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ABSTRACT

This paper summarizes the key findings of two separate studies of issues pertaining to pay equity for faculty by race and gender. Data were obtained from the 1988 and 1993 National Studies of Postsecondary Faculty, which contain information on 11,013 and 31,354 faculty, respectively. It was found that the unexplained wage gap between men and women was between 8 and 10 percent, which is comparable to findings from earlier national studies conducted in the 1970s and 1980s. It was also found that the unexplained wage gap for younger women in academe was much lower than that for older women. These results suggest that the unexplained wage gap between men and women should fall as younger women enter the profession and replace more senior faculty. Significant pay differentials were also found between white and Hispanic faculty, although there was no evidence of an unexplained white/black pay differential after controlling for relevant factors. (Contains 26 references.) (MDM)

A Summary of Two Studies on Pay Disparities by Race and Gender: Evidence from the 1988 and 1993 NCES Surveys

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Abstract

This paper summarizes the key findings from two separate studies using data from the 1988 and 1993 NCES national surveys of faculty to examine issues pertaining to pay equity for faculty by gender and race. The data show that the aggregate unexplained wage gap between men and women is between eight and ten percent, which is comparable to findings from earlier national studies conducted during the 1970s and 1980s, and that the unexplained wage gap for younger women is much lower than for older women in academe. Significant pay differentials are also found between white faculty and Hispanic faculty, although there is no evidence of an unexplained white/black pay differential after controlling for relevant factors.

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A Summary of Two Studies on Pay Disparities by Race and Gender:

Evidence from the 1988 and 1993 NCES Surveys

Introduction

During the 1960s and early 1970s, a series of affirmative action initiatives were passed in the United States to help ensure that workers would not be treated unfairly based on their personal characteristics such as gender and race/ethnicity. Since this time, much attention has been directed toward determining whether workers experience differences in pay based on their gender and/or race, and if any observed differences are decreasing over time. Empirical studies have focused on both the differences in the average salaries for two groups of employees ("total wage gap"), and the portion of the total wage gap that cannot be attributed to differences in average worker characteristics such as experience ("unexplained wage gap").

Studies from the general labor market have shown that the total wage gap between men and women has declined over the past thirty years, although inequities persist (O'Neill and Polachek, 1993; Wellington, 1993). While the total wage gap between blacks and whites in the United States fell during the 1960s and 1970s, recent studies show that the this differential has widened during the 1980s (Cotton, 1989; Haberfeld & Shenhav, 1990; Juhn, Murphy & Pierce, 1991; Verdugo, 1992; Levy & Murnane, 1992; Smith, 1993; Card & Krueger, 1993; and Card & Lemieux, 1994).

In the academic labor market, a notably different profile emerges with regard to differences in earnings by gender and race. Studies by Barbezat (1991) and Ransom and Megdal (1993) have shown quite convincingly that the unexplained wage gap between male and female faculty has not changed very much from the mid 1970s through the late 1980s. While the topic

of gender equity in academe has received considerable attention, relatively few empirical studies have addressed whether there are unexplained differences in faculty pay by race/ethnicity. The few studies that have examined faculty pay by race have concluded that there are smaller earnings differences (in terms of both the total and unexplained wage gaps) between black and white faculty than are found in the general labor market. However, there is virtually no evidence as to how faculty in other race/ethnicity categories, such as Hispanics and Asians, fare relative to white faculty in terms of earnings, and whether their treatment varies by gender.

If the levels of pay disparity vary across racial categories, and if these differences are further compounded by gender and/or field differences, then such results could be used by institutions to critique their affirmative action policies and identify areas in which they are more likely to be deficient and could be improved. Policies aimed at helping Hispanic faculty, for example, might be more tightly focused on Hispanic males in select fields where the largest inequities are found to persist. Such findings would also help identify areas in which more detailed field-specific analyses might be conducted in the future.

This paper summarizes the results from two recent studies written by the author using data from national surveys of faculty conducted by the National Center for Education Statistics in 1988 and 1993 to examine the total and unexplained wage gaps by gender and race in academe.[1] For women, the results show that women in higher education still receive wages that are between eight and ten percent less on average than men with similar characteristics, and as a whole are not fairing better than they did in the late 1970s to mid 1980s. However, the level of pay disparity

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1 "Sex Matters Less for Younger Faculty: Evidence of Disaggregate Pay Disparities from the 1988 and 1993 NCES Surveys," *Economics of Education Review,* Vol. 16 (1998) and "Racial and Marital Status Differences in Faculty Pay," forthcoming, *Journal of Higher Education.*

for younger faculty is much smaller than for more senior faculty suggesting that younger women are receiving better treatment in terms of compensation. The data also show that there are considerable differences in the total and unexplained wage gaps by race/ethnicity, and that they vary dramatically for men and women. These findings illustrate that as in the general labor market, earnings differences among gender and race categories of faculty are clearly not uniform.

