

Faculty Privilege:
Tenure and Faculty Authority in American Higher Education in the 20th Century

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ABSTRACT

Faculty at American colleges and universities possess an exceptional, arguably unique, combination of job security and decision authority. In addition to the protections of academic tenure, “regular” faculty at most higher education institutions exercise significant authority over important organizational policies and decisions, including product design (curriculum) and personnel matters (appointments, promotions, and dismissals). Why some faculty — and only some faculty — should enjoy rights, privileges, and protections available to virtually no other class of employees has never been adequately explained, however. This paper identifies a source of “hold-up” peculiar to academic employment associated with the joint research and non-research responsibilities of “regular” faculty and the way the higher education market values the “academic capital” of scholars. Combining surveys of governance practices with institution-level data on faculty publication rates over the periods 1900-1940 and 1975-2014, the paper presents evidence of an association between research and faculty authority over personnel decisions consistent with (though not dispositive of) the commitment function of faculty rights and privileges posited here.

JEL Codes: I23, J41, N3, M5

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1. Introduction

Faculty at American colleges and universities possess an exceptional, arguably unique, combination of job security and decision authority. In addition to the employment protections of academic tenure, “regular” faculty at most higher education institutions exercise significant authority over important organizational policies and decisions, including product design (curriculum) and, perhaps most significantly, personnel matters: appointments, promotions, and dismissals. Although employees in a handful of other settings enjoy comparable job protections — primarily public sector employees such as federal judges, public school teachers, and other civil servants — in none of these do current employees get to choose their colleagues democratically.¹

Critics have long faulted tenure and faculty governance for contributing to all manner of dysfunction and inefficiency in higher education. Perhaps most conspicuous from an economic perspective is tenure’s degradation of incentives. As Brogaard, Engelberg, and Van Wesep recently put it, “the incentives provided by the threat of termination are perhaps the starkest incentives faced by most employees, and tenure removes those incentives” (2018: 179-80). Tenure also impedes progress in instruction and research by hindering the replacement of faculty whose knowledge or specialty has become obsolete. Defects attributed to faculty governance include slow, cumbersome, and inefficient decision-

¹ Instances of federal judges allegedly timing their retirements to influence the selection of their successors has been criticized as unethical (see, e.g., Lin and Lat, 2021; Raymond, 2022). Law firms have democratic processes for selection and retention of attorneys that resemble in some respects those of academic institutions, but law partners are owners rather than employees of their firms, among other differences (*cf.*, Gutkin, 2022). Higher education systems in other countries also typically feature some form of academic tenure with varying degrees of faculty authority. The U.S. differs from most other countries, however, in the number and prominence of private postsecondary institutions (among other ways). For a recent discussion and empirical analysis of the governance of Italian universities, see Degli Antoni et al. (2021).

making; policy incoherence; capture by special, entrenched, or ideological interests; and lack of accountability. In Thomas Sowell’s assessment, tenure and faculty governance rank “[a]mong the leading institutional liabilities of American colleges and universities”: “In virtually no other institution anywhere is there such a blank check for irresponsibility” (1993: 294-5). Frustration with the costs and content of higher education has elicited proposals to weaken or eliminate tenure at public universities in several state legislatures (Surovell, 2023; Butcher, 2023).

Economists have generally been skeptical of the traditional defense of tenure and faculty governance as necessary for the protection of academic freedom and have offered, instead, several incentive- and risk-based explanations for the privileges accompanying a professorial appointment. Risk and incentive problems are far from peculiar to academic employment, however. There exists, after all, a large personnel economics literature — and larger still principal-agent literature — devoted to risk sharing and incentive alignment in nonacademic employment where the legal default nevertheless remains employment at will. Moreover, academic activities appear especially devoid of the types of relationship-specific investments that motivate the adoption of protective governance arrangements in other settings. For the most part, neither the courses faculty teach nor the research they conduct is specific to any particular institution. Critically missing from the literature is an explanation for why the reputational forces and standard contracting practices relied on for the vast majority of private sector employment relationships are inadequate to mitigate whatever incentive or hold-up problems exist in academia.

This paper makes three main contributions. First, it identifies a source of hold-up in academic employment that arises from the interplay of the market for “academic capital” — the knowledge and skills that enhance a scholar’s productivity — and the combined research and non-research responsibilities of regular academic appointments, *even if* all institutions value individual scholars’ activities identically.² Like their nonacademic counterparts, educational employers and employees have an interest in bargains that

² I use the term “hold up” here in the original sense associated with the transaction cost economics literature (as introduced by Goldberg, 1976) as opposed to its hijacked connotation (originating with Grossman and Hart, 1986, and exemplified in labor economics by Malcomson, 1997, and Acemoglu and Shimer, 1999).

efficiently allocate resources and effort. Thus, as long as the value an institution places on a scholar's time in non-research activities (teaching, administration, clinical work, *et cetera*) exceeds the value of the research time forgone, an administrator's request to perform (extra) non-research activities in exchange for salary (or other benefits) has the potential to leave both the institution and individual better off. But because a scholar's value in the academic market depends on his or her cumulative scholarly output and capacity for future contributions, interruptions in research effort today stand to reduce a scholar's earnings potential over the rest of his or her career, thereby introducing a sequential dimension — and thus renegeing hazard — to academic bargains. On one side, scholars will be reluctant to forfeit their “academic capital” in reliance on administrator promises to maintain long-term compensation and promotion prospects. On the other, administrators will be wary of advancing faculty the present value of their reduced future market opportunities lest the recipients, having pocketed the advance, shirk service and teaching obligations and pursue outside options.

Second, the paper seeks to shift attention from tenure to authority over personnel decisions as the critical and distinctive feature of academic employment. Tenure, in its common understanding of permanent or lifetime employment,³ protects academic bargains from one manifestation of opportunism: administrator termination of employees as a means to evade paying promised future compensation. But an income guarantee that is not contingent on continued service — a sinecure in effect — simply shifts the locus of hold up from administrators to faculty, freeing the latter to renege on service commitments without financial repercussion. The challenge of academic governance is in settling on the parameters of satisfactory performance and on procedures for their evaluation in which both sides have confidence. Although the notion of academic tenure has a long history, tenure systems that left the definition and determination of adequate performance, including adequate cause for termination, exclusively to governing boards and their

³ “In practical terms, tenure is merely an extremely robust form of job protection” (Gutkin, 2022). Most economic analyses of tenure make no or only passing reference to the possibility of termination. McPherson and Winston (1983) and McPherson and Shapiro (1993) are exceptions.

agents were barely distinguishable from at-will employment. It was not until faculty acquired meaningful authority over personnel decisions that tenure took on its contemporary significance.

Finally, the paper documents the association — over time, among institutions, and among faculty within institutions — between the inclusion of scholarship as a faculty responsibility and the rights and privileges accompanying “regular” academic appointments. Histories of American higher education and surveys conducted by the American Association of University Professors (AAUP) show that authority over personnel decisions, including termination, remained mostly the province of boards and college presidents well into the first half of 20th century. Only when and where research became a sufficiently important component of faculty responsibilities did the commitment benefits of endowing faculty with significant authority over personnel decisions overcome its drawbacks and the resistance of university boards and presidents.

The next section provides a broad overview of existing explanations for tenure and their limitations. Section 3 provides a heuristic model illustrating the nature of the hold-up problem in academic employment relationships. In section 4, I describe the historical emergence and diffusion of tenure and faculty governance, and in section 5, I examine the relationship between faculty authority over personnel decisions and research using responses to AAUP surveys conducted in or around 1920, 1940, 1970, and 2001 and institution-level data on publications per faculty member over the periods 1900-1940 and 1975-2014. Conclusions and observations follow.

2. The Economic Logic of Faculty Privilege

The prominent role of economists and the American Economic Association in controversies involving academic freedom entering the 20th century notwithstanding, contemporary economists are mostly unconvinced that academic freedom considerations motivate academic tenure. Henry Hansmann summarizes both the traditional rationale and the skepticism with which it is regarded by many economists (2012: 177; internal citations omitted):

The conventional argument for tenure in higher education is that it provides the protection needed for faculty members to address controversial topics in both teaching and research. As others have pointed out, however, this is not a particularly persuasive justification. Lifetime tenure is neither necessary nor sufficient to protect intellectual freedom in colleges and universities, including in particular the freedom to express socially or politically unpopular views.

Critics note, for example, the absence of comparable protections for others engaged in controversial activities or expression. Thomas Sowell (less skeptic than detractor) contrasts the pressures to abandon controversial topics in universities with the experience of think tanks “which have no tenure but which have produced some of the most controversial writings of our times, including fundamental challenges to the orthodoxy pervading academic social science departments” (1993: 274).⁴ Nor have recent, highly-publicized “cancellations” of journalists and opinion writers for expressing unpopular views produced a groundswell of calls for a journalistic analog to academic tenure.

Modern economic analyses have mainly emphasized tenure’s incentive implications and can be broadly divided into two strains.⁵ The first emphasizes tenure’s effects on the incentives of individual faculty to exert effort or invest in often highly specialized research with uncertain payoffs. Examples include McPherson and Whinston (1983), Ito and Kahn (1986), and more recently, MacLeod and Urquiola (2021). In the second strain, tenure is ancillary to the role of faculty as institutional decision makers. Institutions delegate decision authority to faculty either because only faculty possess the knowledge and expertise necessary to evaluate increasingly specialized teaching and research, or because the absence of owners or other parties with long-term institutional interests leaves them the least ill-suited to the task. Tenure, it is argued, promotes more efficient exercise of that authority. The best-known example is Carmichael’s (1988) argument that, without the security of tenure, professors would be reluctant to hire and

⁴ Among others expressing such skepticism are Jason Brennan and Phillip Magness, who call the academic freedom justification for tenure “moral grandstanding” (Brennan and Magness, 2019: 142); and Roger Meiners, who dismisses as “Balderdash” the “common justification for tenure” that “it permits faculty members to speak the truth (as they see it) without fear of retribution by intolerant administrators, board members, or legislators irritated with the statements of outspoken professors” (2019: 121-2). See also the blog posts on tenure by Gary Becker (2006a,b) and Richard Posner (2006a,b).

⁵ Brown (1997) and Meiners (2019) provide overviews of the development of tenure along with assessments of existing economic rationales. Other summaries and overviews of the economics literature on tenure include McPherson and Shapiro (1999); McPherson and Winston (1983), and Siow (1998). Briefer but still useful summaries can also be found Brogaard et. (2018) and MacLeod and Urquiola (2021).

promote the best job candidates lest they be replaced by their new superior colleagues (see also Dnes and Garoupa, 2005). Another is Brown's (1997) contention that, by lengthening faculty time horizons and increasing their stake in the success of an institution, tenure provides faculty with both an incentive to monitor and the job security to criticize administrators.

The incentive issues associated with tenure in the economic literature are, for the most part, intuitively plausible. What the literature fails to establish is that the existence or severity of the incentive problems distinguish academic from other employment. Employment in higher education is not obviously riskier (or faculty systematically more risk averse) nor are the incentive problems obviously more acute than in other sectors of the economy. Indeed, for each incentive problem associated with academic employment an analog exists in the broader principal-agent literature. Motivating innovation, for instance, is hardly a problem limited to higher education (see, *e.g.*, Levin, 2003; Lerner and Wolf, 2007; Manso, 2011). Yet the solutions proposed or derived to motivate innovation outside of academic settings rarely if ever include tenure.⁶ To take one recent example, while discussing ways in which agency theory helps to understand tenure, MacLeod and Urquiola observe that academic research sometimes requires years of work “to make one important discovery [what] MacLeod (2007) calls ... an *innovative commodity*” (2021: 202; emphasis in original). “In such cases,” they continue, “optimal compensation can feature delayed rewards and bonuses..., which tenure helps introduce” (*id.*). But tenure is notably absent, and apparently unnecessary, in commercial settings that MacLeod (2007) uses to illustrate such innovative commodities: “research provided by a scientist or the sale of large, complex goods, such as military weapons systems or commercial real estate” (624).

Similarly, the problem of decision maker reluctance to hire high-quality employees is not exclusive to academia. A general problem in hierarchical organizations, according to Friebel and Raith, is “[m]anagers who fear being replaced by their subordinates [and therefore] have an incentive to recruit and

⁶ Manso (2011: 1849) does allude to “research departments in business ... organizations [that] often grant tenure to their researchers” but does not provide evidence or support for the practice, and I am unaware of any business organizations that do so.

develop weaker but less dangerous subordinates” (2004: 239). But, unlike academia where “lifetime employment may be optimal,” they note, “employment guarantees are rarely offered in firms that have to survive in a competitive environment” (*id.*, 237). As Brown framed the criticism, despite “[s]imilar problems ... in hiring specialists in non-academic labor markets[, ...] we do not observe similar tenure rules in these professions. So while tenure may help to alleviate the incentive problems pointed out by Carmichael, it cannot provide the overriding reason for tenure” (1997: 447). Brown’s challenge to Carmichael’s argument, however, can also be leveled Brown’s administrator-monitoring rationale: Lack of ownership is a feature of nonprofits generally. But nonprofit boards, as a rule, do not delegate collective authority over employment decisions to (non-managerial) employees or grant their employees job security analogous to tenure.⁷

Finally, it is difficult to explain why reliance on recourse to the labor market to discipline behavior by employers and employees generally is inadequate for academic employment in light of the large number of institutions and paucity of relationship-specific investments in higher education. Table 1 shows the number of four-year degree-granting public and nonprofit postsecondary institutions in the United States from 1900 to 2010 (at ten-year intervals plus 2014-15). As seen in the table, the higher education market in the United States has consisted of large numbers of institutions throughout its modern history and has experienced significant entry over time.⁸ Impediments to labor mobility exist in academia as in every occupation. But a case that mobility impediments are much greater in academia is hard to sustain given the lack of institution-specific investments that motivate the adoption of specialized governance structures in other settings. Although academic research has become increasingly specialized, it is rarely specific to a

⁷ Brown’s position that faculty best represent long-term institutional interests will likely also strike many with experience in higher education as, at a minimum, unproven.

⁸ The net increase in institutions understates entry because of closures and mergers, also indicators of a dynamic market. The National Center for Education Statistics reports that 544 4-year degree nonprofit institutions (plus eight public institutions) closed between 1969 and 2019. (Table 317.50, Digest of Education Statistics, 2020). Historical accounts describe an industry characterized by experimentation and dynamism (see Veysey, 1965: 330; John R. Thelin, 2004: 110–13). Bennett (2014: 513-17) characterizes 19th-century American higher education as one of ease of entry, proliferation of new institutions, high level of experimentation, significant failure rate, and overall competitiveness.

