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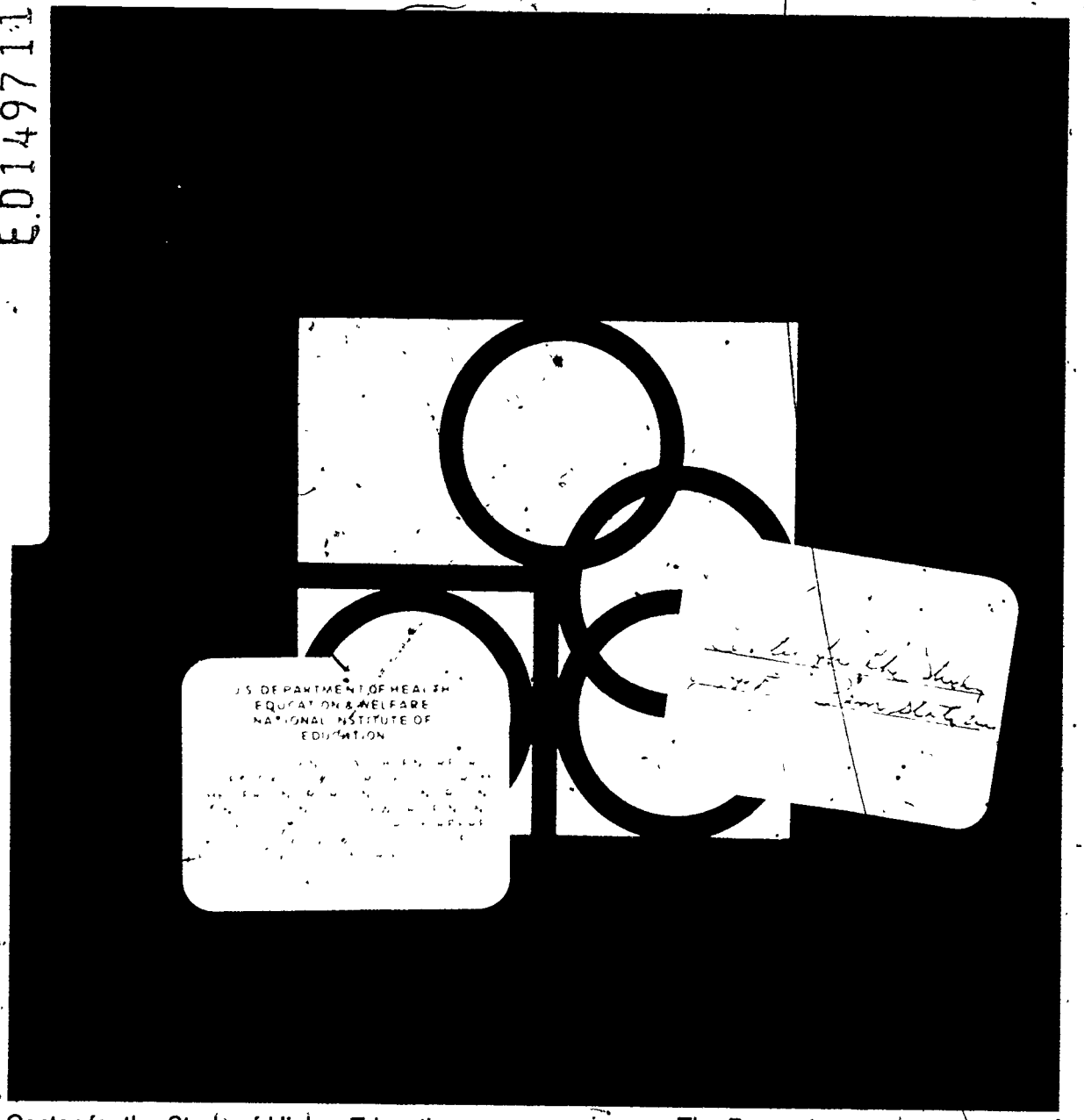
ABSTRACT

The impact of faculty unionization on faculty compensation, research contract revenues, student tuition and fees, and other financial considerations are examined in this report. The study uses multiple regression models to analyze the net impact of collective bargaining on a sample of over 100 union and nonunion institutions. Faculty compensation in union and nonunion institutions is compared overall and within several institutional categories (e.g., public, private, two-year, four-year). Included are considerations of the long-term effects of bargaining on compensation composed of salaries versus fringe benefits. Also studied are the relationships of collective bargaining to changes in the amounts of institutional income from varying sources and to changes in the distribution of institutional expenditures. It is found that, holding other factors constant, average faculty compensation in unionized institutions during 1974-75 was about $1,291 more than in nonunionized institutions. Further, this compensation advantage increased steadily to 1974-75 at which time a reversal was noted; in 1975-76 the $1,291 advantage shrunk to $800. Beyond the financial implications for faculty, unionization does not appear to have changed the incentives of faculty to seek contract research money from the government. (Author/LBH)

The Financial Implications of Collective Bargaining in Higher Education

Larry L. Leslie
Teh-wei Hu



Center for the Study of Higher Education
The Pennsylvania State University

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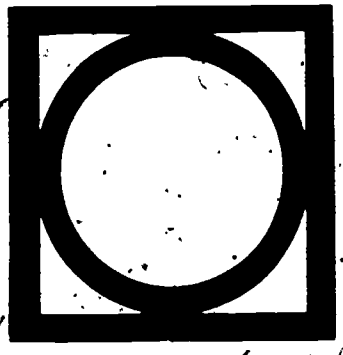

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FOREWORD

This report examines the impact of faculty unionization on faculty compensation, research contract revenues, student tuition and fees, and other financial considerations. It is one in a series of Center studies and/or reports about the impact of faculty unionization on postsecondary education, the first of which was published in 1972. This study uses multiple regression models to analyze the *net* impact of collective bargaining on a sample of over 100 union and nonunion, four-year institutions.

The study is important for its own sake, since it sheds light on an important question in the debate over whether faculty compensation is effected by unionization. The model developed here is already being extended and further developed.

The study is also important because it is a joint project conducted by Dr. Leslie, a former member of the Center staff and Dr. Hu, a professor of economics. The Center is in the process of developing cooperative studies with our colleagues in the disciplines in an effort to apply their concepts, methods and skills to problems in postsecondary education. We are pleased to welcome Dr. Hu as a Center Associate. The Center staff welcomes the opportunity to work cooperatively with our discipline-based colleagues.

