Collective Bargaining in American Higher Education

by

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I Introduction

No discussion of governance in higher education would be complete without a consideration of the role of collective bargaining in higher education. Historically, most researchers interested in the subject have directed their attention to the unionization of faculty members. Given several recent National Labor Relations Board staff decisions that leave open the possibility that unionization of faculty in private colleges and universities may increase in the future, we discuss collective bargaining for faculty in the next section.¹

Recently, however, attention has been also directed at the unionization of two other groups in the higher education workforce. Activists on a number of campuses have pressed for academic institutions to pay their low-wage employees a living wage and this has brought attention to the role of staff collective bargaining in academia. In section III, we present the first empirical estimates of the impact of staff bargaining on staff salaries in higher education.

Finally, the number of public universities in which teaching assistants, and in some cases research assistants, have won the right to bargain collectively began to expand rapidly at the turn of the 21st century. A National Labor Relations Board ruling in 2001 that permitted collective bargaining for teaching assistants at New York University, led the university to be the first private university that signed a contract with a union representing teaching assistants in the following year. Building on this ruling, graduate assistant organizing campaigns are underway at a number of prestigious private universities. We address why graduates assistants are increasingly interested in

¹ Courtney Leatherman (2000)
organizing in section IV and present evidence on the effects of graduate student unions on a number of economic variables. Finally, section V presents some brief concluding remarks.

IV. Collective Bargaining by Graduate Assistants

The first graduate assistant union to be recognized as a collective bargaining agent was a union of graduate students at the University of Wisconsin in 1969. As noted in section II, collective bargaining at public higher education institutions is governed by state laws and as state agencies, or state courts, ruled on the applicability of these laws to graduate assistants, collective bargaining for graduate students gradually spread at public higher education institutions. As table 5 indicates, by 1999 teaching assistants at 19 public research and doctoral universities were covered by collective bargaining agreements and, in some cases, these agreements also covered research assistants at the same campuses. Since the start of 1999 13 additional major research and doctoral universities have recognized graduate student bargaining agents, including all the campuses of the University of California.

Teaching assistants at Yale University have been trying to organize and bargain collectively since 1990. The push for collective bargaining for graduate students at private universities got a major boost in February 2001 when the National Labor Relations Board ruled that graduate assistants at NYU had the legal right to form a union.² NYU subsequently agreed to enter into collective bargaining with the union and a contract settlement was reached in February 2002.³ Organization drives have subsequently begun at many other private universities, including Brown, Columbia,

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² Scott Smallwood (2001)
³ Scott Smallwood (2002a)
Cornell, Tufts and Pennsylvania; a ruling by the NRLB that Brown assistants had the right to form a union has been appealed by the university.

The formation of graduate student unions is a bit of an anomaly to economists and collective bargaining scholars. The literature on unions suggests that unions are most likely to arise in situations in which workers have long-term attachment to firms. Graduate students do not have permanent employment relationships with the universities at which they study, so why have they increasingly become interested in unionizing?

The University of Wisconsin was a hotbed of student activism in the late 1960s when the first graduate student union was formed and undoubtedly its formation was heavily influenced by this activism. The late 60s were also a booming time in the academic market for new PhDs, with times to degree averaging 5 to 6 years in many fields and a widespread availability of good academic positions. However, since that time things have changed. As table 6 indicates, across all disciplines, median total years enrolled between the granting of baccalaureate and doctoral degrees increased by 1.5 years between 1970 and 2000. Focusing on the increase in the median degree times across all fields obscures the wide differences in the changes that occurred across fields. In particular, while median time to degree went up by less than two years in virtually all of the science and engineering fields it went up by almost three years in the humanities. Humanities, and to some extent social science, graduate students found themselves spending more hours per week as teaching assistants, and service as a teaching assistant has been shown to slow times to degree.  

