

THE EFFECT OF FACULTY UNIONS ON SALARIES: SOME RECENT EVIDENCE

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ABSTRACT

This article updates an earlier study presented by one of the authors [1]. That study computed union-induced compensation gains using the *1993 National Study of Postsecondary Faculty*. The present work uses data from the *1998-99 National Study of Postsecondary Faculty* and specifies a semi-logarithmic earnings equation whose coefficients estimate the relative importance of certain faculty characteristics upon faculty compensation. The results, which indicate negligible differences in earnings between union and nonunion campuses, are compared to, and contrasted with, those of earlier studies. It is argued that the absence of a significant union wage premium could well signal a change in collective bargaining strategy, as unions may now be seeking more non-pecuniary benefits for their members.

INTRODUCTION

A number of studies have estimated the impact of unions on compensation.¹ In addition in a series of articles [1, 2, 4], one of the present authors examined the

¹ See for example, Barbezat [6], Birnbaum [7], Brown and Stone [8], Hu and Leslie [10], Marshall [11], and Morgan and Kearney [13].

effects of unions on faculty salaries. The latest of these [1] used data from the *1993 National Study of Postsecondary Faculty (NSOPF)*. The U.S. Department of Education has since provided newer data. The *1999 NSOPF* enables us to update existing results and to compare the strength of faculty unions at public universities relative to those at private institutions. Separate estimates of the union/non-union earnings differential for public and private universities have been calculated. To determine how the union earnings premium has changed since 1993, comparisons are made with the estimates from Ashraf's earlier studies [1, 4].

DATA AND METHODOLOGY

This study employs data from the *1999 National Study of Postsecondary Faculty*. These data were made available by the U.S. Department of Education for use by academic researchers. The *1998-99 National Study of Postsecondary Faculty (NSOPF:99)* included 960 degree-granting postsecondary institutions and an initial sample of faculty and instructional staff from those institutions. Approximately 28,600 faculty and instructional staff were sent a questionnaire. Subsequently, a subsample of 19,813 faculty and instructional staff was drawn for additional survey follow-up. Approximately 18,000 faculty and instructional staff questionnaires were completed for a weighted response rate of 83 percent. The response rate for the institution survey was 93 percent. All four cycles of *NSOPF* gathered information regarding the backgrounds, responsibilities, workloads, salaries, benefits, attitudes, and future plans of both full- and part-time faculty. In addition, information was gathered from institutional and department-level respondents (department-level data collected in 1988 only) on such issues as faculty composition, turnover, recruitment, retention, and tenure policies.²

We used the same methodology and variables in this study as in Ashraf [1]. This helps in comparisons of the results. A semilogarithmic model was specified in which the log of monthly earnings was the dependent variable. The wage equation used for this study was:

$$\text{Log Salary} = \alpha + \sum_{i=10}^{i=1} X_i + \sum_{i=9}^{i=1} D_i$$

The X_i represent characteristics of faculty which have an impact on productivity and, therefore, the earnings of faculty. Specifically these variables are dummy variables for *tenured*; the three faculty ranks of *assistant professor*, *associate professor*, and *full professor* (with *all other ranks* being the missing base variable); *doctorate* (representing respondents holding a doctoral degree); *married*; *white*; and *male*. The variable *experience* was defined as the number of

² The description of the 1999 NSOPF is drawn from the *Methodology Report* of the NSOPF-99 [12].

years since each respondent completed his/her highest degree. The square of that variable, *experience-squared*, was intended to capture the concavity of the experience-earnings profile. *Articles* were defined as the number of articles published by faculty members, as reported by those members. Some earlier studies on college faculty have expressed dissatisfaction with this variable, since the *quality* of such articles is more important than mere *quantity* in influencing faculty salaries. It was not possible, unfortunately, to make an determination of article quality from the data. This shortcoming is recognized, although virtually all previous studies suffer from the same drawback.

The model included nine broad disciplines that each faculty member reported being associated with. These were *agriculture, business, engineering, fine arts, health sciences, humanities, natural sciences, social sciences, and other disciplines*. The missing discipline in the regression equation was *education*.