Kenneth P. Mortimer
Professor and Director
Center for the Study of Higher Education

I

INTRODUCTION

The recency of collective bargaining in American higher education has left numerous major questions unanswered, and several areas of inquiry largely unexplored. The first bargaining agreement in higher education was not reached until 1963, and the bargaining movement was not a serious force in higher education until the City University of New York, Central Michigan University, and Southeastern Massachusetts University were organized in the 1968 academic year. From thirteen unionized faculties in 1968, the movement has grown to 326 bargaining units on 550 campuses, involving over 100,000 faculty by early 1977 (Kelley 1977). Although a number of limited studies have now been completed in such areas as the legal and financial aspects of bargaining and the impact of bargaining on institutional governance, the need exists to expand previous samples, consider new questions, and extend analyses into new areas of inquiry.

The focus of the study reported herein is on selected financial implications of collective bargaining. Specifically, what are the direct effects of bargaining upon faculty salaries and fringe benefits and on institutional financial ledgers overall? In regard to the former, this paper compares faculty compensation in union and nonunion institutions overall and within several institutional categories, e.g., public, private; two-year, four-year. Included are considerations of the long-term effects of bargaining on compensation composed of salaries versus fringe benefits. In regard to the impact on institutional financial ledgers, this paper considers the relationships of collective bargaining to changes in the amounts of institutional income from varying sources and to changes in the distribution of institutional expenditures.

II

BACKGROUND STUDIES

Although the evidence from existing research is occasionally inconsistent, several major conclusions appear supportable as one progresses from studies of industrial unionism to more pertinent bargaining by public employees, specifically college faculty members. In the former case, results of three separate analyses of data from prior to the end of World War II differ only in degree in concluding that industrial unionism resulted in higher industrial wages (Ross 1948; Garbarino 1950; and Lewis 1963, p. 146). A fourth (Lester 1948) reported no relationship, but its analysis excluded two years in which major wage gains were noted in unionized industries. A second conclusion from data for industrial unions is that initial gains appear not to be expanded by continuing unionism (Ross and Goldner 1950).

In the public sector, studies of public school teachers' salaries, when examined closely, appear to support the conclusion of initially higher wages under collective bargaining agreements. Among the more extensive and carefully controlled studies was Thornton's (1971) investigation of eighty-three large city school districts. Utilizing nonunion districts as a control and adjusting for salary differences prior to the advent of bargaining, Thornton concluded that unionism was associated with from 1 to 4 percent higher salaries at the lower salary levels and twenty-three percent at the maximum levels. Thornton's general pattern of findings was supported by Rhemus and Wilmer (1968) and Baird and Landon (1972), while the findings of Kasper (1970) and Brown (1975) disagree. Upon reviewing just one of these conflicting studies, however, it is seen that Kasper's method was insensitive to salary variations caused by bargaining in local districts because his regression models utilized *statewide* teachers' salary data. A final conclusion to be reached from studies of teachers' salaries is that particular union affiliations, e.g., National Education Association-American Federation of Teachers (NEA-AFT) do not seem to be related to salary levels (Thornton 1971).

To date, three major studies of faculty compensation in unionized institutions of higher education have been completed, and the synthesized conclusions generally are consistent with the above. The earliest of these studies was by Robert Birnbaum (1974) who matched eighty-eight union and eighty-eight nonunion institutions and reported an average higher salary of $777 in the unionized institutions, with the largest differences being noted in four-year public colleges. Three years later, Birnbaum reported that the union advantage had declined in 1975-76 and that much of the union salary advantage had actually occurred in anticipation of bargaining (Birnbaum 1977).

A somewhat more ambitious effort was undertaken by Brown and Stone (1976), who added several dimensions to their analysis, including data disaggregations by rank and by union affiliation and comparisons of promotion and tenure rates. Unlike Birnbaum, Brown and Stone did not consider two-year

colleges, and they compared their data to national and regional averages rather than to data for matched institutions. Brown and Stone *concluded* that there were "no significant impacts on salary, compensation and promotions associated with the adoption of collective bargaining. . . . " However, Brown and Stone's data generally do show larger (though statistically not significant) salary gains in unionized institutions overall and, in fact, significantly larger gains among faculty at the higher ranks.[1] Likewise, they report promotions to higher faculty ranks at an average rate "slightly, but not significantly" greater in the unionized colleges. Brown and Stone also appear to show that the largest (though small) gains were in NEA followed by American Association of University Professors (AAUP) affiliated institutions.

The study of David Morgan and Richard Kearney (1976) combined many of the best elements of the Birnbaum and Brown and Stone investigations and added regression analyses to control for the effects of other variables. Morgan and Kearney matched forty-six pairs of four-year institutions; they divided their sample into three institutional categories although they did not consider salaries by rank as had Brown and Stone. Morgan and Kearney concluded that "the union/nonunion variable is the most important single effect in the analysis of compensation change," accounting for some $1,200 in salary differentials overall. Further, gains were largest for "less comprehensive" and private institutions; indeed, unionized faculty in large public institutions lost ground in comparison to their nonunionized counterparts, according to Morgan and Kearney.

The explanation for the deviation of the Brown and Stone conclusions from those of Birnbaum and Morgan and Kearney would appear to lie primarily in variations in the degree to which the analyses and research designs were controlled. Birnbaum's and Morgan and Kearney's matching, plus the latter's partial regression analyses, more carefully controlled for possible confounding variables. Second, Brown and Stone's comparisons to national and regional compensation averages and their use of compensation "ratios," as opposed to dollar values, led to problems in reaching conclusions and causes problems of comparability with other studies.[2] In sum, there appears to be reason to believe that (1) unionism results in somewhat higher salaries in the short term but that (2) these gains may stabilize or even diminish slightly on a more long-term basis. There is also considerable evidence that (3) larger compensation gains are experienced at the higher employee levels, and there is modest evidence that (4) promotions may be slightly more rapid in unionized institutions. However, (5) the evidence is mixed as to what categories of unionized institutions demonstrate the larger compensation gains and which union affiliations are the most beneficial to faculty. This study sought to further test several of these propositions in the environment of American higher education.

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[1] In dealing with total populations, major attention should be drawn to the magnitude of differences.

[2] In a subsequent paper, Brown and Stone criticize the Morgan and Kearney study on several grounds (Brown and Stone 1977). The major and most valid criticism is the focus of Analysis II in the findings of this paper.

