

The causal effect of faculty unions on institutional decision-making

Stephen R. Porter and Clinton M. Stephens*

Department of Educational Leadership and Policy Studies, Iowa State University

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Abstract

The goal of this paper is to estimate the causal effect of unionization on institutional decision-making. We use a national survey of presidents and faculty senate leaders to measure the level of shared governance at 341 public universities in fifteen different areas. To handle the endogeneity of faculty unionization, we use an index of state employee collective bargaining rights as an instrument for unionization. We find that unionization greatly increases faculty influence over decision-making in areas such as setting faculty salary scales, individual faculty salaries, appointing department chairs, and appointments to institution-wide committees.

*Address: N243 Lagomarcino, Iowa State University, Ames, IA 50010. Direct correspondence to Stephen R. Porter (srporter@iastate.edu). We would like to thank John Curtis, Michael Mauer, Paul Umbach, and participants in the Human Resources seminar of the Department of Economics at Iowa State University and the 2010 Workshop on Research Design for Causal Inference at Northwestern University School of Law for advice and comments.

Introduction

Faculty unions in the United States are quite common; in our dataset approximately one-third of public four-year institutions are unionized. As the higher education landscape continues to change, we may see an increased number of faculty union elections. Many faculty believe they are being asked to do more for the same compensation, that academic freedom and shared governance are generally under attack, and that with the rise in the numbers of contingent faculty, they generally have less influence within their institutions. While unionization at private institutions has almost halted, there may be some prospects in this sector if the case law changes. In addition, faculty at some for-profit postsecondary institutions are beginning efforts to unionize. Given current trends in higher education, it seems likely that unionization of faculty in postsecondary institutions will continue to increase.

Although faculty unions have been around for almost half a century, we still know little about the effects of unionization on faculty and institutions, particularly on how institutions function. The overall effect of unionization is unclear. Due to the power of collective bargaining, unions might increase faculty power over university decision-making, particularly in areas such as faculty compensation. Conversely, the legalistic approach to faculty-administrative relations that results from unionization may result in administrators unwilling to informally cede power to faculty, unless such power is specifically spelled out in the collective bargaining agreement, resulting in a loss of influence after unionization.

The goal of this paper is to estimate the causal effect of unionization on institutional decision-making. We use a national survey of presidents and faculty senate leaders to measure the level of shared governance at an institution, and we estimate the effect of unionization using an instrumental variables (IV) approach and state unionization laws. Such an approach is necessary if there is a simultaneous relationship between governance and the presence of a faculty union on campus. Besides low salaries, a common finding in the case study literature is that faculty often unionize as a result of frustration with their input into

university decision-making. If faculty unions form in part due to low levels of involvement in decision-making, standard regression analysis will yield biased estimates of the effect of unionization.

Background

We assume that faculty vote to form a union to increase their collective welfare (Hosios and Siow, 2004). The formation of a union allows faculty to make a credible threat to strike, with the potential of disrupting and even shutting down a university if their demands are not met. In response, university administrators weigh the costs of meeting demands and the costs of a potential strike, with the result that at least some of the union's demands are met. Given this, how should we expect unions to affect faculty influence on institutional decision-making? Our review of the literature yields three different arguments: faculty unions should have no effect, increase faculty influence, or actually decrease faculty influence. We review these in turn.

The majority of research on faculty unions has focused on compensation. The literature in this area is mixed, with some studies finding that unionized faculty earn more than non-unionized faculty (Ashraf, 1992, 1997; Barbezat, 1989; Benedict, 2007; Birnbaum, 1974; Monks, 2000; Rees et al., 1995), while others find little difference (Hosios and Siow, 2004; Kesselring, 1991; Rees, 1993). Most of the positive studies find the unionization effect to be small, generally only a few percentage points of salary.

Together, this literature suggests that unionization has had little impact on faculty salaries, in turn implying that unionization does little to affect how much influence faculty have over their institutions. Given that one of the main goals of unionization is to increase salaries and benefits, if faculty unions cannot effectively pressure administrators to raise faculty compensation, it is unlikely that they can gain influence in non-compensation areas. Ehrenberg et al. (2004, p. 212) ascribe these limited findings to the distinct nature

of faculty unions in the U.S:

Most faculty members covered by union contracts are employed in public higher education institutions, most organized faculty in public higher education lack the legal right to strike, and the two major sources of revenue that finance faculty salaries - tuition and salary appropriations - are typically controlled by the legislature and the governor, not by the trustees of the state institutions. With little bargaining power and very few monopoly rents to extract, one should expect unions to have a very small impact on faculty salaries.

Thus, one conclusion is that faculty unions should have little to no effect on institutional decision-making, given the constraints on the actions of unions and faculty in forcing concessions from administrators.

Despite what the literature on faculty compensation implies, faculty unions may instead increase faculty input as to how an institution is run. While many faculty may lack the legal right to strike, faculty strikes are not exactly unknown in the United States. During the period 1966-1994, for example, 163 faculty strikes occurred (Annunziato, 1994). Even if faculty at an institution cannot strike, administrators may still be wary of defying the union. Faculty can make life difficult for administrators without a resorting to a strike, through how they conduct their classes and treat students, their participation in the faculty recruitment process (e.g., scaring off quality hires), and harming the public image of the university through highly visible protests and other means. The formation of a union indicates that faculty at an institution are very dissatisfied; some administrators would gladly make concessions to avoid outright hostilities between faculty and the administration.