EMPIRICAL RESULTS

Table 1 provides the means of the variables used in this study. The percentage of faculty who were tenured in our sample ranged from 54 percent to 67 percent. The faculty were evenly divided among the three faculty ranks with approximately one-third being in the ranks of Professor, Associate Professor, and Assistant Professor. The majority of the faculty was white, with the percentage being between 79 percent and 85 percent. Between 70 percent and 76 percent of the faculty reported being married, and the percentage of males in the sample was a little below two-thirds.

In Table 2 we have provided the coefficient estimates of variables in the earnings equations for union and non-union faculty at public and private universities, as well as the two combined. (For intertemporal comparison purposes, Table 2(b) displays the coefficient estimates derived in Ashraf's prior study [1], using the earlier 1993 NSOPF data, for a similar earnings equation). As expected, the compensation level is higher for tenured faculty than it is for their untenured counterparts, when we examine all institutions. Surprisingly, however, we found the variable *tenured* to be insignificant in explaining compensation at public universities. We found, as expected, that salary rises monotonically with academic rank. However, the coefficient was not statistically significant for Associate Professors at Private Universities.

The positive and high level of statistical significance for *articles* suggests that research and scholarship are valued at all kinds of universities, public and private, unionized and non-unionized.

The results for the variable *white* were interesting. The coefficient estimates were statistically insignificant for non-union faculty. However, they were significant and *negative* for unionized faculty. This is somewhat different from Ashraf [1] who found that the variable *white* was not statistically significant for

Table 1. Means of Variables, 1999

| Variable name | All | | Public universities | | Private universities | |
|---------------------|-------|-----------|---------------------|-----------|----------------------|-----------|
| | Union | Non-union | Union | Non-union | Union | Non-union |
| Tenured | 0.65 | 0.62 | 0.66 | 0.67 | 0.57 | 0.54 |
| Professor | 0.37 | 0.38 | 0.37 | 0.38 | 0.33 | 0.38 |
| Associate professor | 0.32 | 0.31 | 0.32 | 0.32 | 0.32 | 0.31 |
| Doctorate | 0.80 | 0.76 | 0.81 | 0.79 | 0.75 | 0.73 |
| Experience | 16.97 | 17.17 | 17.02 | 17.20 | 16.62 | 17.12 |
| Experience squared | 397.9 | 404.51 | 398.87 | 403.58 | 391.93 | 405.95 |
| Articles | 19.48 | 21.96 | 19.71 | 23.59 | 18.07 | 19.41 |
| White | 0.81 | 0.85 | 0.81 | 0.85 | 0.79 | 0.84 |
| Agriculture | 0.03 | 0.03 | 0.04 | 0.05 | 0.01 | 0.00 |
| Business | 0.06 | 0.07 | 0.06 | 0.06 | 0.07 | 0.09 |
| Engineering | 0.05 | 0.06 | 0.05 | 0.07 | 0.05 | 0.04 |
| Fine arts | 0.07 | 0.05 | 0.07 | 0.05 | 0.08 | 0.06 |
| Health sciences | 0.12 | 0.16 | 0.11 | 0.17 | 0.14 | 0.16 |
| Humanities | 0.15 | 0.12 | 0.14 | 0.10 | 0.18 | 0.15 |
| Natural sciences | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Social sciences | 0.12 | 0.12 | 0.13 | 0.12 | 0.10 | 0.12 |
| Others | 0.09 | 0.10 | 0.08 | 0.09 | 0.11 | 0.11 |
| Married | 0.72 | 0.76 | 0.72 | 0.76 | 0.70 | 0.75 |
| Male | 0.63 | 0.65 | 0.63 | 0.66 | 0.63 | 0.64 |

any except one of his six subgroups in 1993. It appears from these results that non-whites have done well under unions on college campuses in recent years.

The results for the variable *male* were quite different from those for the variable *white*. We found the coefficient variable for *male* to be strongly significant and positive for all groups of universities. This is consistent with Ashraf [1] who also found the variable *male* to be a statistically strong and positive determinant of earnings. It thus appears that, while racial differences in earnings are confined to non-unionized faculty, earnings differentials across gender exist at both unionized and non-unionized universities.

Among the various disciplines, we found that faculty associated with *business*, *engineering*, or *health sciences* consistently had higher compensation than faculty in *education*. On the other hand, faculty in *fine arts* earned less than their counterparts in *education*.