Literature Review

Studies of faculty pay in higher education utilize data from either single institutions or from national surveys of faculty. Most of these studies examine whether faculty earnings differ by gender, and whether progress has been made in achieving gender equity. Using data from the *Carnegie Commission Surveys of Higher Education*, Barbezat (1987a) found that after controlling for factors such as potential experience, education, field, and number of publications, the unexplained wage gap between men and women in 1968-69 was 16.5 percent. Subsequent work by Barbezat (1987b, 1989, 1991), using data from the *1977 Survey of the American Professorate* and the *Carnegie Foundation Surveys of Higher Education*, showed that the unexplained wage gap fell considerably by the mid 1970s, but has since remained relatively constant at around seven percent.

The majority of salary equity studies have been conducted at the institutional level. Of these studies, very few address whether there are earnings differentials for faculty based on race, and when they do, it is usually done by grouping faculty into two categories such as "black/non-black" or "white/non-white" (Koch & Chizmar, 1973; Hoffman, 1976; Riggs & Dwyer, 1995). Institution-specific studies usually cannot adequately test concerns about salary equity for various

race/ethnicity groups because there may be too few minority faculty at a given institution to reliably estimate earnings differentials for smaller categories such as Hispanics.

National surveys of faculty can potentially supply the sample sizes needed to estimate earnings differences by more detailed racial categories. Few of these studies, however, have examined whether these unexplained wage gaps vary by race. Among the exceptions are Barbezat (1987a, 1987b, 1989, 1991) and Bellas (1993), who categorize faculty into one of two racial categories: white and non-white. Their results confirm that after controlling for relevant factors, there is no evidence of an unexplained earnings differential favoring white faculty over non-white faculty. While Barbezat (1991) found in the 1989 Carnegie Survey that black men earned eleven percent more than non-black men with similar characteristics, these results are unlikely to be representative of the minority faculty population since only 38 out of 3,077 faculty in the sample (1.23 percent) were black.

Data Description

The data used in both studies are taken from surveys of faculty conducted by the National Center for Education Statistics: *1988 National Study of Postsecondary Faculty* (NSOPF-88) and *1993 National Study of Postsecondary Faculty* (NSOPF-93). Of the two surveys, the 1993 survey was the largest, drawing a sample of 31,354 faculty from a population of 3,256 postsecondary public and private institutions, whereas the 1988 survey sampled 11,013 faculty from 424 institutions. To help ensure comparability with earlier studies, the samples used here are restricted to only full-time faculty holding the rank of either full, associate, or assistant professor in either a Research I or II, Doctoral I or II, Liberal Arts I or II, or Comprehensive I or

II institution.[2] The final samples consisted of 4,767 faculty in the 1988 study and 9,819 faculty in the 1993 study. Most of the statistical results to follow rely primarily on the 1993 survey. Table I contains descriptive statistics for selected variables from the 1993 survey, broken down separately for men and women.

********** **Insert Table 1 Here** **********

The total wage gap in 1993 between men and women is twenty percent, which is virtually the same as found by Ransom and Megdal for faculty in 1977. Certainly, some of this differential is due to differences in mean observable characteristics of men and women. Table 1 shows that, as expected, men tend to be older than women, have more experience and publications, and are more likely to be employed at a Research I or II institution.

Empirical Results

The unexplained wage gap between men and women can be calculated in several ways. The most common method, referred to as the single-equation method, creates dichotomous variables for an individual's gender and/or race, and adds these variables to the earnings equation. The resulting regression model is written as:

$$Salary = f(human\ capital, characteristics, gender, race)$$

2. The sample only included those faculty members with length of appointments of eight months or more. A small number of respondents reported annual salaries of less than $10,000 per year. These observations were dropped from the analysis. For complete details on the sampling procedure used by NCES, see "Faculty and Instructional Staff: Who Are They and What Do They Do?" *1993 National Study of Postsecondary Faculty*, National Center for Education Statistics, U.S. Department of Education (NCES 94-346), October 1994.

