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The Education Papers

How We Pay Professors and Why It Matters

John Chant

In this issue...

Canadian universities differ in the way they compensate professors and these differences have noticeable effects on faculty performance in teaching and research. Universities with seniority-based salary structures should imitate those with merit-based compensation.

The Study in Brief

Academic salaries now total more than \$4 billion and account for more than twenty percent of total university operating expenditures. Salary structures set the incentives for faculty to advance the mission of their university: the transfer and creation of knowledge.

The job of professor involves multi-tasking and the productivity of professors is, largely, independent from that of their colleagues. Universities do not have the same loyalty needs of some other knowledge-based employers and they have an effectively flat hierarchy among their faculty. All these aspects suggest that determining the salaries of university professors should give substantial recognition to performance.

The arrangements for salary advancement at Canadian universities are many and varied and appear to be closely related to whether faculties are unionized or not and to the type of university. They differ with respect to the granting of salary increments, the existence of salary ceilings, the granting of lump-sum awards, and provisions to provide salary supplements to reflect market pressures. Of these arrangements, the provisions that determine annual salary increments together with salary ceiling are the most important in shaping the structure of faculty salaries.

The salary structures at Canadian universities appear to matter. Evidence shows that the performance of universities with merit-based salaries exceeds that of other universities. They perform better in a variety of research-based and quality measures such as entrance grades, the success of faculty in gaining research grants and the citations received by faculty publications.

Elimination or reduction of the seniority-based element in university salaries would benefit higher education. Funds would no longer be committed to raising the salaries of faculty members who fail to demonstrate adequate performance, allowing these funds to be directed towards attracting, retaining and encouraging more productive faculty; or toward financing other priorities in higher education.

Provincial governments may need to foster greater competitive pressures among universities by making funding follow students, rather than the other way around. Such pressures may force universities to rethink their salary policies.

The Author of This Issue

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The pay of university teachers was, in Adam Smith's view, "set as directly in opposition to his duty as it is possible to set it" when it was set independently from the teacher's success and reputation (Smith 1776).

The concerns Smith raises are just as relevant today when academic salaries total nearly \$4 billion and account for more than twenty percent of total university operating expenditures.

The resources of Canadian universities come mainly from the public through government grants or from students through the fees they pay. Consequently, universities have a responsibility to these groups for husbanding their resources. They must be especially accountable for the salaries they pay since they represent a large share of overall expenses. To fulfill their responsibilities, universities must ensure that their compensation arrangements encourage faculty to advance the mission of their university to transfer and create knowledge.

This paper deals with the structure of professors' salaries at Canadian universities and its consequences. It is especially concerned with the way the progress of professors' salaries over their careers reflect their performance. Too often salary structure is dismissed as an administrative detail far removed from the central academic concerns of the university. However, salary structures are vital in determining the quality of faculty that a university can attract and retain. Salary structures also set the incentives for faculty in the performance of their duties. Faculty will be less inclined to strive for excellence if their efforts, relative to other faculty, go unrewarded.

Salary structures at Canadian universities are the result of continuing negotiations between professors often represented by their unions, and administrators acting on behalf of boards of governors ultimately responsible for the business of the university.¹ A university's failure to put in place salary structures that provide incentives for productivity represents a breakdown of governance. This paper suggests that incentives are vital to the performance of universities and supports the efforts of university administrators who have maintained incentives at the centre of their salary structures. Under current conditions, the prospects appear dim for reforming seniority based arrangements at other universities. University administrators have little incentive to fight for incentive pay because funding is tied to institutions through rigid enrolment quotas. This system forces students to follow funding. If, instead, governments substantially replaced their current grants by issuing vouchers to qualified students who could apply them to the institutions of their choice, universities would have stronger incentives for raising their performance. Such pressures may force universities to rethink their salary policies.

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1 The Board of Governors at Simon Fraser University is described as the "senior governing body [of the university]... constituted under the University Act. The overall responsibility for the business of the University (property, revenue and policies) is vested in the Board." See www.sfu.ca/bog.

The Role of Universities and Professors

The jobs and compensation arrangements of employees are derived ultimately from the objectives and activities of their employers. Therefore, professors' jobs and compensation arrangements should intimately tie in to the functions of the university.