Table 2. Coefficient Estimates of Wage Equation for Faculty at Different Institutions, 1999

| Variable | All institutions | | Public universities | | Private universities | |
|-----------------------|------------------|-------------------|---------------------|-------------------|----------------------|-------------------|
| | Union faculty | Non-union faculty | Union faculty | Non-union faculty | Union faculty | Non-union faculty |
| Intercept | 8.353*** | 8.291*** | 8.355*** | 8.39*** | 8.317*** | 8.174*** |
| Tenured | 0.046** | 0.076*** | 0.033 | -0.028 | 0.113** | 0.131*** |
| Professor | 0.309*** | 0.269*** | 0.322*** | 0.377*** | 0.224*** | 0.191*** |
| Associate professor | 0.136*** | 0.084*** | 0.154*** | 0.157*** | 0.037 | 0.052 |
| High degree | 0.020 | 0.016 | 0.031 | -0.035 | -0.020 | 0.058** |
| Experience | -0.002 | -0.002 | -0.001 | -0.001 | -0.005 | 0.000 |
| Experience squared | 0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Articles | 0.002*** | 0.003*** | 0.002*** | 0.003*** | 0.004*** | 0.003*** |
| White | -0.032** | -0.0135 | -0.028* | -0.022 | -0.054* | -0.011 |
| Agriculture | -0.054 | -0.0185 | -0.053 | -0.043 | -0.188 | 0.004 |
| Business | 0.226*** | 0.281*** | 0.226*** | 0.268*** | 0.265*** | 0.319*** |
| Engineering | 0.135*** | 0.197*** | 0.136*** | 0.184*** | 0.140 | 0.209*** |
| Fine arts | -0.086*** | -0.081** | -0.088** | -0.107*** | -0.027 | -0.039 |
| Health sciences | 0.167*** | 0.236*** | 0.136*** | 0.209*** | 0.348*** | 0.261*** |
| Humanities | -0.038 | -0.031 | -0.030 | -0.030 | -0.048 | -0.008 |
| Natural sciences | 0.015 | 0.072*** | 0.016 | 0.059** | 0.040 | 0.102** |
| Social sciences | 0.050 | 0.072*** | 0.051* | 0.069** | 0.022 | 0.083* |
| Others | 0.010 | 0.097*** | -0.006 | 0.063** | 0.127 | 0.146*** |
| Married | -0.011 | 0.011 | -0.016 | 0.017 | 0.031 | 0.004 |
| Male | 0.067*** | 0.071*** | 0.061*** | 0.057*** | 0.090** | 0.086*** |
| <i>N</i> | 2272 | 4228 | 1951 | 2578 | 321 | 1650 |
| <i>R</i> ² | 0.356 | 0.306 | 0.350 | 0.344 | 0.449 | 0.276 |

*Significant at the 0.90 level of confidence.

**Significant at the 0.96 level of confidence.

***Significant at the 0.99 level of confidence.

Table 2(b). Coefficient Estimates of Wage Equation for Faculty at Different Institutions, 1993