III

MODEL SPECIFICATION AND DATA SOURCES

Collective bargaining is an economically rational behavior engaged in by two competing interests: employers and labor unions. Settlement between the two parties is reached at an equilibrium point at which both employer and employee perceive that they will be better off if they can agree than if they do not. In the case of college faculty bargaining, the union's major goals are improved financial compensation, job security, and reduced work loads. Institutions of higher education, however, seek to conserve their scarce resources in order to maximize productivity, particularly in regard to institutional quality.

Representing as they do, competing interests, bargaining agreements between faculty unions and educational institutions result in several important impacts. The impacts on faculty include changes in faculty salaries, fringe benefits, promotion and tenure opportunities, teaching loads, and research support. The impacts on institutions include changes in the allocation of resources, prices charged to students and other clients and thus on demand for institutional services, hiring patterns, and the ability to generate revenues from public as well as private sources.

The analytical model in this study was based largely on the model specified by Morgan and Kearney (1976) but with some modification including consideration of the relative effectiveness of various bargaining agents (e.g., NEA versus AAUP). Unionism/nonunionism was considered as a binary dummy variable, and several other variables were used largely as controls. Institutional sector (public/private) was considered as a dummy variable. Faculty professionalism (four-year colleges only) was represented by the percentage of faculty holding the doctorate or equivalent (Furniss 1973), the reasoning being that, independent of bargaining, institutions employing more highly educated faculty members might be expected to pay higher salaries. The degree of state unionism was represented by the percentage of nonagricultural membership composed of union members; here the reasoning was that state postures *vis-á-vis* unionism, in general, might well spill over to higher college faculty salaries. State per capita income was included also for reasons of possible spillover to faculty salaries, while the dependent variable—faculty compensation—was adjusted to reflect variations in the cost of living.[3]

For the four-year institutions, interval level scores of institutional quality were taken from *The Gourman Report* (Gourman 1967). This institutional quality variable is deserving of special comment. In their 1977 paper, Brown and Stone raise a serious question as to whether changes in institutional quality might

[3]One of Brown and Stone's points in their view (1977) was that regional variations might account for observed compensation differences. Therefore, institutional salaries were adjusted for the cost of living in the Standard Metropolitan Statistical Area (SMSA) in which the institutions were located, or, in the case of non-metropolitan institutions, for the regional cost of living.

not account for the observed changes in compensation, and they suggest that changes in the number of institutional accreditations might be a superior measure of quality. Based upon responses to inquiries to researchers who have conducted institutional quality studies, it is concluded that institutional quality tends to change very little in relative terms over time. Further, based upon the authors' own knowledge and research on accreditation, it is believed that the Gourman ratings are a superior measure of quality. First, the granting of accreditation is based almost universally merely upon the meeting of minimum standards; second, the proliferation of accreditation by scores of professional organizations and the concomitant high costs of the accrediting process have caused many institutions—particularly "secure" institutions of high prestige—to abstain from "nonessential" accrediting activities. (Only general [regional] accrediting by the more prestigious professional associations [e.g., the American Medical Association, the American Bar Association, the American Chemical Society] often are considered "essential," especially by high prestige institutions.) In sum, although it is acknowledged that the Gourman ratings are somewhat dated, no better alternative is available.

The dependent measures were in two categories: faculty compensation and institutional financial data, which were obtained from AAUP and Higher Education General Information Survey (HEGIS) files. In the former category, Morgan and Kearney used 1969-1970 as their base year and made comparisons with 1974-1975 compensation data; this study used the most recent (1975-1976) average compensation data and compared the change in compensation during the last two-year period. Furthermore, faculty compensation by rank was analyzed separately. Also, the ratios of fringe benefits to total compensation were compared over time in an attempt to ascertain whether tradeoffs between salaries and fringes tended to be made as bargaining on campus "matured." In the category of institutional financial data, both income and expenditure data were considered in an attempt to examine possible relationships of bargaining to changes in the overall financial status of the institutions.

The sampling methods of Birnbaum (1974) were followed to obtain matches for 150 pairs of four- and two-year institutions.[4] The matches of most of the senior institutions were borrowed from Morgan and Kearney (1976) and the matches of two-year colleges were made by the authors.[5] The criteria for matching were six: The first was the AAUP category—a graduated classification system reflecting breadth of degree offerings. The second was the AAUP compensation scale—a one-to-five scale representing the institution's compensation levels in comparison to average institutional compensations. The third criterion was control—public or private. The fourth was geographical proximity or cultural similarity. Here, matches generally were within the same states; but where this was not possible, in most cases "control" institutions were selected from states

[4]The actual number of institutions in the analyses varied with the availability of data. In the case of the two-year colleges, in particular, data were lacking.

[5]We are indebted to S. V. Martorana for his review and helpful suggestions in matching the two-year colleges.

classified as culturally similar by Luttbeg (1971).[6] The fifth and corollary criterion was level of urbanization—within and between states, the attempt was to match large city, suburban, mid-sized city, and rural institutions. The sixth criterion was institutional size—the number of students enrolled. Finally, as suggested by Morgan and Kearney, the Nebraska, New Jersey, Connecticut, and Vermont State Colleges, which bargain as a unit, were matched with a single, appropriate institution. In the special case of community colleges, additional attention was given to similarities in institutional funding patterns—whether the funding base was local, local-state, or state.

A number of unionized institutions were not included in the study either because no suitable matches could be found or because the necessary data were not available. The City University of New York was not included because of its unique nature, and several Michigan community colleges were eliminated because of an insufficient number of nonunionized two-year institutions in industrial states.

The procedure resulted in fourteen pairs of Category I institutions, which awarded in the most recent three years an annual average of fifteen or more doctorates across at least three disciplines;[7] thirty-four pairs of Category IIA institutions, which award degrees above the baccalaureate but which are not Category I institutions; eight pairs of Category IIB institutions, which award only the baccalaureate or equivalent; and ninety-three pairs of those Category III and IV institutions that are two-year colleges.[8] Thirty-eight pairs of four-year institutions were public and eighteen were private, while all of the community colleges were public.

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[6] The authors' knowledge of community colleges and the educational environment in the state of Washington suggested that matches should be made from institutions in Oregon, Montana, Idaho, Colorado, and Arizona rather than from other states classified, like Washington, as "industrial states."

[7] See Table 3 for the exception in the case of HEGIS data.

[8] Missing data caused adjustments in the two-year sample (discussed later). Also, HEGIS classifications vary somewhat; see footnote, Table 3.