In addition the fraction of new PhDs finding employment, let alone employment in tenure track academic jobs, by the time they received their degrees declined

substantially. For example, less than 59% of new PhD in the humanities who received their degrees in 1998, reported having definite commitments of employment or plans for future study at the time they received their PhDs.\textsuperscript{5} In some fields, such as the life sciences, at least one, and often multiple postdoctoral fellow positions, often at relatively low salaries and without benefits, became the rule, rather than the exception, before young scholars has a shot at receiving a tenure-track position.\textsuperscript{6} In sum, lengthening times to degree and smaller and more distant payoffs at the end of the graduate school rainbow made highly educated graduate students a ripe target for unionization efforts.

Times to degree, the nature of support patterns while in graduate school, the relationships of graduate students to faculty, and job opportunities after receipt of the PhD vary widely across fields. Degree times are shortest in the sciences and engineering fields where many graduate students work closely with faculty as research assistants on sponsored research projects, develop research skills from this work, choose related dissertation topics and then have good employment opportunities in the nonacademic as well as academic sectors. In addition, scientists’ external research funding often permits them to supplement the size of the minimum graduate student stipend specified by their universities; they have external resources to pay what is needed to attract first-rate talent. As a result, many graduate students in the physical sciences and engineering are quite happy with their graduate school experiences.

In contrast, in the humanities there is less involvement of faculty and graduate students on joint research, a greater proportion of graduate students are funding via teaching assistantships, writing a dissertation takes considerably longer, and there are

\textsuperscript{5} Alan R. Sanderson et. al. (1999)
\textsuperscript{6} National Research Council, (1998)
only limited nonacademic employment opportunities after receipt of the degree. Faculty members in the humanities only rarely have funds to supplement university teaching or fellowship stipends. Is it any wonder then that the push for graduate student unionization is often led by graduate students in the humanities and that often the unionization effort seeks to limit the bargaining unit to assistants (primarily teaching assistants) who are supported by university rather than also include those supported by external funds?7

Most universities that have been faced by a graduate student unionization campaign have vigorously sought to oppose the formation of unions. Public universities that have had collective bargaining relationships with their faculty for many year (e.g. the UC or SUNY systems) or collective bargaining relationships with their staff (e.g. the University of Illinois at Urbana) and have not seen these relationships lead to the demise of the university still vigorously oppose graduate student organizing campaigns. So too do many private universities, a large number of presidents of major private research universities testified before the National Labor Relations Board, as well as did leaders of higher education organizations such as the Association of American Universities, the American Council on Education, and the Council on Graduate Schools, in opposition to the bid of the NYU graduate student union to be allowed to bargain collectively.8

Why have these universities opposed graduate student unionization? For some it is clearly the principled belief that a system of shared governance in which the parties (students, faculty, administrators and trustees) reach decision through mutual discussions is preferred to a system of conflict. For some it is the worry that graduate student unions will try to get involved in decisions that are more properly left to the faculty and

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7 In both the NYU and Brown organization campaigns the union successfully sought to limit the scope of the bargaining unit in this way.
8 Gordon Lafer (2001)
administration, such as the assignment of specific students to different responsibilities and faculty members. For some, it is the concern that “one size does not fit all” and that graduate assistant contracts will not allow for the wide diversity of individual arrangements that currently exist across departments within each campus. For others it is the fear that graduate student unions will impose financial costs on universities that they do not want to bear and that these costs will force them to make cutbacks in other areas, or to increase tuitions by more than they otherwise would prefer to do.

Some of these fears appear to be unfounded, at least for public universities. Public employees in many states, such as New York, are prohibited from striking. Absent the major weapon that a union has to try to impose its desired contract on management, economists predict that the likely impact of the unions on public employees compensation packages will be small. Certainly the literature discussed in section II suggests that faculty unions’ effects on their members’ salaries and benefits have been small.