Table 1. Public and Nonprofit Postsecondary Institutions, 1900–2015

Year	Public	Private	Commissioner of Education Report Total	NCES Total ^a	Governance Sample Institutions ^h
1899-1900	89	520	609^b	977 ^c	733
1909-10	89	513	602^d	951 ^c	824
1919-20	149	567	716^e	989	873
1929–30	251	690	941^f	1,132	932
1939–40	306	874	1180^g	1,252	965
1949–50	344	983		1,327	1014
1959–60	367	1,055		1,422	1071
1969–70	426	1,213		1,639	1128
1979–80	549	1,376		1,925	1139
1989–90	595	1,479		2,074	1141
1999–2000	614	1,531		2,145	1141
2009–10	672	1,539		2,211	1141
2014–15	701	1,584		2,285	1141

Sources and notes:

^a National Center for Education Statistics (Snyder 1993: Table 26); and *Digest of Education Statistics 2019* (Table 317.10). NCES publications did not report public and private figures separately before 1949-50. Data for years before 1974–75 include main campuses only. Data for later years include both main and branch campuses. Inclusion of branch campuses increased the number of public institutions by 85 and private institutions by 9 in 1979–80.

^b Figures are for 1900-01, *Report of the Commissioner of Education, 1900-1901*, p. 1611; Table 29, pp. 1652-1671; Tables 32, 34 (colleges for women; pp. 1707, 1710-1714); Tables 36 (schools of technology, pp. 1720-1721)

^c Includes unknown number of 2-year colleges.

^d Source: Report of the Commissioner of Education, 1911, vol. II, p.843.

^e Source: Biennial Survey of Education, 1920-22. Chapter IV, p. 295.

^f Includes 124 public and 6 private degree-granting teachers colleges. Source: Biennial Survey of Education, 1930-1932, Table A. p. 6.

^g Includes 165 public and 21 private degree-granting teachers colleges. Sources: Biennial Survey of Education 1938-1940; 1940-1942 Vol. 2, Chapter IV, Table I., p. 2.

^h Pre-1940 totals include some junior colleges, normal schools, and other institutions that would later become, but were not yet, four-year degree granting colleges.

particular institution.⁹ Novel scientific discoveries, theoretical advances, musical compositions, and so forth, are unlikely to be significantly more highly valued at one institution than another. Research that addresses a particular local issue (for example, the state of the local economy) and scientific projects that require expensive equipment, laboratories, or personnel that cannot be easily relocated or replicated elsewhere except at large cost might constitute exceptions. But such exceptions do not clearly differentiate academic from commercial activities and organizations.¹⁰ The vast majority of us could teach the same courses and do the same research at pretty much any of the thousands of colleges and universities in the United States. In Siow's assessment, it is the *lack* of significant institution-specific investments that distinguishes academic employment (1998: 153, 162). "The problems of specialization, obsolescence, and asymmetric information are not unique to academia," he concludes, yet in no other industry do firms adopt to its "distinctive organizational features" (*id.*, 170).

3. The Stakes Are Not So Small

To highlight that the source of hold-up in the depiction of academic employment that follows does not lie in any specificity in a scholar's research or in other impediments to labor mobility, I assume that all institutions value the services and academic capital of a given professor, i , identically, that the market for faculty is competitive, and that relocation between universities is costless.¹¹ During any given period, t , faculty divide their available time, T , between scholarship, s_t , and non-research activities, τ_t , so that $T = s_t + \tau_t$. (Non-research activities might include teaching, various forms of service such as committee or

⁹ McPherson and Winston (1983), for example, identify the specialized nature of academic research as motivating the need for tenure as commitment device. Elaborating on McPherson and Winston, Siow argues that a university would not be willing to pay faculty upfront to invest in "specialization [that] is valuable to the industry" because "the individual can leave the employer [i.e., university] after the payment" (1998: 155). Given that such disciplinary specialization is not specialized to a particular institution, however, there is no reason why an employing university would have to pay to an individual to undertake the investment in the first place.

¹⁰ Specialization combined with institutional quality stratification can inhibit mobility by reducing the likelihood of finding suitable positions at institutions of comparable status and resources within increasingly narrow fields and subfields, thereby complicating the matching problem. But ranked differences in quality, however measured, are significant only among elite institutions — the top 50, or possibly 100, of the more than 2,000 colleges and universities.

¹¹ Although different in other respects, a lack of institution-specific investment and the public nature of a scholar's research record are also features of Siow's analysis of tenure, which posits "a role of tenure is to induce older professors, whose research productivity has fallen but by less than their peers, to do less research" (1998: 162-4).

administrative work, patient care, and any other activities a university values. Because only the total amount of time spent on non-research activities matters for the analysis, it is convenient to assume that both faculty and universities are indifferent to the division of time among non-research work.) To simplify further, I will assume that faculty allocate their time between research and non-research activities to maximize their income over their careers. (Allowing utility from the consumption of research activities would not change the implications of the analysis.)

For their part, universities value both research and the non-research services that faculty provide. The value universities place on professor i 's non-research activities in time t will be denoted w_{it} , which, given the assumption of competition and costless relocation, can also be thought of as the competitive wage for individual i 's non-research services.

Universities also value faculty for the research they produce. (The sources of that value are various and disputed: to contribute to societal progress, for prestige, to satisfy preferences of donors, legislatures, and other funding sources, among other possibilities.) I will assume here that the value universities place on a particular scholar is related to that individual's "academic capital," A_i , which, analogous to human capital more generally, embodies the knowledge and skills that enhance an individual's ability to produce output, in this case, academic research. Not being able to own their employees, universities can only "lease" the research services of academics. Define the "rental" universities are willing to pay for scholar i in period t to be

$$v_{it} = v(A_{it}),$$

where A_{it} is the stock of academic capital of scholar i in period t . A scholar's stock of academic capital at any point in time is observable. As with compensation for non-research activities, competition assures that the per-period "rental rate" for a scholar with academic capital A_{it} is the same across institutions. (Note that v_i and w_i have subscripts for individual faculty, i , but not for institutions since all institutions are assumed to value faculty services identically.)

As with other types of human capital, academic capital requires investment to create and, without maintenance, will depreciate over time. A scholar's academic capital at a point in time can be represented as

$$A_{it} = A_{it-1} - \delta_i A_{it-1} + a_i(s_{it-1}; A_{it-1}, d_i). \quad (1)$$

In words, an individual's current stock of academic capital equals last period's stock, A_{it-1} , less depreciation, $\delta_i A_{it-1}$, plus additions acquired through investments in new capital, $a_i(\bullet)$. Depreciation of academic capital, at rate δ_i , occurs, in part, because knowledge and skills previously acquired become obsolete with new discoveries, advances in theory, and changes in technology. Academic capital may also diminish because prior knowledge is forgotten (owing to imperfect memory) or skills atrophy with disuse.¹²

The final term in the equation (1), $a_i(\bullet)$, represents an academic capital production function. The first term in that expression, s_{it-1} , reflects the contribution of time spent on research in the preceding period to today's stock of capital, $a'_i > 0$. Conducting research helps to maintain a scholar's research skills, keeps the scholar abreast of current literature, and permits the acquisition of new knowledge and abilities. (In this respect, human capital differs from physical capital, the value of which generally declines with use.) The remaining terms in $a_i(\bullet)$ are intended to capture the effect of a scholar's existing academic capital, A_{it-1} , on his or her ability to develop new academic capital (as opposed to producing current research), and a possibly separate rate, d_i , at which this ability to acquire new academic capital (e.g., the capacity to learn new techniques for conducting research) decays.

Figure 1 illustrates the effects of an interruption in time spent on research on the value of a scholar's academic capital over a scholar's career. The curve $v(A_{it})$ represents what the value of a scholar's academic capital would be in the absence of an interruption in time devoted to research. An interruption of, say, length $\bar{\tau}$ stands to have three separate effects on a scholar's realized market value relative the original curve $v(A_{it})$. First, even if no depreciation were to occur, time away from research delays the production of research and

¹² Alternatively, or in addition, institutions may simply value older research less than more recent publications.

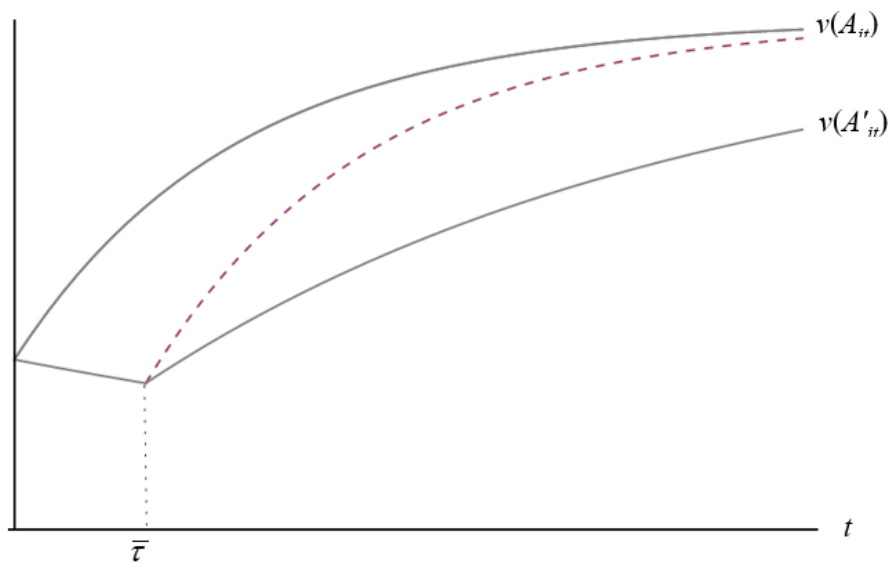


Figure 1. The Value of Academic Capital over Time

publications; work that would have been produced at time 0 will not appear until time $\bar{\tau}$, shifting the curve $v(A_{it})$ horizontally to the right by $\bar{\tau}$ (not illustrated). Second, time away from research prevents the maintenance and enhancement of academic capital, resulting in depreciation of the stock of a scholar's academic capital, depicted in the illustration by the negatively-sloped line from the vertical axis, followed by the upward-sloping dashed curve. Finally, research interruptions can make it harder to accumulate new academic capital, represented by the slower rate of growth of the curve $v(A'_{it})$, which incorporates all three of the above effects.

The main implication of equation (1) and the illustration in figure 1 for the present analysis is that reductions in time spent on research, s_{it} , reduce the value of a scholar's academic capital over his or her remaining career. As a result, the cost to a scholar of additional time spent on non-research activities in period, τ_{it} , is not the current "rental" price of the scholar's academic capital, v_{it} (plus any reduction in utility derived from the act of conducting research, if relevant) but the present value of the reduction in v_{it} over that individual's career horizon: the (discounted) difference between $v(A_{it})$ and $v(A'_{it})$ in figure 1.

A bargain between an administrator and professor that reallocated faculty time from research to other activities would be efficient if the value to the institution of those other activities exceeded the opportunity cost to the scholar. The problem arising from the durability of academic capital is how to accomplish the transfer necessary to effect that bargain. A scholar's current of academic capital is observable, but an individual's capacity to produce new academic capital, $a_i(\bullet)$; rates at which old capital and learning capabilities depreciate, δ_i and d_i ; time horizon; time actually spent on research, s_i ; and how the market will value of a particular scholar's academic capital in the future will typically not be. Although administrators and faculty could, in principle, negotiate lump-sum payments that compensate faculty upfront for the present value of forsaken future earnings as occasions for efficient bargains arose, doing so would require repeated individualized bargaining in the presence of uncertain and idiosyncratic future paths of both $v(A_{it})$ and $v(A'_{it})$. Transferring the potentially large sums needed to effect such bargains would also expose institutions to renegeing by scholars who, having acquired compensation upfront, might withhold promised services and avail themselves of market options.¹³ Administrator promises to pay scholars what would they would have earned, meanwhile, would avoid the costs of bargaining over lump-sum transfers (and the need to forecast a scholar's realized market value, $v(A'_{it})$). But such promises would lack credibility given the limited job tenure of administrators, an institution's ability (absent tenure) to renege on promised compensation through termination (or nonrenewal), and the impossibility of knowing, much less contracting on, an individual's counterfactual market value over time, $v(A_{it})$.¹⁴

¹³ Allowing administrators to make ad hoc cash side payments in exchange for faculty investments — in a “pay-as-you-go” fashion — would also likely violate the non-distribution constraint that characterizes not-for-profit organization and generally weaken safeguards against misappropriation of institutional resources (Hansmann, 2012: 162). Enhancing the ability of administrators (or a majority faction) to target rewards and retaliation selectively through ad hoc transfers may also impede the coordination of collective responses to administrator opportunism (see Masten, 2006: 655-6).

¹⁴ Dnes and Garoupa (2007) posit damages for breach of tenure contracts that would leave a professor “in the same position as if the tenure contract had been honored,” calculated as the difference between current earnings and “those in the next best occupation” (2007:838). Damages relevant to the bargain contemplated here, by contrast, would need to be measured relative to how much a professor would have earned had he or she not sacrificed research time to perform additional non-research activities, in the model above, the difference (in present value) between $v(A_{it})$ and $v(A'_{it})$. Even if prospective earnings in a scholar's current (or comparable) job could be reasonably estimated, the value of a scholar's career had he or she devoted more time to research would be purely speculative, precluding the use of standard damage remedies to secure such academic bargains.

As with commercial transactions involving relationship-specific investments for which conventional contracting arrangements prove inadequate, specialized governance structures that “attenuate opportunism and otherwise infuse confidence” stand to increase the gains realizable from academic exchanges (Williamson, 1979: 242). The bundle of rights and privileges that have come to be associated with academic appointments can be understood as serving this purpose. Specifically, that bundle consists of three components:

- (i) job security contingent on satisfactory performance, which constrains the use of termination to evade the payment of promised compensation;
- (ii) norms regarding satisfactory performance and legitimate cause for dismissal, which serve as referents for evaluating decisions and may exclude specific factors (such as expression) as bases for such judgments; and
- (iii) faculty authority (typically jointly with administrators) in personnel decisions, which provides a process for assessing compliance with agreed-upon norms in the exercise of discretion in appointment, promotion, and dismissal decisions.

As with all such arrangements, these structures do not prevent all manifestations of opportunism and come with the array of well-known costs associated with the current system of academic governance. Accordingly, we should expect such arrangements to be adopted only where the problem of academic hold up is expected to be most acute, namely, when and where research has become a sufficiently important addition to faculty responsibilities.

