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ABSTRACT

This paper examines issues involved in selecting a strategy that could be carried out by institutions to achieve salary equity between male and female faculty. It compares potential strategies based on equity of salary adjustments, political constraints, cost to the institution, and whether the plan removes inequities. Steps in determining evidence of sex discrimination in faculty salaries involve deciding what characteristics institutions may legitimately use in setting salaries, specifying an earnings equation, and measuring the unexplained salary differential through a single-equation model or multiple-equation model. Salary adjustment can then be based on what each female would receive in the absence of discrimination, and what each female currently receives due to discrimination. The institution can then remove any observed unexplained salary differentials via across the board methods, case by case methods, or a combination of the two methods. Criteria in devising a salary adjustment plan include: equity, political feasibility, effectiveness in solving the problem, and cost. Data on 1252 male and 267 female faculty at the University of Minnesota are used to illustrate how these criteria might influence an institution's choice of a salary adjustment plan. (Contains 19 references.) (JDD)

ISSUES IN CHOOSING A STRATEGY FOR ACHIEVING SALARY EQUITY

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ABSTRACT

In studies of gender equity, considerable attention is directed towards determinng which faculty to include in the analysis, what factors to control for, and how these factors will be measured. However, once these issues are settled, there remain a variety of questions that institutions should answer when devising a plan for achieving salary equity. This paper focuses on the issues involved in selecting a strategy that could be carried out by institutions to achieve salary equity between male and female faculty. My goal is to provide institutional researchers, analysts, and administrators with an understanding of the major issues that are involved in formulating a salary adjustment plan. I provide an overview of strategies that institutions could employ, and examine how they compare based on equity of salary adjustments, political constraints, cost to the institution, and whether the plan removes inequities.

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ISSUES IN CHOOSING A STRATEGY FOR ACHIEVING SALARY EQUITY

INTRODUCTION

Much of the debate that occurs in studies of gender equity in faculty salaries focuses on issues such as which faculty to include in the analysis, what factors to control for, and how these factors will be measured.[1] However, once these issues are settled, there remain a variety of questions that institutions should answer when devising a plan for achieving salary equity. For example, how can the institution determine what each female would earn in the absence of discrimination? What political barriers is the institution likely to face in formulating a policy to remedy the situation? Should all females receive the same salary adjustment? How should the salary adjustments for individuals be computed? How equitable are the various salary adjustment plans, and are they effective in correcting the perceived inequity?

There is no consensus on how an institution should proceed when devising a plan for adjusting faculty salaries to achieve salary equity. Analysts often do not consider the wide range of possible salary adjustment plans, and the resulting implications concerning cost, equity, and politics, when formulating a strategy.[2] This paper is intended to help fill that gap, by providing institutional researchers, analysts, and administrators with an understanding of the major issues that are involved in selecting a strategy for achieving salary equity.

MODELS AND METHODS FOR ADJUSTING SALARIES

Measuring the Unexplained Salary Differential

The first step in determining whether there is evidence of sex discrimination in salaries for faculty is to decide what characteristics institutions may legitimately use in setting salaries and specify an earnings equation that includes these characteristics, as in

$$\ln Y_i = \beta_0 + \sum_{k=1}^{K} \beta_k X_{ki} + \epsilon_i \tag{1}$$

where $\ln Y_i$ = logarithm of salary for the i-th faculty member, X_{ki} = value of the k-th explanatory variable, $\beta_0, \ldots \beta_k$ = parameters describing how each variable influences the log of salary, and ϵ_i = random error term. In Equation (1), the dependent variable is the logarithm of salary and not actual salary.[3] As shown by Becker and Goodman (1991) and Becker and Toutkoushian (1993), however, this functional form introduces several problems for analysts when formulating a salary adjustment plan.