The faculty salary literature may also be somewhat limited in its claims of small differentials. Benjamin (2006) argues that the small differences between unionized and non-unionized salaries are due to methodological issues. Non-unionized institutions may increase salaries to compete for faculty, or to preempt unionization activity on their campus. Such behavior is difficult to detect with the typical cross-sectional approach used in much of the salary

literature, and could account for the limited impact of unions. Another possibility is that after unionization, the variance in compensation within an institution changes, but not the mean level of compensation. Hosios and Siow (2004) posit a theoretical model where unions change overall faculty compensation by redistributing funds from well-paid, more productive faculty to poorly-paid, less productive faculty. In their study of Canadian universities, they interpret the salary compression across ranks that occurred after unionization as evidence in favor of their model. The implication of both arguments is that unions increase faculty influence, at least in the area of compensation, just in ways that may not be easily detectable using cross-sectional data.

More importantly, the Ehrenberg et al. view does little to explain why faculty unions continue to exist, and why faculty continue to unionize. Faculty unions can be decertified at any time, but decertification elections are a rare occurrence. Table 1 shows the distribution of full-time faculty bargaining units certified as of 2004 by the year the bargaining agent was recognized. Although the largest wave of unionization occurred in the 60s and 70s as state laws changed in favor of unionization of state employees, faculty have continued to unionize into the 21st century; most recently, in 2010 faculty at Bowling Green State University and the University of Wisconsin - Superior voted to unionize. Given the extraordinary amount of time and effort a unionization drive takes, it is difficult to explain away unionization behavior of faculty as simply misguided; unionization must be providing some sort of benefit to faculty.

While it seems logical that unionized faculty would have more say in university decisions involving issues around compensation, less clear is whether unionization results in greater faculty say in other areas of governance. Wickens (2008) suggests several reasons why unionization may actually have adverse effects on faculty influence on decision-making. First, while faculty senates are in principle representative of all faculty, union representatives may tend to only represent the interests of union members when negotiating with the administration. Second, union representatives may be more antagonistic towards the administration than

the typical faculty member, in turn affecting the faculty-administration relationship and how open the administration is to faculty input. Third, the presence of a union may reduce the amount of service on the part of faculty, including governance service, simply because the union will be viewed as “taking care of” the faculty. This line of reasoning implies that faculty influence in some areas of institutional decision-making may actually decrease after unionization.

As can be seen, there are a variety of views about faculty unions and their impact on institutions. The traditional view of unions, often touted by union supporters, is that unionization will have a positive effect, in terms of both compensation and influence over how an institution is run. Alternatively, unionization may have little impact on compensation, in turn implying that unions have little power vis-à-vis administrators and that unions should have little effect on faculty influence over decision-making. Finally, it is possible that unions decrease faculty influence on decision-making. The remainder of the paper is devoted to determining empirically the effect of unionization on how much influence faculty have on institutional decision-making.

Methodology

Our study uses a 2001 survey on faculty governance sent to presidents and faculty leaders at every four-year institution accredited to grant bachelor’s degrees in the liberal arts (Kaplan, 2004). The institutional response rate was 68%, with 903 private and public universities and colleges having at least one respondent to the survey. We focus on a subset of schools, those with a Carnegie classification ranging from bachelor’s to research university (thus excluding specialized institutions such as seminaries included in the original survey). Due to these exclusions, our final sample size is 341 public institutions.¹ For institutions with more than one respondent, we averaged the responses to create one record per institution.

¹Approximately 2-3% of respondents did not fill out one or more of the decision-making questions described below; their missing data were handled with multiple imputation.

Identification strategy

To identify the effect of faculty unions on decision-making, we require an exogenous source of variation in unionization. Unionized institutions likely differ from non-unionized institutions in ways that are unobservable, at least in terms of the typical higher education datasets available for analysis. For example, faculty political beliefs, distrust of campus administrators, and satisfaction with employment conditions may affect both the probability of unionization (Bornheimer, 1985; Dworkin and Lee, 1985; Goldey et al., 2010; Hemmasi and Graf, 1993) and the amount of effort faculty exert when attempting to influence institutional decision-making. In addition, as stated above, anecdotal evidence suggests that lack of influence is one of the factors that lead faculty to unionize. Both omitted variables and simultaneity suggest that faculty unionization is endogenous in a model with faculty influence on decision-making as the dependent variable.

We use the legal framework for academic unions as a source of exogenous variation, as used in the general union literature and teacher union literature. Faculty unions are subject to both federal and state law. In terms of federal law, faculty union activity falls under the purview of the National Labor Relations Board (NLRB) and relevant court decisions. The most relevant decision to date is the Supreme Court's 1980 ruling in *NLRB v. Yeshiva University*, in which the court ruled that faculty at private universities could not unionize if they were managerial employees (Metchick and Singh, 2004; Thomas and McGehee, 1994). Whether faculty can be considered managerial employees hinges on the amount of influence they have on institutional decision-making. The amount of influence can be fairly minimal; in one case, faculty had no say in hiring and tenure decisions, but were ruled managers because they had influence over the curriculum and other academic areas (Shaw, 2006). Given that whether faculty at private institutions can unionize depends on the amount of say they have over how the institution is governed, it makes little sense to study the effect of faculty unions on decision-making for privates: by definition, unions can only occur at private institutions where faculty have such minimal influence that they would be viewed by

the NLRB as regular employees (such as custodians and secretaries) rather than managers.² Thus, we exclude privates from our analysis and focus only on public universities.

Academic unions at public institutions fall under state law, and we use variation in state laws regulating the unionization of state employees as our instrument for the presence or absence of a faculty union at a university. Our data are from 2000 and are taken from Farber's (2005) updated version of the Freeman and Valletta (1988) NBER Public Sector Collective Bargaining Law Data Set. Freeman and Valletta created an eight-category classification of state laws measuring the strength of collective bargaining rights for a variety of public sector workers, including state employees. The classification ranges from low to high as follows:

1. Collective bargaining prohibited
2. No provision
3. Collective bargaining permitted
4. The right to meet and present offers
5. Employer duty to bargain, express or implied with no specific dispute settlement mechanism
6. Duty to bargain with fact-finding or mediation required
7. Duty to bargain with strikes allowed
8. Duty to bargain with arbitration required

Recent work using instrumental variables has interpreted the estimated treatment effect within Rubin's Causal Model (Holland, 1986); specifically, as the Local Average Treatment Effect (Angrist et al., 1996). Such an interpretation rests on five assumptions.