To date there have been no studies of the effects of graduate student unions on economic variables but a data exchange conducted by a set of major universities provides some suggestive information. Under the condition that we would not divulge the name of any individual institution, or even the name of the data exchange, and would not present the data for any individual institution, we have been granted access to data on the salaries, compensation and costs of teaching and research assistants at a set of public universities for a number of recent years. We have grouped these universities into 4 groups. Group A consists of 16 institutions that have never had a collective bargaining relationship with graduate assistants. The second and third groups consist of four
institutions that had collective bargaining arrangements with their graduate assistants before 1995 (B) and these four institutions plus two more that first began bargaining with graduate assistants in 1995 or 1996 (B+C). The final group consists of 7 institutions that first began bargaining with their graduate assistants during the 1999 to 2001 period (D). For simplicity, we restrict our attention to teaching assistants in what follows, but the data for research assistants yields very similar results.

Table 7 contains tabulations of the mean values of the averages, across institutions in each group, of a number of economic variables for five academic years, 1996-1997 through 2000-2001. The first panel presents the average stipends that teaching assistants received from the institutions during the academic year. Comparing the institutions where bargaining never occurred (A) to those whose graduate students were covered by collective bargaining agreements by the first year in our sample (B and B+C), we observe that the institutions without collective bargaining had slightly lower average stipends in 1996-97 but by 2001-2001, their academic year stipends averaged the highest among the three groups. Whether this reflects the inability of graduate student unions to win large salary increases for their members, differences in the tightness of the state budgets in the states in which institutions in which graduate students were organized are located and the tightness of budgets in states in which institutions with graduate students who are not organized are located, or a concerted effort by nonunion schools to raise stipends to try to encourage graduate students not to think about organizing, can not be determined from these data. What is of interest though is that the highest average stipends in each year occurred at the institutions at which graduate students organized for
bargaining only during the latter years of the period (D). Many of these institutions are located in relatively high cost of living areas, a point that we return to below.

In the second panel of data, we deduct from the stipend paid at each institution, the tuition and fees that teaching assistants who were in-state residents had to pay to the university.⁹ This is not a perfect measure of the teaching assistants’ compensation because the value to the graduate students of any university provided health insurance benefits would not be included in these numbers and health insurance coverage has often been an issue that precipitated graduate student organizing efforts. A search of the websites of all the institutions in our sample suggested that by 2001-2002 (which is after our sample period) all but two of these institutions (one from group A and one from group B) provided at least partial funding for graduate student health insurance. Nonetheless, focusing on this compensation variable provides some evidence on how graduate student unions influence tuition remission decisions.

In 1996-97, average teaching assistant compensation was higher at the nonunion institutions (A) than it was at the unionized institutions (B and B+C), which suggests, given the numbers in the previous panel, that required graduate assistant tuition payments were higher at the unionized institutions than they were at the nonunion ones. By 2000-2001, the differential had narrowed somewhat, suggesting that during the period, graduate assistants were able to win larger reductions in required tuition and fee payments at schools in which graduate students bargained collectively. Again the average

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⁹ The rules governing whether graduate assistants who were residents of other states prior to entering graduate school qualify for in-state student tuition, both while they are assistants and during other points in their graduate career vary widely across institutions. We leave consideration of union effects on these rules for another time.
compensation of graduate assistants at the group D schools, the ones that organized near the end of the period, was the highest.

In the third panel, we ask what the costs of graduate assistants are to the institutions. These costs include the stipend and the portion of the students’ tuition and fees that are not collected from assistants. Some of these costs are real costs, for example, the fees that graduate students would otherwise have to pay for mandatory student health insurance coverage. Some are opportunity costs, the foregone tuition revenue that the university does not collect. Omitted from these costs are any university subsidies for benefits, such as health insurance, that the university makes for all graduate students, regardless of whether they are graduate assistants.

