

Collective Bargaining and Academic Compensation: Evidence in the 21st Century

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Abstract

Only a handful of studies have used micro-level data to compute the impact of unions on faculty compensation. Using data from the 2004 National Study of Postsecondary Faculty, this note updates earlier results. We find the union wage effect to be 5.19%. There is considerable variation in the estimate among different groupings of faculty.

Introduction

Relatively few studies have been conducted on the effect of unions on faculty salaries. Fewer still have used national individual-level data in the estimation of such effects. According to Monks (2000), there are only five such studies, including his own. This short article updates earlier results by using data from the *2004 National Study of Postsecondary Faculty (NSOPF: 04)*, recently made available by the U. S. Department of Education's *National Center for Education Statistics*. *NSOPF: 04* is a nationally representative study that collects data regarding the characteristics, workload, and career paths of full- and part-time postsecondary faculty and instructional staff at public and private not-for-profit 2- and 4-year institutions in the United States. The data set provides information on 26,108 faculties at 980 academic institutions.

Review of Literature

Surveying some of the earlier studies, Monks (2000) reported that a number of them (Birnbaum 1974, 1976; Morgan and Kearny, 1977; Leslie and Hu, 1977) found collective bargaining increased compensation in academia. In contrast, another set of studies (Marshall, 1979 ; Guthrie-Morse et al., 1981; Hu and Leslie, 1982; Kesselring, 1991, Rees, 1993) suggested that unions had minimal impact on salaries, and in some cases, the effect was even negative.

According to Monks, only five studies (including his own) have used individual-level data in studies estimating the union wage effect on faculty salaries. In the first of these studies, Barbezat (1989) using data from the *1977 Survey of the American Professoriate* found the union wage premium among college professors to be approximately two percent. Using the same data set, Ashraf (1992) reported the wage advantage from collective bargaining to be 4 percent. However, when he estimated the wage premium for different subgroups of faculty, he got considerable variation in his results. In another article, Ashraf (1997) examined the union wage effect over a twenty year period, using data from 1969, 1977, and 1988. He found that unionized faculty earned more than their nonunionized counterparts in 1969. But the gain from collective bargaining was marginal in the other two years (1977 and 1988). The most recent of the

published studies that have used individual level data at the national level in estimating union wage premiums is Monks' (2000). He used the *1993 National Survey of Postsecondary Faculty* for his estimations. Monks found unions to raise wages by 7.3%. For some subgroups of the faculty, he found the premium to be as much as 14%.

Methodology

In this study, we specified a semi-logarithmic model in which the log of monthly salaries was the dependent variable. The wage equation used in the computations of the earnings gap was:

$$\text{LogSalary} = \alpha + \sum_{i=1}^{17} X_i + \sum_{j=1}^{10} D_j \quad (1)$$

where the X_i represents various productivity-affecting characteristics of faculty, and the D_j are different academic disciplines. The X_i and D_j are self-explanatory. The X_i include dummy variables for *Tenured*, the faculty ranks of *Associate Professor* and *Full Professor* (with *Assistant Professor* being the omitted category), *Doctorate* (representing respondents holding a doctoral degree), *Married*, *White*, *Experience* (defined as the number of years since each respondent completed his/her highest degree), and *Experience-Squared* (intended to capture the concavity of the experience-earnings profile). Dummy variables were used for *Research Universities*, *Doctoral Universities*, *Comprehensive Universities*, and *Liberal Arts Colleges*. *Junior Colleges* were used as the missing base institutional group. We recognize the omission and shortcomings of certain variables. For brevity, we omit elaboration. A discussion can be found in Ashraf (1996) who estimated the gender earnings gap in academia, using data from 1993.

The D_j represents ten broad disciplines (each encompassing several academic departments) with which faculty members reported association. The omitted discipline in the wage equation was *Education*. Broad categorizations bring together sometimes disparate departments. However, these categorizations have been used frequently in the literature. Even with their admitted shortcomings, exclusion of these disciplinary groupings would diminish the model.