²There are a handful of exceptions to this rule. Universities may voluntarily recognize a faculty union, even though the university would prevail in having the union decertified in a NLRB hearing. This is a rare occurrence, see for example Schneider (1998).

First, the Stable Unit Treatment Value Assumption (SUTVA) must hold. Generally, SUTVA comprises two parts, no interference between units and stable treatment and control conditions for each unit. Figure 1 illustrates potential issues of interference between units using our IV approach.

The figure depicts schools i and j , with bold arrows indicating the causal paths of our IV model, and the dotted arrows, a , b , and c illustrating potential SUTVA violations. We first assume i and j are in different states. Arrow a illustrates the effect of i 's assignment affecting j 's treatment decision. Angrist et al. (1996) suggest this would occur if someone assigned a low lottery number (i.e., drafted) convinces a friend with a high lottery number (not drafted) to serve in the military. In our application, this would occur if a change in Nebraska's public sector union laws would cause the faculty at Iowa State to change their decision to unionize. Arrow b illustrates a similar causal path, except that i 's assignment affects j 's outcome. So a change in Nebraska's union laws would then cause a change in the demand for influence over decision-making by Iowa State faculty, or a change in the amount of influence administrators or the Iowa Board of Regents decides to grant. Both causal paths seem unlikely and thus are not SUTVA violations in our application.

Arrow c is probably the most common form of SUTVA violation, and illustrates spillover effects when unit i 's treatment affects unit j 's outcome. For example, this would occur if schools strategically decide to raise salaries when faculty in peer schools unionize. While this may be possible, for our application faculty or administrators in school j would have to change the amount of faculty influence in reaction to the unionization decision of school i . Schools may act strategically in terms of salary raises, but we have discovered no evidence that schools change faculty influence over decision-making due to other schools' unionization decisions. Moreover, if an administration decides to placate their faculty given a wave of unionization at similar schools, it is likely that the administration would focus on highly visible changes. Listening to faculty during meetings or adding a position on a committee is much less visible than an institution-wide increase in faculty salaries. Thus, causal path c

also seems unlikely.

Arrows q and r illustrate two situations in our dataset that might appear to violate SUTVA, but do not. Now assuming that schools i and j are in the same state, we can see that if the union laws for i change, then the laws for j must change as well. The analogy in a random experiment would be a cluster randomized trial, with students nested within schools and the unit of treatment at the school level; when one student in a school is assigned to an experimental group, all other students in the school are assigned to that group as well. This implies that we should take into account the clustering of schools within states when estimating the standard errors.

Arrow r shows a causal relationship in which school i 's treatment decision determines school j 's treatment decision. While unusual, this does occur in our dataset. A few of the university systems, like California State University, voted as a system to unionize, not as individual campuses. Thus, it is possible that one or two schools that did not want to unionize could have been forced to unionize if outvoted by faculty in the rest of the system. Like q , this would not appear to be a SUTVA violation. Continuing the analogy of a random experiment, this would be equivalent to a participant in one experimental group persuading another participant in the same group to undergo or avoid the treatment. In our application, one could argue unionization by system might actually reduce the correlation between unobservables and unionization; presumably the schools that are forced to unionize would have low values on variables such as distrust of administrators, unlike the pro-union schools.

The second part of SUTVA assumes that for each unit there is only one form of the treatment and one form of the control condition. Using Rubin's aspirin treatment example, there can be no "dud" aspirins. Here, this means that there should be no variation in the treatment of unionization, which in turn raises the question, what do we mean by unionization?

Our definition of unionization is the legal one; unionization occurs when a majority of

faculty vote to support a union, the union is certified and the faculty are then represented by a collective bargaining agent. This definition would appear to be a case of stable treatment. However, when we consider why a union is able to extract concessions from a university administration, part of the union's power derives from the ability to call a strike, which is not legal for faculty unions in all states. Binding arbitration also varies across states. There may thus be some variation in treatment if we consider union power as part of the treatment. This in turn implies that our estimated treatment effects will be some sort of weighted average, underestimating the effect for strong unions and overestimating the effect for weak unions.

Second, the instrument (or treatment assignment) must be randomly assigned, or ignorably so. In our application this requires us to assume that the strength of public sector collective bargaining rights is uncorrelated with the potential outcomes of level of faculty influence on institutional decision-making. This would be satisfied, for example, if state public sector union laws were randomly distributed across the country. However, it is clear that the strength of these laws is driven in large part by the political culture of the state; conservative states have much weaker collective bargaining rights than liberal states (the correlation between the Freeman and Valletta state employee index and our measure of state citizen ideology is .49). This is problematic, as political culture could be correlated with the potential outcomes. Political culture could affect internal decision-making at an institution indirectly, as faculty and administrators make decisions with the electorate and legislators in mind. Or, political culture could affect decision-making more directly, as states directly regulate the internal functioning of an institution. Most probably, the correlation would occur if faculty sort themselves across states in terms of their political beliefs; liberal faculty choosing faculty positions in liberal states, etc.

States also vary in terms of the strength of oversight of public higher education. More powerful boards have the ability to intervene internally with the workings of institutions. If state oversight and strength of union laws are correlated, then our potential outcomes

and instrument could be correlated. Both lines of reasoning imply that controls for political culture and the strength of the state higher education governing structure should be included in both stages of the instrumental variables regression to satisfy the second assumption.