where *salary* = natural logarithm of annual salary, *human capital* = measures of faculty experience and ability, *characteristics* = other characteristics of individual faculty and their institutions, *gender* = 1 if female, 0 otherwise, and *race* = set of four dummy variables for race/ethnicity ("white" is the omitted category). The results from three alternative models, for both the pooled sample and for each gender, are presented in Table 2. The following variables are used in the first model specification ("Model I"): experience and experience squared, age and age squared, educational attainment, length of appointment, gender, whether currently a chairperson, marital status, and geographical region. Model II uses the same variables that are included in Model I, plus additional controls for years of seniority and seniority squared, primary teaching field (forty-three variables), Carnegie classification of institution, and public versus private status of the institution. Finally, the last model ("Model III") augments Model II with four variables for the number of career publication counts and a variable for career patents.

Collectively, the three model specifications and variable definitions are very similar to those employed by other researchers who have examined data from national surveys of faculty. It has become standard practice (see Barbezat (1991) for a similar approach) to present results from several alternative model specifications since some of the variables typically included in earnings equations, such as field, rank, and publications, are subject to criticism on the grounds that they may themselves be discriminatory (Ransom and Megdal, 1993; Bellas, 1994). By considering three alternative model specifications, it is possible to observe if the effects of race on earnings change when alternative factors are controlled for in the model.

********** **Insert Table 2 Here** **********

The signs and significance levels of the coefficient estimates for the human capital and

publication variables are consistent with those found in previous studies. As expected, pay increases along with the research intensity of the institution (as represented by the Carnegie classification) and the number of journal articles and books published over one's career. The positive sign for the variable years of experience and the negative sign for squared experience shows that there is a non-linear relationship between the log of salaries and experience. Interestingly, male faculty in private institutions earn significantly less than men with similar measured characteristics in public institutions.

Table 2 illustrates how earnings differentials vary by race/ethnicity as well as by gender, and how the results are sensitive to the factors included in the earnings equation. Approximately two-thirds of the eleven percent total wage gap between black and white males is accounted for by variables in Model I. The total wage gap favoring Asian males over white males is effectively eliminated after controlling for field and the other variables in Model II. In contrast, Hispanic males fare worse in academia when compared to white males, earning between four and eight percent less than white males even in Model III.

With regard to gender, women earn between eight and ten percent less than men. In all three models, the estimated coefficients for the gender dummy variable are significant at the one percent level. How do these results compare with those obtained in other national studies of faculty? To minimize differences, Barbezat (1991, Table 1, p.193) selected five alternative model specifications and applied each of these to the sets of full-time assistant, associate, or full professors employed at a university or four-year college in five national studies of faculty conducted between 1968 and 1989. Her basic model (I) includes controls for advanced degree, eleven month contract, race, age, whether administrator, experience and experience squared,

teaching versus research emphasis, and geographical location. The additional four models, denoted (II) through (V), add further control for publications by including a series of six dummy variables for career journal articles and four variables for career books published, as well as field, institutional type, and rank.

For the purpose of comparison, similar variables to those used by Barbezat are constructed from the 1993 NCES data. Four of her models are then estimated using the 1993 NCES data, and the estimated coefficients for female are reported in Table 3 along with selected results presented by Barbezat. There are several minor differences in the variable definitions used by Barbezat as compared to those in this study, which are described in the first study.

********** **Insert Table 3 Here** **********

It would be difficult to argue that the results presented in Table 3 show that women in the aggregate are better off in 1993 than they were in the earlier surveys, in terms of the unexplained wage gap between women and men.

While the single-equation method is often used to measure the unexplained wage gap because it is easy to implement and the results can be readily interpreted, it has been criticized for imposing the restriction that there are similar wage structures (except for the intercept) for each group under examination, such as blacks/whites or males/females. Several alternatives have been offered to measure pay disparity between groups of workers. These methods use the estimated wage structures for each group of workers to decompose the total wage gap into the portion explained by the independent variables in the regression model, and the remainder which is interpreted as the unexplained wage gap. Neumark (1988) shows that the wage gap between men and women (subscripts m and f) can be decomposed into two aggregate components

(1) $$(\bar{w}_m - \bar{w}_f) = (\bar{x}_m - \bar{x}_f)b_n + [\bar{x}_m(b_m - b_n) - \bar{x}_f(b_f - b_n)]$$

where $\bar{x}_m$, $\bar{x}_f$ = vectors of means for males and females, respectively, b_m = male wage structure, b_f = female wage structure, and b_n = "no-discrimination" wage structure, or the wage structure assumed to exist in the absence of discrimination. The total wage gap is the difference in mean (log) salaries for men and women. The explained wage gap, $(\bar{x}_m - \bar{x}_f)\, b_n$, represents the portion of the total wage gap that is due to differences between men and women in the measurable characteristics in the model. Finally, the unexplained wage gap is shown in the square brackets in Equation (1), and represents the portion of the total wage gap due to men and women receiving different rewards for the variables included in the earnings equation.