Empirical Results

Coefficient estimates of the earnings equations are presented in Table 1 for the entire sample, as well as for unionized and nonunionized faculty separately. The coefficient estimate for faculty at unionized campuses is 0.051 (suggesting a union earnings premium of 5.23%), and is highly significant.¹ Professors earned 26.87% more than Assistant Professors, while the earnings gap between Associate Professors and Assistant Professors was a more modest 6.93%. The earnings gap for those two academic ranks was higher at unionized campuses (10.52%) than at nonunionized campuses (6.50%). As expected, tenure led to a statistically significant earnings premium of 6.3% across all campuses. This gap was largely similar at unionized and nonunionized campuses. A doctoral degree had a higher return (6.29%) at unionized campuses than at those not engaged in collective bargaining (3.25%). Refereed journal articles were significant in explaining earnings, and yielded a 2.00% gain in earnings at

both unionized and non-unionized campuses. Unfortunately, the data did not allow us to assess the quality of journals, which would have been a legitimate factor in determining compensation levels. Largely because of the even greater variability of quality in books and book chapters, we omitted using them as explanatory variables. We defined *Experience* as the number of years since earning the highest degree. We found the variable to be highly significant in explaining salary levels. The square of the variable confirmed the concave experience-earnings profile. What we did find surprising was that the variable *Age* (which is highly correlated with experience) was not statistically significant.

Education was the missing base variable in the ten broad disciplinary groupings we used. We found the highest coefficient estimates for *Business* (27.38%) and *Health* (23.86%). The lowest was for *Natural Sciences* at 1.11%. The coefficients estimates were not statistically significant for *Natural Sciences*, *Social Sciences*, and *Other Disciplines*, suggesting that that compensation in these disciplines is little different from the base discipline of *Education*.

Salaries at *Research Universities*, *Doctoral Universities*, and *Comprehensive Universities* were significantly higher than for *Junior Colleges*. The highest premium was for faculty at unionized *Research Universities* (15.60%). On the other hand, faculty at *Liberal Arts Colleges* earned less than their *Junior College* counterparts.

Union Nonunion Earnings Differentials:

Table 2 indicates that the union nonunion earnings differential was 5.19% across all campuses. However, it varied considerably between different faculty subgroups. It was as high as 10.89% at junior colleges. The union wage premium was less than one percent at institutions in the southwest (and was statistically insignificant).

Associate Professors appeared to benefit more from collective bargaining (7.24%) than did Professors (5.18%) and Assistant Professors (3.3%). Females at unionized campuses gained 6.11%, while the union earnings premium for males was 4.43%.

We found the effect of collective bargaining to be statistically insignificant at *Research Universities* and *Doctoral Universities*. However, it had a significant impact on earnings at *Comprehensive Universities*, *Liberal Art Colleges*, and *Junior Colleges*. The union earnings premium was as much as 10.89% at *Junior Colleges*. The effect of unions on compensation differed little between private and state institutions (5.59% and 4.64% respectively).

We found the union impact to vary considerably across different regions of the country. It was highest in the Plains (6.67%) and the Mideast (6.17%).² A listing of states in each of the regions is provided in the Appendix. Although *Unionized Campus* was statistically significant in New England, the Great Lakes and the West, the magnitude of the coefficient estimate was small. The variable was statistically insignificant in the Southeast and the Southwest.

Although the data identified ten disciplines, we estimated the union earnings impact for only five of them due to insufficient number of observations in some of them. The union earnings premium was highest for *Social Sciences* and *Education* (6.42%). It was somewhat lower in *Natural Sciences* and *Engineering* (6.28%) and *Humanities and Arts* (5.64%), and was statistically insignificant for *Health*.

Summary and Conclusions

This short article updates earlier work on the effect of collective bargaining on faculty salaries. We find the salary premium at unionized campuses to be 5.19%. However, it varies considerably among different regions, different disciplines, and different types of institutions, being as high as 10.89% at Junior Colleges, and as low as 0.05% at Doctoral Universities.