Third, the instrument must have no effect on the outcome except through the treatment (exclusion restriction). Here, faculty influence at an institution must not be affected by the strength of collective bargaining rights in the state once faculty unionization status has been taken into account. We have not been able to construct a plausible example of a violation of this assumption in this context. One could construct an argument, for example, that as laws governing unionization of state employees change, faculty somehow decide to change how much input they should have at an institution. More indirectly, one could argue that as state laws change, the proportion of state employees who are unionized increases. As a result of becoming unionized, state employees for some reason demand a change in the internal governance of public universities in the state, and are also influential enough to achieve this change. Both lines of reasoning illustrate alternate causal paths for state laws and faculty influence on decision-making, but neither seems plausible. A more plausible path is that union laws exert a strong, negative effect on state economies, yielding lower government subsidies to public universities, which results in a dissatisfied faculty and a change in their demand for influence on decision-making. Stevans (2009) finds limited evidence that right-to-work laws positively affect the economy of a state, so this is an unlikely causal path. We recognize that while state unionization laws may vary with political culture, laws in and of themselves should not exert a direct effect on faculty input within universities, other than through the unionization of faculty.

Fourth, there should be a nonzero average causal effect of the instrument on the treatment. In our dataset, the correlation between the Freeman and Valletta index and whether a public university is unionized is a .58. Because the relationship between the ordinal bargaining rights index and unionization may be nonlinear, we use seven dummy variables based on the eight-category collective bargaining rights index in our IV regressions, with the lowest

category as the reference group. The partial R-square from the first-stage regressions ranges from .33 to .35, and the first-stage F-statistic ranges from 28 to 47. These numbers indicate that we do not have a weak instrument problem (Bound et al., 1995; Stock et al., 2002).

Fifth, of the units affected by the instrument, all units must be affected in the same way (monotonicity assumption). Here, there must be no university that would unionize if state collective bargaining rights were limited (i.e., difficult to unionize), but then would not unionize if state collective bargaining rights suddenly became expansive (easy to unionize). Given the research on what drives faculty to unionize, this appears to be a plausible assumption in this context.

Dependent variable

The survey asked respondents to describe the extent of faculty participation in institutional decision-making for 15 different items on a five-point Likert scale, where participation could range from full faculty participation to no faculty participation. Unlike the typical Likert scale, respondents were asked to place the percentage of faculty on their campus in each category (see Table 2 for question wording). This is a somewhat unusual approach, but it allows for a finer discrimination between institutions, particularly those where faculty governance is not homogenous across the institution.³

We created a weighted average for each item, multiplying the percentages in each category by 0-4, depending on its position on the Likert scale. The result is one number per item per respondent, taking a value of 4 if 100% of faculty have full determination for a particular area, and 0 if 100% have no participation in decision-making for that area. The average proportion of faculty falling into each category, as well as the mean weighted average for each item, can be seen in Table 3. Looking at the weighted averages in the last column, nationally, faculty have the most authority over the curriculum and setting degree requirements, and the least authority over construction programs, budgetary planning, and individual faculty salaries.

³Another reason for this question wording was to match the wording of the 1970 survey conducted by the American Association of University Professors (1971).

Independent variables

Our main independent variable of interest, presence of a faculty union, was created by using the Directory of Faculty Contracts and Bargaining Agents in Higher Education (National Center for the Study of Collective Bargaining in Higher Education, 2006), and is a dummy variable indicating the presence of a faculty union for full-time faculty in 2000.

We include two sets of state-level covariates, the first measuring political culture and the second measuring the strength of the higher education governance structure. State political culture is measured by an indicator for state citizen ideology (Berry et al., 1998). The citizen ideology measure is based on interest group ratings of individual members of Congress weighted by their vote shares, combined across districts in a state, for the year 2000.

State governance structures can be grouped into two types. Consolidated, which tend to have the most power to regulate public higher education, usually have responsibility over academic programs and budgets. Coordinating and planning boards, on the other hand, may have limited power in some areas, but are chiefly meant to coordinate relationships between the state government and individual institutions. As Nicholson-Crotty and Meier note, “Coordinating boards differ from consolidated governing boards in that they do not govern institutions and they do not appoint institutional chief executives or set faculty personnel policies” (2003, p. 85). Research indicates, for example, that the strength of a state’s higher education governing board can affect prices, with stronger political control resulting in lower tuition at public universities (Lowry, 2001). We include a dummy variable indicating whether a state had a consolidated governing board (23 states). The data are from 1997 and are taken from McGuinness (2002).

Including university-level covariates in our models is potentially problematic, as many of the variables used in models of higher education institutional behavior are endogenous in this context. For example, faculty are regularly consulted on issues such as spending, admissions standards, and the optimal size of the student body. Technically, such control variables are

not needed given the instrumental variables approach (except to increase power), but there may be some bias in our sample data due to the less than 100% response rate for the survey.

We estimate the models two ways. First, we include only the state-level controls listed above in a fully exogenous model. Second, we estimate a potentially endogenous model by including a group of institutional-level covariates: size (log of full-time equivalent enrollment), financial resources (log of expenditures per student), selectivity (Barrons college guidebook selectivity index, which ranges from 1 (not selective) to 6 (very selective)), age of the institution, location (urbanization scale ranging from large city to rural), and institutional mission (Carnegie classification, a classification scheme that sorts institutions based on the amount of federal research grants received and number of degrees awarded; ranges from baccalaureate college to research university). These variables are taken from the IPEDS Institutional Characteristics survey, and Barron's and Peterson's college guidebooks, all from 2000.

Results

Table 4 shows the OLS and IV results for the fifteen areas of faculty influence over institutional decision-making. The first two columns include only state-level covariates, the next two columns also include institution-level covariates, and the last two columns use state-level clustered standard errors. Because changes in the five-point Likert scale are not easy to interpret in a substantive sense, we also report our results in terms of effect sizes (difference between unionized and non-unionized institutions, divided by the standard deviation of the dependent variable).