IV

FINDINGS

It has become the conventional approach in assessing the impact of collective bargaining on faculty compensation to compare, for a given time period, compensation changes in presently unionized institutions to compensation changes in presently nonunionized institutions. This approach, which is the focus of Analysis I, has both shortcomings and strengths. Because the "presently unionized institutions" may have been unionized for all or only part of the time period under study, the approach actually measures compensation changes in unionized, as well as "to-be-unionized" institutions. Thus, one cannot be sure how much of the observed compensation changes occurred before or after unionization and, strictly speaking, one cannot ascribe any compensation differences directly to unionization *per se*.[9] On the other hand, this approach has the strength of including the effects on compensation of "unionization avoidance behaviors" on the parts of governance board members and institutional administration, who undoubtedly often provide atypically high raises as bargaining elections approach. This behavior is clearly at least an *indirect* effect of bargaining and should probably be considered in investigations such as this. The solution to this dilemma, as applied herein, was to add a second approach (Analysis II), in which pre-bargaining effects on post-bargaining compensation changes were excluded, and thus only the direct effects of bargaining were assessed.

Analysis I

As a preliminary step, simple comparisons of average compensation data were compiled. Morgan and Kearney's base year (1969-1970) data showed that faculty compensation in the control (nonunion) four-year institutions was $201 higher than in the four-year institutions that would later become unionized (see Table 1). Further, Morgan and Kearney reported larger subsequent compensation gains in the unionized schools, resulting in a $625 compensation advantage over the nonunion schools, for a net gain of $826 in their final year of analysis, 1974-1975. This compares closely to a difference of $621 from HEGIS data, which were utilized herein in extending the Morgan-Kearney analyses. Perhaps the most significant finding of this paper, however, is that the 1975-1976 HEGIS data show that the union advantage had shrunk to only $48, for a net gain since 1970-1971 of $249.

When compensation data are considered by faculty rank, the HEGIS data for 1974-1975 and 1975-1976 show that the major benefits of unionism are experienced at the higher faculty ranks and that the margin of these benefits was reduced for all ranks over the one-year time span (see Table 2). In 1974-1975, the average union/nonunion salary differential for professors was $1,303, compared to $1,039 for associate professors, and $168 for the "assistant professors and others" category. In 1975-1976, the average advantage of unionism

[9] Brown and Stone (1977) make a good deal of this point although they do acknowledge the possible "strength" of the conventional approach.

TABLE 1

AVERAGE COMPENSATION FOR UNION AND NONUNION FOUR-YEAR INSTITUTIONS
1969-70, 1974-75, and 1975-76

		Average Compensation						
Status, 1975-76	N	1969-70[1]	1974-75[1]	Difference	N	1974-75[2]	1975-76[2]	Difference 1969-70 to 1975-76[2]
Union	46	$12,941	$18,503	$5,562	56	$21,448[2]	$22,757[2]	
Nonunion	46	13,142	17,878	4,736	56	20,827[2]	22,709[2]	
Difference		-$ 201	$ 625	$ 826		$ 621	$ 48	$ 249

[1]SOURCE: AAUP (Morgan-Kearney study).

[2]SOURCE: HEGIS. The HEGIS adjustments to a common base (e.g., 9 mos. to 12 mos.) vary from those of the AAUP; therefore, the absolute compensation values are not comparable.

TABLE 2

AVERAGE COMPENSATION FOR UNION AND NONUNION FOUR-YEAR INSTITUTIONS 1974-75 AND 1975-76, BY FACULTY RANKS

	Average Compensation							
	1974-75				1975-76			
Faculty Ranks	N[1]	Union	Nonunion	Difference	N[1]	Union	Nonunion	Difference
Professor	114	$28,940	$27,637	$1,303	112	$30,416	$29,784	$632
Associate Professor	114	22,655	21,616	1,039	112	23,793	23,258	535
Assistant Professor and Others	114	17,634	17,466	168	112	18,549	18,660	-111

[1] Number of institutions.

over nonunionism was reduced to $632 for professors and $535 for associate professors; for "assistant professors and others," the earlier $168 "advantage" has become a $111 compensation disadvantage.

Another useful data disaggregation is by institutional category. Morgan and Kearney found that compensation increases had been greatest in the less comprehensive unionized institutions between 1970-1971 and 1974-1975 (see Table 3). Although larger union than nonunion gains had been noted in both AAUP institutional groupings, the net gain was almost $1,000 in smaller schools (Category II) compared to $328 in larger schools (Category I). The HEGIS data, however, do not support this Morgan-Kearney finding. The apparent reason is that the comparable HEGIS Category I includes *all* doctoral-granting universities rather than only the largest. As a result, the HEGIS data show that the more comprehensive unionized institutions exhibited the larger compensation advantages in 1974-1975 ($1,067 versus $527), and that this advantage was extended in 1975-1976 ($1,235 versus -$31). Apparently, the second-level unionized institutions—those awarding only a few doctorates—accounted for a major portion of the union/nonunion compensation difference.

By institutional control, Morgan and Kearney reported that unionized private institutions showed a net gain of $1,320 over their nonunionized private school counterparts, compared to a $547 net gain for unionized institutions in the public sector (see Table 4). The 1975-1976 data reveal a narrowing of this difference, with the net private school gain since 1969-1970 declining to $648 and the net public school gain narrowing to $116. In other words, the Morgan-Kearney reported public versus private net gain difference of $773 between 1970-1971 and 1974-1975 was reduced to $532 in 1975-1976.

Other data disaggregations conducted beyond those of Morgan and Kearney were by institutional level and union agent or affiliation. Although the AAUP data sources are severely lacking in the case of two-year colleges, the HEGIS files provide adequate information for some basic union/nonunion compensation comparisons by institutional level (see Table 5).[10] Based upon sample of 133 and 145 two-year colleges in 1974-1975 and 1975-1976, respectively, it appears that the pattern observed for four-year institutions is followed closely in the case of two-year colleges. First, the 1974-1975 four-year, union/nonunion compensation gap of $625 compares closely with a $681 gap for two-year colleges. Further, just as this gap for four-year institutions was almost closed in 1975-1976, the same occurred in two-year colleges; 1975-1976, only a $1 gross salary gap separated the two-year union from the nonunion schools, compared to a $48 gap for the four-year schools. Whatever was affecting the balance between union and nonunion salaries appeared to be operating at both institutional levels.