Footnotes

¹ As is always the case with semi-logarithmic models, the percentage earnings differences between faculty at unionized and nonunionized campuses were computed as *exponent* $(U) - 1$, where U is the coefficient estimate for *Unionized Campus*.

² States included in each region: 1 - New England CT ME MA NH RI VT; 2 - Mid East DE DC MD NJ NY PA; 3 - Great Lakes IL IN MI OH WI; 4 - Plains IA KS MN MO NE ND SD; 5 - Southeast AL AR FL GA KY LA MS NC SC TN VA WV; 6 - Southwest AZ NM OK TX; 7 - Rocky Mountains CO ID MT UT WY; 8 - Far West AK CA HI NV OR WA.

Table 1 Coefficient Estimates of Earnings Equations (Dep. Variable: Log of monthly salary)

	Full Sample	Union	Non-union
Unionized Campus	0.051***	-----	-----
Professor	0.238***	0.226***	0.237***
Associate Professor	0.067***	0.100***	0.057***
Tenured	0.063***	0.068***	0.061***
Doctoral Degree	0.031***	0.061***	0.032***
Refereed Journal Articles	0.002***	0.002***	0.002***
Experience	7.572***	5.883***	8.092***
Experience Squared	-3.711***	-2.824***	-4.010***
Sections Taught	-0.017***	-0.005*	-0.020***
Male	0.058***	0.025**	0.065***
Married	0.003	0.003	0.005
Public University	-0.036***	0.014	-0.042***
Age	-0.078	2.46	1.761
Age Squared	-3.922	-1.786	-6.603**
Agriculture	-0.123***	-0.088**	-0.126***
Business	0.242***	0.209***	0.255***
Engineering	0.125***	0.108***	0.129***
Art	-0.098***	-0.053*	-0.102***
Health	0.214***	0.092***	0.229***
Humanities	-0.065***	-0.073***	-0.064***
Natural Sciences	0.011	0.023	0.007
Social Sciences	0.019	-0.001	0.023
Other Disciplines	0.014	0.002	0.019
Research Universities	0.192***	0.145***	0.203***
Doctoral Universities	0.129***	0.054**	0.148***
Comprehensive Universities	0.043***	0.053***	0.042***
Liberal Arts Colleges	-0.073***	-0.054**	-0.067***
Intercept	8.47***	8.45***	8.44***
R-Squared	0.43	0.4	0.44
Sample Size	11,874	2,347	9,527

Note: Asterisks denote statistical significance at the one (***), five (**), and ten (*) percent level.

Table 2 Union Salary Premiums Across Various Groups

	Differential (%)	R-Squared	Sample Size
Overall Faculty Sample	5.19***	0.43	11,874
<i>Rank:</i>			
Full Professors	5.18***	0.36	4,437
Associate Professors	7.24***	0.27	3,603
Assistant Professors	3.30**	0.3	3,834
<i>Gender:</i>			
Male	4.43***	0.44	7,555
Female	6.11***	0.35	4,319
<i>Type of institution:</i>			
Research Universities	2.63	0.39	4,272
Doctoral Universities	0.05	0.33	2,018
Comprehensive Universities	8.16***	0.45	2,642
Liberal Art Colleges	3.71**	0.33	1,842
Junior Colleges	10.89***	0.31	944
Public Schools	5.59***	0.41	7,393
Private Schools	4.64**	0.46	4,481
<i>Region:</i>			
New England	3.94**	0.41	920
Mideast	6.17***	0.43	1,809
Great Lakes	5.23***	0.44	2,002
Plains	6.67***	0.49	1,176
Southeast	1.12	0.48	3,009
Southwest	0.96	0.43	1,137
West	2.89*	0.4	1,779
<i>Disciplines:</i>			
Business	5.88*	0.39	744
Natural Sciences and Engineering	6.28***	0.43	3,305
Humanities and Art	5.64***	0.46	2,418
Health	1.2	0.31	1,593
Social Sciences and Education	6.42***	0.47	2,301
Agriculture	3.07*	0.35	236

Note: Asterisks denote statistical significance at the one (***), five (**), and ten (*) percent level.

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