The alternative methods for calculating the unexplained wage gap differ in their choice of coefficients to use for the no-discrimination wage structure. Two methods attributed to Oaxaca (1973) are used here. In the case of gender equity, the Oaxaca (M) method specifies that the no-discrimination wage structure is the male wage structure and thus pay inequities arise from females being underpaid on average. For the second alternative, denoted Oaxaca (F), the no-discrimination wage structure is the female wage structure. Similar wage structures can be identified for faculty by race/ethnicity. Table 4 provides a summary comparison of the results derived from these two methods to the single-equation method for men/women, whites/blacks, and whites/Hispanics:

********** **Insert Table 4 Here** **********

From Table 4, the estimates of the unexplained wage gap for women vary between eight to ten percent, with the single-equation method falling in the middle of the range of estimates.

Similar results are found for comparisons of faculty by race/ethnicity. For blacks, the four percent wage disadvantage relative to whites (-0.044) becomes a one to two percent unexplained wage differential in favor of blacks after controlling for differences between black and white faculty in the variables included in Model III. On the other hand, over half of the wage disadvantage faced by Hispanics relative to whites (-0.051) remains after controlling for these same factors, regardless of whether a single-equation or multiple-equation method is used to measure pay disparity. Therefore, in these two studies, the single-equation method is useful as a general barometer of aggregate salary inequity.

To explore whether progress is being made in reducing the earnings disparities between men and women, it is useful to consider differences in pay disparity by age, since faculty in different age cohorts on average would have been hired at different points in time. To examine the relationship between age and pay disparity, faculty are divided into two age categories: (i) those 40 years old and under, most of whom would have started their academic careers after the 1970s, and (ii) those over 40. Data from both the 1988 and 1993 NCES surveys are then used to estimate the level of pay disparity for the whole sample and for faculty in each age category. The results are shown in Table 5:

********** **Insert Table 5 Here** **********

Table 5 shows that the unexplained wage gaps in both samples for more senior faculty is much larger than for junior faculty. The second and third columns for each survey suggest that the estimated level of pay disparity for women over 40 is nearly twice as large as that for women 40 and under as of 1988, and close to three times as large by 1993. It is also interesting to note that the estimated coefficients for gender are smaller across both age categories in the 1993

survey than in the 1988 survey.

While younger women in academe face smaller levels of pay disparity than older women, it is possible that this difference merely reflects two points along a given age/pay disparity profile rather than a reduction in the level of pay disparity for younger women. One way to estimate if the level of pay disparity changes with age is to track artificial "cohorts" of faculty from different age categories and compare the estimated level of pay disparity at two points in time.[3] An artificial cohort matches faculty of a certain age in year t with faculty in year $t+k$ who are k years older than the faculty in the previous study. Three cohorts are used here:

Artificial Cohort	**Age as of 1988 survey**	**Age as of 1993 survey**
Cohort #1	$30 \leq \text{Age} < 40$	$35 \leq \text{Age} < 45$
Cohort #2	$35 \leq \text{Age} \leq 45$	$40 \leq \text{Age} \leq 50$
Cohort #3	$45 < \text{Age} \leq 60$	$50 < \text{Age} \leq 65$

Table 6 provides the estimated coefficients for female from each of these cohorts using the common model specification shown in Table 5:

********** **Insert Table 6 Here** **********

From Table 6, it can be seen that the estimated levels of pay disparity are very similar for each artificial cohort of faculty over this five-year period. In 1988, the unexplained wage gap for faculty between the ages of 30 and 40 was less than one-third of that for faculty 45 to 60. If there were a linear relationship between age and pay disparity, then the unexplained wage gap for younger women would have to grow by about 0.3% per year, or 1.5% for each five-year time span, for their level of pay disparity to reach the level of more senior women. While there was a

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3. I would like to thank two anonymous referees for suggesting this approach.

slight increase of 0.7% in the unexplained wage gap for younger women over this five-year time period, there were virtually no changes in the unexplained wage gaps for women in other age categories. On the whole, there is no compelling evidence from this comparison that the level of pay disparity between men and women widens dramatically as they increase in age.