Recognition of the existence of persistent effects of interruptions in research activity on research productivity and career earnings is not novel. Empirical studies of academic employment have attempted to quantify the effects of higher course loads and administrative work on research productivity (e.g., Goodwin and Sauer, 1995; and Taylor et al., 2006) and on compensation (e.g., Fender et al., 2015). Studies have also shown that the effects of research interruptions vary among disciplines and fields (McDowell, 1982; Levin and Stephan, 1991; Ragan and Rehman, 1996), with consequences generally found to be larger in sciences and more technical fields (e.g., McDowell, Singell, and Stater 2011; Anauati, Galiani, and Gálvez, 2016; and Galiani, and Gálvez, 2017), where knowledge is likely to depreciate at faster rate. What seems not to have been fully appreciated is the hold-up potential attributable to the combination of research and non-research activities and its implications for academic governance. Notably, in this regard, neither

research nor multiple responsibilities alone are unusually problematic. Many occupations involve research — including, for example, some non-instructional research scientist positions within universities and affiliated hospitals — but do not pose the tradeoffs (thereby occasioning the governance responses) identified here. Nor does the problem arise solely because employees have multiple responsibilities. “Multi-task” jobs are also common, but in few, if any, does the allocation of time between tasks have such direct and long-lasting effects on an employee’s earnings path. Other university employees, such non-faculty administrators, administrative staff, and instructional and clinical faculty for whom research is not a primary responsibility, are not similarly exposed to the tradeoff described above; nor are they generally afforded the protections and privileges of regular faculty.

4. The Nature and History of Faculty Privilege

In casual usage, academic tenure has come to mean permanent or lifetime employment, with the result that much of both the popular and academic discussion of tenure has focused on the purposes and consequences of guaranteed employment relative to term contracts or employment at-will. Irrevocability is not, at least technically, a feature of academic tenure, however: “Tenure, accurately and unequivocally defined,...provides only that no person continuously retained as a full-time faculty member beyond a specified lengthy period of probationary service may thereafter be dismissed *without adequate cause*” (Van Alstyne, 1971: 328; emphasis in original).

A case can be made that termination criteria have become so stringent and the removal process so costly that, as a practical matter, acquiring tenure at a modern American university confers effective permanence.¹⁵ But the presumption that an appointment with “permanent or continuous tenure” — as the joint AAUP and Association of American Colleges *1940 Statement of Principles on Academic Freedom and Tenure* termed it — provided robust job security was not true for most of the 20th century. In the preceding century, faculty appointments had consisted of a mix of fixed-term (often annual) contracts and

¹⁵ For example, McLeod and Urquiola (2021), while acknowledging in a footnote that “[a]s a matter of law, tenure does not guarantee permanence of employment, but rather, sets the bar for dismissal high” (201, fn. 10), state in the text that “tenure rewards reaching a threshold level of achievement and cannot be taken away” (199).

positions of “indefinite tenure,” with a trend “clearly — though not universally” toward indefinite-term appointments (Metzger, 1973: 122-3). “Indefinite” meant little more than no specified duration, however. A professor’s job security depended on “supremely vague” criteria and procedures for dismissal (*id.*), and retention in one’s position lay solely at the discretion of outside governing boards and, effectively, over time, in presidents.¹⁶ “Although a professor usually held office indefinitely on good behavior, his tenure depended upon usage and had no legal status: he could be fired at will by the governing board; in many institutions a hearing was not required” (Hofstadter and Metzger, 1955: 230). At most public universities, the standards permitted “removal whenever in the judgement of the board the interests of the college require it” (Metger, 1973: 127), and courts generally interpreted charters to afford boards (both private and public) near absolute discretion on dismissal decisions (*id.*: 132-134). According to Metzger, the vast majority of dismissals of professors with indefinite tenure between 1860 and 1914 (62 of the 68 he uncovered) occurred without a hearing (*id.*: 128). As late as 1910, “the concept of permanent faculty tenure, though not entirely unknown, was forthrightly accepted by very few university presidents even of leading institutions, and professors were at the mercy of their superiors to a far greater degree than would be true at the better universities a half-century later” (Veysey, 1965: 305).

Despite joint AAUP and Association of American Colleges endorsements of the principle of tenure in the *1925 Conference Statement on Academic Freedom and Tenure* and *1940 Statement of Principles on Academic Freedom and Tenure*, tenure protections remained anemic throughout the first half century. A survey of 78 colleges and universities conducted by the president of Rice University in 1935 found that “fewer than half . . . employed formal tenure policies, and many of these were weak and indeterminate by modern standards” (Rosenthal, 2011: 2). A 1955 survey of 80 mostly private colleges and universities found

¹⁶ Histories of American universities in the late 19th and early 20th centuries are replete with accounts of autocratic presidents (see, e.g., Veysey, 1965: 303-305; Duryea, 1973: 23; Bowen and Tobin, 2015: 29, 39; Gerber: 48-49). Even with the establishment of academic departments—“a logical outgrowth of size and specialization and of the pressing necessity to delegate and decentralize if major administrators were not to find themselves overwhelmed” — the locus of power merely shifted from presidents to department chairs (Duryea, 1973: 31): “The turn of the century was a time of conspicuous departmental dictatorships” as control over appointments and promotions allowed department chairmen to demand personal loyalty and to inhibit rival viewpoints from being expressed in classrooms (Veysey, 1965: 322).

tenure to be “virtually universal” also but also found what the authors described as “a bewildering variety of policies, plans, and practices,” vague or nonexistent criteria for acquiring and terminating tenure, and “insubstantial” legal protections (Byse and Joughin, 1959: 10, 69, 133, 136). Of the 80 respondents, faculty action on recommendations for tenure was required at only 26 institutions (*id.*:141), appeals of tenure denials to a faculty body at only 13 (*id.*: 142). “Termination procedures [were] clearly the weakest element in the whole tenure picture” (*id.*: 69).

Tenure was at least nominally available at most institutions by the 1970s.¹⁷ The authority of faculty in appointment, promotion, and dismissal decisions had developed far more slowly, however. Beginning shortly after its formation in 1915, the AAUP conducted a series of surveys seeking to gauge the extent of faculty participation in college and university decision making over a range of topics, including personnel decisions. The first, conducted in the early 1920s (reported in AAUP, 1924), and the second, conducted in 1939-40 (reported in AAUP, 1941), posed open-ended questions: “To what extent and how do the Faculty members participate in the selection of members of the teaching staff?” (AAUP, 1924: 43), and “Is faculty consulted in appointments, promotions, and dismissals? How?” (AAUP, 1941: 156).¹⁸ Although the questions differed and responses required interpretation, the surveys nevertheless present a picture of the status of faculty authority in personnel decisions in this early period consistent with historical accounts.¹⁹

¹⁷ An American Council of Education survey in 1972 reported that all but 13 private colleges out of 332 colleges and universities provided the opportunity for tenure (Commission on Academic Tenure in Higher Education, 1973: 218-219). Based on that survey, Furniss (1972:1) estimated that 95% percent of faculty worked in institutions having tenure systems. By 1999-2000, all public doctoral institutions and 91% of public 4-year degree-granting institutions overall had tenure systems; among private nonprofit institutions, 81% of doctoral institutions, 73% of masters institutions, and 55% of “other” (mostly liberal arts colleges) offered tenure. (U.S. Department of Education, Digest of Education Statistics 2021, Table 316.80).

¹⁸ The earlier survey was initiated following publication of the 1920 Report of Committee T in March 1921 (AAUP, 1921), suggesting that responses were collected in 1921 to 1923. Responses to the second survey were obtained between 1938 and 1940 (Gerber, 2014: 67) and published in May 1924 (AAUP, 1924). Although the surveys took place earlier, I will refer to the surveys by their publication dates. The earlier questionnaire was addressed to the president of the institution and subsequently submitted to the president for verification (AAUP, 1924: 43). The later of the two appears to have been sent to and completed by local AAUP chapters (AAUP, 1941: 157-8).

¹⁹ Gerber (2014) examined the survey responses and assigned codes for various forms and levels of faculty involvement. Figures reported here for 1924 and 1941 are based on Gerber’s coding (reported in his appendix: 171-181) with the combination of some categories (e.g., combining consultation through department committees and faculty committees into a single category of faculty consultation). My review of the actual responses to the earlier of the surveys (AAUP, 1924) suggests that Gerber was generous in his classification of faculty participation.

Respondents to the 1924 survey reported that faculty participated in hiring decisions at less than a third of the institutions: Of the 168 respondents, 38 reported that faculty had “formal involvement” and another 15 “significant involvement” in the selection of the teaching staff. Responses to the 1941 survey suggest little change in the intervening years. Faculty were consulted on appointment, promotion, and dismissal decisions at only a third of the 227 responding institutions, with 45 reporting no participation and 103 consultation only through appointed department heads. (See tables A.3 and A.4 in appendix A.)

It is significant that, even among institutions classified as having formal participation, involvement typically consisted of little more than an expectation of consultation. For the most part, administrators were obliged neither to seek faculty opinions nor to abide by their recommendations.²⁰ With few exceptions, authority over personnel decisions remained the exclusive domain of boards and administrators through the first half century.

A pair of subsequent surveys, in 1970 and 2001, indicate that faculty had acquired more, and more effective, authority over personnel decisions in the later part of the century. Although boards always retain ultimate legal authority over all institutional decisions, institutions could delegate authority to faculty through bylaws, handbooks, or less formal commitments to norms.²¹ Aware that actual practice may deviate from official procedures, the surveys instructed respondents to “consider actual practices followed” in identifying “the level of faculty participation” over various decision in terms of the following categories (AAUP, 1971: 122):

Administrator Determination: decisions or actions over which administrators have unilateral authority

²⁰ The University of Virginia’s response in the 1924 survey illustrates the considerable discretion retained by presidents in appointment decisions: “Before nominating any one for a professorship in the Faculty, the President consults those members of the Faculty who are most likely to have information of value. Generally, the President appoints a Committee of the Faculty to go over the ground and to nominate to him the person or persons seem to the Committee most suitable for the position” (AAUP, 1924: 96). Only one response to the 1924 survey, for Bowdoin College, contained a seemingly unequivocal statement of faculty determinative authority: “No promotion or appointment made without consent of full Professors” (*id.*: 46).

²¹ Because boards can always revise bylaws or ignore norms, adherence to delegation commitments must be self-enforcing. On the self-enforcing properties of faculty governance, see Masten (2006).

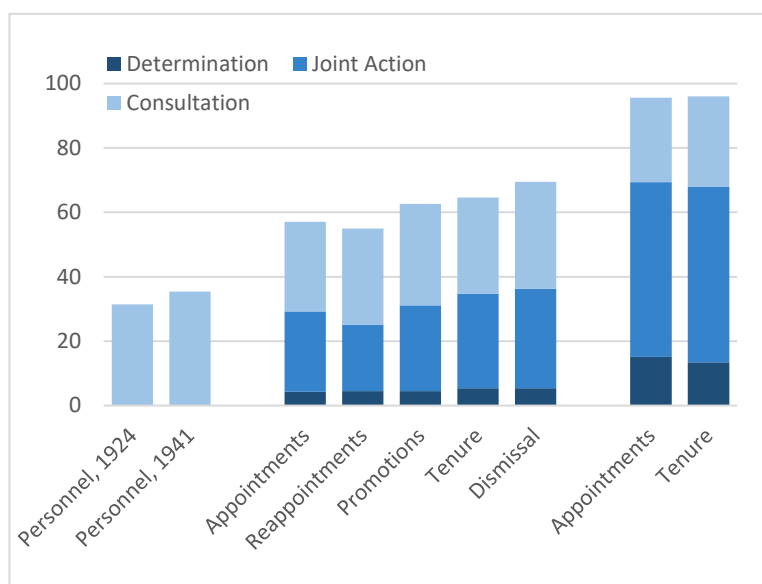


Figure 2. Faculty authority over personnel decisions, percentages

Faculty Determination: decisions or actions over which “the faculty of an academic unit or its duly authorized representatives have final legislative or operational authority with respect to policy or action”

Joint Action: decisions or actions that require “formal agreement by both the faculty and other components of the institution” and are subject to “veto by any component”

Administrator determination category was further categorized as either consultation, discussion, or none, depending on the nature and form of communication between faculty and administrators expected to occur before a decision is made.²² Figure 2 summarizes the reported allocation of authority for personnel decisions for each of the four AAUP surveys. The first two (light blue) bars indicate the percentage of responding institutions at which faculty were consulted on personnel decisions in the 1924 and 1941 surveys. The 1970 survey asked separately about authority over appointment, reappointment, promotion, tenure, and dismissal decisions while the 2001 survey asked about appointment and tenure authority only. By 1970, faculty at a subset of institutions had acquired effective authority — either exclusively (darkest

²² For a breakdown of responses among these three subcategories and responses for other decision categories, see Masten (2006) and Kaplan (2002).

blue shading in the center bars of figure 2) or jointly with administrators (medium blue shading) — over personnel decisions, ranging from 25% for reappointment decisions to 36% for dismissal decisions. Although faculty could expect to be consulted at another 30% or so of institutions (indicated by the light blue bars), administrators retained exclusive authority over the personnel decision areas covered by the 1970 survey in two-thirds to three-quarters of the responding institutions.

By 2001, however, those proportions had roughly reversed, at least for appointment and tenure decisions. Faculty exercised authority over appointment and tenure decisions at just under 70% of institutions.²³ Collectively, these surveys show that faculty authority to determine membership in the professoriate, who received tenure, and whether dismissal was justified varied significantly over time and among institutions long after the existence of tenure systems had become commonplace.

5. Research and Faculty Privilege

Historians of American higher education have long noted that the introduction of research as a major function of postsecondary educational institutions preceded the emergence of the structures that characterize the modern American university:²⁴

[I]n the 1870's research played no important role in American higher education. . . . Around 1880 a definite change occurred. . . . Ten years later research had become one of the dominant concerns of higher education. . . . As far as official demands upon faculty were concerned, by 1910 research had almost fully gained the position of dominance which it was to keep thereafter (Veysey, 1965: 174–5, 177).

At the same time, there was growing consensus that faculty would be responsible for both teaching and research. Observing that “the old distinction between ‘teaching men’ and ‘research men’ was becoming increasingly untenable in the research universities,” Geiger (1986: 75) quotes the president of Yale in 1910 counselling, “There is nothing more fatal to the efficiency of a department than the maintenance in its teaching force of a number of reasonably good instructors who are kept because they can teach moderately

²³ See table A.1 in appendix A for a breakdown of the number of respondents to each question in the 1970 and 2001 surveys. Approximately 520 institutions responded to both surveys. The percentages using just the subset of institutions that responded to both surveys are almost identical to those for all respondents in both periods.