Universities are sometimes characterized simply as post-secondary or tertiary level educational institutions. This suggests that they are just a continuation of previous educational experience, no different from other post-secondary institutions. Universities, like other educational institutions, including secondary schools and community colleges, do devote much effort to conveying knowledge to their students. However, universities do more. They transfer to students an understanding of how knowledge is advanced. The greatest difference distinguishing universities from other post-secondary institutions lies in their approach to knowledge: universities are deeply committed through their research to extending the boundaries of knowledge.

Universities direct themselves to research for a number of reasons. Research can create new knowledge, and new knowledge can make a valuable contribution to society. Some new knowledge has commercial value and spawns new industries. Some research directly enhances individual welfare. Medical research allows many people to live longer and more fulfilling lives. Research also contributes to better public policy. Finally, research contributes to public understanding of our society.

Not all research can boast such achievements. By exploring the unknown, research must inevitably have an uncertain outcome. This unpredictability means that a broad net must be cast to produce significant achievements.² A society must judge the value of research by the benefits of its entire research enterprise.

While the fruits of research can justify the resources society directs to universities, they do not necessarily justify the conduct of research in those institutions. Universities do have some advantages as sites for research. By teaching the current state of knowledge, they possess the well-educated staff necessary for expanding the frontiers of knowledge. Their role in educating the students who will themselves work to extend knowledge provides a further justification for the role of universities in research. This education requires teachers who understand the current boundaries of knowledge and who themselves struggle to advance these boundaries. In addition, the research universities conduct differs from that done elsewhere since universities, more than other industries, focus on early stage research that may not have an immediate payoff.

Research and teaching at universities are not independent of each other: rather they are closely linked. It is not enough that the university embraces both teachers and researchers to gain the benefits that research bestows on teaching. While the university has a place for instructors who teach general undergraduate courses as well as some research professors who teach no formal courses, the core of a

² This uncertainty does not imply all research efforts are equally promising. Track record and quality of research plans are good indicators of the chances for success.

university's faculty must be able to convey the insights they gain from pursuing knowledge first hand.

The way in which research contributes to teaching defines the job of professors. This dual role of professors as researchers and teachers distinguishes them from other instructors at secondary schools or at post-secondary institutions such as vocational institutes and colleges. It also distinguishes professors from workers at think tanks, government research institutes and the research and development arms of corporations. It is this link between teaching and research that defines a university and which must be a foremost consideration in determining the job of most professors and in setting salary policies for their jobs.

The Professor's Job

Jobs differ greatly in the characteristics that shape the pattern of appropriate rewards. The job of professor involves multi-tasking and the productivity of professors is, largely, independent from that of their colleagues. Universities do not have to the same degree the loyalty needs of some other knowledge-based employers and they have an effectively flat hierarchy among their faculty.

Multi-Tasking

The tasks that make up the job of university professor include teaching, research, participating in the administration of the university and providing community service. Such multi-tasking appears to conflict with the logic of specialization and practice elsewhere. The earlier justification for research activity at universities shows it is to a large degree inseparable from teaching: research informs teaching and teaching informs research. The institution achieves this cross-fertilization to the degree that the same individuals carry on both activities. Participation of professors in university administration reflects the long tradition of academic freedom. While non-academic professionals increasingly do many tasks such as human resources, finance and research services, professors still determine what is to be taught through their control over curriculum and judge the performance of their peers.

The need for workers to multi-task complicates the employer's approach to compensation. Workers are likely to weigh the costs of performing each task relative to the incentives for success. Where salaries are independent of success in different tasks, workers will tend to emphasize those that bring them the greatest satisfaction and direct less effort to the others. When the less emphasized tasks are important to the employer's mission, they must build the incentives to perform these tasks into compensation.

Independence

The contributions of professors to teaching and research depend not only on the professor's own contribution, but also on the efforts of the professor's colleagues. A professor's teaching of a subject depends on the grounding students have

gained in other courses. Similarly, professors' research success may depend on the efforts of other members of their research team. Collaborations, however, are voluntary and usually involve a small share of the members of any academic department. Teams often include professors at different institutions together with their post-doctoral and graduate students. Faculty members within the same department generally follow a variety of lines of research so that, for example, the success of the high-energy physicists does not compromise the success of their colleagues in astrophysics or molecular physics. The independence is not, however, complete: interactions with colleagues through workshops or in one-on-one discussion may sharpen and stimulate a professor's research.