Viewed from this perspective, the average teaching assistant costs for the nonunion schools (group A) rose relative to the average teaching assistant costs for the schools at which graduate students were organized during the entire period (groups B and B+C), as well as relative to the average teaching assistant costs at institutions at which graduate students were organized only at the end of the period (group D). These comparisons do not provide support for the view that graduate student unions increased universities academic year costs for graduate students during the period, although we caution that they may be driven by differential rates of tuition increases at the different sets of institutions during the period.10

The next panel provides information on the average stipends paid to graduate students for teaching assistant responsibilities during the summer. The average summer salaries for teaching assistants at the nonunion schools started a few hundred dollars above those at the schools at which graduate students were unionized throughout the

10 We will investigate this point in a latter draft.
period, but wound up substantially below them by the end of the period. Hence one economic effect of graduate student unions may be to win better stipends for summer work.

Interestingly the stipends for summer teaching were highest throughout the period at the institutions at which graduate students became unionized only at the end of the period. As noted above, many of the universities in this category are located in high cost of living areas (see table 5) and a reasonable is that it is important to control for cost of living differences across areas before drawing any definitive conclusions from the comparisons presented so far.

There are several ways one might attempt to control for cost of living differences. One can use variations in the cost of rental housing across areas to proxy for differences in the cost of living; such data can be obtained from the Census of Population every ten years. One can use estimates of the costs of living in different areas prepared by commercial firms that advise corporations about how much to alter their executives’ compensation when one relocates them across areas.11 Or, one can simply say that what is relevant is how much teaching assistants are making relative to young tenure track faculty, namely full-time assistant professors.12 Using all three measures yield similar findings and we report only the comparisons that adjust for assistant professor salaries here.

The final panel of table 7 presents the latter set of comparisons. We find little support from these comparisons for the proposition that graduate student unions increase the salaries of teaching assistants relative to the salaries of assistant professors. Initially,

11 See for example, the cost of living comparisons for 309 U.S job markets that are provided on the World Wide Web at http://mazerecruiters.com/job.htm by Maze Recruiters and Associates.
12 These data are available from the American Association of University Professors and from WebCapsar.
the ratio of average teaching assistant salary to average assistant professor salary is
lowest at the institutions that never had collective bargaining for graduate assistants.
However, over the period, it rises relative to the comparable ratios at universities at which
graduate students bargained throughout the period. Similarly, it was highest throughout
the period at the institutions that began bargaining with their graduate assistants only
during the last sample year. That the ratio of graduate assistant to assistant professor
salaries does not vary that much over time at these public institutions should not be too
surprising – several of the graduate student contracts specify that the salary increase that
their members are to receive will be equal in percentage terms to increases granted to the
faculty.13

Taken together the findings above suggest that the impact of graduate assistant
unions on economic outcomes does not appear to be very large and that concern about the
issue of graduate student unions may be overstated14. Indeed attracting and retaining top
graduate students is an important objective of faculty at all research universities and so
the faculty is often supportive of increased stipends for graduate fellows and assistants.
Concern about graduate assistant unions, for the most part, is an administrative not a
faculty concern.

13 For example, the 1999-2002 contract between the Regents of the University of Michigan and the
Michigan Graduate Employees Organization (Article X) specifies the minimum percentage salary increases
that graduate assistants will receive each year under the contract and then adds that if the faculty (who are
not covered by a collective bargaining agreement) were to receive a greater average percentage increase in
any year, then the graduate students would receive the same percentage increase. (http://www.umich.edu/~urel/gsi-sa/contract/99-02-toc.html). The recently signed 2002-2005 contract
similarly ties graduate assistant to faculty salary increases, but the assistants are to receive a .5% smaller
increase in the first year of the contract (Smallwood, 2002b)
14 An important concern of graduate students in many organizing efforts has been workload issues. Our
analyses of the survey data found no evidence that graduate student unions had decreased their members’
workloads relative to those of graduate assistants at institutions without unions.
Of course if the cost of graduate students increases too much, it is reasonable to expect that universities will seek alternative ways of meeting their staffing needs for undergraduate courses. If graduate student unions, or the bidding up of teaching assistant stipends in an effort to attract the best and brightest graduate students, lead to substantially increased costs for graduate students, it is reasonable to expect that ultimately universities will shrink the size of their PhD programs and use make more use of lecturers and other non tenure track faculty to staff undergraduate courses. Another source of substitute labor is undergraduate teaching assistants. However, as the vote in favor of establishing an union for undergraduate resident hall assistants at the University of Massachusetts in March 2002 should suggest, once the line between financial aid and employment becomes blurred, academic institutions may well be subject to more organizing campaigns of undergraduate students.\(^{15}\) Institutions that offer undergraduate teaching assistantships for academic credit, rather than for compensation, might skirt this issue, but many faculty members challenge the legitimacy of giving academic credit for work as a teaching assistant.