There is some evidence that unionization increases faculty influence over the curriculum and the setting of teaching loads. The OLS estimates for curriculum are close to zero, while the IV estimates are .16 to .17 (effect size of approximately .33). However, the p values from the IV models range from .09 to .14. The teaching load estimates are about three times the size of the OLS coefficients (.30 to .36, effect size of approximately .38), with p values

ranging from .07 to .11.

The most consistent results across all specifications are for appointing chairs and setting faculty salary scales. The coefficients are always statistically significant, with the IV models producing larger coefficients. Unionized institutions score about half a point more on the influence scale in the area of appointing chairs (effect size of .64), and about 1.2 points more for faculty salary scales (effect size of 1.25).

Unionization also appears to increase faculty influence over decisions about individual faculty salaries, with the IV estimates more than twice as large as the OLS estimates. The difference between unionized and non-unionized institutions is about one-third to one half a point (effect size of .36 to .45).

Finally, unionization also increases faculty influence over the selection of members for institution-wide committees. Here, the IV results indicate a difference of about one-third of a point (effect size of .52).

Sensitivity analysis

We have already tested the sensitivity of our results with a potentially endogenous model specification and the clustering of standard errors at the state level, given that the assignment process occurs at the state level. Here, we investigate two other potential problems with our results.

First, the specifications in Table 4 assume a linear relationship between the state-level covariates and the dependent variables. Correctly modeling the functional form of these variables is crucial, as the success of our identification strategy depends on it. We face a situation similar to regression-discontinuity models, which depend on the correct functional form of the assignment variable. We adopt the approach used by most regression-discontinuity applications, and include squared, cubic, and interactions terms for our state-level covariates. Table 5 presents these results. The first column is the specification used in Table 4 (column 2). The next three columns present the results with interaction terms between the

consolidated governing board and state ideology variables, and squared and cubed terms for state ideology. As can be seen, the qualitative results vary little from specification to specification.

Second, we have combined administrator and faculty responses for the analyses in Tables 4 and 5. Inspection of responses for institutions with both administrator and faculty responses reveals some wide differences in responses for individuals at the same institution.⁴ If these differences occur fairly randomly, then this should not pose much of a problem for our analyses. However, if administrator and faculty responses differ in systematic ways, then our approach of combining them could be problematic.

Table 6 presents the fully exogenous model results from column 2 of Table 4, as well as model results using only administrator responses and only faculty responses (both fully exogenous and potentially endogenous). Qualitatively, the results are fairly similar across samples and model specifications. Two patterns of differences are apparent. First, differences between unionized and non-unionized institutions appear larger with the faculty sample. The coefficients for appointing chairs, faculty salary scales, and individual faculty salaries are about 25%-50% larger. Second, faculty at unionized institutions appear to have more influence over decisions about the scope of faculty governance, but only in the administrator sample.

Discussion

The results presented here suggest that faculty unions have a positive effect on the level of faculty influence at public institutions. Not surprisingly, faculty at unionized institutions have more say in decisions regarding overall salary scales as well as decisions about individual faculty salaries. However, they also have more influence over the appointment of department chairs, and possibly over teaching loads and the curriculum as well. Contrary to some what

⁴A few institutions have responses for both the faculty senate leader as well as the head of the local AAUP chapter. We averaged these to create one response per school in Table 6.

some scholars have argued, faculty influence does not appear to suffer from any negative effects of unionization.

In contrast to the literature looking at unionization and faculty salaries, the results here suggest a large impact of unionization on faculty salaries. The effect size of 1.25 for setting faculty salary scales is quite large, and the effect size of about .40 for decisions about individual faculty salaries is also substantively large. There are several explanations for these divergent findings. While it is possible that faculty might be “fooled” into thinking unions have increased their influence over the salary structure at their institutions even though nothing has changed after unionization, Table 6 indicates that administrators show the same pattern of responses. A more likely explanation is that unionization increases faculty influence over the setting of salaries, but that the main change in salary structure after unionization is in the overall distribution of salaries, rather than the mean level (Hosios and Siow, 2004). A second possible explanation is that much of the faculty salary literature is methodologically flawed. Many of these studies do not take into account the endogeneity of unionization, and many studies include both private and public institutions in the same sample. A fruitful line of research here would be the use of a faculty salary panel with instrumental variables using state collective bargaining rights over time to handle endogeneity.

Another possibility is that faculty unions increase compensation through changing faculty workloads. Reducing teaching loads or publication expectations while holding salary constant could be viewed as an increase in compensation, in the form of a reduction in the number of hours worked with no loss in pay. The results presented here suggest that unionization increases faculty influence over decision-making about teaching loads, which fits with this explanation. Another useful area of research would be the impact of faculty unions on individual faculty behavior, particularly productivity.

Somewhat surprisingly, our results suggest that unionized faculty have similar influence over faculty appointments and tenure and promotion decisions as non-unionized faculty. Traditionally, collective bargaining in academia has focused on compensation and issues

around promotion and tenure; analysis of 41 collective bargaining agreements found that 100% contained provisions about salaries and benefits, 78%-80% contained provisions about promotion, grievance, and layoff procedures, and roughly half contained provisions about tenure appeal procedures and chair selection (Ponak, Thompson, Zerbe, 1992).

Finally, our paper demonstrates the importance of properly handling the endogeneity of unionization when studying postsecondary institutional outcomes. We believe that we have presented a strong argument in favor of state employee collective bargaining rights as an instrument for faculty unions, and use of this instrument yielded substantively significant results compared to ordinary least squares.

