure (which incidentally is the one recommended by the National Academy of Sciences in its 1981 report, Women, Work, and Wages) is described in detail, with examples, in the Appendix attached to this report. What is involved is the use of a statistical technique,

multiple regression analysis, to capture the implicit policy underlying an enterprise's pay system by predicting the existing pay rates for all jobs within an enterprise from a set of characteristics thought to legitimately affect pay rates--ordinarily these would be the factors in an existing job evaluation system--plus one other factor, per cent female. Job characteristics that affect pay rates are known as compensable factors. If the resulting regression coefficient or weight associated with per cent female is substantially different from zero, "femaleness" would be said to be a compensable factor. Let us be clear about precisely what such a coefficient means: it is the expected, or average, difference in pay between two jobs that are identical with respect to all of the other measured factors (measures of skill, effort, responsibility, etc.) but that differ by one unit in their percentage female, and is thus a measure of the extent of gender discrimination in pay in the enterprise. We can say that pay differences arise because of the sex composition of jobs if and to the extent that sex is a compensable factor in a compensation system, that is, if and to the extent that the sex composition of jobs predicts pay differences among jobs that are equal with respect to their measured levels of skill, effort, responsibility, etc. To remove this discriminatory effect, the enterprise would adjust its pay rates so that the coefficient associated with per cent female goes to zero--that is, would remove gender as a compensable factor from its compensation system.

Note that under these definitions, women's jobs could pay less on average than men's jobs without pay rates depending on sex or race or arising because of the sex composition of jobs. Suppose most managers are men and most clerical workers are women (which is, in fact, the case in most enterprises); then we would expect the men's jobs to pay better not because they are men's jobs but because they require managerial skills and responsibilities. Only if, among jobs requiring similar levels of skill, responsibility, etc., those with a higher percentage of men paid better would we infer discrimination.

Exactly the same strategy can be used to identify and correct cases where pay discrimination is based on race or ethnicity rather than, or in addition to, sex.

This strategy for identifying and correcting pay discrimination has four major advantages.

First, it resolves a major dispute regarding the appropriate interpretation of pay prediction equations. Critics of the regression approach to discovering discrimination point out that unless all legitimate compensable factors are measured, regression equations that include per cent female as a variable will overstate the effect of gender as a predictor of pay rates. True enough. But by placing the burden on the employer to show that observed differences in the pay rates of "men's" jobs and "women's" jobs (or majority and minority

jobs) are based on factors other than sex or race, we create a powerful incentive for the employer to do a very good job of measuring whatever it is he or she is paying for. Given the historical pattern of pay differentials based on sex and race, it is not unreasonable to say that if an employer can't demonstrate that a pay differential correlated with the sex or race composition of jobs is actually due to some legitimate difference between jobs, it is sex or race that is being paid for, which is discriminatory and must be corrected.

This point speaks directly to criticisms of the adequacy of current job evaluation procedures as a means for discovering pay discrimination. When used as a tool for defending against accusations of pay discrimination, the subjectivity of job evaluation procedures is irrelevant, since the point is not to arrive at any particular basis for deciding upon the relative worth of jobs but simply to discover whether sex or race are implicit bases of compensation in an enterprise and to correct this condition when it is found.

Second, the policy capturing approach proposed here is minimally disruptive of the status quo, in that it permits the retention of the existing wage structure except insofar as it contains discriminatory elements.

Third, this approach permits the incorporation into the pay prediction equation of differences between individual workers in seniority, merit, productivity, etc.

Fourth, it provides a way of taking account of legitimate problems of recruitment and retention. Certain jobs may be in particularly short supply, and hence command higher pay rates than other jobs requiring similar levels of skill, responsibility, etc. Such pay differentials should be permitted, even when correlated with the sex or race composition of jobs, if, but only if, the employer can demonstrate that the enterprise's ability to recruit or retain workers would be seriously compromised if the jobs in question were paid less. Our expectation, based on the experience of compensation specialists, is that such cases are rare.

2. Pay discrimination other than that based on sex or race should not be explicitly mentioned in the amendment to the Fair Employment and Housing Act proposed by the Task Force majority. The majority report recommends that the Fair Employment and Housing Act be amended by adding the following language:

Discrimination in compensation includes payment by the employer because of race, religious creed, color, national origin, ancestry, physical handicap, medical condition, marital status, age, or sex, of lower wages to an employee or employees who perform work which is of substantially equal value to the employer as that performed by other employees who are paid higher wages.