Similarly, if graduate student unions bid up the costs of research assistants and universities require faculty with external sources of funding to pay higher stipend levels and higher levels of tuition for graduate research assistants, faculty members may decide that they are better off employing more post doctoral fellows and permanent lab staff and fewer graduate research assistants. So one impact of graduate student unions may be smaller sized PhD programs.

\(^{15}\) Resident Assistants at UMass Vote to Unionize (2002). The Massachusetts Labor Relations Board had ruled earlier in the year that resident assistants had the right to join a union. This ruling applies only to public higher education institutions in the state.
One respected former university president is genuinely concerned that there may be a conflict between collegiality at universities and collective bargaining for graduate students\textsuperscript{16}. In addition to worrying about graduate student unions getting involved with issues of class size and the assignment of teaching assistants, he worries that graduate student unions may lead to some breakdowns in the faculty/student mentorship relationship and ultimately a reduction in graduate program quality.

If this were true, one might expect to see things such as time to degree and completion rates for PhD students increasing at universities that have TA unions and, as a result, possibly a decline in the quality of the applicants who apply to such programs. In contrast, if graduate student unions are seen as improving the atmosphere for students attending graduate school, graduate student unions might be expected to lead to an improvement of the quality of the applicants to such programs and a general increase in program quality. To date, no tests of these hypotheses have been conducted.

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\textbf{V. Concluding Remarks}

The role of collective bargaining in higher education is likely to grow in the future. Most of the growth of higher education is occurring in the public sector and it is in the public sector that both faculty and staff unions are the strongest (in terms of shares of individuals who are members) and where there are the fewest legal obstacles to the continued growth of collective bargaining. The decline of faculty salaries in the public sector relative to faculty salaries in the private sector may also provide further impetus

\textsuperscript{16} James J. Duderstadt (2000), pp. 94-95. Jeffrey Iseminger (1999) reports, however, that a survey of nearly 300 faculty at five universities that had graduate student unions for at least four years found that over 90\% of the respondents felt that the unions had not inhibited faculty members’ ability to advise and instruct graduate students.
for future faculty organization issues, although the decline in public salaries has often been large in states in which faculty unions already exist. Recent NRLB staff decisions seem to leave open the possibility that the Yeshiva Decision may not apply to all private sector faculty members and thus, that possibilities may also exist for the growth of faculty unions among faculty in private colleges and universities.

While extensive research has been conducted on the impact of faculty unions on salaries, benefits, and productivity, very little is actually known about how faculty governance is influenced by the presence of faculty unions. One hypothesis, which has yet to be tested, is that by providing a means by which faculty may advocate for things (like salaries) that are explicitly important to them, faculty unionization allows faculty involved in faculty governance to evaluate economic issues facing their institution more broadly from the perspective of the institution as a whole.

The growing living wage movement on campuses, which has its roots in the notion that academic institutions have an obligation to treat their workers fairly is also likely to provide a stimulus for efforts to increase union strength among staff at these institutions. Certainly the evidence that staff unions, unlike their faculty counterparts, seem able to improve their economic positions through collective bargaining should stimulate future growth in this area.