Summary

Using a variety of model specifications and methods for measuring the unexplained wage gap, the data from the 1993 NCES study show that women still earn between eight to ten percent less, on average, than men with similar measurable characteristics. These estimates are comparable to those found by Barbezat using data from national surveys in 1975, 1984, and 1989. However, while those women 40 and under are still paid significantly less than men, the smaller unexplained differential for younger women is encouraging news. The failure of national studies to reveal a significant decline in the unexplained wage gap between men and women could in part reflect the aging of the faculty as a whole, due to faculty members extending their time to retirement and the demographic trend caused by the baby boom. Provided that younger women do not experience inequitable salary increases in the future, the unexplained wage gap should fall as more younger women enter the profession and replace more senior faculty.

Although previous studies aggregate faculty into one of two racial categories, this study reveals that this practice is inappropriate due to the remarkable differences in pay equity across race/ethnicity categories. The experiences of Hispanic, black and Asian faculty are dramatically different, and these differences vary further by gender. If the falling gap in pay between blacks and whites is attributable to the success of Affirmative Action policies, it is an open question as

to why women and Hispanics have not benefitted to the same extent. Given the commitment to Affirmative Action by universities and colleges, the results might be interpreted by some as evidence that these policies seem to be working. Others might counter that the evidence supports the opposite conclusion, since black females earn somewhat more than white females after controlling for field and number of publications, and that salary deficiencies persist for faculty in other race/ethnicity categories. It should be remembered that these studies focus on those individuals who have attained employment within academe, and thus cannot address other Affirmative Action concerns such as inequities with regard to access to faculty positions.

While the results presented in these two studies cannot be used to isolate a cause for why faculty in different gender and race/ethnicity categories are treated differently, they clearly show that uniform policies have not been effective in ensuring equal treatment for all groups of faculty. Equity cannot be viewed as a simple "white/non-white" or "male/female" issue, but rather a more complex process integrating race, field, gender, and family status differences (Bellas, 1997). Although national studies of faculty cannot further explain these differences, they can suggest areas for future study. In particular, these results could help shape more detailed field-specific studies to better learn about the profiles of faculty in selected categories and how they are compensated. At a minimum, such studies should examine additional measures of faculty productivity before a more definitive conclusion can be drawn.

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Table 1: Descriptive Statistics for Selected Variables, NSOPF-93 Data

Variable	Pooled Sample	Women Only	Men Only
Annual Salary	$48,604 (35,362)	$41,821 (28,072)	$52,214 (38,199)
Years of Experience	15.76 (10.99)	12.64 (9.30)	17.42 (11.46)
Years of Seniority	11.66 (9.35)	9.11 (8.11)	13.02 (9.68)
Age	48.62 (9.34)	46.77 (9.08)	49.60 (9.33)
Career Journal Articles	11.45 (25.19)	5.80 (14.78)	14.46 (28.81)
Career Book Chapters	1.46 (3.89)	1.06 (2.86)	1.68 (4.33)
Career Books	0.50 (1.71)	0.36 (1.42)	0.58 (1.84)
Hispanic	0.04 (0.21)	0.04 (0.20)	0.05 (0.21)
Asian	0.06 (0.23)	0.04 (0.19)	0.07 (0.26)
Black	0.09 (0.28)	0.11 (0.31)	0.08 (0.26)
Other Race	0.02 (0.13)	0.01 (0.11)	0.02 (0.13)
Research I or II Institution	0.22 (0.41)	0.17 (0.38)	0.24 (0.43)
Doctoral I or II Institution	0.21 (0.41)	0.20 (0.40)	0.22 (0.42)
Comprehensive I or II Institution	0.44 (0.50)	0.48 (0.50)	0.42 (0.49)
Private Institution	0.38 (0.49)	0.41 (0.49)	0.37 (0.48)
Sample Size	9,819	3,410	6,409

NOTES: Standard deviations are shown in parentheses.