We believe that any pay equity amendment to the Fair Employment and Housing Act should be limited to sex and race discrimination because:

A. There is a demonstrable history of pay discrimination based on sex and race. The evidence regarding pay discrimination based on the other listed characteristics is much less substantial and much less persuasive.

B. The employer defense proposed in Point 1 above, a demonstration that an observed correlation between the sex or race composition of jobs and their pay rates can be accounted for by differences in job content, is unworkable when account has to be taken of so many different worker characteristics, especially those that apply to only a small fraction of the incumbents of each job. This is especially true since employers are currently prohibited by law from inquiring about many areas of possible discrimination, including religious creed, physical handicap, medical condition, and marital status.

C. One basis of discrimination listed in the minority report, age, would preclude pay differentials based on seniority, since seniority tends to be highly correlated with age. Regardless of whatever judgment one might make in the abstract regarding the merit of seniority as a basis for pay differentials, it is a widely accepted practice and is permitted under existing law.

3. Refusing to downgrade any job classification to achieve pay equity is inconsistent with the concept. The majority report added the following provision in discussing amendments to the Fair Employment and

Housing Act: "No job classes shall be downgraded or reduced in compensation in order to accomplish the purposes of this act." Since the claim of proponents of comparable worth is that some jobs are undervalued relative to others, it follows as a matter of logic that some jobs are overvalued relative to others. Hence, adjustments in the pay rates of jobs to bring them into proper alignment with one another may require reducing the pay rates of some jobs as well as increasing the pay rates of others. To preclude this is tantamount to insisting that if any jobs in an enterprise are overpaid relative to their evaluated worth, the pay rates of all jobs in the enterprise should be adjusted upward to the point where they are equally overpaid. To do less is to retain inequities in payment relative to job worth; but to make a complete adjustment would necessarily require increasing the total wage bill. We do not think is appropriate for the Legislature to require that enterprises increase their labor costs. Moreover, we believe that such a requirement would be seriously disruptive of employment patterns, and might well cause more harm than good to groups currently suffering from pay discrimination.

4. Small employers, public and private, should not be required to meet the same self-evaluation mandate as large employers. The majority report proposes that all public employers and all private employers with 500 or more employees be required to conduct self-evaluations to ensure pay equity and to be in compliance by 1990 and that smaller private employers be required to conduct self-evaluations and to be in

compliance by 1992. These self-evaluations would be subject to audits by the Department of Fair Employment and Housing. We believe this requirement should be restricted to employers, public and private, with 500 employees or more, because:

A. The actions of large employers effectively control the labor market. There are more than one half million employers in California, employing more than 10 million workers. Of these, approximately 1,700, or 3/10ths of one per cent, employ 500 workers or more. Together, these 1,700 enterprises employ approximately one third of the entire labor force in the State. By requiring that enterprises with 500 employees or more adjust the relative pay rates of jobs to achieve pay equity, it is possible to substantially alter the market price for labor faced by smaller enterprises. Requiring changes in the compensation practices of large firms is thus an effective way to alter wage rates throughout the state without intruding in the pay setting practices of the great majority of enterprises. It has the added advantage of limiting the burden on the Department of Fair Employment and Housing to monitor compliance.

B. Self-evaluation and wage adjustment to achieve pay equity is relatively unburdensome for large enterprises, since almost all such enterprises already have in place well documented and highly formalized compensation systems. The same is not true of many smaller enterprises.

C. The methodology for demonstrating compliance, described in Point 1 above, is not well suited to small enterprises since in such enterprises there often are only a few individuals in each job title.

IV. A RECOMMENDED CHANGE IN CALIFORNIA LAW

In addition to the recommendations embodied in the discussion in the previous section, we offer to the legislature the following change in California law for achieving pay equity.

The Fair Employment and Housing Act should be amended to prohibit pay discrimination on the basis of the sex or race composition of job categories. Here we propose alternative wording to that proposed by the majority. Our proposal is:

It shall be an unlawful practice for an employer explicitly or implicitly to base the relative pay rates for job categories within an enterprise on the sex, race, or ethnicity of incumbents. Differences in pay rates among job classifications that are correlated with the proportion female or proportion minority workers in each job classification shall be assumed to be based on the sex, race, or ethnicity of incumbents unless the employer is able to demonstrate that such differences are accounted for by business related differences in job content, including differences in skill, effort, responsibility, and working conditions defined in Government Code Section 19827.2.

Salary variations between job categories are permissible if based upon merit, seniority, quality or quantity of work, or demonstrable problems of recruitment or retention. The employer has the burden to prove business necessity if problems of recruitment or retention are invoked as a basis for pay variations between job categories that are correlated with their sex, race, or ethnic composition.