References

- American Association of University Professors (1971). Report of the survey subcommittee of committee t. *AAUP Bulletin* 57(1), 68–124.
- Angrist, J. D., G. W. Imbens, and D. B. Rubin (1996). Identification of causal effects using instrumental variables. *Journal of the American Statistical Association* 91(434), 444–455.
- Annunziato, F. (1994). Faculty strikes in higher education: 1966-1994. *National Center for the Study of Collective Bargaining in Higher Education and the Professions Newsletter* 22(4), 1–8.
- Ashraf, J. (1992). Do unions affect faculty salaries. *Economics of Education Review* 11(3), 219–23.
- Ashraf, J. (1997). The effect of unions on professors' salaries: The evidence over twenty years. *Journal of Labor Research* 18(3), 439–450.
- Barbezat, D. (1989). The effect of collective bargaining on salaries in higher education. *Industrial and Labor Relations Review* 42(3), 443–455.
- Benedict, M. (2007). The effect of unionization on faculty salaries 1978-1996: A test of empirical methods. *Journal of Collective Negotiations* 31(3), 251–274.
- Benjamin, E. (2006). Faculty bargaining. In E. Benjamin and M. Mauer (Eds.), *Academic Collective Bargaining*. New York: Modern Language Association of America.
- Berry, W. D., E. J. Ringquist, R. C. Fording, and R. L. Hanson (1998). Measuring citizen and government ideology in the american states, 1960-93. *American Journal of Political Science* 42, 327–48.
- Birnbaum, R. (1974). Unionization and faculty compensation. *Educational Record* 55, 29–33.

- Bornheimer, D. G. (1985). Conditions influencing faculty voting in collective bargaining elections. *Research in Higher Education* 22(3), 291–305.
- Bound, J., D. A. Jaeger, and R. M. Baker (1995). Problems with instrumental variables estimation when the correlation between instruments and the endogenous explanatory variable is weak. *Journal of the American Statistical Association* 90(430), 443–450.
- Dworkin, J. B. and D.-H. Lee (1985). Faculty intentions to unionize: Theory and evidence. *Research in Higher Education* 23(4), 375–386.
- Ehrenberg, R., D. B. Klaff, A. T. Kezsbom, and M. P. Nagowski (2004). Collective bargaining in american higher education. In R. Ehrenberg (Ed.), *Governing academia*. Ithaca: Cornell University Press.
- Farber, H. S. (2005). Union membership in the united states: The divergence between the public and private sectors.
- Freeman, R. B. and R. G. Valletta (1988). The nber public sector collective bargaining law data set. In R. B. Freeman and C. Ichniowski (Eds.), *When Public Sector Employees Unionize*, pp. 81–106. Chicago: University of Chicago Press.
- Goldey, G., E. Swank, C. Hardesty, and R. Swain (2010). Union professors: Framing processes, mobilizing structures, and participation in faculty unions. *Sociological Inquiry* 80(3), 331–353.
- Hemmasi, M. and L. A. Graf (1993). Determinants of faculty voting behavior in union representation elections: A multivariate model. *Journal of Management* 19(1), 13–32.
- Holland, P. (1986). Statistics and causal inference. *Journal of the American Statistical Association* 81(396), 945–970.
- Hosios, A. and A. Siow (2004). Unions without rents: The curious economics of faculty unions. *Canadian Journal of Economics* 37(1), 28–52.

- Kaplan, G. E. (2004). How academic ships actually navigate. In R. Ehrenberg (Ed.), *Governing academia*. Ithaca: Cornell University Press.
- Kesselring, R. (1991). The economic effects of faculty unions. *Journal of Labor Research* 12(1), 61–72.
- Lowry, R. C. (2001). Governmental structure, trustee selection, and public university prices and spending: Multiple means to similar ends. *American Journal of Political Science* 45(4), 845–861.
- McGuinness, A. C. (2002). The authority of state boards of postsecondary education. Technical report, Education Commission of the States.
- Metchick, R. and P. Singh (2004). Yeshiva and faculty unionization in higher education. *Labor Studies Journal* 28(4), 45.
- Monks, J. (2000). Unionization and faculty salaries: New evidence from the 1990s. *Journal of Labor Research* 21(2), 305–314.
- National Center for the Study of Collective Bargaining in Higher Education (2006). *Directory of faculty contracts and bargaining agents in institutions of higher education*. New York: CUNY. the National Center for the Study of Collective Bargaining in Higher Education, Baruch College–CUNY. 28 cm. Caption title. "Compiled by Molly Garfin." Chiefly tables.
- Nicholson-Crotty, J. and K. J. Meier (2003). Politics, structure, and public policy: The case of higher education. *Educational Policy* 17, 80–97.
- Rees, D. (1993). The effect of unionization on faculty salaries and compensation: Estimates from the 1980s. *Journal of Labor Research* 14(4), 399–422.
- Rees, D., P. Kumar, and D. Fisher (1995). The salary effect of faculty unionism in Canada. *Industrial and Labor Relations Review* 48(3), 441–451.

- Schneider, A. (1998, Dec. 4). Goddard college allows faculty to unionize. *Chronicle of Higher Education*.
- Shaw, M. (2006). Prospects for full-time faculty organizing at private universities and colleges. In E. Benjamin and M. Mauer (Eds.), *Academic Collective Bargaining*. New York: Modern Language Association of America.
- Stevens, L. K. (2009). The effect of endogenous right-to-work laws on business and economic conditions in the united states: A multivariate approach. *Review of Law and Economics* 5(1), 595–614.
- Stock, J. H., J. H. Wright, and M. Yogo (2002). A survey of weak instruments and weak identification in generalized method of moments. *Journal of Business and Economic Statistics* 20(4), 518–529.
- Thomas, S. L. and V. McGehee (1994). Faculty bargaining in private colleges and universities: Beyond yeshiva. *Employee Responsibilities and Rights Journal* 7(4), 297–315.
- Wickens, C. (2008). The organizational impact of university labor unions. *Higher Education* 56(5), 545–564.