²⁴ Goldin and Katz (1999) provide an overview of developments in American higher education between 1890 and 1940, including the emerging complementarity of teaching and research (49).

well, but who have little promise of inspiring either associates or their students to work of really high grade and who keep out from the faculty men of less experience but more promise.”

Broadly speaking, the expansion of tenure rights and faculty authority described in the preceding sections paralleled the increasing emphasis on research over the course of the century. But neither the weight placed on research nor the delegation of decision authority progressed uniformly among institutions. In this section, I explore the relationship between research and governance using data on publication rates of faculty at individual institutions over the periods 1900 to 1940 and 1975 to 2014. Publications counts are extracted from data in Web of Science Core Collection. (See appendix C.3 for a description of the data and some of its known limitations.) Although the periods of coverage are dictated primarily by the availability of data on publications and faculty counts, the coverage periods conveniently, if roughly, align with the four AAUP surveys.²⁵

Figures 3 and 4 provide a general picture of the available data on publication rates. Figure 3 shows the average across institutions of the number of publications per faculty member from 1900-1940 for the set of colleges and universities that responded to one or more AAUP governance surveys discussed in the preceding section (hereafter referred to as the “governance sample” or “sample institutions”).²⁶ (The number of institutions included in the averages varies over time because of lack of data on faculty numbers in some years and because of the founding of new institutions after 1900. Average publication rates for institutions founded before 1900, represented by the orange line in figure 3, is nearly identical to the average for all available institutions.) Although the absence of author affiliation information for many early publications means that publication counts capture only a fraction of all publications over this period, the upward trend in publications rates (and dip coinciding with U.S. involvement in World War I) nevertheless

²⁵ Gerber (2014) reports on a fifth survey conducted by the AAUP around 1953.

²⁶ For comparison, the right-hand column in table 1 reports the number of sample institutions over time. Founding dates of institutions may not represent the year an institution began offering postsecondary education. For that reason, the figures in the right-hand column tend to overstate the fraction of all postsecondary institutions in the sample, particularly in earlier years.

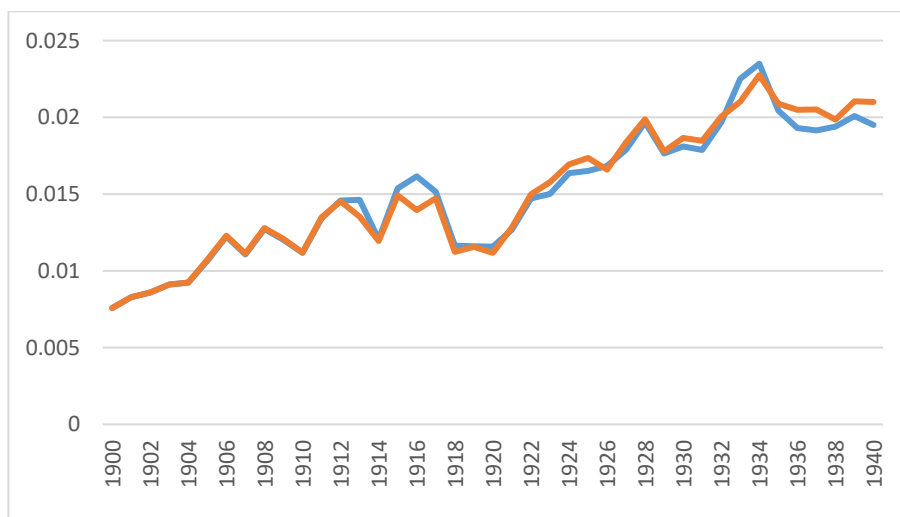


Figure 3. Publications per faculty member, 1900-1940 (unbalanced panel; governance sample institutions)

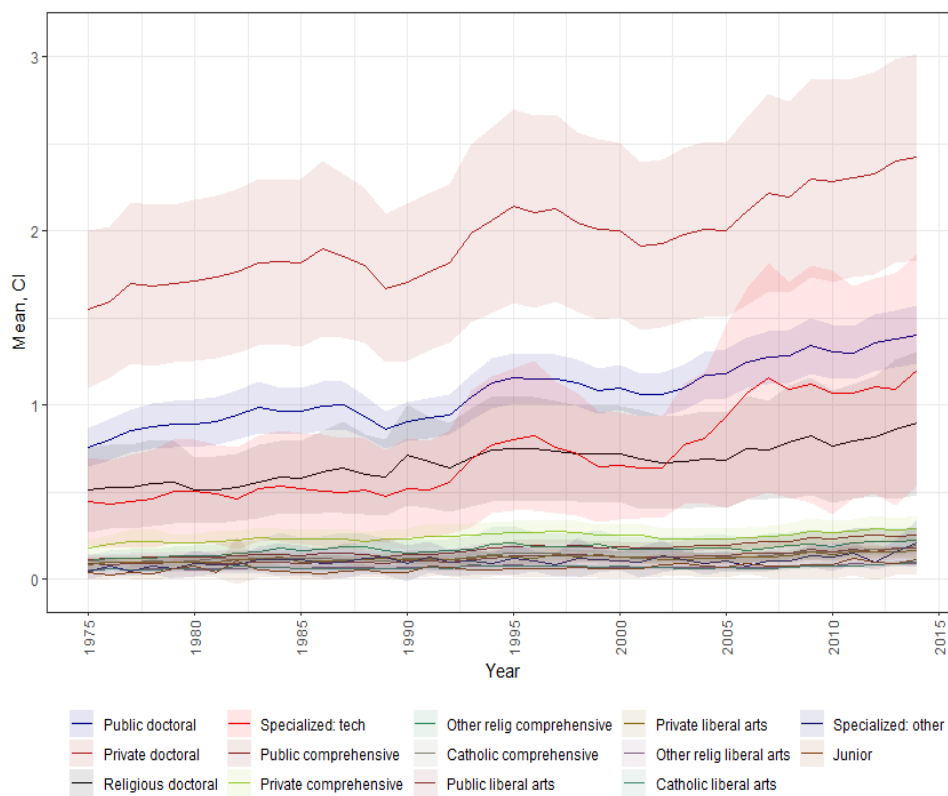


Figure 4. Publications per faculty, mean and 95% confidence intervals, 1975-2014, by control and type (unbalanced panel, governance sample institutions)

Table 2. Sample Institutions by 1970 Classification and Institutional Control

Carnegie Classification, 1970	Control				Total
	Private	Public	Catholic	Other religious	
Doctoral universities	43	107	11	7	168
Specialized - technology	7	5	-	-	12
Comprehensive institutions	45	272	40	46	403
Liberal arts colleges	101	23	101	252	477
Specialized - other	10	3	2	8	23
Junior	6	16	3	19	44
Founded post-1970	1	11	-	2	14
Total	213	437	157	334	1141

Notes: Excludes military service schools and Columbia Teachers College. “Specialized – other” consists primarily of four-year degree granting institutions specializing in business, arts, or music and theological seminaries.

conforms to what we know generally about the increasing importance of research over the period.

Figure 4 shows publications per faculty (and 95% confidence intervals) for 1975-2014 by institutional classification and control. The classifications and forms of control in the data, and the distribution of sample institutions among those categories, is described in table 2.²⁷ As expected, the data show publication rates to be rising over the period, with the highest levels in private doctoral universities, followed by public and religious-affiliated doctoral institutions, with liberal arts institutions publishing at the lowest rates, and “comprehensive” universities falling in between.²⁸

5.a. Research and authority, pre-World War II. Figures 5.a and b plot mean publications per faculty member by whether faculty were consulted on personnel decisions as reported in the 1924 and 1940 surveys. As seen in the figures, mean publication rates were higher at institutions where faculty were

²⁷ Institutional classifications and, less frequently, institutional control change over time. See the appendix C.4 for information on and discussion of how institutions are categorized.

²⁸ The 1970 Carnegie Commission classification system defined the category “Comprehensive Universities and Colleges” as institutions offering primarily liberal arts programs but including one or more professional or occupational programs conferring master’s degrees. This category was relabeled as “Master’s Colleges and Universities” in the 1994 and later classifications.

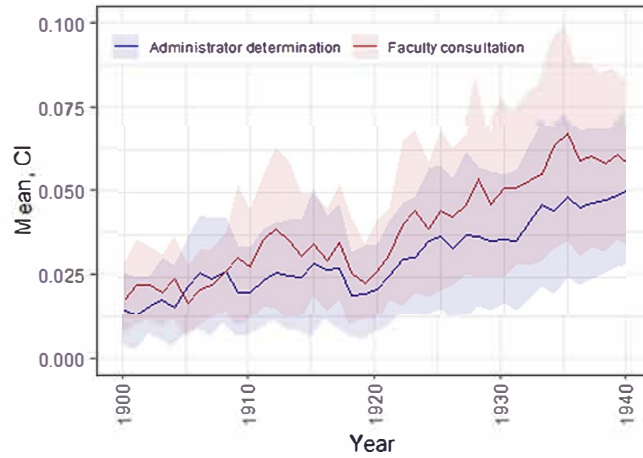


Figure 5.a. Mean publications per faculty member, 1900-1940, by Consultation in 1924
 Notes: Unbalanced panel with 95% confidence intervals.

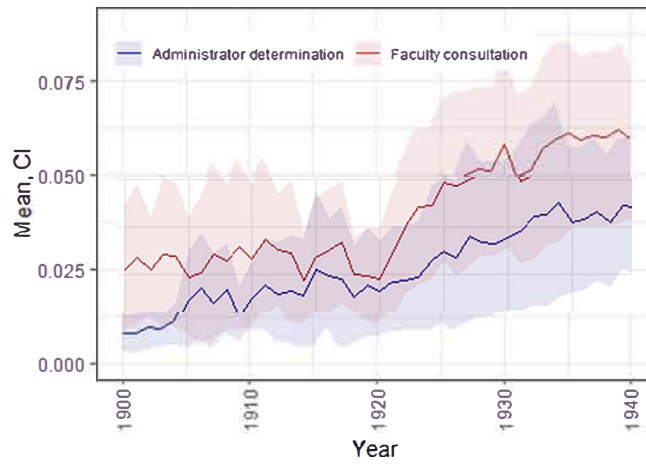


Figure 5.b. Mean publications per faculty member, 1900-1940, by Consultation in 1940
 Notes: Unbalanced panel with 95% confidence intervals.

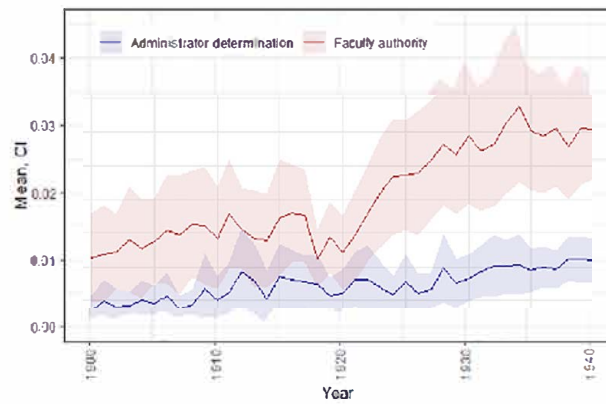


Figure 5.c. Mean publications per faculty, 1900-1940, by 1970 appointment authority; with 95% confidence intervals

consulted on personnel decisions, but the confidence intervals overlap for both surveys. The first half of the century was a period of transition and experimentation in higher education (Masten, 2019: 1184), and the value of giving faculty greater authority over personnel decisions, given the still relatively low rates of publication, may not yet have achieved a level sufficient to overcome the opposition of college and university presidents (Metzger, 1973: 144-45). Moreover, non-economic factors such as the relatively imprecise survey questions, imperfect coding of the open-ended responses, and the lower quality of the early publication data may also have contributed to the lack of separation. Evidence consistent with the latter is the separation in publication rates beginning around 1920 as a function of faculty authority on appointments in 1970, shown in panel c of figure 5.

5.b. Research and Authority, 1970. To facilitate the presentation and analysis using the 1970 and 2001 survey responses, I have recoded the measure of faculty authority as equal to 1 for responses indicating that faculty have either exclusive or joint authority over at least some decisions within a given the topic.²⁹ Figure 6, the analog to the 1970 and 2001 bar graphs in Figure 2, shows the distribution of responses indicating faculty authority over some or all decisions for each topic using the recoding. The indicator of faculty authority for each topic in the following analysis is the sum of two shaded bars in the figure.

Figures 7.a and b plot means publications per faculty member (with 95% confidence intervals) over 1975-2014 by whether faculty had authority (exclusive or joint) over appointment and dismissal decisions, respectively, in 1970. On average, publication rates were significantly higher at institutions where faculty had authority in each of these two decisions areas (as were rates relative to authority over reappointment, promotion, and tenure decisions, which yield similar diagrams.)

Figures 8.a-c show equivalent plots for doctoral universities, comprehensive universities, and liberal arts colleges separately. Mean publication rates are higher at institutions where faculty have authority

²⁹ To allow for the possibility that authority over decisions might vary among units within a given institution, the 1970 and 2001 survey designs allowed respondents to report percentages of faculty falling within each authority category. See AAUP (1971: 123), and Masten (2006: 664, n. 25). Given that most responses were 0 or 100, use of alternative percentage cutoffs for classification had little effect on results. See table A.2 for additional detail.

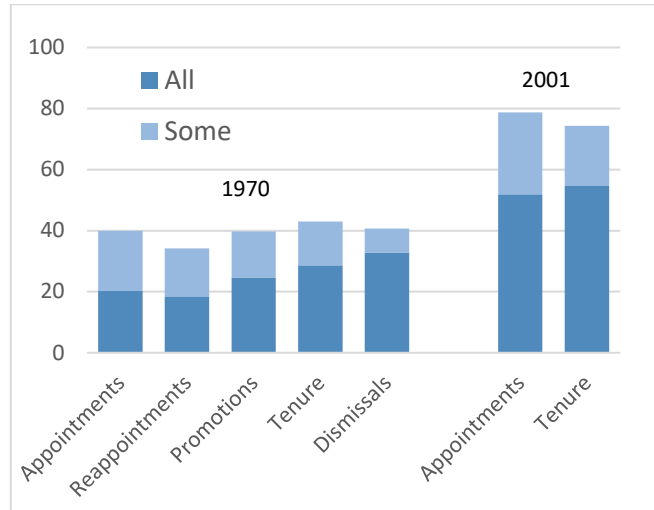


Figure 6. Faculty authority over some or all personnel Decisions, percentage of institutions, 1970 and 2001

over appointment decisions for all three institutional categories. Although the confidence intervals overlap for doctoral universities, besides being definitionally research focused, administrators retained exclusive authority over appointment decisions at only a relatively small proportion of doctoral universities: 25% compared 60% of institutions overall.