I define the *average unexplained salary differential* (USD) as the difference in average log of salaries for males and females, after controlling for differences due to these characteristics. This USD can be measured via the following general formula suggested by Neumark (1988):

$$USD = \ln Y_m - \ln Y_f - \sum_{k=0}^{K} (\bar{X}_{km} - \bar{X}_{kf}) B_k \tag{2}$$

where $\bar{X}_{km}$, $\bar{X}_{kf}$ = mean of the k-th variable for males and females, respectively, and $B_0,\ldots,B_k$ = effect of each of the k variables in the absence of discrimination. I refer to these coefficients as the institution's *nondiscriminatory wage structure* (NDWS).

I focus on strategies that could be employed after analysts have chosen the explanatory variables to be used in the salary model. A *salary adjustment plan* can be viewed as having two components. First, a *model* must be chosen for measuring the unexplained salary differential. Second, once a model has been selected, a *method* is needed for adjusting salaries. As shown by Becker and Toutkoushian (1993), there are many alternative models and methods that could be used to achieve salary equity.

Models for Measuring Unexplained Salary Differentials

Once the explanatory variables have been chosen, the unexplained salary differential will depend upon the chosen NDWS $B_0,\ldots,B_k$. However, economic theory provides no unique choice of what coefficients to use in this formula. The most common procedure, referred to here as the single-equation model, estimates the regression model shown in Equation (1) with an additional dummy variable for SEX. The estimated coefficient for SEX, B_{k+1}, is the USD. When SEX = 1 for females and 0 otherwise, the set of coefficients $(B_0-B_{k+1}),\ldots,B_k$ is taken as the female wage structure, and the entire set $B_0,\ldots,B_k$ is the NDWS.

Subsequent models fall into the general category of multiple-equation models, since they require more than one equation to compute the USD. Oaxaca (1973), Blinder (1973), and later Scott (1979), suggest that Equation (1) be estimated separately for males and females, and the NDWS set equal to either the male or female wage structure.[4] Other studies generalize this approach to cases where both male faculty are being overpaid and female faculty are being underpaid. For example, the model used by Reimers (1983) would compute the NDWS as the midpoint of the male and female wage structures.[5]

These models wrestle with how to predict what female faculty would earn in the absence of discrimination, and carry with them implicit assumptions about an employer's discriminatory behavior. The single-equation model presumes that discrimination arises solely from either males receiving a fixed positive premium or females receiving a fixed negative premium. Under the Oaxaca framework, the pay disparity is attributed to faculty of different genders receiving diverse salary increments for the same characteristics. The more general procedures beginning with Reimers allow for discrimination to arise from both males being overpaid and females being underpaid for the same characteristic.

There are also statistical considerations that analysts should consider when choosing a model. The single-equation model is appealing in that it is easier to obtain reliable parameter estimates, but has been subject to criticism as a means for measuring the USD due to possible multicollinearity between the variable SEX and other regressors in the model.[6] Analysts need to consider both the implications of how salary inequity has arisen, as well as these statistical issues, when choosing a model for their salary adjustment plan.

Methods for Adjusting Salaries

Once a model has been chosen to measure the USD in Equation (2), how can the institution remove any observed unexplained salary differentials for females? There are a variety of methods that could be used within each model to adjust female salaries. In general, these methods fall into one of three categories: across-the-board methods, case-by-case methods, or a combination of across-the-board and case-by-case methods.

Under across-the-board methods, all female faculty receive the same salary adjustment based upon the estimated level of pay disparity for an "average female." This method is appealing in that female faculty are treated as a class, and the institution does not have to define and defend explicit criteria used for individualized salary adjustments. A drawback to these methods is that salary inequities for individuals may persist following the salary adjustment, and the salaries of some female faculty may be overadjusted as a result of the across-the-board plan.

With case-by-case methods, salary adjustments are allowed to vary across individual females. Methods of individual identification have the advantage that they allow each woman to receive a salary adjustment based on her salary characteristics; those with larger unexplained salary differences will receive larger payments and vice-versa. However, such plans require proper measurement of these individual-specific adjustments, and are often more difficult to carry out politically since the salary adjustment is likely to be subject to criticism from female faculty who are stipulated to receive smaller salary adjustments than other females at the institution.