This language is in keeping with the arguments we have made above and overcomes a number of the difficulties with the language of the majority report identified in our discussion.

APPENDIX

ON THE INTERPRETATION OF REGRESSION STATISTICS

IN THE CONTEXT OF PAY EQUITY ASSESSMENTS

In this Appendix, we provide an introduction to the interpretation of regression models, for the benefit of readers unfamiliar with this technique. We work through a number of hypothetical examples to make clear how we interpret regression statistics in the context of pay equity analysis, and especially how we interpret equations containing "per cent female" and "per cent minority" as variables.

To keep matters simple in our example, let us assume that pay differences among jobs in an enterprise depend on only three factors: how much responsibility each job entails, how much skill it requires, and the extent to which it is regarded as a "woman's job." In fact, the determinants of pay rates typically are much more complex. Also, in an actual analysis we would want to consider whether there is a race as well as a sex effect on pay rates.

Suppose that each of the factors is measured as follows:

The pay rate (Y) is measured by the average salary of incumbents of each job title.

Responsibility (R) is measured by a combination of items put together into a scale with scores ranging from 0 to 10, with 10 high.

Skill (S) is likewise measured by a combination of items aggregated into a single scale. Let us suppose that scores range from 0 to 10, with 10 high.

The extent to which a job title is regarded as "women's work" (F) is measured by the proportion of females among all employees with that job.

Assume that each job title in the enterprise has a score on each of these four variables.

Model 1. Pay is based on skill only.

Let us begin with a very simple model. Suppose we wanted to know whether, to what extent, and in what way pay differences among jobs depend on differences in the skill required to do them, ignoring for the moment any other determinants of pay differences. We could estimate the effect of skill differences between jobs on pay by

statistically predicting pay rates from our skill variable, specifically by finding the line relating the two variables that minimizes the sum of the squared errors in prediction. To see this graphically, imagine that we had a sample of only five job titles. We could then plot each job title on a two-dimensional plot, known as a scatter plot, where the horizontal axis represents our skill variable and the vertical axis represents average salary. Figure 1(a) gives such a hypothetical plot. From even a casual glance at Figure 1(a) it is evident that as skill requirements increase, salaries tend to increase. To quantify this relationship, with an estimate of how large a difference in salary we would expect, on average, for two occupations that differed by one point on the skill requirements scale, we would fit the line shown in Figure 1(b). Recall from high school algebra that the formula for a straight line is $Y = a + b(X)$, or, since we have labeled our skill variable S rather than X , $Y = a + b(S)$. The a is the intercept; it gives the value of Y when $S = 0$. The b is the slope; it gives the number of units of change in Y for a one unit change in S . The point on the Y axis corresponding to any particular point on the S axis is known as the expected or predicted value of Y , and is labeled \hat{Y} ("Y-hat"). In figure 1(a) the actual value of S , the actual value of Y , and the predicted value of Y are marked for one observation; these are labeled S_i , Y_i , and \hat{Y}_i , respectively. Regression analysis is a procedure that finds the best fitting line relating, in this case, Y to S , where the criterion of "best fit" is that the sum of the squared differences between the actual and predicted values of Y is minimized. That is, regression is a technique for finding the a and b that will result in the smallest value for $\sum(Y - \hat{Y})^2 = \sum e^2$, which is another way of saying that the resulting equation gives the best prediction of the value of Y given that one knows the value of S or, in the present case, the best prediction of the average salary of incumbents of an occupation that can be made from knowledge of the skill requirements of the occupation.

The square of the correlation coefficient, r^2 , is a measure of how good the prediction is. Obviously, the smaller the scatter of observed points around the regression line relating the two variables, the better the prediction. Formally, r^2 is defined as $r^2 = 1 - (Y - \hat{Y})^2 / (Y - \bar{Y})^2$, that is, as one minus the ratio of the variance around the regression line to the total variance in Y , which is why r^2 is a measure of the proportion of the variance in Y explained by another variable, in this case S . From this definition, it is evident that if prediction is perfect, $r^2 = 1$, and if there is no association between the two variables, $r^2 = 0$.