Tables 3 and 4 report regression results relating publication rates and faculty authority. Table 3 presents regression results for linear and tobit specifications of the relationship between publication rates and faculty authority over appointment and tenure decisions controlling for institutional control (that is, whether the institution is public, private (secular), Catholic, or other religious affiliation).³⁰ Odd number columns include an interaction term between faculty authority and time (Year), while even number columns

³⁰ Appointment and tenure decisions are the two areas common to the 1970 and 2001 AAUP surveys. Table B.1 in the appendix reports results for analogous estimations using authority over the three 1970 decision categories — dismissals, promotions, and reappointments — not covered in the 2001 survey, all of which yield results.

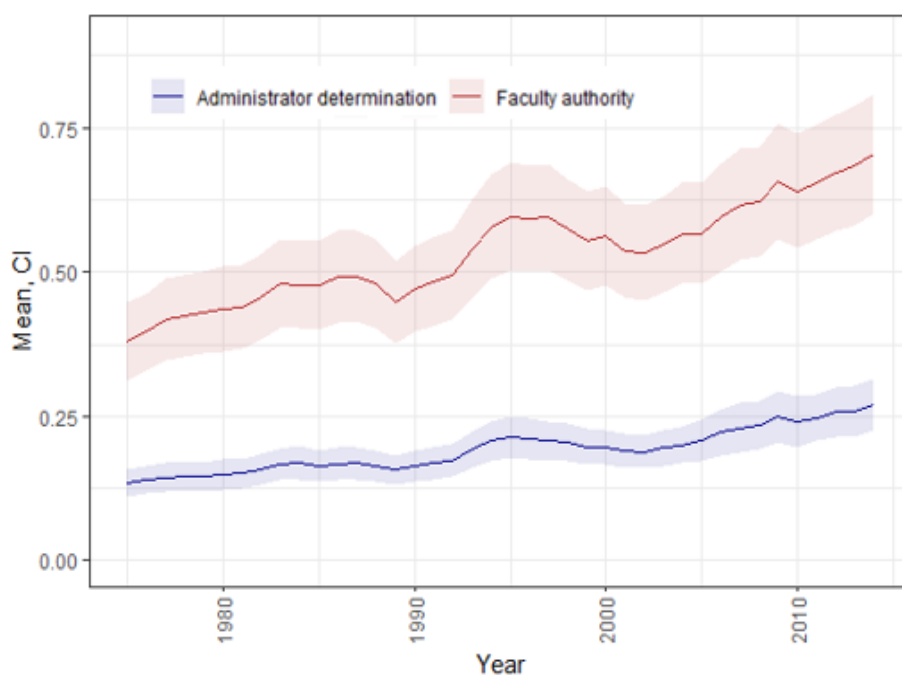


Figure 7.a. Publications per faculty, 1975-2014, by 1970 appointment authority, all respondents; means and 95% confidence intervals

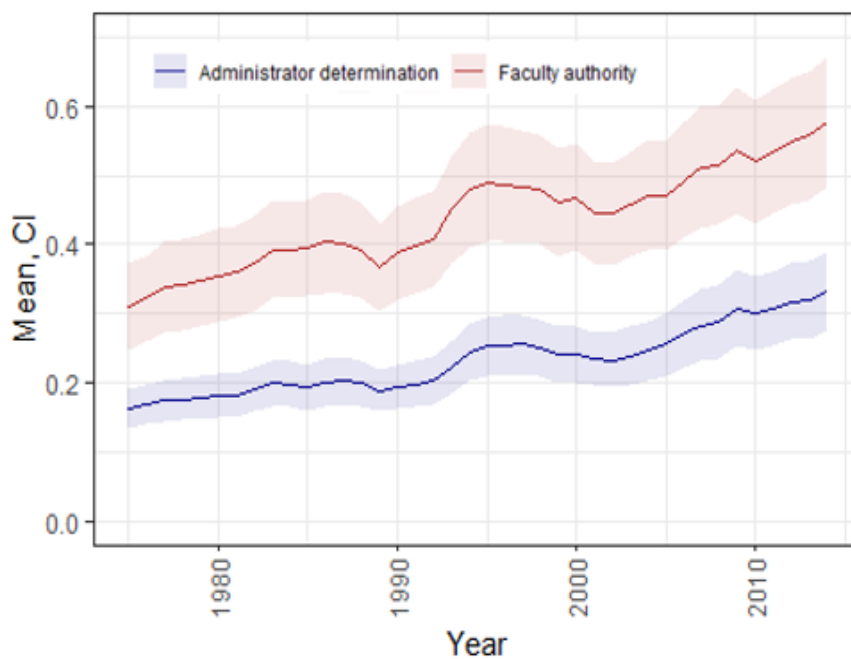


Figure 7.b. Publications per faculty, 1975-2014, by 1970 dismissal authority, all respondents; means and 95% confidence intervals

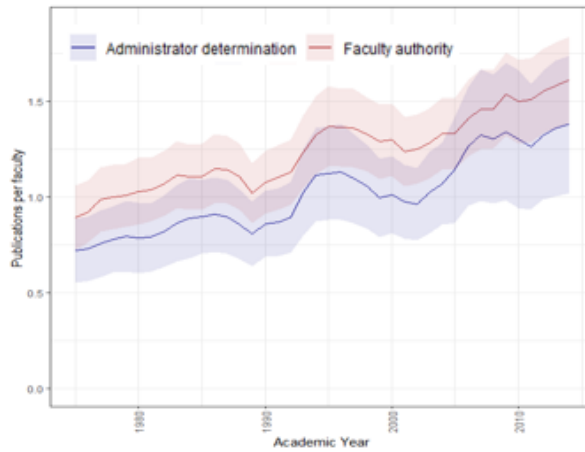


Figure 8.a. Publications per faculty, 1975-2014, by 1970 appointment authority, doctoral university respondents; means and 95% confidence intervals

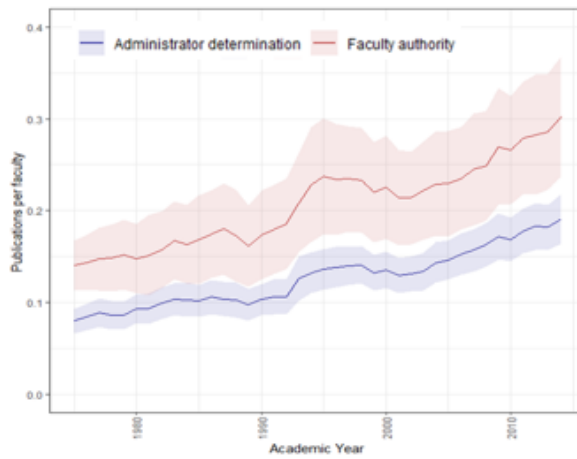


Figure 8.b. Publications per faculty, 1975-2014, by 1970 appointment authority, comprehensive university respondents; means and 95% confidence intervals

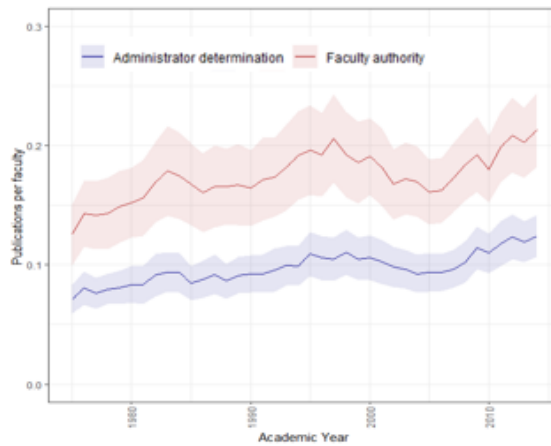


Figure 8.c. Publications per faculty, 1975-2014, by 1970 appointment authority, liberal arts college respondents; means and 95% confidence intervals

Table 3. Publications per faculty 1975-2014, by faculty authority 1970

	Appointments				Tenure			
	linear		tobit		linear		tobit	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Faculty authority	0.225*** (6.833)	0.303*** (7.402)	0.251*** (7.048)	0.323*** (7.579)	0.181*** (5.764)	0.234*** (5.983)	0.200*** (5.874)	0.248*** (6.094)
Year (1975=0)	0.00306*** (7.936)		0.00382*** (9.079)		0.00344*** (8.180)		0.00418*** (9.216)	
Faculty authority * Year	0.00401*** (5.638)		0.00368*** (5.132)		0.00268*** (3.884)		0.00241*** (3.469)	
Private	0.145* (1.879)	0.144* (1.875)	0.144* (1.835)	0.144* (1.833)	0.154** (1.987)	0.155** (1.987)	0.153* (1.928)	0.153* (1.928)
Other religious	-0.235*** (-7.775)	-0.235*** (-7.770)	-0.274*** (-8.440)	-0.274*** (-8.441)	-0.257*** (-8.039)	-0.257*** (-8.035)	-0.295*** (-8.571)	-0.295*** (-8.571)
Catholic	-0.215*** (-5.569)	-0.215*** (-5.570)	-0.232*** (-5.661)	-0.232*** (-5.664)	-0.227*** (-5.665)	-0.228*** (-5.664)	-0.245*** (-5.753)	-0.245*** (-5.755)
Constant	0.209*** (8.403)	0.173*** (6.718)	0.178*** (6.788)	0.141*** (5.151)	0.227*** (8.457)	0.200*** (7.131)	0.199*** (7.047)	0.170*** (5.758)
Observations	31,200	31,200	31,200	31,200	30,890	30,890	30,890	30,890
Number of institutions	783	783	783	783	775	775	775	775
	Wald chi2(6) = 220.54	Wald chi2(43) = 354.86	F(6, 31194) = 38.59	F(43, 31157) = 7.67	Wald chi2(6) = 206.83	Wald chi2(43) = 350.05	F(6, 30884) = 36.39	F(43, 30847) = 7.53
	R ² (between) = 0.1566	R ² (between) = 0.1564			R ² (between) = 0.1294	R ² (between) = 0.1295		
Time fixed effects		Yes		Yes		Yes		Yes

Unbalanced panel; linear random effects (in linear specifications)
 Robust z-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1
 Omitted Control category: Public

include year fixed effects. Publications per faculty are significantly higher on average in institutions with faculty authority in all specifications. Specifications that include the authority-year interaction show publication rates growing at a significantly higher rate over the 1970-2014 period in institutions with faculty authority over either decision. Publications rates were also higher at private institutions and lower at religiously affiliated institutions than at public institutions on average.

Table 4 reports results from estimations including additional controls and alternative specifications to those in table 3. Specifically, column 1 of table 4 mirrors the specification in column 1 of table 3 with the addition of faculty size and founding year as controls. Publication rates are higher at larger and older institutions, but the positive association between faculty appointment authority and both levels and growth in publication rates remains. In recognition of the fact that publication rates are highly skewed (see figures A.1 and A.2 in appendix A), columns (2) through (4) report results of specifications using a log transformation of publication per faculty member as the dependent variable. The coefficient for private institutions is no longer significant, but the results are otherwise consistent with other specifications.

The preceding shows the existence of a robust correlation between faculty authority in 1970 and publication rates over succeeding decades. To be clear: No claim about causality is, or can be, made from such correlations. The correlation is consistent, however, with what one would expect “in equilibrium” (perhaps not implausibly given the large number of competitors and long time period over which adjustments could occur) if faculty authority over personnel decisions was an efficient governance response for institutions that emphasize research. But such correlations are obviously unable to address causation or the consequences of adopting the “wrong” governance form. The lack of exogenous variation or obvious instruments impedes the ability to go beyond correlation, however.

In an attempt to identify causal relationships statistically, figure 9 and table 5 summarize results from estimations of the effect of faculty authority on publication rates using the marginal treatment effect framework introduced by Heckman and Vytlacil (2005), where the “treatment” is assignment of decision authority to faculty. (Full results and supporting details are reported in appendix B.) As an instrument, the

Table 4. Publications per faculty 1975-2014, by faculty appointment authority 1970

	(1)	(2)	(3)	(4)
	pubs per fac	ln(1+pubs per fac)	ln(1+pubs per fac)	ln(1+pubs per fac)
Faculty authority	0.160*** (4.717)	0.146*** (8.032)	0.113*** (6.474)	0.142*** (7.692)
Year (1975=0)	0.00252*** (6.448)	0.00199*** (11.88)	0.00174*** (10.56)	0.00226*** (10.59)
Faculty authority * Year	0.00360*** (5.010)	0.00163*** (5.739)	0.00144*** (5.006)	0.00162*** (5.705)
Private	0.146** (2.101)	0.0541 (1.534)	0.0473 (1.479)	-0.00500 (-0.141)
Other religious	-0.215*** (-4.878)	-0.150*** (-8.705)	-0.149*** (-7.087)	-0.228*** (-8.574)
Catholic	-0.142*** (-3.407)	-0.129*** (-5.621)	-0.0960*** (-4.390)	-0.158*** (-5.947)
Faculty size	0.000223*** (2.595)		0.000102*** (3.248)	
ln(Faculty size)				-0.0240** (-2.178)
Founding year	-0.00266*** (-4.921)		-0.00155*** (-6.133)	-0.00178*** (-6.410)
Constant	5.166*** (5.009)	0.164*** (11.48)	3.054*** (6.348)	3.667*** (6.799)
Observations	31,200	31,200	31,200	31,200
Number of institutions	783	783	783	783
	Wald $\chi^2(8) =$ 269.70	Wald $\chi^2(6) =$ 424.12	Wald $\chi^2(8) =$ 510.28	Wald $\chi^2(8) =$ 436.84
	R ² (overall) = 0.3107	R ² (between) = 0.1943	R ² (overall) = 0.3558	R ² (overall) = 0.1889

Linear random effects

Robust z-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Omitted Control category: Public

estimations use the average level of faculty authority over nonpersonnel decisions (such as curriculum and financial matters among others) on the assumption that (i) factors other than the hold-up hazard determine faculty authority over nonpersonnel decisions and (ii) authority over nonpersonnel matters does not independently affect faculty publication rates.³¹ Figure 9 shows the estimated marginal treatment effects of faculty appointment authority on average publications per faculty member over the period 1975 to 1984. (Results for publication rate averages for 2005-2014 are also reported in appendix B.) Table 5 reports the

³¹ The 1970 AAUP survey covered 26 decision areas in addition to the five “faculty status” categories. See Masten (2006) for a complete list of decisions and average authority allocations. See tables B.2. and B.3 for results bearing on the relationship among nonpersonnel authority, appointment authority, and publication rates.