Table 2: **Multiple Regression Models of Faculty Salary: Results from the NSOPF-93 Survey (dependent variable = LOG(annual salary))**

Estimated Coefficients (standard errors)

Variable	Pooled Sample			Women Only			Men Only		
	Model I[a]	Model II[b]	Model III[c]	Model I[a]	Model II[b]	Model III[c]	Model I[a]	Model II[b]	Model III[c]
Married	0.063**	0.027**	0.022*	0.041**	0.014	0.009	0.089**	0.046**	0.039**
	(0.010)	(0.009)	(0.009)	(0.013)	(0.012)	(0.012)	(0.016)	(0.015)	(0.014)
Separated	0.030*	0.008	0.006	0.023	0.004	0.001	0.053*	0.027	0.023
	(0.013)	(0.012)	(0.012)	(0.016)	(0.015)	(0.015)	(0.021)	(0.019)	(0.019)
Cohabitating	0.052*	0.033	0.026	0.063*	0.057*	0.048	0.053	0.017	0.010
	(0.023)	(0.022)	(0.021)	(0.03)	(0.028)	(0.027)	(0.036)	(0.033)	(0.032)
Hispanic	-0.045**	-0.026	-0.027	-0.010	0.008	0.013	-0.061**	-0.043*	-0.048**
	(0.015)	(0.015)	(0.014)	(0.025)	(0.024)	(0.024)	(0.020)	(0.018)	(0.018)
Asian	0.065**	0.014	0.010	0.025	0.002	0.004	0.076**	0.015	0.009
	(0.014)	(0.013)	(0.013)	(0.027)	(0.025)	(0.025)	(0.016)	(0.015)	(0.015)
Black	0.005	0.007	0.015	0.047**	0.042**	0.052**	-0.036	-0.017	-0.011
	(0.011)	(0.011)	(0.010)	(0.016)	(0.015)	(0.015)	(0.016)	(0.014)	(0.014)
Other Race	-0.041	-0.047*	-0.059**	0.005	0.001	-0.007	-0.058	-0.067*	-0.080**
	(0.025)	(0.023)	(0.023)	(0.045)	(0.042)	(0.042)	(0.030)	(0.028)	(0.027)
Female	-0.108**	-0.095**	-0.086**	------	------	------	-------	-------	-------
	(0.007)	(0.007)	(0.007)						
Years of Experience	0.008**	0.008**	0.007**	0.009**	0.008**	0.007**	0.007**	0.008**	0.006**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Experience Squared/1000	-0.074**	-0.078**	-0.062**	-0.078**	-0.080*	-0.067	-0.063**	-0.076**	-0.058**
	(0.015)	(0.016)	(0.018)	(0.029)	(0.036)	(0.036)	(0.018)	(0.019)	(0.018)
Research I or II Institution	------	0.254**	0.205**	------	0.224**	0.190**	------	0.264**	0.210**
		(0.012)	(0.012)		(0.019)	(0.019)		(0.015)	(0.015)

Table 2 (cont'd):

Variable	Pooled Sample			Women Only			Men Only		
	Model I[a]	Model II[b]	Model III[c]	Model I[a]	Model II[b]	Model III[c]	Model I[a]	Model II[b]	Model III[c]
Doctoral I or II Institution	------	0.145** (0.011)	0.118** (0.011)	------	0.136** (0.018)	0.112** (0.018)	------	0.151** (0.015)	0.122** (0.015)
Comprehensive I or II Inst.	------	0.055** (0.010)	0.053** (0.010)	------	0.072** (0.016)	0.067** (0.016)	------	0.052** (0.014)	0.050** (0.014)
Private Institution	-------	-0.021** (0.007)	-0.023** (0.007)	-------	-0.013 (0.011)	-0.013 (0.011)	-------	-0.023* (0.009)	-0.025** (0.009)
Career Journal Articles	------	------	0.002** (0.000)	------	------	0.002** (0.000)	------	------	0.002** (0.000)
Career Book Chapters	------	------	0.005** (0.001)	------	------	0.008** (0.002)	------	------	0.004** (0.001)
Career Books	------	------	0.008** (0.002)	------	------	0.013** (0.003)	------	------	0.007** (0.002)
Career Textbooks	------	------	0.006* (0.003)	------	------	0.006 (0.006)	------	------	0.006 (0.003)
Constant	9.893** (0.080)	9.575** (0.077)	9.648** (0.075)	10.153** (0.119)	9.937** (0.116)	10.008** (0.114)	9.622** (0.107)	9.214** (0.103)	9.293** (0.101)
R-Squared	0.31	0.42	0.45	0.28	0.37	0.39	0.27	0.40	0.43
Sample Size	9,819	9,819	9,819	3,410	3,410	3,410	6,409	6,409	6,409

NOTES: Standard errors are shown in parentheses. [a]Model I contains additional variables controlling for level of educational attainment, length of appointment (e.g., whether 8-month contract), age and age squared, whether departmental chairperson, and nine census region dummy variables. [b]Model II includes all variables in Model I plus years in current position and years squared, Carnegie classification of university, and forty-two variables for field. [c]Model III includes all variables in the second model plus the number of career patents and four categories of career publications. **$p < 0.01$, *$p < 0.05$ (two-tailed tests).