A hybrid approach that has been implemented by at least several institutions perform salary adjustments on <u>both</u> an across-the-board and case-by-case basis. Each female receives an across-the-board adjustment of a specified amount, and an additional salary adjustment that is allowed to vary across females in the sample. As part of the settlement of a sex discrimination suit at the University of Minnesota,[7] for example, female faculty received an across-the-board salary adjustment of 3 percent, and an additional salary adjustment based on each female's residual from a specified earnings equation. Gaylord and McLaughlin (1991) also describe an alternative approach whereby female faculty in specific categories would receive different across-the-board salary adjustments, based on the magnitude of their average residuals from a chosen earnings equation.

An important point shown by Becker and Goodman (1991) and Becker and Toutkoushian (1993) is that within each of these categories, there are alternative ways of performing salary adjustments. These differences can influence not only how much money specific individuals receive, but also the cost to the institution of carrying out the plan. To determine each female's salary adjustment, two pieces of information are required: (i) what each female would receive in the absence of discrimination, and (ii) what each female presently receives due to discrimination. While the first component is measured by each female's predicted salary from the chosen NDWS, the second component can be represented by either actual salaries or the predicted salaries each female would earn from the female wage structure.

I will focus on the reasons why these differences arise, and the resulting implications.[8] First consider the case-by-case salary adjustment methods. Salary adjustments can be based upon the difference between each female's predicted salary under the nondiscriminatory wage structure, $\hat{Y}_{i,ndws}$, and either her actual salary, Y_i, or her predicted salary obtained from the female wage structure, $\hat{Y}_{i,f}$.[9] Although Scott (1979) advocated such a multiple-equation approach, she provided no theoretical basis for choosing among these two alternatives. Similar problems arise when an across-the-board salary adjustment method is used. The average female's predicted salary in the absence of discrimination, $\hat{Y}_{avg,ndws}$, can be obtained by placing the average characteristics of females into the chosen NDWS. However, the prescribed salary adjustment can be computed by subtracting either the average female salary or $\hat{Y}_{avg,f}$ from $\hat{Y}_{avg,ndws}$.

In a linear salary model, the costs to the institution of adjusting female salaries would not be dependent upon whether Y_{avg} or $\hat{Y}_{avg,f}$ was used in calculating the across-the-board payment. This is not necessarily true in a semi-logarithmic model due to the nonlinear nature of the earnings equation since $Y_{avg} \neq \hat{Y}_{avg,f}$.

A similar problem occurs in case-by-case salary adjustment plans, since in general $Y_i \neq \hat{Y}_{i,f}$.

The decision as to whether salary adjustments should be based on predicted or actual female salaries has conceptual as well as cost implications for institutions. If salary adjustments are based on actual salaries rather than predicted female salaries, then the salaries of females who receive adjustments will now be exclusively determined by the explanatory variables used in the model. The NDWS becomes the explicit salary policy of the university for these women, although it should be noted that the salaries of women who do not receive salary adjustments need not fall on this plane.

In contrast, if salary adjustments are based on predicted salaries from the female wage structure rather than actual salaries, then any difference between a woman's predicted salary according to the female wage structure and her actual salary will be preserved by the salary adjustment method. This may be desirable in instances where it is believed that these differences represent omitted variables, such as research productivity, that should be retained in individual salaries. Academic departments are likely to favor such an approach since it allows departments some leeway in setting salaries, rather than having to strictly follow a statistical formula.

CRITERIA IN DEVISING A SALARY ADJUSTMENT PLAN

Criteria in Choosing a Plan

Given the array of models and salary adjustment methods available to practitioners, the obvious question becomes how can an institution select a course of action? In this section, I offer several criteria for comparing various salary equity strategies. Although it is possible to formulate a salary adjustment plan that allows for male salaries to be adjusted when they are also underpaid, I will restrict the discussion to cases where only the salaries of females are adjusted. While there is no single salary adjustment plan that is uniformly superior to all other plans, consideration of these factors and those already mentioned will help practitioners choose strategies that may be more acceptable given the institution's objectives. These criteria are not listed in any specific order of importance.