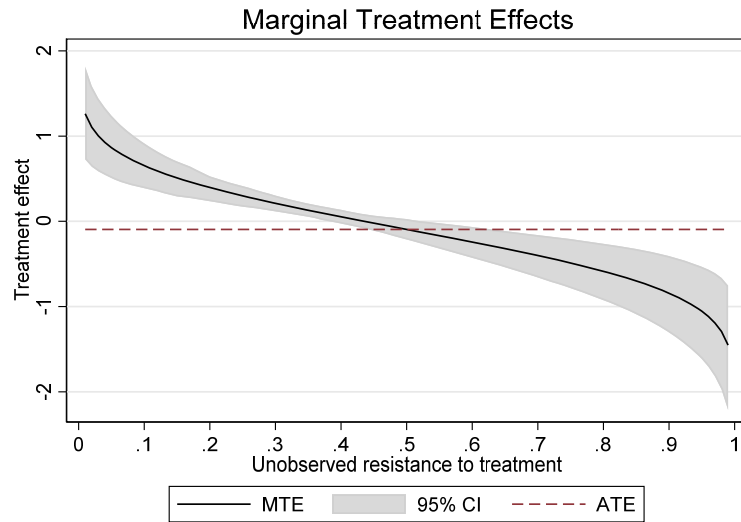


Figure 9. Estimated average and marginal treatment effects of 1970 faculty appointment authority on average 1975-1984 publication rates.

Table 5. Estimated average treatment effects of 1970 faculty appointment authority on average 1975-1984 publication rates

Average treatment effect	-0.0950 (0.0619)
Average treatment effect on treated	0.525*** (0.0881)
Average treatment effect on untreated	-0.510*** (0.132)

From appendix table B.4

corresponding estimated average treatment effect, average treatment effect on the treated, and average treatment effect on the untreated. In words, faculty appointment authority neither increases nor decreases publication rates on average over the entire set of institutions. However, faculty authority is estimated to increase publication rates for institutions at which faculty possessed appointment authority (the treated institutions) and decrease publication rates for institutions where they did not (the untreated institutions). On one hand, the commitment advantages of assigning faculty authority over personnel decisions may have allowed research-oriented institutions to attract highly motivated, research-oriented scholars that they could not have without the enhanced security that faculty authority provides, resulting in higher publications rates. On the other, giving faculty authority over personnel decisions at institutions where they did not have it, by enhancing job security, might have, as commonly associated with tenure, reduced incentives to publish.

5.c. Research and authority, 2001. By 2001, faculty authority over appointment and tenure decisions had become the prevalent governance mode, with faculty exercising authority over decisions in these areas at 70% to 80% of institutions. (See figures 2 and 6). Table 6 reports coefficients from estimations of publications per faculty using the same specifications as in table 3 but with faculty authority in 2001. The results are similar but weaker than those using authority in 1970. Faculty authority in 2001 is associated with higher average publication rates but not with higher rates of growth, and R^2 's are lower than in 1970 authority regressions.

Changes in authority between 1970 and 2001 are reflected crosstabulations in Table 7 showing the number of institutions reporting faculty appointment and tenure authority in each survey for the 522 institutions that responded to both surveys. Of those, 237 of the 310 institutions without faculty appointment authority in 1970 reported having that authority in 2001, while only 34 of the 212 institutions with faculty appointment authority reported not having that authority in 2001. For tenure authority, 208 of the 289 institutions without authority in 1970 reported having it in 2001 while 55 of the 226 with that authority in 1970 no longer did in 2001.

Table 6. Publications per faculty 1975-2014, by faculty authority 2001

	Appointments				Tenure			
	linear		tobit		linear		tobit	
Faculty authority	0.0608** (2.033)	0.0811** (2.167)	0.106*** (2.767)	0.111*** (2.615)	0.0597* (1.908)	0.0762** (2.036)	0.0860** (2.246)	0.0894** (2.175)
Year (1975=0)	0.00348*** (5.299)		0.00527*** (7.036)		0.00384*** (6.719)		0.00548*** (8.520)	
Faculty authority * Year	0.00103 (1.307)		0.000252 (0.299)		0.000840 (1.125)		0.000171 (0.219)	
Private	0.166* (1.794)	0.208** (2.077)	0.161* (1.680)	0.161* (1.681)	0.208** (2.142)	0.208** (2.142)	0.208** (2.077)	0.208** (2.077)
Other religious	-0.318*** (-9.302)	-0.395*** (-10.04)	-0.405*** (-10.24)	-0.404*** (-10.24)	-0.317*** (-9.208)	-0.317*** (-9.202)	-0.395*** (-10.04)	-0.395*** (-10.04)
Catholic	-0.278*** (-7.496)	-0.308*** (-7.352)	-0.321*** (-7.735)	-0.321*** (-7.736)	-0.273*** (-7.210)	-0.273*** (-7.206)	-0.308*** (-7.352)	-0.308*** (-7.352)
Constant	0.288*** (8.148)	0.230*** (5.711)	0.218*** (5.344)	0.212*** (4.938)	0.290*** (8.378)	0.270*** (7.385)	0.236*** (5.939)	0.230*** (5.711)
Observations	33,939	33,939	33,939	33,939	32,785	32,785	32,785	32,785
Number of institutions	859	859	859	859	828	828	828	828
	Wald $\chi^2(6) =$ 187.43	Wald $\chi^2(43) =$ 349.89	F(6, 33933) = 33.92	F(43, 33896) = 6.57	Wald $\chi^2(6) =$ 189.61	Wald $\chi^2(43) =$ 349.10	F(6, 32779) = 34.70	F(43, 32742) = 6.76
	R ² (between) = 0.089	R ² (between) = 0.097			R ² (between) = 0.101	R ² (between) = 0.101		
Time fixed effects		Yes		Yes		Yes		Yes

Linear random effects (in linear specifications)

Robust z-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Omitted Control category: Public

Table 7. Faculty Authority, 1970, 2001, joint survey responses

	Appointments			Tenure		
	2001			2001		
1970	0	1	Total	0	1	Total
0	73	237	310	81	208	289
1	34	178	212	55	171	226
Total	107	415	522	136	379	515

Notes: 1 indicates faculty authority; 0 indicates administrator authority

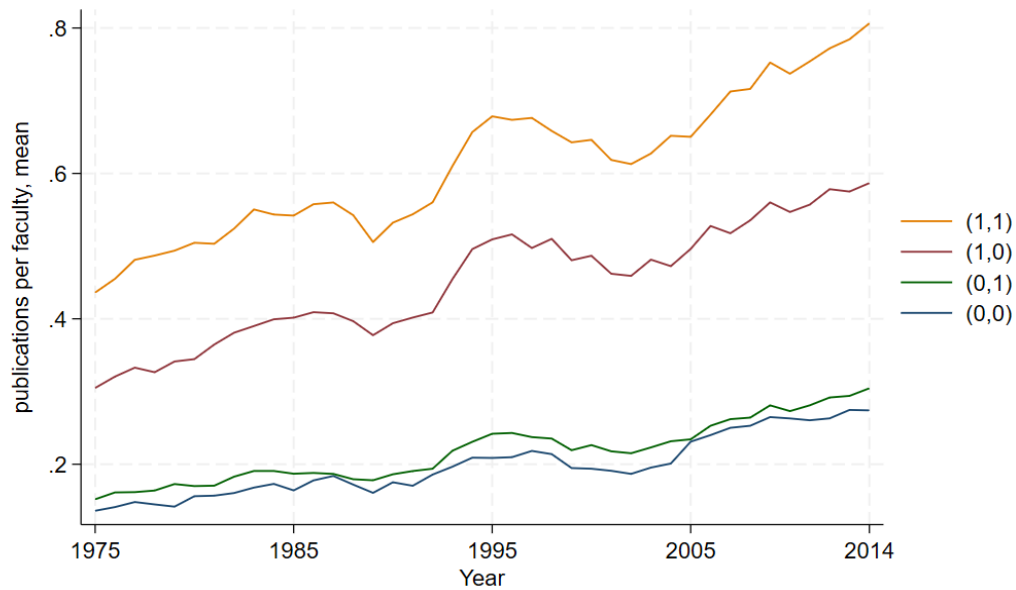


Figure 10. Publications per faculty member by faculty appointment authority, (1970, 2001)

Figure 10 compares publication rates for institutions without and without faculty appointment authority in 1970 and 2001. (The graph using tenure authority is virtually identical.) Publications per faculty member were highest at institutions where faculty possessed appointment authority in both 1970 and 2001 (the yellow line, coded (1,1)). Institutions where faculty had appointment authority in 1970 but not 2001 (coded (1,0)) had somewhat lower publication rates. Finally, both institutions where faculty lacked appointment authority in both periods (0,0) and those without authority in 1970 but that added it in 2001 (0,1) had much lower research output per faculty member. Unlike authority in 1970, the addition of faculty authority after 1970 does not appear to have been associated with higher publication rates.

6. Conclusion

Why faculty — and only some faculty — should enjoy rights, privileges, and protections available, at least in combination, to virtually no other class of employees has never been adequately explained. To be sure, many rationales have been offered, most raising valid concerns. Academic freedom *is* at risk if administrators can terminate outspoken faculty at will; scholars *will* be less willing to pursue risky lines of inquiry in the absence of employment guarantees; the willingness to identify and support hiring the best candidates for a position likely *would* be chilled when that position may be your own. But none of these are problems unique to higher education. As special as we like to think we are, it has yet to be shown that the severity of these concerns are distinctly greater in academia than in other sectors, or that their severity is sufficient to overcome, and thereby justify, the significant drawbacks associated with the job security and decision rights accompanying a tenured appointment. Why aren't labor market competition, reputation, and standard employment contracting — deemed sufficient protection and recourse for most employees, including the growing number of contingent faculty — also adequate for “regular” faculty?

Tenure and faculty authority over personnel decisions are, at least in the United States, mostly phenomena of the late 20th century. With few exceptions, faculty at the beginning of the century served at the pleasure of autocratic presidents and, later, autocratic department chairs. To be sure, presidents, like managers of any business enterprise, had little incentive to hire and fire professors arbitrarily and were

constrained in their treatment of faculty by competition, especially for prominent professors. But faculty throughout the 19th and into the early 20th centuries had little formal say over who their colleagues were and little recourse if the administration decided, for whatever reason, that their services were no longer needed. In other words, at least with respect to personnel decisions, colleges and universities operated much like other employers for much of the 20th century — and as they do now with respect to all but the (dwindling) privileged class of tenured faculty.

This paper suggests a pair of features of academic employment that together introduce the type of hold-up problem conventionally associated with durable, relationship-specific investments even though none of the principle activities that faculty typically perform — teaching, research, and service — is more than incidentally specific to any institution. The source of the problem lies, first, in the way scholars accumulate, and markets value, academic capital — the knowledge and skills that determine an individual’s capacity to produce research — the development and maintenance of which requires continuous investments of time and effort. The second is the combination of research and non-research responsibilities expected of “regular” faculty. The absence of either of these features obviates the hold-up problem and accounts for why neither purely instructional faculty nor research scientists without teaching responsibilities typically command the employment guarantees and governance rights of “full service” faculty.³² It also aligns with the historical record in which tenure and associated governance rights emerged and diffused gradually and selectively over a century as research was first introduced and subsequently gained importance as a central function of higher education institutions.

None of this is necessarily a defense of the status quo. Academic democracy exhibits many of the same deficiencies as political democracy but is, in one respect at least, potentially worse: With faculty exercising authority over hiring and promotion decisions, membership in academic communities, unlike general polities, is self-perpetuating. Once a faction achieves a majority, the democratic process for

³² Purely instructional (non-research) faculty are typically hired on annual or relatively short multi-year contracts. Although criteria for appointment and promotion of non-instructional university research scientists are often similar to those for tenure-track faculty, research scientists are typically not eligible for tenure.

selecting and retaining faculty will naturally tend toward ideological (and frequently methodological and topical) homogeneity. With the addition of the job security afforded by tenure, overturning prevailing interests within current institutional arrangements becomes a very long-term undertaking if possible at all. It may be that significant reforms of higher education are only be achievable through radical restructuring. If the analysis here is correct, however, it may not be possible to eliminate or significantly weaken the prevailing governance arrangements without sacrificing the credibility necessary to sustain the academic bargain that has kept American research universities at the top of higher education for the better part of a century.

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Appendix A. Governance sample characteristics and governance survey responses

1970 and 2001 AAUP surveys

Table A.1. Number of valid responses, AAUP surveys, 1970, 2001

Decision	Survey		
	1970	2001	Both
1. Appointments	783	859	522
2. Reappointments/renewals	781		
3. Promotions	776		
4. Tenure	775	828	515
5. Dismissals for cause	752		

Table A.2. Faculty Authority, percentage and mean, 1970 and 2001 samples

All responses	1970				2001			
	% All	% Some	%Any	Mean	% All	% Some	%Any	Mean
1. Appointments	20.1	19.8	40.9	29.4	51.6	26.8	78.3	69.4
2. Reappointments/renewals	18.4	15.8	34.2	25.4				
3. Promotions	24.5	15.1	39.6	31.4				
4. Tenure	28.5	14.5	43.0	35.1	54.6	19.7	74.3	67.9
5. Dismissals for cause	32.7	8.0	40.7	36.4				
Both survey response institutions	1970				2001			
	% All	% Some	%Any	Mean	% All	% Some	%Any	Mean
1. Appointments	20.7	19.9	40.6	30.0	54.2	25.3	79.5	72.0
4. Tenure	27.8	16.1	43.9	35.1	56.7	16.9	75.6	68.5

“% All” and “% Some” are percentages of valid responses indicating faculty had either exclusive or joint authority over all or some of the corresponding decisions, respectively. “Mean” is the average of the sum of the percentage responses for the “faculty determination” and “joint action” categories in the surveys.

1924 and 1941 AAUP surveys

A.3. Faculty personnel consultation, 1924 survey*

	Gerber (2014) coding	Recoding	
Formal involvement	38	Faculty consultation	53
Significant involvement	15		
No involvement or no clear reply	114	No consultation	114

*Survey question: To what extent and how do the Faculty members participate in the selection of members of the teaching staff?

A.4. Faculty personnel consultation, 1941 survey*

	Gerber (2014) coding	Recoding	
Elected departmental head	6	Faculty consultation	79
Departmental committee	19		
Faculty committee	38		
Both faculty and department	16		
None	45	No consultation	148
Appointed departmental head only	103		

*Survey question: Is faculty consulted in appointments, promotions, dismissals? How?