Table 1: Distribution of faculty unions by year of agent recognition

Time period	Sector		Total
	Private	Public	
1965-1969	0	11	11
1970-1974	14	40	54
1975-1979	25	77	102
1980-1984	0	24	24
1985-1989	0	1	1
1990-1994	3	2	5
1994-1999	0	6	6
2000-2004	0	15	15

Table 2: Wording of survey question on faculty influence

Below you will find 15 items describing decisions regularly made on a campus. For each of the decisions listed, please indicate in the relevant box the percentage of faculty whose participation in the decision takes the form indicated. For each question, focus on the practice of the last 5 years. Note that the sum of the figures in each row should be 100% for questions 1-15.

Example: If in the selection of the department chair, 25% of the institutions faculty are in departments or divisions in which they elect the chair, 60% in departments or divisions with chairs appointed by the administration after consultation with faculty, and 15% in departments or divisions which have chairs appointed unilaterally by the administration, then the responses to this question would appear as follows:

	Determination	Joint Action	Consultation	Discussion	None
	Faculty authority and determination	Between faculty and administration	Administration consults with the faculty	Administration explains decisions to faculty	No faculty participation
10: Selection of department chair	25		60		15

Table 3: Distribution of items measuring faculty influence over decision-making

	Determination	Joint action	Consultation	Discussion	None	Weighted average
<i>Faculty status</i>						
Appointments of full-time faculty	18%	55%	24%	3%	1%	2.86
Tenure promotions for faculty	14%	55%	28%	2%	1%	2.79
<i>Academic operation</i>						
Decisions about the content of the curriculum	59%	33%	6%	1%	0%	3.50
Setting degree requirements	50%	39%	9%	2%	0%	3.36
<i>Academic planning and policy</i>						
Types of degrees offered	19%	55%	18%	5%	2%	2.85
Relative sizes of the faculty of various disciplines	6%	27%	38%	21%	8%	2.03
Construction programs for buildings and other facilities	1%	8%	37%	39%	15%	1.42
Setting of the average teaching loads	7%	38%	23%	24%	8%	2.12
<i>Selection of administrators and department chair</i>						
Appointing the academic dean	3%	33%	52%	9%	3%	2.23
Appointing department chairs or heads	17%	43%	33%	5%	2%	2.69
<i>Financial planning and policy</i>						
Setting faculty salary scales	2%	24%	24%	32%	18%	1.60
Decisions about individual faculty salaries	4%	21%	25%	28%	23%	1.55
Short range budgetary planning	3%	16%	33%	32%	16%	1.57
<i>Organization of faculty agencies</i>						
Decisions that establish the authority of faculty in campus governance	15%	50%	20%	11%	4%	2.61
Selecting members for institution-wide committees, senate, and similar agencies	48%	34%	12%	4%	3%	3.20

Table 4: Effects of unionization on faculty influence

	OLS	IV	OLS	IV	IV	IV
Faculty appointments	-0.02 (0.07)	0.06 (0.13)	0.03 (0.07)	0.08 (0.13)	0.06 (0.12)	0.08 (0.12)
Tenure promotions	-0.06 (0.07)	0.11 (0.13)	-0.02 (0.08)	0.10 (0.13)	0.11 (0.11)	0.10 (0.11)
Curriculum	-0.01 (0.06)	0.17 (0.11)	0.05 (0.07)	0.16 (0.11)	0.17 (0.11)	0.16* (0.10)
Degree requirements	-0.05 (0.07)	-0.04 (0.12)	-0.01 (0.07)	-0.08 (0.12)	-0.04 (0.11)	-0.08 (0.11)
Degrees offered	-0.10 (0.09)	0.05 (0.15)	-0.06 (0.09)	0.01 (0.14)	0.05 (0.14)	0.01 (0.12)
Size of faculty in disciplines	-0.06 (0.09)	-0.02 (0.16)	-0.03 (0.10)	0.11 (0.15)	-0.02 (0.12)	0.11 (0.10)
Construction programs	-0.14 (0.08)	-0.15 (0.14)	-0.12 (0.08)	-0.06 (0.13)	-0.15 (0.18)	-0.06 (0.17)
Teaching loads	0.11 (0.12)	0.36* (0.20)	0.12 (0.12)	0.30 (0.19)	0.36* (0.20)	0.30 (0.18)
Appointing deans	-0.03 (0.07)	0.01 (0.12)	-0.05 (0.07)	-0.02 (0.11)	0.01 (0.14)	-0.02 (0.12)
Appointing chairs	0.20** (0.08)	0.42*** (0.15)	0.17* (0.09)	0.46*** (0.15)	0.42** (0.19)	0.46** (0.18)
Faculty salary scales	0.81*** (0.12)	1.17*** (0.19)	0.77*** (0.12)	1.18*** (0.19)	1.17*** (0.23)	1.18*** (0.22)
Individual faculty salaries	0.15 (0.13)	0.43** (0.21)	0.17 (0.13)	0.35* (0.21)	0.43* (0.24)	0.35 (0.22)
Budgetary planning	-0.02 (0.10)	-0.03 (0.18)	-0.06 (0.11)	0.06 (0.18)	-0.03 (0.22)	0.06 (0.22)
Faculty governance	-0.00 (0.09)	0.18 (0.16)	0.03 (0.10)	0.23 (0.15)	0.18 (0.18)	0.23 (0.18)
Institution-wide committees	0.02 (0.08)	0.35** (0.14)	0.05 (0.08)	0.34** (0.14)	0.35** (0.17)	0.34* (0.19)
State-level covariates?	Yes	Yes	Yes	Yes	Yes	Yes
School-level covariates?	No	No	Yes	Yes	No	Yes
Clustered standard errors?	No	No	No	No	Yes	Yes