| Variable | All institutions | | Public universities | | Private universities | |
|----------------------------|------------------|-------------------|---------------------|-------------------|----------------------|-------------------|
| | Union faculty | Non-union faculty | Union faculty | Non-union faculty | Union faculty | Non-union faculty |
| Intercept | 10.02*** | 10.21** | 10.07*** | 10.11*** | 10.10*** | 10.27*** |
| Tenured | 0.005** | 0.01 | 0.04 | 0.01 | 0.06 | 0.02 |
| Professor | 0.08 | 0.02 | 0.29* | 0.08 | -0.07 | -0.01 |
| Associate professor | -0.08 | -0.10 | 0.11 | -0.03 | -0.16 | -0.14 |
| Assistant professor | -0.15 | -0.14** | 0.04 | -0.05 | -0.23* | -0.18** |
| High degree | 0.20*** | 0.25*** | 0.17*** | 0.26*** | 0.27*** | 0.24*** |
| Experience | 1.39*** | 1.63*** | 1.37*** | 1.95*** | 1.49** | 1.43*** |
| Experience squared | -1.71** | -2.39*** | -1.64** | -3.28*** | -1.94* | -1.85** |
| Articles | 0.16*** | 0.24*** | 0.00*** | 0.01*** | 0.00*** | 0.00*** |
| White | 0.01 | 0.00 | -0.01 | 0.03 | 0.08* | -0.03 |
| Agriculture/ Home Econ. | 0.14** | 0.03 | 0.13** | 0.05 | 0.20 | -0.08 |
| Business | 0.20*** | 0.14*** | 0.17*** | 0.13*** | 0.36*** | 0.16*** |
| Engineering | 0.18*** | 0.14*** | 0.18*** | 0.16*** | 0.24** | 0.11** |
| Fine arts | 0.02 | -0.04 | 0.00 | -0.08 | 0.15* | -0.01 |
| Health sciences | 0.28*** | 0.29*** | 0.27*** | 0.30*** | 0.38*** | 0.29*** |
| Humanities | -0.04 | -0.10*** | -0.06* | -0.14*** | -0.06 | -0.06* |
| Natural sciences | 0.04 | -0.04* | 0.01 | -0.06* | 0.22*** | -0.02 |
| Social sciences | 0.07** | -0.02 | 0.06* | -0.03 | 0.17** | -0.00 |
| Others | 0.07** | 0.08*** | 0.05 | 0.06 | 0.19** | 0.10** |
| Married | 0.03* | 0.03* | 0.05* | 0.00 | -0.02 | 0.05** |
| Male | 0.04* | 0.09*** | 0.04* | 0.12*** | 0.04* | 0.08*** |
| <i>N</i> | 3,856 | 6,884 | 3,114 | 3,541 | 741 | 3,342 |
| <i>R</i> ² | 0.17 | 0.18 | 0.17 | 0.17 | 0.23 | 0.20 |

*Significant at the 0.90 level of confidence.

**Significant at the 0.96 level of confidence.

***Significant at the 0.99 level of confidence.

UNION/NON-UNION EARNINGS DIFFERENTIALS

The effects of unions at public universities relative to private universities is the main focus of this study. As in Ashraf [1], the procedure used is a modified version of a methodology outlined by Cotton [9] to estimate male-female earnings differentials. The procedure allows for the gender wage gap to be expressed as the sum of (a) the skill or productivity advantage of males over females; (b) the so-called “male advantage” or the degree by which males are overcompensated relative to a discrimination-free environment; and (c) the “female disadvantage” or the amount by which female wages trail the levels that their marginal product suggests.³ Modifying this approach, the union/non-union wage gap for faculty was computed as the sum of the skill difference, the union advantage, and the non-union disadvantage.⁴

Tables 3 and 3(b) provide the union earnings premium not only for public and private universities, but also for these two groups broken down into additional groups. A notable finding is that while the union wage premium was marginally negative in 1993 (–0.44%), it was positive in 1999 (1.08%). Another significant finding is that while the union earnings premium was negative for both public and private universities in 1993 (–1.36% and –2.40%, respectively), it was actually positive for private universities in 1999 (1.57%); but it continued to be negative for public universities (–1.01%). The group appearing to benefit the most from faculty unions was private comprehensive universities that had a union wage premium of 5.5 percent. Public comprehensive universities, too, had an earnings benefit of 3.51 percent. The results for private comprehensive universities are particularly noteworthy since only 81 were unionized compared to 427 that were not.

A comparison of the union wage premiums that we have calculated with those from Ashraf [1, 4] is instructive. Ashraf [4] used data from three different national data sets from 1969, 1977, and 1988. Ashraf [1] found the union wage premium to be negative for research and doctoral universities in both 1977 and 1988. In 1988, the union premium was as much as –8.21 percent and –7.92 percent for research and doctoral universities, respectively. The union premium had dropped to –1.36 percent and –2.40 percent for public and private universities respectively in 1993 [1]. In our present study, we find that the union wage premium has shrunk to –1.01 percent for public universities, and, at 1.57 percent, is actually positive for private universities. Furthermore, while Ashraf [1] found the union premium to be –2.28 percent for private comprehensive universities, the premium has jumped to 5.50 percent in the present study.

³ See Cotton [9] and Ashraf [3] for details.

⁴ The union advantage constitutes the amount by which unionized faculty salaries exceed their marginal product, while the non-union disadvantage is the degree to which non-union faculty salaries trail levels that would prevail in the absence of unions.