Table A.5. Descriptive statistics

	Mean	s.d.	Min	Max	obs.
Founding year ¹	1887.5	45.6	1636	1985	1,141
Faculty size, 1900	34.7	49.2	3	483	411
Faculty size, 1910	56.3	84.9	1	652	438
Faculty size, 1920	80.6	127.6	5	1006	507
Faculty size, 1930	110.9	195.3	7	1849	641
Faculty size, 1940	114.3	208.8	1	1978	903
Faculty size, 1975	226.7	293.2	4	2050	1,093
Faculty size, 1995	260.7	317.3	4	2225	1,134
Faculty size, 2001	279.8	336.9	4	2551	1,131
Faculty size, 2014	350.4	432.0	4	3506	1,122

Avg. pubs per faculty	Mean	s.d.	%=0	Max	obs.
1900	0.008	0.031	87%	0.45	411
1910	0.011	0.042	82%	0.56	438
1920	0.012	0.046	79%	0.48	507
1930	0.018	0.065	73%	0.84	641
1940	0.020	0.062	67%	1	903
1975-1984	0.25	0.54	3%	5.21	1,132
1985-1994	0.28	0.57	2%	5.56	1,137
1995-2004	0.32	0.64	1%	6.04	1,135
2005-2014	0.34	0.66	1%	6.08	1,131

Average of faculty authority responses on non-personnel decisions	Mean	s.d.	Min.	Max.	obs.
1970 survey (26)	41.4	18.3	0	96.2	786
1970 survey (13) ²	33.3	17.7	0	100	786
2001 survey (13) ²	47.5	18.4	0	100	864

Notes:

¹ 727 of 1,141 institutions (64%) were founded before 1900; the first in 1693, the last in 1985. Founding dates of an institution may not represent the year an institution began offering postsecondary education.

² Averages of the 13 nonpersonnel questions in both surveys.

Table A.5. Institutional attributes by institutional control

	Public	Private	Other rel.	Catholic
Median founding year	1894	1878	1875	1898
Faculty size, 1900	43.3	55.9	19.1	25.9
Faculty size, 1940	161.7	167.8	40.7	79.6
Faculty size, 1975	400.0	195.7	74.8	97.7
Faculty size, 2001	471.5	248.6	105.4	156.0
Average pubs per faculty				
1975-1984	0.31	0.49	0.08	0.12
1985-1994	0.34	0.54	0.10	0.14
1995-2004	0.41	0.61	0.11	0.16
2005-2014	0.44	0.62	0.11	0.15
Average of faculty authority responses on non-personnel decisions				
1970 survey, 26 areas	37.7	45.5	46.8	36.4
1970 survey, 13 areas	31.1	36.4	36.4	29.5
2001 survey, 13 areas	48.9	51.4	45.4	43.9

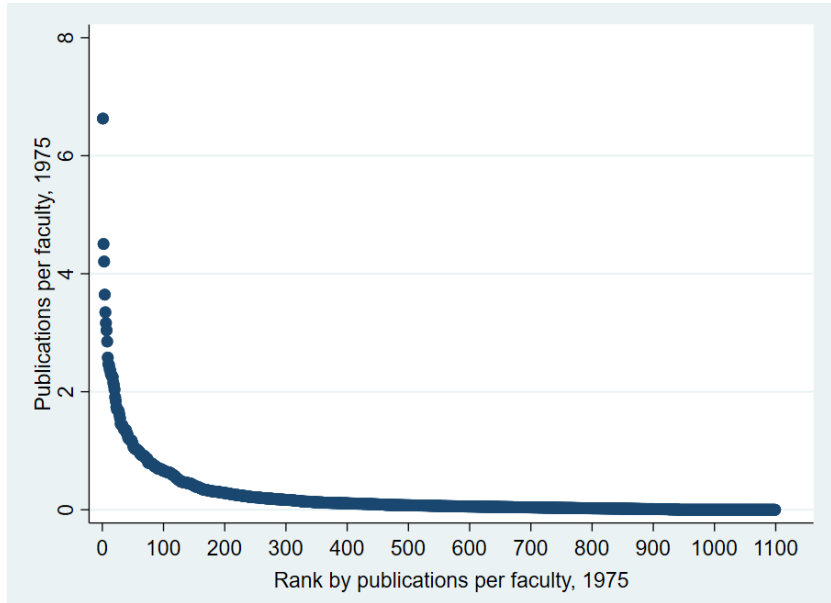


Figure A.1. Distribution of publications per faculty, 1975

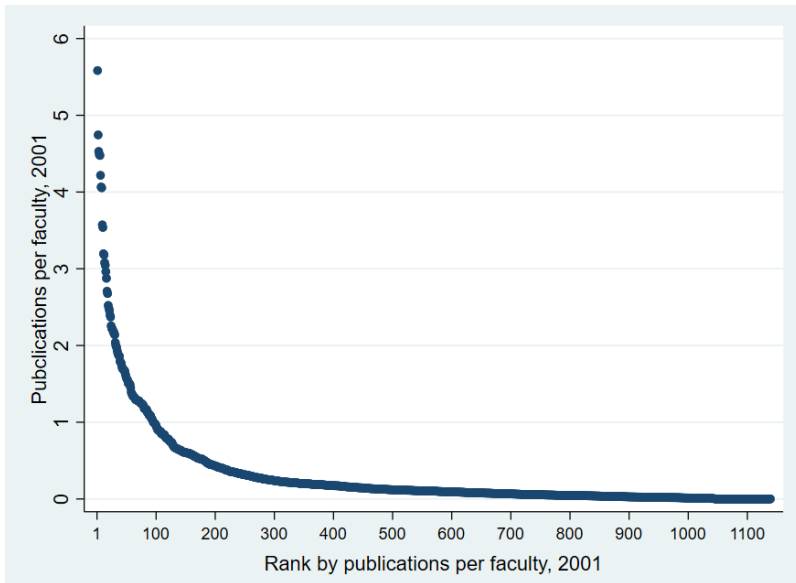


Figure A.2. Distribution of publications per faculty, 2001

Appendix B. Additional estimations and results

Table B.1. Publications per faculty 1975-2014, by faculty authority 1970

	(1)	(3)	(3)	(4)	(5)
	Dismissals	Promotions	Reappoint/Renewals	both survey responses	
				Appointments	Tenure
Faculty authority	0.164*** (4.992)	0.202*** (5.935)	0.164*** (4.992)	0.246*** (5.726)	0.239*** (5.798)
Year (1975=0)	0.00389*** (8.693)	0.00364*** (8.708)	0.00389*** (8.693)	0.00343*** (6.658)	0.00347*** (6.506)
Faculty authority * Year	0.00190*** (2.735)	0.00265*** (3.732)	0.00190*** (2.735)	0.00433*** (4.676)	0.00394*** (4.305)
Private	0.125 (1.636)	0.165** (2.105)	0.125 (1.636)	0.215* (1.907)	0.232** (2.064)
Other religious	-0.267*** (-8.192)	-0.249*** (-7.794)	-0.267*** (-8.192)	-0.281*** (-7.760)	-0.303*** (-7.994)
Catholic	-0.249*** (-6.271)	-0.247*** (-6.026)	-0.249*** (-6.271)	-0.274*** (-5.861)	-0.290*** (-5.876)
Constant	0.240*** (8.795)	0.226*** (8.335)	0.240*** (8.795)	0.240*** (7.428)	0.243*** (7.612)
Observations	29,960	30,939	31,130	20,810	20,530
Number of institutions	752	776	781	522	515
	Wald $\chi^2(6) =$ 210.82	Wald $\chi^2(6) =$ 210.36	Wald $\chi^2(6) =$ 210.82	Wald $\chi^2(6) =$ 165.09	Wald $\chi^2(6) =$ 158.60
	R ² (between) = 0.116	R ² (between) = 0.137	R ² (between) = 0.116	R ² (between) = 0.182	R ² (between) = 0.180

Linear random effects

Robust z-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Omitted Control category: Public

Columns (1) – (3) report results from estimations using the specifications in columns (1) and (5) of table 3 for the three decision categories not covered by the 2001 survey. Results reported in columns (4) and (5) reproduce the estimations in (1) and (5) of table 3 using only responses for the subset of institutions that participated in both the 1970 and 2001 surveys.

Table B.2. Estimated relationship of non-personnel authority and publications per faculty

	(1)	(2)
	ln(1_avg. pubs per faculty 1975-84)	ln(1_avg. pubs per faculty 1975-84)
Authority, non-personnel, 1970	0.000395 (0.000377)	-0.000263 (0.000416)
Authority, personnel 1970		0.000614*** (0.000208)
ln(Faculty size,1975)	0.170*** (0.0113)	0.163*** (0.0111)
Private	0.204*** (0.0321)	0.196*** (0.0319)
Other religious	0.105*** (0.0208)	0.101*** (0.0209)
Catholic	0.138*** (0.0203)	0.124*** (0.0207)
Founding year	-0.000877*** (0.000201)	-0.000869*** (0.000198)
Constant	0.889** (0.393)	0.916** (0.389)
Observations	782	782
R^2	0.436	0.443
F	F(6, 775) = 50.71	F(6, 774) = 44.79

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

These regressions explore the relationship of non-personnel authority and publications per faculty member. Non-personnel authority is statistically unrelated to publication rates with and without inclusion of authority over appointment decisions whereas authority over appointment decisions continues to have a significant positive relationship to research intensity after inclusion of non-personnel authority.

B.3. Probit estimates of 1970 faculty appointment authority

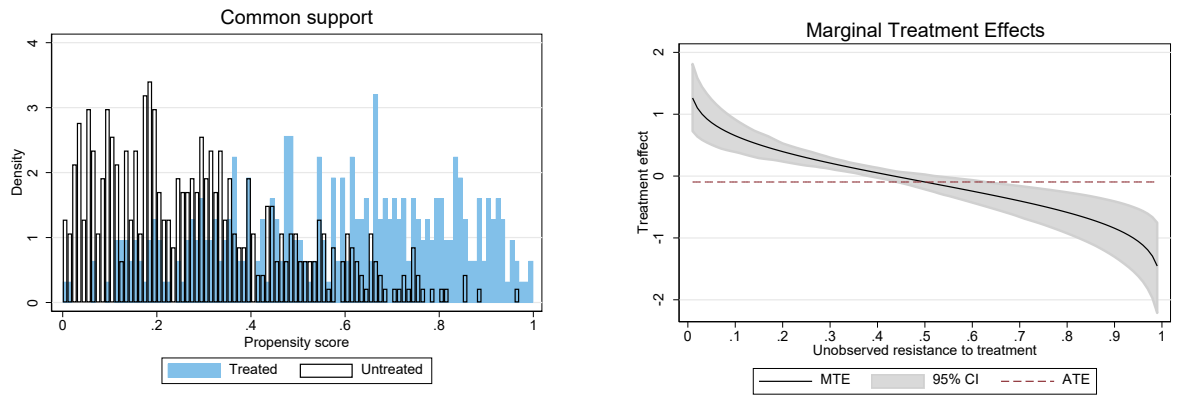
	(1)	(2)
Authority, non-personnel	0.0331*** (0.00343)	0.0328*** (0.00341)
log(1+pubs per fac, 1975-84)		0.769** (0.301)
log(faculty size, 1975)	0.616*** (0.0752)	0.488*** (0.0897)
Private	0.463*** (0.162)	0.310* (0.174)
Other religious	0.200 (0.178)	0.122 (0.180)
Catholic	0.951*** (0.194)	0.848*** (0.197)
Founding year	-0.000233 (0.00131)	0.000301 (0.00133)
Constant	-4.602* (2.630)	-5.028* (2.649)
Observations	782	782
Pseudo R ²	0.233	0.240
	$\chi^2(6) = 163.9$	$\chi^2(7) = 172.5$

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Column (1) reports the coefficients from the first-step probit estimation of 1970 faculty authority from the two-step marginal treatment effects estimation. Column (2) re-estimates that relationship including average publications per faculty member between 1975 and 1984 (in log form). The probability that faculty have appointment authority is significantly positively related to authority over other decisions. The significant coefficient on publications per faculty in column (2) indicates that faculty appointment authority is positively related to publication rates after controlling for authority over non-personnel decisions.

Figure B.1. Probit propensity score distribution densities, and estimated marginal treatment effect curves

Panel A: Dependent variable: log of (one plus) average publications per faculty member, 1975-1984:



Panel B. Dependent variable: log of (one plus) average publications per faculty member, 2005-2014:

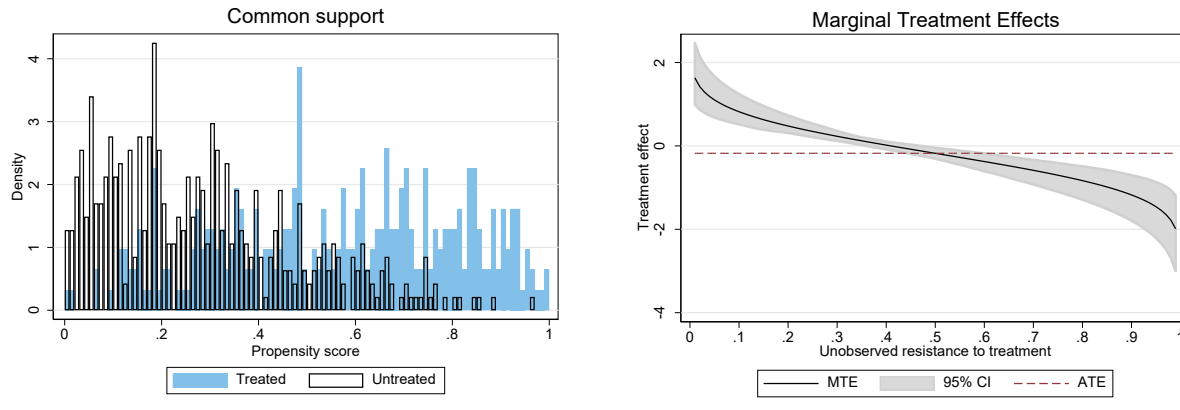


Table B.4. Second-step estimates of essential heterogeneity model

	log(1+pubs per faculty) (1975-1984 avg.)		log(1+pubs per faculty) (2005-2014 avg.)	
	(1) β_0	(2) $\beta_1 - \beta_0$	(3) β_0	(4) $\beta_1 - \beta_0$
log(Faculty size)	-0.0407* (0.0245)	0.449*** (0.0591)	-0.0131 (0.0300)	0.513*** (0.0763)
Private	-0.0519 (0.0563)	0.530*** (0.132)	-0.0134 (0.0589)	0.485*** (0.136)
Other religious	-0.0165 (0.0307)	0.196** (0.0891)	-0.00863 (0.0369)	0.195* (0.111)
Catholic	-0.0150 (0.0360)	0.302*** (0.0965)	-0.0430 (0.0388)	0.385*** (0.104)
Founding year	0.000604** (0.000277)	-0.00307*** (0.000786)	0.000931*** (0.000312)	-0.00408*** (0.000794)
Constant	-0.945* (0.538)	3.233** (1.505)	-1.682*** (0.612)	4.731*** (1.570)
Mills ratio		-0.584*** (0.139)		-0.778*** (0.169)
Effects				
ATE		-0.0950 (0.0619)		-0.178** (0.0729)
ATT		0.525*** (0.0881)		0.614*** (0.114)
ATUT		-0.510*** (0.132)		-0.705*** (0.162)
LATE		0.113** (0.0528)		0.0888 (0.0642)
MPRTE1		0.0602* (0.0332)		0.0243 (0.0414)
MPRTE2		0.0900*** (0.0308)		0.0721* (0.0388)
MPRTE3		-0.218*** (0.0736)		-0.344*** (0.0859)
Test of observable heterogeneity, p-value		0.0000		0.0000
Test of essential heterogeneity, p-value		0.0000		0.0000
Observations		782		780

Bootstrap standard errors in parentheses; 250 replications; *** p<0.01, ** p<0.05, * p<0.1

Appendix C. Data sources

C.1. Governance data

1924 and 1941 AAUP Surveys

Electronic data file provided by Professor Larry Gerber

References:

American Association of University Professors, 1924. "Report of Committee T: Data Concerning the Actual Status of Faculties in University Government in a Number of Institutions," *Bulletin of the American Association of University Professors*, 10(5), May: 43-104.