1. **Equity**

If it is determined that some, or all, female faculty are being underpaid, then an *equitable* salary adjustment process would be one in which each female is no longer being underpaid following the adjustment. On equity grounds, multiple-equation models are usually preferable to the single-equation model since these models allow for the measurement of unique unexplained salary differentials for females. Likewise, case-by-case salary adjustment plans would be more equitable than across-the-board adjustment plans, with the hybrid plans falling in the middle of the spectrum.

2. Political feasibility

Salary adjustments do not occur within a vacuum, since any plan for correcting salary inequities must be "sold" to both faculty and administrators. As noted by Snyder et al. (1993), it is important to take into account how both parties are likely to react to various salary adjustment plans. Essentially, the *political* factors are constraints that either limit or alter the possible salary adjustment plans available to analysts.

For example, faculty members will likely be strongly opposed to any plan that calls for salaries of specific faculty members to be reduced, even if this is shown to be "equitable". This results in two constraints. First, salary adjustment plans should be conducted without requiring male salaries to be reduced directly. Employers may not want to identify those individuals who will bear the cost of any salary redistribution. Second, the plan should ensure that salaries for selected females are not reduced. It is possible that the salary adjustments under the multiple-equation models would dictate that some female salaries be adjusted downward, while this could only occur in the single-equation model when the average female is being overpaid or actual salaries are used in a case-by-case method. However, rather than eliminate possible plans on this basis, a constrained strategy can be used where female salaries are only adjusted when the suggested salary adjustment is positive.

Another important political concern is that case-by-case salary adjustments are likely to be more contentious than across-the-board adjustments, since the former requires that the criteria on which salary adjustments will be determined must be made explicit. In the political arena, therefore, across-the-board salary adjustment methods are usually preferable to more complicated case-by-case methods, and the single-equation model has appeal over multiple-equation models.

Taking the issues of equity and politics together, while more complex salary adjustment plans tend to be more equitable, at the same time they are more difficult to implement politically than simpler schemes. The hybrid approaches are seen as a compromise between these two criteria, since they try to appease both equity and political concerns. However, there are an infinite number of such schemes that could be devised, and little theoretical basis for selecting the weights that should be given to the across-the-board and case-by-case portions in computing a female's total salary adjustment. Nonetheless, these plans are appealing in that they at least partially address both of these criteria and in principle can be weighted as to reflect the institution's relative preference between equity and politics.

3. Does the plan solve the problem?

Surprisingly, during the time when salary adjustment plans are being considered, little attention may be given towards answering this question. It is not unusual for an institution to devise a plan, adjust salaries, and not determine if the plan was effective in solving the problem until after salaries have been adjusted. But what *problem* is the institution trying to solve? Is the institution's primary objective to devise a plan that removes the average unexplained salary differential in it's entirety, or the appearance of a statistically significant unexplained salary differential? In contrast, the institution could be interested in ensuring that salary adjustments are made so that they remove all unexplained salary differentials for specific individuals.

Along these lines, while salary adjustments only for females based upon the multiple-equation models may be more equitable than across-the-board adjustment plans, they could leave the appearance of a considerable average unexplained salary differential since the salaries of male faculty have not also been adjusted. Similar, albeit smaller, unexplained salary differentials may also persist when salary adjustments are based on predicted rather than actual salaries. Finally, the issue becomes more clouded when the models are restricted by not allowing salaries for selected females to be reduced.

It is essential that analysts address this issue during the development phase of a salary adjustment plan. This can be accomplished by simulating the effects of several potential plans that incorporate equity and political concerns of the institution, and then using these results as a guide in selecting a final course of action.

4. Cost

The cost to the institution of adjusting salaries is a non-trivial issue, especially given the current fiscal restraints faced by many institutions. If such adjustments are stipulated to be an increment to base salary, the institution must find a way to cover these costs on a recurring basis. The cost to the institution of a salary adjustment plan is simply the sum of all of the individual-specific salary adjustments. While it is probably apparent that this cost will vary across models, in the semi-logarithmic earnings equation the cost will also be dependent upon the method used to adjust salaries.