Table 3: Comparison of Estimated Female Dummy Coefficients - 1993 NCES Survey and Earlier National Surveys (dependent variable in all models is the logarithm of annual salary)

	Year of National Survey				
Model	**1968[5]**	**1975[6]**	**1984[7]**	**1989[7,8]**	**1993[9]**
(I) Basic Regression[1]	-0.207 (0.015)	-0.127 (0.014)	-0.090 (0.011)	-0.128 (0.010)	-0.085 (0.007)
(III) Basic Regression Plus Publication Variables[2]	-0.174 (0.015)	-0.100 (0.013)	-0.081 (0.011)	-0.097 (0.010)	-0.072 (0.007)
(IV) Basic Regression Plus Publication and Field Variables[3]	-0.165 (0.015)	-0.104 (0.013)	-0.068 (0.011)	-0.070 (0.009)	-0.078 (0.007)
(V) Basic Regression Plus Publication, Field, and Institution Type Variables[4]	-0.163 (0.015)	-0.095 (0.013)	-0.070 (0.011)	-0.066 (0.009)	-0.075 (0.007)
Sample size	13,613	2,202	1,791	3,077	9,790

Notes: Standard errors are shown in parentheses. Dependent variable in all studies is the logarithm of annual salary. Samples are restricted to full-time faculty at either the assistant, associate, or full professor rank employed by a four-year college or university. All estimated coefficients are significant at the 1% significance level. Table format, model labels, and values from earlier studies are similar to Barbezat (1991, p.193). [1]Basic regression model includes controls for highest degree (1 variable), length of appointment (1 variable), race, age, administrative position, years since highest degree and years since degree squared, teaching versus research position, and geographical region. [2]Includes six dummy variables for career journal articles and four dummy variables for career books. [3]Includes controls for faculty member's discipline (20 variables). [4]Includes controls for institutional classification (Research, Doctoral, Comprehensive, and Liberal Arts). [5]Source: *The Carnegie Council National Surveys of Higher Education.* Institutional type in this study is measured by college versus university. [6]Source: *The Survey of the American Professorate.* [7]Survey sponsored by The Carnegie Foundation. Model does not control for geographical region. [8]Replaces years since highest degree with years of full-time academic experience. [9]Sample size differs from Table 2 due to missing values on years since highest degree.

Table 4: Calculation of the Unexplained Wage Gap Between Men and Women Using Alternative Models - 1993 NCES Survey

Category/Method	Total Wage Gap	Explained Wage Gap[a]	Unexplained Wage Gap[b]
Women			
Oaxaca (M)[c]	-0.199	-0.094 *[+47%]*	-0.105 *[+53%]*
Oaxaca (F)[d]	-0.199	-0.113 *[+57%]*	-0.086 *[+43%]*
Single-equation	-0.199	-0.108 *[+54%]*	-0.091 *[+46%]*
Blacks			
Oaxaca(W)[e]	-0.044	-0.061 *[+139%]*	+0.017 *[-39%]*
Oaxaca(B)[f]	-0.044	-0.064 *[+145%]*	+0.020 *[-45%]*
Single-equation	-0.044	-0.059 *[+134%]*	+0.015 *[-34%]*
Hispanics			
Oaxaca(W)[e]	-0.051	-0.023 *[+45%]*	-0.028 *[+55%]*
Oaxaca(H)[g]	-0.051	-0.019 *[+37%]*	-0.032 *[+63%]*
Single-equation	-0.051	-0.014 *[+27]*	-0.037 *[+73%]*

NOTES: Percentages of the total wage gap that are explained and unexplained are shown in square brackets below each value. Dependent variable is the logarithm of annual salary. Wage decompositions by race are based on the pooled sample for men and women using Model III presented in Table 2, whereas a different salary model is used for the male-female decomposition. [a]The explained wage gap represents the portion of the wage gap that is due to differences between faculty in their measurable characteristics. [b]The unexplained wage gap is the wage gap (column 1) minus the explained wage gap (column 2). [c]Male wage structure is the no-discrimination wage structure. [d]Female wage structure is the no-discrimination wage structure. [e]Oaxaca(W) = the coefficients from the white-only regression model are used as the no-discrimination wage structure. [f]Oaxaca(B) = the coefficients from the black-only regression model are used as the no-discrimination wage structure. [g]Oaxaca(H) = the coefficients from the Hispanic-only regression model are used as the no-discrimination wage structure.