Finally, it will likely prove difficult for most major universities to resist that tide of graduate assistant organizing activity that is sweeping the nation. These unions provide a structure under which activist students can develop leadership skills and the courts appear to be increasingly ruling in unions’ favor. Our preliminary evidence that suggests that graduate student unions do not have a large impact on the economic well-being of
their members is unlikely to sway die hard adherents from the notion that graduate student unions will help to alter the imbalance between graduate students and their mentors that is often alleged to exist.
References


James J. Heckman, “Sample Selection Bias as a Specification Error”,

*Econometrica* 47 (January 1979): 153-161

Arthur Hosios and Aloysius Siow, “Unions Without Rents: The Curious Economics of Faculty Unions” (mimeo, University of Toronto, November 2001)


Gordon Lafer, “Graduate Students Fight the Corporate University”, *Dissent* 48 (Fall 2001)


Table 5

Universities That Have Recognized Teaching Assistant Unions

<table>
<thead>
<tr>
<th>Public Universities (pre1999)</th>
<th>Public Universities (1999 and after)</th>
<th>Private Universities</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUNY</td>
<td>Michigan State</td>
<td>New York University (2001)</td>
</tr>
<tr>
<td>Florida A&amp;M</td>
<td>Oregon State</td>
<td></td>
</tr>
<tr>
<td>Rutgers (New Brunswick)</td>
<td>UC Berkeley</td>
<td></td>
</tr>
<tr>
<td>SUNY Albany</td>
<td>UC Davis</td>
<td></td>
</tr>
<tr>
<td>SUNY Binghamton</td>
<td>UC Irvine</td>
<td></td>
</tr>
<tr>
<td>SUNY Buffalo</td>
<td>UCLA</td>
<td></td>
</tr>
<tr>
<td>SUNY Stony Brook</td>
<td>UC Riverside</td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>UC San Diego</td>
<td></td>
</tr>
<tr>
<td>Iowa</td>
<td>UC Santa Barbara</td>
<td></td>
</tr>
<tr>
<td>Kansas</td>
<td>UC Santa Cruz</td>
<td></td>
</tr>
<tr>
<td>Massachusetts (Amherst)</td>
<td>Massachusetts (Boston)</td>
<td></td>
</tr>
<tr>
<td>Massachusetts (Lowell)</td>
<td>Temple University</td>
<td></td>
</tr>
<tr>
<td>Michigan</td>
<td>Washington (Seattle)</td>
<td></td>
</tr>
<tr>
<td>Oregon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Florida</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin (Madison)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin (Milwaukee)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wayne State</td>
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</tr>
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</table>

Table 6
Median Total Years Enrolled Between Baccalaureate and Doctorate Degrees

<table>
<thead>
<tr>
<th>Academic Discipline</th>
<th>1970</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>6.0</td>
<td>7.5</td>
</tr>
<tr>
<td>Engineering</td>
<td>5.2</td>
<td>6.8</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>5.3</td>
<td>6.5</td>
</tr>
<tr>
<td>Geological Sciences</td>
<td>5.8</td>
<td>7.8</td>
</tr>
<tr>
<td>Math and Comp. Sci.</td>
<td>5.2</td>
<td>7.1</td>
</tr>
<tr>
<td>Life Sciences</td>
<td>5.3</td>
<td>7.0</td>
</tr>
<tr>
<td>Psychology</td>
<td>5.3</td>
<td>7.2</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>5.8</td>
<td>8.1</td>
</tr>
<tr>
<td>Humanities</td>
<td>6.0</td>
<td>8.8</td>
</tr>
<tr>
<td>Education</td>
<td>6.3</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Authors’ calculations from data found in WebCaspar (http://caspar.nsf.gov)
### Table 7

**Comparison of TA Salaries, Costs and Compensation at Public Research Universities With and Without TA Unions**<sup>a</sup>