Though the cost of any salary adjustment plan is dependent upon the individual characteristics of the sample, some general observations can be made. First, multiple-equation models would be expected to yield lower costs than either the single- or two-equation models, since the differences in predicted salaries for females from the female wage structure and the NDWS will tend to be smaller in multiple-equation models.

Second, salary adjustment plans based on actual rather than predicted female salaries will yield smaller financial costs to the institution when the salary distribution of females is skewed to the right ($Y_{avg,f} > \hat{Y}_{avg,f}$). This would arise when a few high salaries pull the average salary up so the mean salary is above the median salary. However, this holds only when it is possible for the institution to both raise and lower female salaries when appropriate. If salary adjustment plans are restricted to those cases where no female salaries may be lowered, the opposite can occur where the cost would be ~~lower~~ higher if salary adjustments were based on actual versus predicted salaries. This is attributable to the higher variance of actual salaries over predicted salaries from the female wage structure. Accordingly, an across-the-board salary redistribution plan may prove to be less expensive than case-by-case adjustments in this instance.

AN APPLICATION

Using data on faculty at the University of Minnesota in academic year 1986-87 (1252 males and 267 females), I will illustrate how these criteria might influence an institution's choice of a salary adjustment plan. The set of variables used in the models are described in the Appendix.

I consider three alternative models for measuring the USD in Equation (2): single-equation, Oaxaca,[10] and Reimers. Likewise, I use three of the alternative methods for adjusting salaries described by Becker and Toutkoushian (1993). Each female's salary is adjusted by the amount shown below:

Method 1: $$\hat{Y}_{i,ndws} - Y_i \qquad (4)$$

Method 2: $$\hat{Y}_{i,ndws} - \hat{Y}_{i,f} \qquad (5)$$

Method 3: $$\hat{Y}_{avg,ndws} - Y_{avg} \qquad (6)$$

Methods 1 and 2 are examples of case-by-case salary adjustments, where each female receives a possibly unique salary adjustment. Method 3 is an across-the-board salary adjustment method, in which every female receives the same dollar increment to salary, based on the estimated dollar difference of the average female. Unlike the case-by-case salary adjustments used by Becker and Toutkoushian (1993), however, given the political concerns noted above I only apply Methods 1 and 2 to those females when the deviations shown in Equation (4) or (5) are positive. Combined, these models and methods represent nine possible salary adjustment plans. Table 1 shows the calculated USD as shown in Equation (2) for female faculty using each of the three models, prior to making any salary adjustments:

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INSERT TABLE 1 HERE

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In the semi-logarithmic earnings equation, these values can be interpreted as approximate percentage differences in salaries. The levels of USD shown in Table 1 differ across models, ranging from the single-equation model reporting an approximate 4.3 percent unexplained pay disparity for females, down to an approximate 3 percent unexplained salary difference according to the model suggested by Oaxaca.

Table 2 shows the resulting monthly costs that the institution would incur by implementing each plan. The costs for each plan are computed by summing the salary adjustments for all females who would receive them (shown in parentheses):

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INSERT TABLE 2 HERE

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The figures in Table 2 demonstrate that wide cost differences can arise from different salary adjustment plans. The monthly costs in this application are largest under Method One, where salary adjustments are based on each female's actual salary, and are smallest using the across-the-board method (Method Three). The costs vary by over 88 percent across methods within each model, depending upon how salary adjustments are computed. In comparing the chosen models, the monthly costs tend to be highest under the single-equation model and the model suggested by Oaxaca, and lowest using the intermediate model developed by Reimers.

To determine how successful each plan would be in removing the USD's shown in Table 1, the new average log of salaries for females is computed for each of the nine salary adjustment plans. The new wage gap between males and females is found by subtracting these new average log of female salaries from the average log of male salary (8.4539). The USD is then recalculated by subtracting the explained salary differential from the new wage gap. Table 3 shows what the average log of female salaries would be following each of the salary adjustment plans, and the corresponding average unexplained salary differential.