[10] Although the original sample of 186 two-year colleges consisted of ninety-three sets of matched pairs, considerable missing data resulted in an unknown loss of control. It can only be said that the two-year college findings pertain to those colleges from the ninety-three matched pairs, for which data were available; i.e., the "effective" sample was really a sample at hand.

TABLE 3

AVERAGE COMPENSATION FOR UNION AND NONUNION FOUR-YEAR INSTITUTIONS 1969-70, 1974-75, AND 1975-76, BY INSTITUTIONAL CATEGORY

Institutional Category[3]	Average Compensation															
	1969-70[1]				1974-75[1]				1974-75[2]				1975-76[2]			
	N	Union	Non-union	Difference	Union	Non-union	Difference	Net Difference	N	Union	Non-union	Difference	Union	Non-union	Difference	Net Difference, Union Non-union '69-70 to '75-76
I[3]	22	$14,853	$14,924	-$ 71	$20,773	$20,516	$257	$328	36	$23,931	$22,864	$1,067	$25,938	$24,703	$1,235	$1,306
II(A,B)[3]	70	12,340	12,582	-242	17,789	17,049	740	982	76	21,015	20,488	527	22,210	22,241	-31	211

[1]SOURCE: AAUP (Kearney-Morgan Study).

[2]SOURCE: HEGIS. The HEGIS adjustments to a common base (e.g., 9 mos. to 12 mos.) vary from those of AAUP, therefore, the absolute compensation values are not comparable.

[3]For the left half of the table, Category I includes institutions conferring an average of fifteen or more doctorates in the most recent three years in a minimum of three nonrelated disciplines. For the right half of the table, Category I includes all doctoral-degree granting institutions.

TABLE 4

AVERAGE COMPENSATION FOR UNION AND NONUNION FOUR-YEAR INSTITUTIONS
1969-70, 1974-75, AND 1975-76, BY CONTROL (PUBLIC OR PRIVATE)

		Average Compensation													
		1969-70[1]			1974-75[1]			Union/ Nonunion	1974-75[2]			1975-76[2]			Union/ Nonunion
Control	N	Union	Non-union	Difference	Union	Non-union	Difference	Net Difference	N	Union	Non-union	Difference	Union	Non-union	Difference	Net Difference '69-70 to '75-76
Public	54	$13,363	$13,476	-$113	$18,768	$18,334	$ 434	$ 547	76	$22,360	$21,869	$491	$23,859	$23,856	$ 3	$116
Private	38	12,467	12,546	-79	18,266	17,025	1,241	1,320	36	20,931	20,080	851	22,135	21,566	569	648
Difference								$ 737								$532

[1]SOURCE: AAUP (Kearney-Morgan Study)

[2]SOURCE. HEGIS. The HEGIS adjustments to a common base (e.g., 9 mos. to 12 mos.) vary from those of AAUP; therefore, the absolute compensation values are not comparable.

TABLE 5

AVERAGE COMPENSATION FOR UNION AND NONUNION TWO-YEAR INSTITUTIONS 1974-75 AND 1975-76

Status	Average Compensation			
	N	1974-75	N	1975-76
Union	64	$18,747	74	$19,894
Nonunion	69	18,066	71	19,893
Difference		$ 681		$ 1

One of the most difficult faculty decisions related to bargaining is the selection of a bargaining agent. In making this decision, among other things, faculty must judge which agent is likely to yield the largest salary gains. Table 6 contains comparative data for the several bargaining agents disaggregated by institutional level. Disregarding the agents that represent only one institution, it appears that the joint NEA-AFT affiliates (not NEA or AFT agents) are *associated* with the more favorable faculty compensation data. Indeed, in the most recent year, 1975-1976, the only other agent to "perform" better than "no agent" (nonunion) was the AFT, and this was true only in the case of two-year colleges. Further, only the NEA-AFT affiliates were associated with *improved* salaries, *vis-á-vis* "no agent," for the two-year time period (two-year colleges only).

In spite of these rather clear compensation advantages for the NEA-AFT affiliates, conclusions should be drawn with caution because, of course, agents are not assigned "randomly." It may be that the NEA-AFT affiliated institutions are simply those where higher salaries are paid traditionally, such as the cases in the state of New York. Put another way, if compensation data for the NEA-AFT affiliated institutions were compared to that for their matched pairs instead of to the data for all institutions, the results might be quite different.

Regression Results

In the previous section, the differences in the average compensation of union and nonunion faculty were presented for 1974-1975 and 1975-1976. These are, however, only gross differences. That is, these differences could be due not only to unionization or its absence, but also to the nature of the institution (public versus private, quality of education, etc.). Thus, to estimate the net impact on unionization, multiple regression analysis was used to control for other factors which might also affect the differences in these dependent variables. Since the quality of data for two-year colleges is questionable, only four-year institutions were analyzed in the regression model.

Table 7 presents the regression results of comparisons of 109 union and nonunion four-year institutions based on the 1974-1975 and 1975-1976 average faculty compensations (Regression 1). All of the explanatory variables are statistically significant at the 5 percent level (two-tailed test) in the 1974-1975 equation. The average faculty members in unionized institutions during 1974-1975 earned about $1,291 more than nonunionized faculty after other institutional characteristics are controlled. However, during 1975-1976, the differences in faculty compensation between union and nonunion institutions decreased to about $800. Furthermore, (as indicated by the "beta" coefficients), the relative weights of the union variable are much reduced in explaining the variation of faculty compensation differences. Based on Morgan and Kearney's results, there were no differences in faculty compensation between union and nonunion institutions in 1969-1970, but by 1974-1975 union faculty earned $1,240 more. The results for 1974-1975 from HEGIS data are comparable to the Morgan-Kearney estimates. The results for 1975-1976 from HEGIS data would appear to suggest further that the magnitude of these differences may not be sustained in the long run; however, as will be seen in Analysis II, these data are misleading.