Now, suppose we estimated the relationship between skill requirements and average salary not for the five hypothetical job titles in the scatterplot but for all job titles in a large enterprise, and obtained the following prediction equation:

$$\hat{Y} = 4,000 + 2,900(S) \quad (1)$$

with an associated r^2 of .60. These results would tell us, first, that sixty per cent of the variance across job titles in average salaries can be explained by variations in the skill requirements of jobs. Second, jobs with the lowest skill level (a score of 0) would be predicted to pay an average of \$4,000 per year and each additional point on the skill scale would result in a predicted increase of \$2,900 per year. Thus, job titles with the highest skill level (a score of 10) would be predicted to pay incumbents an average of \$33,000 per year ($= 4,000 + 2,900(10)$). Of course, some jobs might actually pay even more, presumably because they not only require a high degree of skill but also great responsibility, etc. For such jobs, relying on skill as the only measure of job content would underestimate their value. Similarly, some jobs not only require low skill but entail little responsibility, etc. For such jobs, relying on skill as the only measure of job content would overestimate their value. For this reason, we need to be able to measure the simultaneous effect of a number of different aspects of job content. To do this, we would estimate a multiple regression equation, which is a straightforward extension of the two variable regression example we have just worked through.

Model 2: Pay is based on both skill and responsibility.

Suppose we wanted to know the effect of both skill requirements and responsibility demands on salary level. To do this we would estimate a multiple regression equation analogous to Eq. (1) above, which might yield the following:

$$\hat{Y} = 3,400 + 1,400(S) + 1,900(R) \quad (2)$$

with an associated R^2 of .70.

R^2 ("R-square") is a measure of how good the prediction is; it is exactly analogous to r^2 in the example above, but the convention is to capitalize r in the multiple regression case. An R^2 of .70 indicates that 70 per cent of the variability ("variance") in pay rates across job titles can be attributed to variability in the responsibility and skill the jobs entail. The other 30 per cent is due to factors that haven't been measured. Typically, studies of this kind are able to explain around 90 per cent of the variance in pay rates among jobs in an enterprise, or in a state or local civil service system, which means that they have successfully captured almost all of what differentiates the pay rates of jobs.

Now let's interpret the equation. The \hat{Y} is the average salary level predicted from the equation. It is the average salary that would be expected if each job were paid only on the basis of responsibility and skill, and if each of these factors were worth exactly the same for each job.

The 3,400 is the intercept, and is exactly analogous to the intercept in the two variable case described above. It indicates the predicted average salary of job titles that have scores of zero on each of the factors: that is, jobs that have the lowest scores on both the responsibility and the skill factors. One way to think of it is that it is the component of pay that all jobs share regardless of their levels of responsibility and skill.

The 1,400 is the weight, or coefficient, associated with the skill factor. It indicates that two jobs that have the same scores on the responsibility factor but that differ by one point on the skill factor would be predicted to differ by \$1,400 per year in average salary. Another way of putting this is to say that the net regression coefficient associated with skill is \$1,400. Note that the net regression coefficient associated with skill in Eq. (2) is substantially smaller than in Eq. (1). The reason for this is that skill and responsibility tend to be highly correlated; jobs that require a great deal of skill also entail a great deal of responsibility. Thus when both variables are included in the equation, their effect tends to be divided. Each one point increase in skill results in a predicted increase of \$1,400 in average salary and each one point increase in responsibility results in a predicted increase of \$1,900. But two job titles that differ by one point in skill requirements and by one point in responsibility level would be expected to differ by \$3,300 ($= 1,400 + 1,900$) in average salary, compared to a difference of \$2,900 predicted from skill alone in Eq. (1).

The 1,900 is the weight, or net regression coefficient, associated with the responsibility factor. It is interpreted in the same way as the coefficient for the skill factor.

These results allow us to predict the salary grade of jobs with different combinations of skill and responsibility. Jobs with both the lowest skill level and the lowest responsibility level would be predicted to have an average pay rate of \$3,400 ($= 3,400 + 1,400(0) + 1,900(0)$). Jobs with the highest levels of both skill and responsibility would be predicted to pay an average of \$36,400 ($= 3,400 + 1,400(10) + 1,900(10)$). A job title with a skill level of 3 and a responsibility level of 5 would be predicted to pay an average of \$17,100 ($= 3,400 + 1,400(3) + 1,900(5)$); and so on. Predicted pay rates can be computed for each job title and compared to the current average pay rate. If the predicted pay rate for a job is higher than the actual average salary, the job would be said to be undervalued relative to its skill and responsibility requirements. Of course, if the predicted pay rate is lower than the actual average salary, the job would be said to be overvalued relative to its skill and responsibility requirements.