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INSERT TABLE 3 HERE

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Table 3 illustrates that the plans examined here would have varying levels of success in removing the appearance of an USD. In general, while salary adjustments based on Method One would be more equitable than an across-the-board salary adjustment, it could create a new USD in favor of males. This differential, as noted by the value for Oaxaca's model using Method One, can in some instances be substantial. On the other hand, the across-the-board adjustment method seems to be more successful in eliminating the appearance of an USD in favor of males. The multiple-equation models, however, are a notable exception, in that even after an across-the-board salary adjustment for all females, there could remain a positive USD in favor of males. This occurs in the multiple-equation models since the USD also partially reflects the unexplained salary premium paid to males.

CONCLUSION

I have demonstrated the complexity involved in formulating a salary adjustment plan in salary equity studies, and have suggested criteria that institutions may use in choosing an appropriate course of action. It is essential to recognize that all of these options exist <u>after</u> decisions have been made as to the model specification and sample selection. I hope that I have been successful in describing why these issues would be of importance to policymakers and administrators involved in salary equity studies. As faculties become more cognizant of possible discriminatory behavior on the part of institutions, this issue is likely to rise in importance in the near future. It is essential that institutions themselves become aware of the range of corrective measures that they could implement, and the advantages, disadvantages, and implications of each.

Although no single salary adjustment plan has been shown to be uniformly better than the others, some general suggestions are in order for analysts involved in developing such plans:

1. Identify the problem that the institution hopes to resolve through any salary adjustment plan.
2. Identify any political constraints and how they will restrict the choice of salary adjustment plan.
3. Simulate the effects of several potential plans that incorporate equity and political concerns of the institution, and use these results as a guide in selecting a final course of action.

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APPENDIX

Definitions of Variables Used in the Salary Model

Acquired Characteristics

RETENTN	-	Dummy variable if faculty member receives, or is likely to receive, an offer from another employer (1) or not (0).
BAMADEG	-	Bachelor's or Master's Degree is highest degree (1) or not (0). (The excluded category consists of those with a degree that is foreign, unknown, or in progress)
DOCTDEG	-	PhD or DED is highest degree (1) or not (0). (The excluded category is as above for BAMADEG.)
PROFDEG	-	MD, JD, DDS, DVM, or DPharm is highest degree (1) or not (0). (The excluded category is as above for BAMADEG.)
LCITE	-	Logarithm of citations (plus one) in 1985 to any previously published works tracked by the Institute for Scientific Inquiry (ISI). Citation counts exclude self-citations, and only include first-author citations.

Experience and Rank

PREVEXP	-	Previous to U of M academic experience in days (may include TA or RA positions at U of M).
PASTADMX	-	Past administrative experience at U of M (1) or not (0). (The end date on an administrative appointment is before January 1, 1987).
NPLEAVE	-	Non-professional leaves in days.
FULASSX	-	For faculty whose current rank is Full or Associate Professor, this variable shows the time spent (in days) at the University.
ASSTTIME	-	For faculty whose current rank is Assistant Professor, this variable shows the time spent (in days) as an Assistant Professor.
TENURE	-	Dummy variable (1) currently Full or Associate Professor or (0) currently Assistant Professor.

Department and Field Variables

NINE12 - Nine month appt (1) or twelve month (0).

MARKET - The mean salary for the 27 institutions in the AAUDE data bases by department and appointment term, weighted by FTE and broken down by tenure (excluding U of M salaries).

DEPARTMENT- Set of 110 dummy variables representing individual's home department. (DD1 thru DD110, where DDi = 1, if i-th department and 0 otherwise. DD75 is the excluded department.)

Personal Characteristics

SEX - Dummy variable (1) if female or (0) if male.

Dependent Variable to be Explained

LOGMONTH - Logarithm of 1987 monthly salary assuming faculty member was 100% time.