The degree to which this dependence among faculty contributions should influence salary structure depends on its importance. If university departments were like piano moving teams, a uniform salary policy might be required because the team is no stronger than its 'weakest link' and members' contributions to the team cannot be easily measured. Universities, however, do not fit the piano mover mould very closely. While colleagues can contribute to a professor's success, the 'weakest link' does not drag others down. More importantly, the diverse contributions of individual faculty members — teaching; research; and support of their colleagues — can be recognized, albeit not perfectly, and incorporated into salary adjustments.

Turnover

The avoidance of turnover is vital in determining salary structure in some activities. Turnover is especially costly in industries where valuable proprietary information such as customer lists or unique processes are important. Here employers will want to retain employees to contain the spread of this information. Turnover is also costly in industries which invest in workers through job specific training. Avoiding turnover allows employers to escape the costs of investing in replacement workers. In these cases, employers can try to avoid the costs of turnover by making salaries depend to some degree on the length of tenure with the employer.

Turnover does have some costs to universities. Searches are expensive, both in time and money. They are especially so in smaller departments where a search involves a substantial commitment of time from all faculty. New hires also involve substantial start up costs in fields such as science, engineering and medicine. In addition, the practice of granting temporarily reduced teaching loads to new faculty raises the costs of turnover because other faculty must take up the slack by teaching larger classes. Increased turnover aggravates each of these problems.

Nevertheless, the absence of express knowledge and job-specific training requirements means turnover is not likely to be as expensive for universities as it is for other knowledge industries. Indeed, salary arrangements appear to reflect a low need for loyalty from faculty. Professors who shift from one university to another do not start at the bottom of the salary structure. Rather experience at other universities is taken into account, generally in full measure, in setting the professor's salary at the new institution.

Hierarchy

The hierarchy of assistant, associate and full professor at universities lacks the functional basis of hierarchies found in both the clergy and the military where those at higher levels direct the activities of those below them. In these cases, the trappings and rewards of higher office induce the lower ranks to strive for promotion. Academic jobs at universities lack such a hierarchy. All professors from the newest assistant professor to the most senior full professor do the same things: they teach, carry out research, and participate in running the university. Full professors are not formally responsible for supervising or directing the work of assistant and associate professors, though many contribute through their role as informal mentors.³

Universities in North America lack the pyramidal hierarchy that creates the conditions for tournaments in other organizations. There are no limits placed on the numbers that can hold the higher ranks; thus, promotion to higher ranks does not pit professors against each other.⁴ Workers advance to the next ranks once they meet their university's standards for that rank. Indeed, the age structure of university faculty that reflects the massive university expansions in the late 1960s and 1970s produced a bulge in the numbers in the senior ranks during the 1990s that is only now changing as full professors retire.

Universities have a management hierarchy that consists of department chairs, deans, vice presidents and presidents. This hierarchy, however, differs from the hierarchies found in corporations or the military. It is independent and separate from the professorial hierarchy. Deans who administer the affairs of faculties may hold an academic rank below that of many professors in their faculty. In addition, progress in the administrative hierarchy of universities is quite different than elsewhere where upward movement depends on demonstrating the skills needed at higher levels of responsibility. University administrators do not perform the same tasks as their colleagues in that they neither teach nor perform research. Rather they organize and manage the apparatus needed to run the university. While some very successful academics become university administrators, rising in the administrative hierarchy requires different skills than being an academic. These differences mean that movement up the hierarchy in universities does not provide the same incentives as in other organizations

Professors' Jobs and Their Compensation

The compensation arrangements for professors should reflect what professors do and how they do it. As noted above, the professor's job is multi-tasked, largely independent from the efforts of others, in a flat hierarchy and generally without a strong need for employee loyalty. These characteristics have differing implications for salary structure:

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- 3 In some universities, only professors of a certain rank and higher judge the promotions to that rank. This practice appears to be disappearing with the democratization of university governance.
 - 4 The situation is quite different in other countries. Universities in the United Kingdom and Germany both place limits on the numbers in their senior ranks.
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1. The multi-tasked dimensions of the professor's job means that gearing compensation to performance of the different tasks gives professors incentives to weight their efforts appropriately among the tasks.
2. The largely independent efforts of professors suggest that compensation reflecting the individual performances of faculty should be a major part of overall compensation.
3. The university's need for loyalty appears on the whole sufficiently weak to limit the degree to which length of service needs emphasizing over performance in the determination of compensation.
4. The absence of an effective hierarchy means that the salary structure for professors must build in incentives to a greater degree than for jobs where there are rewards from advancing through the institutional ladder.