TABLE 6

AVERAGE COMPENSATION IN TWO- AND FOUR-YEAR INSTITUTIONS, 1974-75 AND 1975-76, BY BARGAINING AGENT

Level and Agent	Average Compensation						
	(N)	1974-75	Deviation from Nonunion Average	(N)	1975-76	Deviation from Nonunion Average	Change from Nonunion Average, 1974-75 to 1975-76
Four-Year							
No Union	56	$20,827		56	$22,709		
AAUP	20	21,149	$ 322	19	22,619	-$ 90	-$ 412
NEA	10	19,571	- 1,256	10	20,685	- 2,024	- 768
AAUP-NEA	1	22,390	1,563	1	26,774	4,065	2,502
AFT	7	20,736	91	7	21,056	- 1,653	- 1,562
NEA-AFT	17	23,283	2,456	17	24,699	1,990	- 466
Independent	1	19,048	- 1,779	1	20,978	- 1,731	48
Two-Year							
No Union	69	$18,066		71	$19,893		
NEA	27	17,891	-$ 175	32	18,610	-$1,283	-$1,108
AFT	14	19,133	1,067	19	20,431	538	- 529
NEA-AFT	9	21,801	3,735	9	24,014	4,121	386
Independent	14	18,047	- 19	14	19,454	- 439	- 420

SOURCE: HEGIS

TABLE 7

REGRESSION RESULTS FOR AVERAGE FACULTY COMPENSATION, UNION/NONUNION, 1974-75 AND 1975-76

Variable	Regression I		Regression II	
	1974-75	1975-76	1974-75	1975-76
Union/Nonunion	1,291	792		
	(3.32)	(2.10)		
Public/Private	2,240	2,547	2,105	2,494
	(5.10)	(6.10)	(4.62)	(5.57)
Per Capita Income	3.8	3.5	3.8	3.5
	(7.6)	(7.07)	(7.59)	(7.02)
Quality Rating	-.12	-.15	-.13	-.15
	(2.1)	(2.67)	(2.25)	(2.68)
Percent Ph.D.	68	63	71	65
	(5.0)	(4.8)	(5.1)	(4.8)
Percent Union Members	62	116	64	116
	(1.98)	(3.73)	(1.99)	(3.73)
AAUP			968	665
			(1.90)	(1.34)
NEA-AFT			1,539	891
			(3.34)	(1.98)
Constant	-2,760	-953	-2,764	-954
R^2	.63	.66	.64	.66
F-ratio	29.5	33.2	25.5	28.2
Sample Size	109	109	109	109

Note: The values in the parentheses are the t-value. The coefficients are statistically significant at the .05 level (two-tailed test) when the t value is at 1.96 or higher with sample size 109.

Table 7 (Regression II) also provides a breakdown by bargaining agent. The AAUP (including one AAUP-NEA agent) and NEA-AFT were classified as two separate groups. In the 1974-1975 faculty compensation equation, institutions with AAUP agents paid $968 more than nonunion institutions; institutions with NEA-AFT agents paid $1,539 more than the nonunion institutions. These variables are all statistically significant. For the 1975-1976 equation, however, the AAUP compensation advantage was reduced to $665 as compared to $891 for NEA-AFT institutions. The difference is not statistically significant for the AAUP variable, but the NEA-AFT variable remains significant.

To examine the differential financial impact of unionization by faculty rank, separate analyses were performed based on 1972-1973 and 1975-1976 data. The regressions results are presented in Table 8. It is apparent that the higher the rank of faculty among the unionized institutions, the higher the financial gain as compared to gains for their counterparts in nonunion institutions. For instance, in 1972-1973, in comparison to their nonunion counterparts, the net gains were $2,085 for unionized full professors and $1,120 for unionized associate professors. There is no significant difference for assistant professors and lecturers in union/nonunion institutions. For the 1975-1976 data, the relative gains are lower but the pattern is similar: $1,781 for full professors and $863 for associate professors in unionized institutions, as compared to their counterparts in nonunionized institutions. No significant differences are found among lower ranks of faculty.

It is often argued that unions not only bargain for salaries, but also for fringe benefits. Alternatively, there may be some tradeoffs between the demand for salaries and fringe benefits. The ratios of fringe benefits to total compensation were used as dependent variables for three ranks of faculty, based on 1972-1973 and 1975-1976 data. During the 1972-1973 period, unionized full professors gained two percentage points over nonunionized full professors. Significant differences did not emerge between other ranks of union/nonunion faculty in 1973-1974 or between any faculty rankings in 1975-1976. Thus, collective bargaining does not appear to have led to changes in the fringe benefits to total compensation ratios for faculty in higher education.

Analysis II

As noted earlier, results of conventional analyses, such as Analysis I, include an unknown quantity of preunionization, "union avoidance" compensation effects. Strictly speaking, it is not known how much of the union compensation gains observed in Analysis I results directly from more favorable union contracts, as opposed to indirect gains resulting from management attempts to "beat the union." The purpose of Analysis II, therefore, is to attempt to isolate the direct effects of bargaining so that methodological "noise" can be eliminated. This is attempted by measuring union/nonunion compensation differences only after a contract is reached. Table 9 presents the key findings in this regard.[11]

[11] The 1975-1976 (HEGIS) data were not included in Analysis II in order to maintain strict data comparability in the regression analyses. (Morgan-Kearney data were from the AAUP.)

TABLE 8

REGRESSION RESULTS FOR AVERAGE FACULTY COMPENSATION, BY RANK, UNION/NONUNION, 1972-73 AND 1975-76

Variable	1972-73			1975-76		
	Full	Associate	Other	Full	Associate	Other
Union/Nonunion	2,085	1,121	194	1,781	864	80
	(4.19)	(3.02)	(.22)	(3.14)	(2.39)	(.35)
Public/Private	2,492	1,380	781	3,675	2,268	1,389
	(4.59)	(3.40)	(2.77)	(5.96)	(5.76)	(5.05)
Per Capita Income	5	4	2	6	4	2
	(7.74	(7.24)	(6.03)	(7.56)	(7.54)	(5.84)
Quality Rating	20	8	3	19	7	-2
	(4.55)	(2.39)	(1.43)	(3.79)	(2.15)	(.76)
Percent Ph.D.	36	10	-6	57	21	14
	(1.96)	(.69)	(.59)	(2.69)	(1.56)	(1.54)
Percent Union Member	66	34	20	79	61	63
	(1.68)	(1.18)	(.97)	(1.75)	(2.14)	(3.14)
Constant	-11,105	-1,651	4,397	-10,554	209	7,177
R^2	.72	.60	.45	.72	.66	.56
F-ratio	29.91	17.59	9.49	30.14	23.27	14.99
Sample Size	78	78	78	78	78	78

Note: The values in the parentheses are the t-value. The coefficients are statistically significant at the .05 level (two-tailed test) when the t value is at 1.96 or higher with sample size 78.