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Average TA Academic Year Salary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A (16)</td>
<td>10,370</td>
<td>10,617</td>
<td>10,990</td>
<td>11,378</td>
<td>11,817</td>
</tr>
<tr>
<td>B (4)</td>
<td>10,401</td>
<td>10,670</td>
<td>10,537</td>
<td>10,724</td>
<td>11,223</td>
</tr>
<tr>
<td>B+C (6)</td>
<td>10,561</td>
<td>10,891</td>
<td>10,950</td>
<td>11,352</td>
<td>11,686</td>
</tr>
<tr>
<td>D (7)</td>
<td>12,347</td>
<td>12,616</td>
<td>12,833</td>
<td>13,161</td>
<td>13,630</td>
</tr>
<tr>
<td>Average TA Academic Year Compensation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>9,739</td>
<td>9,931</td>
<td>10,250</td>
<td>10,688</td>
<td>11,150</td>
</tr>
<tr>
<td>B</td>
<td>8,953</td>
<td>9,107</td>
<td>10,009</td>
<td>10,141</td>
<td>10,649</td>
</tr>
<tr>
<td>B+C</td>
<td>8,999</td>
<td>9,269</td>
<td>9,892</td>
<td>10,271</td>
<td>10,653</td>
</tr>
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<td>D</td>
<td>10,679</td>
<td>10,964</td>
<td>11,429</td>
<td>11,483</td>
<td>12,751</td>
</tr>
<tr>
<td>Average TA Academic Year Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>14,009</td>
<td>14,492</td>
<td>15,079</td>
<td>15,612</td>
<td>17,350</td>
</tr>
<tr>
<td>B</td>
<td>14,415</td>
<td>14,855</td>
<td>16,019</td>
<td>17,756</td>
<td>17,318</td>
</tr>
<tr>
<td>B+C</td>
<td>13,354</td>
<td>14,020</td>
<td>14,925</td>
<td>16,001</td>
<td>16,132</td>
</tr>
<tr>
<td>D</td>
<td>15,345</td>
<td>15,676</td>
<td>18,375</td>
<td>16,256</td>
<td>18,627</td>
</tr>
<tr>
<td>Average TA Summer Salary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>2904</td>
<td>2970</td>
<td>4,012</td>
<td>4347</td>
<td>3625</td>
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<tr>
<td>B</td>
<td>2608</td>
<td>2695</td>
<td>4,608</td>
<td>5059</td>
<td>4865</td>
</tr>
<tr>
<td>B+C</td>
<td>2683</td>
<td>2767</td>
<td>4,319</td>
<td>4624</td>
<td>4576</td>
</tr>
<tr>
<td>D</td>
<td>4182</td>
<td>4752</td>
<td>4,607</td>
<td>4788</td>
<td>4785</td>
</tr>
<tr>
<td>Average TA Salary/Average Asst. Prof. Sal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.19</td>
<td>0.23</td>
<td>0.22</td>
<td>0.22</td>
<td>0.22</td>
</tr>
<tr>
<td>B</td>
<td>0.20</td>
<td>0.22</td>
<td>0.21</td>
<td>0.21</td>
<td>0.20</td>
</tr>
<tr>
<td>B+C</td>
<td>0.20</td>
<td>0.23</td>
<td>0.23</td>
<td>0.22</td>
<td>0.22</td>
</tr>
<tr>
<td>D</td>
<td>0.21</td>
<td>0.26</td>
<td>0.24</td>
<td>0.24</td>
<td>0.24</td>
</tr>
</tbody>
</table>

<sup>a</sup>Authors’ calculations from confidential data provided to the authors from a set of major research universities that participate in a data exchange program

Where

- A – Public institutions without TA unions
- B – Public institutions with TA unions prior to 1995
- B+C - Group B plus public institutions with TA unions starting in 1995 or 1996
- D – Public institutions with TA unions starting during the 1999 to 2001 period

Compensation – Salary less the portion of tuition and fees that TAs must pay
Cost – Salary plus tuition and fees that university foregoes

The value of health insurance benefits provided to TAs is excluded from TA salaries. The share of health insurance costs that is paid for by a fee charged to students that is waived for TAs is included in TA costs.