Correcting the effect of the sex composition of jobs. Equations such as Eq. (2) are conventionally used in job evaluation studies to determine the relative worth of jobs. They have one major limitation, however. Insofar as job content variables, such as skill and responsibility, or--more pertinently, physical effort, etc.--are correlated with the sex composition of jobs, the regression procedure will attribute to these characteristics part of what might in fact be due to sex composition. For example, if jobs done mainly by women tend to pay less than jobs done mainly by men because of sex discrimination and if the jobs done mainly by women require low levels of physical effort relative to the jobs done mainly by men, the regression procedure will incorrectly attribute heavy weight to a physical effort factor, even if physical effort has no effect on pay rates within the set of jobs done mainly by men or within the set of jobs done mainly by women. To correct for this difficulty, a modified regression model can be estimated, namely:

Model 3: Pay is based on skill, responsibility, and percent female.

In this approach, an equation similar to that of Eq. (2) is estimated, but with one additional variable, the proportion of incumbents in each job title who are female. The inclusion of this variable does two things: first, it provides a direct estimate of the extent to which the sex composition of jobs affects their pay rates, net of other factors; and, second, it provides estimates of each of the other effects net of sex composition--that is, it tells us how skill, responsibility, etc. affect pay among jobs with equal proportions of women among incumbents, thus giving unbiased estimates of the effects of these variables.

Again, let us work through a concrete example. Suppose that we estimated a regression equation predicting average salary from our measures of skill and responsibility and also a measure of gender composition, proportion female among incumbents of the job title, with the following result:

$$\hat{Y} = 3,300 + 1,300(S) + 1,800(R) - 2,000(F) \quad (3)$$

and the associated $R^2 = .80$.

Here the interpretation of the coefficients associated with skill and responsibility is the same as for Eq. (2). Job titles that differ by one point on the skill scale but that are identical on the responsibility scale and have identical proportions female among incumbents would be predicted to differ by \$1,300 in average salary; and job titles that differ by one point on the responsibility scale but that are identical on the skill scale and have identical proportions female among incumbents would be predicted to differ by \$1,800 in average salary.

The -2,000 is the coefficient associated with the "femaleness" factor. It indicates the predicted difference in average salary between job titles that have identical scores on the responsibility and skill factors but that differ by 1.0 in their proportion female. That is, it indicates that the predicted difference in the average salary of two job titles, one of which is 100 per cent male and the other of which is 100 per cent female but which have identical scores on the skill and responsibility variables, is \$2,000. Note that since the coefficient is negative, this equation indicates that predominantly female job titles tend to be have lower average salaries than predominantly male job titles with similar skill and responsibility requirements.

To see how these weights are used, let us consider the predicted salary levels for two jobs, typist and truck driver. Suppose that typists have a score of 4 on the skill factor, a score of 3 on the responsibility factor, and are 100 per cent female; and that truck drivers have a score of 4 on the skill factor, 4 on the responsibility factor, and are 0 per cent female. Then the predicted pay rate for typists would be

$$\hat{Y} = 3,300 + 1,300(4) + 1,800(3) - 2,000(1.0) = 11,900 \quad (4)$$

while the predicted pay rate for truck drivers would be

$$\hat{Y} = 3,300 + 1,300(4) + 1,800(4) - 2,000(0) = 15,700 \quad (5)$$

From these two equations we see that of the \$3,800 (=15,700 - 11,900) difference in the predicted salary grades of truck drivers and typists, only \$1,800 (= 1,800(4) - 1,800(3)) is due to what we would regard as a legitimate basis of pay differentials, the fact that truck driving involves more responsibility than typing, while \$2,000 (= -2,000(1.0) - (-2,000)(0)) is due to the fact that truck driving is a male job while typing is a female job.

The approach to removing the "gender effect" that we propose is to set the coefficient associated with "femaleness" to zero and estimate a predicted pay rate from the legitimate factors--responsibility and skill in the Eq. (3) example. These predicted pay rates can be interpreted as "equitable job worth" scores since they indicate what the employer would pay if responsibility and skill differences between job titles were taken into account but differences in gender composition were not. The utility of this strategy is that it provides an ordering of jobs with respect to their evaluated worth that is free of any sex bias but that otherwise conforms as closely as possible to the current job hierarchy of the enterprise. That is, the relationship between skill and responsibility, on the one hand, and pay rates, on the other, that emerges from an exercise of this kind is precisely the relationship that already exists in the enterprise, adjusted only insofar as is necessary to remove sex as a basis of pay differentials. By capturing the current compensation policy of the enterprise, and

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-A.7-

insisting only that it be sex (and race) neutral, or made so if it is not, we achieve pay equity without having to enter into the difficult and divisive debate about what makes one job worth more than another.