TABLE 1: Average Unexplained Salary Differential for Three Alternative Models

Model	Explained Salary Differential	Unexplained Salary Differential
Single-Equation	0.1527	0.0423
Oaxaca (1973)	0.1646	0.0304
Reimers (1983)	0.1614	0.0336

NOTES: Average log of salaries for males = 8.4539; females = 8.2589. Wage gap = 8.4539 - 8.2589 = 0.1950. The wage gap equals the explained salary differential plus the unexplained salary differential. The unexplained salary differential is calculated as follows:

$$USD = (8.4539 - \bar{\ln Y_f}) - \sum_{k=1}^{K} (\bar{X}_{km} - \bar{X}_{kf}) B_k$$

$$= \text{wage gap} - \text{explained wage gap}$$

TABLE 2: Monthly Costs of Adjusting Female Salaries

Model	Method One	Method Two	Method Three
Single-equation	$84,972 (n=170)	$45,991 (n=267)	$45,090 (n=267)
Oaxaca (1973)	$85,983 (n=159)	$67,381 (n=162)	$31,933 (n=267)
Reimers (1983)	$60,852 (n=149)	$32,499 (n=162)	$15,897 (n=267)

NOTES: Numbers in parentheses denote the number of female faculty who received salary adjustments under each plan.

TABLE 3: Average Female Salaries and Average Unexplained Salary Differential Following Implementation of Salary Adjustment Plans

Model	Method	Average Female Log of Salary	Average Unexplained Salary Differential
Single-equation	1	8.3396	-0.0379
	2	8.3017	0.0000
	3	8.3027	-0.0010
Oaxaca (1973)	1	8.3389	-0.0496
	2	8.3183	-0.0290
	3	8.2902	-0.0009
Reimers (1983)	1	8.3181	-0.0256
	2	8.2886	0.0039
	3	8.2746	0.0179

ENDNOTES

1. See Snyder, Hyer and McLaughlin (1993) for a discussion of fashioning a salary adjustment process, and Moore (1993) for information on some of the legal aspects of salary equity.
2. The existence of alternative salary adjustment methods has been noted by Gunderson (1989), Becker and Goodman (1991), and Becker and Toutkoushian (1993).
3. This semi-logarithmic functional form, first popularized by Mincer (1974), has become the standard functional form used in salary equity studies. It is appealing on econometric grounds as a means for correcting for heteroscedasticity. Furthermore, this functional form is useful for describing the salary determination process when salary increments are given on a percentage basis.
4. Numerous intermediate approaches between the single-equation model and the model of Oaxaca can be devised by interacting the variable for SEX with a subset of regressors in X.
5. See Neumark (1988), Cotton (1988), and Hoenack and Toutkoushian (1993) for alternative schemes of how to weight the separate male and female wage structures when constructing a NDWS.
6. See McLaughlin, Zirkes, and Mahan (1983) and Gaylord and McLaughlin (1991). Moore (1993), however, counters that the existence of correlation between SEX and other variables in X does not necessarily pose a problem in estimation. A multicollinearity problem only arises when the correlation is near perfect, and this is not likely to happen in empirical studies of faculty salaries due to random error in the model.

7. *Rajender v. University of Minnesota*, 24 Fair Empl. Prac. Cas. 1045 (D. Minn. 1987).

8. Since the details of these different methods are explored by Becker and Toutkoushian (1993), I direct interested readers to this paper.

9. It is also possible to base salary adjustments on percentage increases rather than specified dollar increases. Due to the non-linear functional form of the earnings equation, the prescribed salary adjustments for specific females in multiple-equation models may differ if they are based on estimated percentage or dollar increments. A further complication due to the use of the semi-logarithmic earnings equation is that the predicted salaries from these equations are biased estimators of actual salaries (see Meulenberg (1965), Goldberger (1968), Kennedy (1981), and Becker and Toutkoushian (1993)).

10. Under Oaxaca's model, I use the male wage structure as the NDWS.