Table 3. Union/Non-Union Wage Differences for Public and Private Universities, 1999

| | Union/non-union wage differential | Number of observations | |
|--|-----------------------------------|------------------------|-----------|
| | | Union | Non-union |
| All institutions | 1.08% | 2,272 | 4,228 |
| Public universities | -1.01% | 1,951 | 2,578 |
| Private universities | 1.57% | 321 | 1,650 |
| Public research/Doctoral universities | -1.01% | 1,042 | 1,702 |
| Private research/Doctoral universities | -4.41% | 140 | 659 |
| Public comprehensive universities | 3.51% | 799 | 587 |
| Private comprehensive universities | 5.50% | 81 | 427 |

Table 3(b). Union/Non-Union Differentials for Public and Private Universities, 1993

| | Union/non-union wage differential | Number of observations | |
|--|-----------------------------------|------------------------|-----------|
| | | Union | Non-union |
| All institutions | -0.44% | 3,901 | 6,964 |
| Public universities | -1.36% | 3,148 | 3,572 |
| Private universities | -2.40% | 753 | 3,392 |
| Public research/Doctoral universities | -0.34% | 1,296 | 2,170 |
| Private research/Doctoral universities | -5.19% | 97 | 485 |
| Public comprehensive universities | 5.67% | 1,852 | 1,402 |
| Private comprehensive universities | -2.28% | 292 | 1,006 |

By most accounts, it appears that union strength had increased in 1999 compared to previous periods. This contrasts to the general population where studies have indicated a decline in union strength over time.

There may be a good reason for the small, and sometimes negative, wage premium that we observe for college faculty. Astute unions are aware of legislative difficulties in seeking higher salaries for their members. It is much easier and more politically expedient to raise fringe benefits and improve the work environment, and these changes are less likely to capture the attention of taxpayers. Thus, some unions have won lower teaching loads, more generous terms for sabbatical leaves, higher summer compensation, higher levels of travel budgets for attendance at conferences, better retirement benefits, etc. Such benefits improve the total compensation package for faculty without showing up as a part of salary. Thus, the observed union/non-union earnings differential for faculty may be an underestimate of the true effect and might, in fact, reverse in sign if these factors were taken into account.

REFERENCES

1. J. Ashraf, Faculty Unionism in the 1990s: A Comparison of Public and Public Universities, *Journal of Collective Negotiations in the Public Sector*, 28:4, pp. 303-310, 1999.
2. J. Ashraf, Do Unions Affect Faculty Salaries? *Economics of Education Review*, 11:3, pp. 219-223, 1992.
3. J. Ashraf, Is Gender Pay Discrimination on the Wane? Evidence from Panel Data, 1968-89, *Industrial and Labor Relations Review*, 49:3, pp. 537-546, 1996.
4. J. Ashraf, The Effect of Union on Professors' Salaries: The Evidence Over Twenty Years, *Journal of Labor Research*, 17:3, pp. 439-450, 1997.
5. J. Ashraf, Collective Bargaining and Compensation at Public Junior Colleges, *Journal of Collective Negotiations in the Public Sector*, 27:4, pp. 393-399, 1998.
6. D. Barbezat, The Effect of Collective Bargaining on Salaries in Higher Education, *Industrial and Labor Relations Review*, 42:3, pp. 433-445, 1989.
7. R. Birnbaum, Unionization and Faculty Compensation, *Educational Record*, 55:4, pp. 29-33, 1974.
8. W. Brown and C. Stone, College Faculty Unions and Collective Bargaining: An Empirical Analysis of the Economic Gains, *Economic Inquiry*, 15:2, pp. 385-396, 1977.
9. J. Cotton, On the Decomposition of Wage Differentials, *Review of Economics and Statistics*, 70:2, pp. 236-243, 1988.
10. R. Hu and L. Leslie, The Effect of Collective Bargaining on College Faculty Salaries and Compensation, *Applied Economics*, 14, pp. 269-277, 1982.
11. J. Marshall, The Effect of Collective Bargaining on Faculty Salaries in Higher Education, *Journal of Higher Education*, 50:2, pp. 310-322, 1979.
12. Methodology Report, *1998-99 National Study of Postsecondary Faculty*, U.S. Department of Education, Washington, D.C.

13. D. Morgan and R. Kearney, Collective Bargaining and Faculty Compensation: A Comparative Analysis, *Sociology of Education*, 50:1, pp. 28-39, 1977.

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