TABLE 9

REGRESSION RESULTS FOR ADJUSTED[1] FACULTY COMPENSATION AVERAGE AND BY RANK, CONTROLLED FOR YEAR OF FIRST CONTRACT, UNION/NONUNION, 1974-75

Variable	Average 1	Professors 2	Associate Professors 3	Assistant Professors and Others 4
Year of First Contract[2] 1969 or 1970	3,157 (2.92)	3,655 (2.69)	2,081 (2.43)	910 (1.45)
1971	1,940 (2.84)	2,377 (2.76)	847 (1.56)	-395 (1.00)
1972	1,692 (2.60)	2,060 (2.51)	1,223 (2.37)	461 (1.22)
1973	962 (1.02)	619 (.52)	647 (.86)	59 (.11)
Public/Private	3,160 (6.81)	3,491 (5.93)	2,387 (6.44)	1,569 (5.79)
Per Capita Income	355 (6.42)	420 (6.04)	301 (6.85)	251 (7.82)
Quality Rating	5.3 (3.28)	6.2 (3.07)	1.8 (1.43)	.5 (.64)
Percent Ph.D.	44 (2.96)	61 (3.26)	19 (1.60)	9 (1.08)
Percent Union Member	29 (.84)	43 (.99)	-4 (.15)	7 (.33)
Constant	2,050	610	5,694	4,661
R^2	.65	.62	.59	.58
F-ratio	24.2	21.2	18.7	17.7
Sample Size	111	110	110	110

[1]Adjusted for variations in local or regional variations in the cost of living. See Methods section.

[2]Compensation effects will be observed in the year following the year of the contract.

Note: The values in the parentheses are the t-value. The coefficients are statistically significant at the .05 level (two-tailed test) when the t-value is at 1.96 or higher with sample size 109.

Although some of the findings from Analysis II are surprising, most are consistent with those of Analysis I. Focusing on average compensation (Column 1), it can be seen that bargaining is associated with higher compensation for all unionized institutions, regardless of the initial year of the contract, although for institutions in their first contract year (row 4—1973) the difference is not significant. For those institutions that obtained their first union contract in 1969 or 1970, the average adjusted (for variations in the cost of living) union/nonunion compensation differences in 1974-1975 was $3,157 compared to $1,940 for those whose initial contract year was 1971, $1,692 for those whose initial contract year was 1972, and $962 for those whose initial contract year was 1973. The fact that unionized faculty are compensated more than nonunion faculty is consistent with the results of Analysis I, while the apparent yearly increases in these advantages yields a new perspective: It appears that initial contract gains are increased; results from Analysis I indicates that this was not the case.

To explore this perspective further, a similar (to Table 9) regression analysis was performed using 1971-1972 compensation data as the dependent variable, and as would be predicted from Analysis II, the union compensation advantage for those institutions that reached a contract in 1969 or 1970 was only $127 and was not significant. In other words, it does appear that the initial contract advantages over nonunion institutions were increased from 1971-1972 to 1974-1975. However, from Analysis I, it would appear that *this* pattern was reversed in 1975-1976; i.e., the nonunion institutions began to catch up. This is precisely what Birnbaum found in his 1977 analysis (Birnbaum 1977).

Also consistent with Analysis I, regardless of the year of the initial contract, it appears that union compensation advantages vary directly with rank (columns 2, 3, and 4). For example, for those institutions whose first contract was reached in 1969 or 1970, professors showed a $3,655 advantage in 1974-1975 compared to $2,081 and $910 for associate professors and "assistant professors and others," respectively. Once again those at the lowest ranks appear to benefit little from bargaining or not at all. In all cases, the compensation advantage of "assistant professors and others" was not significantly higher statistically in unionized institutions, and in one case (initial contract year 1971) the sign was negative—i.e., a compensation disadvantage of $395 was noted.

A final noteworthy observation from Table 9 is again in response to Brown and Stone (1977), who puzzled over the negative sign for the Institutional Quality variable as reported by Morgan and Kearney. (Analysis I of this paper also resulted in a negative sign for this variable). Apparently, the regression model for Analysis II, in adjusting for local and regional variations in the cost of living and in controlling for the initial year of bargaining, made the necessary correction, since the sign is now positive and the t-value of 3.28 is consistent with the high value obtained by Morgan and Kearney for an earlier year.

V

INSTITUTIONAL FINANCIAL DATA

Beyond the financial implications for faculty, collective bargaining in higher education may have an impact on tuition and fees for students, the institution's ability to seek outside support, and the institution's educational expenditures. Five dependent variables were used for the analysis: total government appropriations, total government contract revenue, educational and general expenditures, grand total current expenditures, and average tuition and fees for students. The most recent data available for the analysis were from 1973-1974 HEGIS files. Regression results are presented in Table 10. The union variable shows a significant difference (at the 10 percent level) in government appropriations (+$4.3 million), but differences on the other three financial dependent variables were not significant. In fact, the dominant factors that explain the variations in total government appropriations and total institutional educational expenditures are the quality of the institutions (Gourman ratings) and the public school versus the private school classification. In terms of total government contract revenues, only the quality of the institution importantly influences the institution's ability to seek contract revenue. The results imply that unionization may not change the incentives of faculty to seek contract research money from the government.

On the other hand, the union variable has a significant impact on student tuitions and fees. Holding the quality of the school and the public versus private factors constant, the students in union institutions paid about $250 more than those in nonunion institutions in 1973-1974. The results suggest that institutions of higher education raised tuition and fees in accordance with the higher faculty compensation.

TABLE 10

REGRESSION RESULTS FOR INSTITUTIONAL FINANCIAL STATUS
UNION/NONUNION, 1973-74

Independent Variable \ Dependent Variable	Total Government Appropriation	Total Government Contract Revenue	Educational and General Expenditures	Grand Total Current Expenditures	Average Tuition and Fees
Union/Nonunion	4,324,676	135,139	6,215,221	-5,091,165	250
	(1.70)	(.11)	(1.22)	(.69)	(2.66)
Public/Private	17,577,795	1,220,334	18,073,865	22,581,589	-1,863
	(6.40)	(.91)	(3.27)	(2.82)	(18.24)
Per Capita Income	190	54	-1,178	-5,912	-.06
	(.06)	(.03)	(.19)	(.65)	(.55)
Quality Rating	112,666	56,647	333,193	462,679	.009
	(5.57)	(5.78)	(8.20)	(7.87)	(0.0)
Percent Ph.D.	137,084	22,426	85,026	64,754	9
	(1.43)	(.48)	(.44)	(.23)	(2.67)
Percent Union Member	-178,441	-99,039	267,337	470,291	18
	(.89)	(1.02)	(.66)	(.80)	(2.50)
Constant	-57,276,976	-19,373,489	-19,297,488	-58,321,083	1,563
R^2	.60	.38	.59	.56	.83
F-Ratio	22.17	8.97	21.12	18.61	69.10
Sample Size	94	94	94	94	94

Note: The values in the parentheses are the t-value. The coefficients are statistically significant at the .05 level (two-tailed test) when the t-value is at 1.96 or higher with sample size 94.