American Association of University Professors, 1941, "Place and Function of Faculties in College and University Government," *Bulletin of the American Association of University Professors*, 27(2), April: 155-205.

Gerber, Larry G. 2014. *The Rise and Decline of Faculty Governance: Professionalization and the Modern American University*. Baltimore: Johns Hopkins University Press.

1970 and 2001 AAUP Surveys

1970 survey data: Electronic data file provided by Father James Thornton.

2001 survey data: Electronic data file provided by Gabriel Kaplan via Professor Stephen Porter

References:

American Association of University Professors, 1971. "Report of the Survey Subcommittee T," *AAUP Bulletin*, 57(1), (March): 68-124.

Kaplan, Gabriel E. 2002. "Between Politics and Markets: The Institutional Allocation of Resources in Higher Education." Unpublished doctoral dissertation, Faculty of Graduate School of Arts and Sciences, Harvard University.

C.2. Publication counts

Publication data were extracted from the Web of Science Core Collection, comprised principally of the Science Citation Index Expanded (SCIE), the Social Sciences Citation Index (SSCI), and beginning around 1975, the Arts & Humanities Citation Index (AHCI).¹ The Web of Science Core Collection is not comprehensive but instead “includes only journals that demonstrate high levels of editorial rigor and best practice” (<https://mjl.clarivate.com/collection-list-downloads>). Web of Science data files are copyrighted material licensed by and obtained with the assistance of the University of Michigan Library and used with permission.

Because the analysis of governance here takes place at the institution level, only publications for which authors’ affiliations could be identified are included in the totals. Although the current Web of Science database covers publications from 1900 to present, the Indexes did not record institutional affiliations during the period when the Indexes were published exclusively on paper. As a result, institutional affiliations only became available in significant numbers for records beginning around 1973. Institutional affiliations for publications from 1900 to 1944 were recorded, where available, owing to a retrospective project incorporating publications prior to the print publication of the science and social science Indices. The absence of affiliations, especially in earlier years, implies an undercount of publications. A timeline of key events in the history of development of the Indices is on the Clarivate website at <https://clarivate.com/webofsciencelibrary/solutions/the-history-of-isi/vatavailable>.

The Web of Science collections have a number of other limitations and imperfections. See Toutkoushian (2006) and Larsen and von Ins (2010) for discussions of some of the difficulties with and limitations of the Web of Science data. Although these factors limit the usefulness of Web of Science publication figures for time series analysis, there is less reason to believe the limitations affect institutions differentially in cross section.

The data used in this study created by first algorithmically and then manually matching institutions in the “governance sample” with institutions in the Web of Science database, an enormous undertaking given alternative spellings, abbreviations, name changes, institutions with the same name, location misattributions, miscoding or misreading errors, among other factors. Consistent with the focus on college and university governance, publications by authors listing affiliations with university hospitals or hospital departments were excluded. (Publications by authors listing medical school affiliations were retained.)

To the extent that publications are co-authored by individuals at more than one institution, a simple summation of publications with any institutional affiliation will overstate the actual number of publications, an issue that becomes more acute over time as co-authorship becomes more prevalent. To address this within the constraints of the Web of Science records, a mixed weighting scheme was adopted that used author weighting where available and institution weighting otherwise, as defined as follows:

1. Author weighting. For entries in which Web of Science records identified the affiliation of each author, each publication associated with an institution was given a weight calculated as (the number of authors affiliated with the institution)/(total number of authors for that publication).

¹ Throughout the covered periods, publications in science and technology vastly outnumbered publications in social sciences. Arts and humanities publications (added in the 1970’s) represent a still smaller part of the publication totals, about 7% in 2010, roughly half the number of social science publications reported that year.

2. Institution weighting. For entries in which individual author affiliations were not recorded, publication counts for each institution were adjusted using an alternative weight calculated as $1/(\text{total number of institutions associated with a given publication})$.

As seen in figures C.1 and C.2, publications by institutions in the governance sample represent a sizeable portion of all publications by authors with U.S. academic affiliations. The total number of publications associated with sample institutions is 9,537,668 over the combined 1900-1944 and 1973-2014 periods compared to 16,517,582 for all publications by all authors with affiliations with U.S. colleges and universities.

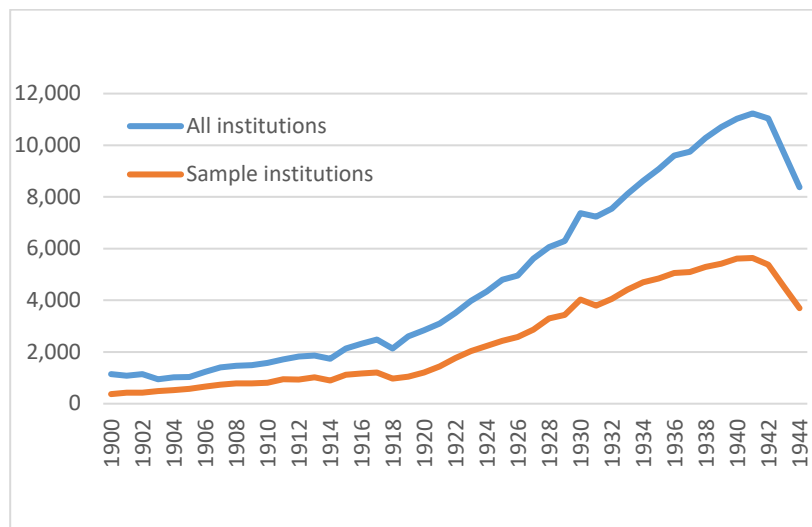


Figure C.1. Publication with U.S. affiliated authors, 1900-1944, all and governance sample institutions

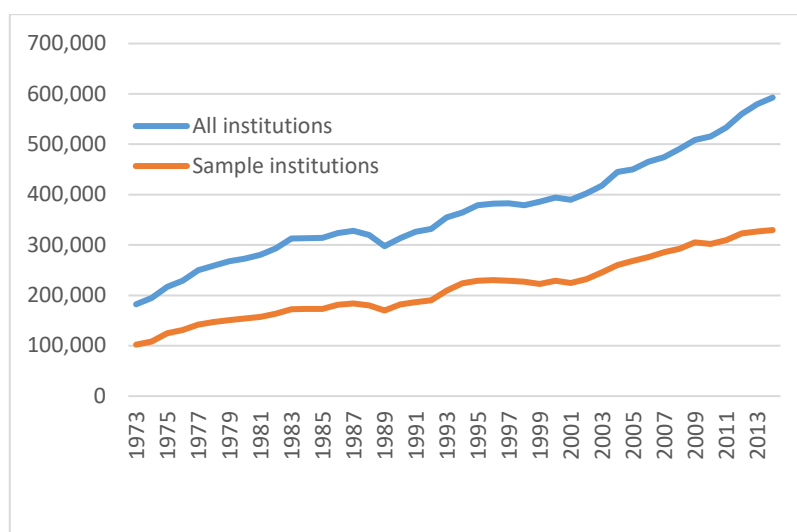


Figure C.1. Publication with U.S. affiliated authors, 1973-2014, all and governance sample institutions

C. 3. Faculty counts

Faculty numbers, 1900-1940

Faculty count data for 1900 to 1940 were manually extracted from U.S. government reports at approximately five-year intervals using the closest available year. (The federal government discontinued publication of data on individual institutions after 1940.) Specific sources are listed below.

Faculty numbers, 1970-2014

The primary source for faculty numbers in the modern period is the National Center for Education Statistics IPEDs database, supplemented by AAUP data, institutional websites, and other ad hoc sources as listed below for years not covered by IPEDs and other missing or inconsistent data.

1970, 1975:

Sources: *AAUP Annual Salary Surveys*, and faculty size numbers included in AAUP 1970 survey data.

1980-2014:

Faculty counts beginning with 1980 are for full-time nonmedical instructional staff with academic ranks of professor, associate professor, assistant professor or instructor. IPEDS institutional data are available for specific years beginning with 1980-81. Counts for years 1980-81, 1984-85, 1985-86, 1987-88, 1990-91 through 1999-2000, and 2001-02 through 2003-04 were downloaded from <https://nces.ed.gov/ipeds/datacenter> using the custom data files function. Beginning with the 2004-05 collection year, data for each collection year were compiled into an Access database (IPEDS Access database, annual beginning with 2004-05 through 2014-15.) Faculty numbers for years not covered were interpolated from adjacent years.

University of California

Both U.S. government and AAUP sources prior to 1978 provide faculty numbers only for the University of California system as a whole. Faculty counts for individual campuses from 1900-1940 come from Stadtman (1967). Values for 1975 are imputed from the system-wide AAUP salary survey total for 1975 apportioned based on relative faculty sizes in the 1978 AAUP salary survey.

References

American Association of University Professors Annual Salary Surveys, 1969-2014.

Stadtman, Verne A. (1967). *The Centennial Record of the University of California*. Berkeley: University of California Printing Department.

U.S. Department of Education. Institute of Education Sciences, National Center for Education Statistics.

U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS).

U.S. Office of Education. Report of the Commissioner of Education. 1900/01:v.2. Washington: U.S. Govt. Print. Off [1900]

U.S. Office of Education. Report of the Commissioner of Education 1901

- U.S. Office of Education. Report of the Commissioner of Education. 1904:v.2.
- U.S. Office of Education. Report of the Commissioner of Education 1906, [academic year 1905-06]
- U.S. Office of Education. Report of the Commissioner of Education 1910
- U.S. Office of Education. Report of the Commissioner of Education. v.2 1910/11. [for 1910]
- U.S. Office of Education. Report of the Commissioner of Education. Washington: U.S. Govt. Printing Office, 1916/1917. 1917: v.2. [academic year 1915-16]
- U.S. Bureau of Education. Biennial Survey of Education 1916-1918, v.3, Washington, D.C: Department of the Interior, Bureau of Education [academic year 1917-18]
- U.S. Bureau of Education. Biennial Survey of Education, 1918-20, Washington, D.C: Department of the Interior, Bureau of Education [academic year 1919-1920]
- U.S. Bureau of Education. Biennial Survey of Education, 1920-1922, Washington, D.C: Department of the Interior, Bureau of Education [academic year 1921-1922]
- U.S. Bureau of Education. Biennial Survey of Education. 1924-1926. Washington, D.C: Department of the Interior, Bureau of Education[for 1925]
- U.S. Bureau of Education. Biennial Survey of Education, 1925-1926, Washington, D.C: Department of the Interior, Bureau of Education [academic year 1925-1926]
- U.S. Bureau of Education. Biennial Survey of Education 1929-30, v.2, Washington, D.C: Department of the Interior, Bureau of Education
- U.S. Bureau of Education. Biennial Survey of Education, 1930-1932, Washington, D.C: Department of the Interior, Bureau of Education [academic year 1931-32]
- U.S. Bureau of Education. Biennial Survey of Education, 1934-1936, Washington, D.C: Department of the Interior, Bureau of Education [academic year 1935-36]
- U.S. Bureau of Education. Biennial Survey of Education, 1938-40, Washington, D.C: Department of the Interior, Bureau of Education [academic year 1939-40]

C.4. Institutional characteristics

Institutional classifications

1970: Carnegie Commission on Higher Education (1973). *A Classification of Institutions of Higher Education*. Berkeley, CA.

2000: Carnegie Foundation for the Advancement of Teaching. *The Carnegie Classification of Institutions of Higher Education, 2000 Edition*. (Electronic data file, available at https://carnegieclassifications.acenet.edu/wp-content/uploads/2023/03/2000_edition_data.xlsx)

Institutional control and affiliations

1970: 1970 AAUP Survey

2000: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2000, Institutional characteristics.

Notes

Changes in public and private control are infrequent but do occur. Among sample institutions, three private institutions became public after 1970 (University of Baltimore, Lincoln University (PA), and College of Charleston). Rutgers University became public in 1945.

Religious affiliations are often ambiguous. The vast majority of colleges founded in or before the 19th century had religious affiliations. Duke University, for example, had an affiliation with the Methodist Church that dates back to its founding in 1838. Although long regarded as “an independent and non-sectarian institution,” Duke University was classified in the IPEDS system as late as 2001 as an institution with a religious affiliation, and 24 of the university’s 36 member board of trustees were elected by North Carolina’s Methodist Conferences until 2016. Among the sample institutions, 33 institutions with religious affiliations in 1970 had changed control by 2000: 7 Catholic institutions became private, 24 with Protestant affiliations were reclassified as private, and 2 (Athens State College and Texas A & M University-Corpus Christi) became public. (Only three of the “other religious institutions” among the governance sample institutions were affiliated with Judaism.)

Founding years

Sources:

U.S. Bureau of Education. *Biennial Survey of Education, 1925-1926*, Washington, D.C: Department of the Interior, Bureau of Education.

Miscellaneous online resources.