Note: Cell entries are coefficients, with standard errors in parentheses; first four columns report robust standard errors. N equals 341. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Effects of unionization: Sensitivity to functional form

	State ideology (I) & consolidated board plus			
		Interaction	I ² & interactions	I ² , I ³ & interactions
Faculty appointments	0.06 (0.13)	0.05 (0.13)	0.08 (0.13)	0.08 (0.15)
Tenure promotions	0.11 (0.13)	0.11 (0.14)	0.13 (0.15)	0.11 (0.16)
Curriculum	0.17 (0.11)	0.20* (0.12)	0.19 (0.12)	0.20 (0.13)
Degree requirements	-0.04 (0.12)	-0.04 (0.13)	-0.07 (0.13)	-0.14 (0.14)
Degrees offered	0.05 (0.15)	0.01 (0.16)	0.03 (0.16)	-0.09 (0.16)
Size of faculty in disciplines	-0.02 (0.16)	-0.04 (0.16)	-0.01 (0.17)	-0.06 (0.18)
Construction programs	-0.15 (0.14)	-0.18 (0.15)	-0.14 (0.15)	-0.12 (0.16)
Teaching loads	0.36* (0.20)	0.32 (0.20)	0.28 (0.21)	0.26 (0.22)
Appointing deans	0.01 (0.12)	-0.01 (0.14)	0.05 (0.13)	0.01 (0.13)
Appointing chairs	0.42*** (0.15)	0.40** (0.16)	0.41** (0.16)	0.51*** (0.17)
Faculty salary scales	1.17*** (0.19)	1.15*** (0.19)	1.14*** (0.20)	1.23*** (0.22)
Individual faculty salaries	0.43** (0.21)	0.34 (0.22)	0.44** (0.22)	0.44* (0.24)
Budgetary planning	-0.03 (0.18)	-0.13 (0.19)	-0.02 (0.19)	-0.02 (0.20)
Faculty governance	0.18 (0.16)	0.11 (0.18)	0.24 (0.17)	0.29* (0.17)
Institution-wide committees	0.35** (0.14)	0.34** (0.15)	0.40** (0.15)	0.36** (0.16)
State-level covariates?	Yes	Yes	Yes	Yes
School-level covariates?	No	No	No	No

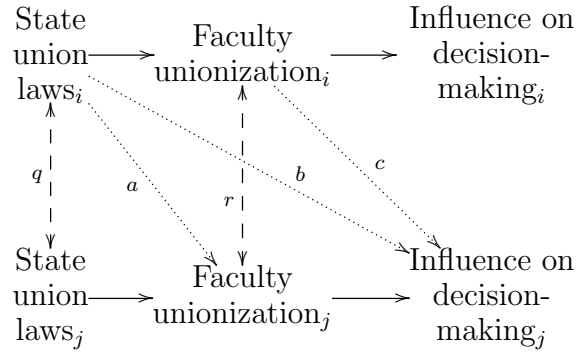
Note: Cell entries are coefficients, with robust standard errors in parentheses. N equals 341. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Effects of unionization: Administrator and faculty responses

	All responses	Administrators		Faculty	
Faculty appointments	0.06 (0.13)	0.11 (0.13)	0.17 (0.13)	0.11 (0.15)	0.10 (0.15)
Tenure promotions	0.11 (0.13)	0.11 (0.13)	0.12 (0.12)	0.20 (0.16)	0.18 (0.16)
Curriculum	0.17 (0.11)	0.10 (0.11)	0.13 (0.11)	0.25* (0.14)	0.21 (0.13)
Degree requirements	-0.04 (0.12)	-0.08 (0.12)	-0.06 (0.12)	0.04 (0.15)	-0.05 (0.14)
Degrees offered	0.05 (0.15)	0.01 (0.16)	0.04 (0.16)	0.13 (0.16)	0.05 (0.15)
Size of faculty in disciplines	-0.02 (0.16)	0.03 (0.17)	0.19 (0.16)	-0.02 (0.20)	0.07 (0.18)
Construction programs	-0.15 (0.14)	-0.15 (0.15)	-0.08 (0.14)	-0.12 (0.16)	-0.07 (0.15)
Teaching loads	0.36* (0.20)	0.34 (0.21)	0.36* (0.20)	0.50** (0.24)	0.33 (0.22)
Appointing deans	0.01 (0.12)	-0.06 (0.13)	-0.04 (0.12)	0.21 (0.15)	0.16 (0.13)
Appointing chairs	0.42*** (0.15)	0.34** (0.16)	0.40** (0.16)	0.61*** (0.19)	0.64*** (0.19)
Faculty salary scales	1.17*** (0.19)	1.06*** (0.20)	1.10*** (0.19)	1.46*** (0.22)	1.39*** (0.22)
Individual faculty salaries	0.43** (0.21)	0.41** (0.21)	0.37* (0.21)	0.60** (0.26)	0.48** (0.24)
Budgetary planning	-0.03 (0.18)	-0.15 (0.19)	-0.05 (0.19)	0.12 (0.20)	0.19 (0.19)
Faculty governance	0.18 (0.16)	0.30* (0.18)	0.36** (0.17)	0.06 (0.19)	0.11 (0.18)
Institution-wide committees	0.35** (0.14)	0.36** (0.15)	0.36** (0.15)	0.34** (0.17)	0.35** (0.17)
State-level covariates?	Yes	Yes	Yes	Yes	Yes
School-level covariates?	No	No	Yes	No	Yes
N	341	256	256	266	266

Note: Cell entries are coefficients, with robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure 1: Possible SUTVA Violations



a - i 's assignment affects j 's treatment

b - i 's assignment affects j 's outcome

c - i 's treatment affects j 's outcome

q - i 's assignment affects j 's assignment (same state)

r - i 's treatment affects j 's treatment (same university system)