VI

OTHER FINANCIAL IMPLICATIONS

In addition to the direct salary and fringe benefits cost of collective bargaining, there exist what Bucklew calls the "process" costs (1976, p. 1), that is, the costs of preparing for the eventuality of bargaining, the costs related to the organizational campaign, and the costs related to the bargaining process itself (pp. 3-16). Bucklew's estimates are that process costs range from $5,000 to $7,500 for the first of these three phases, from $36,000 to $63,000 for the second phase, and from $100,000 to $185,000 for the third phase, for a total of from $141,000 to $255,500.

In examining these costs, it is helpful to consider five categories of institutional expenses: direct personnel costs, indirect personnel costs, logistical costs, faculty support costs, and the indirect costs of shared authority. Direct personnel costs include the salaries of the full-time administrators who are responsible for collective bargaining and part of the salaries of other administrators and staff who are assigned specific collective bargaining tasks in addition to their regular duties. The number of these persons may be quite large; for example, in CUNY, six full-time and several part-time professional staff plus clerical assistants are occupied with collective bargaining (Newton 1973, p. 134). In smaller institutions the numbers and resources represented will be less, but even in the smallest college, administrative time will be consumed by activities during the organizing campaign; by preparation for negotiations; by the negotiations themselves; by contract administration; and sooner or later by mediation, fact finding, and arbitration. Normally, in addition to specialized full-time personnel, the college budget officer, business manager, comptroller, and college attorney will be involved. If there is no college attorney, special counsel will have to be retained. In some cases, it will also be desirable to employ special contract negotiators and outside consultants prior to negotiations.

Indirect personnel costs are those that are incidental to bargaining. Specifically, there will be a necessity to train the administrators who will be assigned the bargaining responsibility, as well as the computer staff and the institution's negotiators. Further, considerable released time must be provided for faculty negotiators, as much as twelve to fifteen full-time equivalents in the case of CUNY (Newton 1973, p. 134). Finally, the contract may mandate costly activities such as faculty evaluation and conference follow-ups, which can consume enormous amounts of administrative time.

The logistical costs entailed in faculty bargaining can easily be overlooked, but they are real expenditures resulting from the bargaining process. One of the first requirements of bargaining will be the generation of data bases. These include the upgrading and automation of personnel files and the collection of comparative data from other institutions. A data system must be built that will allow ready cost analysis of union and management proposals. In all of this, data analysis will be expensive. There are, in addition, always the considerable costs of printing and

supplies; and, finally, there are such miscellaneous costs as the rental of negotiating space, as the union will almost certainly insist on a neutral site.

Costs in the latter two categories are, in a sense, "optional" costs that result only when they are specified in the bargaining agreement; nevertheless, they are real costs that must be taken into account. These costs are not fringe benefits, but are additional costs accruing to the institution from the terms of the agreement. (In conducting a cost analysis, the analyst must identify only those costs that did not exist prior to bargaining and which would not have been incurred without bargaining.)

Many bargaining contracts specify faculty perquisites or support. Some of the more common of these are office space, clerical support, professional libraries, teaching materials and equipment, and time off to conduct research. In a few agreements, research equipment and facilities and even "modern teaching facilities" are stipulated in the contract.

The fifth category is labeled as the indirect costs of shared authority. Institutions sometimes agree to faculty participation in certain personnel decisions. The more common of these concern tenure and other seniority rights. Occasionally, agreements are reached that protect faculty against the use of technology, and it is not unusual to find provisions for faculty participation in hiring. Although the long-term costs of such contract provisions may be sizable, it bears repeating that many such agreements already exist informally.

VII

SUMMARY AND CONCLUDING REMARKS

This paper has examined the impact of collective bargaining at higher education institutions not only on faculty compensation, but also on other financial aspects of the institutions, such as contract revenues and student tuitions and fees. Multiple regression models were used to analyze the net impact of collective bargaining, and, based primarily on a sample of over 100 union and nonunion four-year institutions, a number of important and useful findings have emerged.

It has been found that, holding other factors constant, average faculty compensation in unionized institutions during 1974-1975 was about $1,291 more than in nonunionized institutions. Further, it was found that this compensation advantage increased steadily to 1974-1975 at which time a reversal was noted; and in 1975-1976 the $1,291 advantage shrunk to $800.

Disaggregation of results revealed additional findings. It was shown that affiliation with the NEA-AFT was associated with higher faculty compensation than affiliation with the AAUP. The regression results suggested that the higher the ranks of faculty, the larger their financial gains as compared to nonunion institutions. There was little evidence to suggest tradeoffs in salary for fringe benefit increases.

Beyond the financial implications for faculty, unionization does not appear to have changed the incentives of faculty to seek contract research money from the government. On the other hand, unionization appears to have a significant inflationary impact on student tuition and fees.

It is possible to speak with some confidence regarding these conclusions. The findings reported herein largely are consistent with collective bargaining research in industry and in the public schools. Further, the findings are consistent or reconcilable with comparable research in higher education.

There is also some confidence on the part of the authors that a regression model has been built that approximates quite closely the actual interplay of variables upon faculty compensation. This statement is made with specific cognizance of the most recent (1977) reviews and reservations of Birnbaum and Brown and Stone.

On the other hand, the answers to several other questions remain incomplete. The "process" costs of collective bargaining in higher education are not really known. The implications of bargaining for institutional resource allocation are barely touched. And the *total* effects of bargaining upon faculty compensation levels can only be approximated.

It is still not known how high compensation levels would be if the threat of bargaining did not exist. From our own consulting experiences, we know that

salaries are raised in attempts to avoid a pro-union vote by faculty. We can only guess at the dollar value of these additional benefits. Perhaps even more important are the "industry-wide spillover" effects even when unionization is no real threat, as institutional managers seek to remain competitive with other institutions for good faculty talent and simply to treat their faculty employees in a generally fair and equitable manner. We suppose that any union advocate would point up at least these facts, while any anti-union spokesman would emphasize the 1975-1976 decline in the union compensation advantage and argue that nearly the same compensation increases may be gained without the (perceived) negative side-effects of unionism.

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