Table 5: Multiple Regression Models of Faculty Salaries Stratified by Age - 1988 and 1993 NCES Surveys

	<---------- 1988 NCES Survey ---------->			<---------- 1993 NCES Survey ---------->		
Variable	**All Ages**	**Over 40 Years Old**	**40 Years and Under**	**All Ages**	**Over 40 Years Old**	**40 Years Old and Under**
Female	-0.1060** (0.010)	-0.1200** (0.012)	-0.0560** (0.017)	-0.0950** (0.007)	-0.1110** (0.008)	-0.0390** (0.013)
Career Articles	0.0025** (0.0002)	0.0025** (0.0002)	0.0043** (0.001)	0.0021** (0.0001)	0.0020** (0.0001)	0.0059** (0.001)
Career Books	0.0071** (0.002)	0.0069** (0.002)	0.0028 (0.009)	0.0070** (0.002)	0.0072** (0.002)	0.0007 (0.010)
Career Chapters	0.0023** (0.0005)	0.0020** (0.0005)	0.0130** (0.004)	0.0059** (0.001)	0.0063** (0.001)	0.0022 (0.003)
Academic Experience	0.0023** (0.002)	0.0025** (0.002)	0.0063 (0.009)	0.0069** (0.001)	0.0071** (0.001)	0.0009 (0.004)
Experience Squared	-0.0003** (4.9e-05)	-0.0004** (0.0001)	7.7e-05 (0.001)	-6.4e-05** (1.6e-05)	-6.8e-05** (1.7e-05)	5.8e-05 (0.0001)
Age	0.0180** (0.005)	0.0220** (0.008)	0.0068 (0.054)	0.0180** (0.003)	0.0320** (0.006)	-0.0100 (0.039)
Age Squared	-0.0002** (4.5e-05)	-0.0002* (0.0001)	4.8e-05 (0.001)	-0.0001** (3.0e-05)	-0.0002** (0.0001)	0.0002 (0.001)
Intercept	9.6420** (0.106)	9.5150** (0.220)	9.8260** (0.930)	9.8030** (0.079)	9.4430** (0.155)	10.3320** (0.692)
R-squared	0.49	0.44	0.50	0.39	0.37	0.38
Sample Size	4,767	3,660	1,107	9,819	7,731	2,088

NOTES: Standard errors are shown in parentheses. Each model includes controls for chairperson, highest degree (4 variables), seniority and seniority squared, private institution, race, career textbooks and patents, Carnegie classification of institution (4 variables), and primary teaching field (43 variables). Academic experience measured as the weighted years of academic experience from current and three most recent positions. **p<.01, *p<.05, two-tailed test.

Table 6: Comparison of Estimated Female Coefficients from Selected Age Cohorts of Faculty — 1988 and 1993 NCES Surveys

Age Cohort	Estimated Female Coefficient	Sample Size
Artificial Cohort #1:		
30 ≤ Age < 40 in 1988	-0.0400* (0.018)	941
35 ≤ Age < 45 in 1993	-0.0470** (0.011)	2,821
Artificial Cohort #2:		
35 ≤ Age ≤ 45 in 1988	-0.0880** (0.015)	1,569
40 ≤ Age ≤ 50 in 1993	-0.0890** (0.011)	3,909
Artificial Cohort #3:		
45 < Age ≤ 60 in 1988	-0.1230** (0.015)	2,294
50 < Age ≤ 65 in 1993	-0.1190** (0.012)	3,762

Notes: Standard errors are shown in parentheses. Each model includes controls for chairperson, highest degree (4 variables), weighted years of academic experience from current and three most recent positions, years of academic experience squared, age and age squared, seniority and seniority squared, race, private institution, Carnegie classification of institution (4 variables), career journal articles, career books, career book chapters, career textbooks, career patents, and primary teaching field (43 variables). **p<.01, *p<.05, two-tailed test.

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