All these aspects suggest that determining the salaries of university professors should give substantial recognition to performance.

Climbing the Academic Ladder

University professors face two types of performance evaluations throughout their careers. The first, landmark assessments, take place on relatively few occasions in the form of tenure and promotion reviews. Exceptional professors may face a further assessment if the strength of their performance justifies their consideration for named or endowed chairs. The second type of review is more frequent, usually annual or biennial, and determines the progress of professors through the salary range for their current rank.

Landmark Assessments

Tenure review, the first landmark assessment, decides whether to transfer a faculty member from probationary to permanent status, which virtually assures continuing employment. The decision to grant tenure occurs at the end of a probationary period, generally around seven years after a professor's initial appointment, and uses career performance in relation to the norms of their university as its basis. Tenure decisions require detailed examination of a candidate's teaching, research and other contributions, and usually include evaluations by external authorities. The tenure decision is critical to the applicant because failure to obtain a favourable outcome effectively terminates employment at the university.

The perception exists that the tenure decision is a significant hurdle for aspiring academics, not only because of its implications for continued employment, but also because of the stringency of the criteria that are applied. There is little available evidence on the success rates of tenure applications at Canadian universities with the exception of the recent experience at the University of Toronto. At a university with an outstanding international reputation, only 18 candidates or 3 percent of the total 597 reviewed were denied tenure over the years 1995-96 to 2002-03 (University of Toronto Faculty Association 2004). Data from another university indicates a higher rate of tenure denial, 8 percent in the

thirty-four cases decided from 2002 to 2004.⁵ These data understate to some degree the stringency of the review since some candidates may choose to leave the university in anticipation of an unfavourable decision. Nevertheless, if the experiences of these universities are typical, the large majority of faculty members pass the test when reviewed for tenure at Canadian universities. Tenure reviews appear less stringent than is the common perception, especially by junior faculty yet to face the test.⁶

The second landmark assessment, promotion review, has less substantial consequences as no threat to continuing employment hangs on the decision. An unsuccessful faculty member continues employment and, as will be seen later, may not suffer any salary consequences from failing this review. Some universities have combined promotion to associate professor with the granting of tenure. Promotion to full professor, on the other hand, remains a landmark assessment.

Salary Assessments

The second type of performance assessment for professors is the regular review that determines the advancement of professors' salaries throughout their careers. Compared to landmark assessments, regular salary assessments have lesser implications. They either have no effect on employment security or have an effect only in extreme circumstances. Depending on the salary arrangements, a regular assessment can raise a professor's salary by the amount of the award for the rest of their career, as in the case of a salary system with no salary ceilings.

The present value of a current salary award can be substantial. The award of a \$3,000 increment would have a present value of as much as \$48,000 for a faculty member with 35 years remaining in a career. On the other hand, the same award has a present value of only \$13,000 for a faculty member who is five years from retirement.⁷ Where salaries are subject to ceilings, the value of a salary award may be much less. It may just raise the salary until the faculty member reaches the next salary ceiling. In this case, a favourable salary award accelerates the faculty member's progress toward that ceiling. The faculty member benefits from receiving the additional \$3,000 each year until they reach the ceiling. In the extreme case, a favourable salary assessment has no value to a faculty member who is already at the ceiling.⁸

5 Information provided to the author.

6 The University of Toronto faculty association attributes the low rate of tenure denial to the university's selectivity in hiring junior faculty. There is some reason to be sceptical of this explanation. Elite US universities that have their choice of the top candidates each year have much higher refusal rates.

7 The value of the award also depends on the faculty member's pension arrangements and differs between defined contribution and defined benefit pensions.

8 Some universities allow a faculty member's salary to go beyond the ceiling according to the number of merit awards the member has received beyond the normal increments.

Table 1: Basis for Annual Salary Adjustments at Canadian Universities

Lock-Step	Regina, Brandon, Winnipeg, Manitoba, Windsor, York, Ottawa, Concordia, Carleton, Bishops), Mt Allison, Dalhousie, Mt St Vincent, St Francis Xavier, St. Mary's, Acadia, Memorial.
Step Plus Merit	UNBC, Saskatchewan, Lakehead, Laurentian, Brock, Trent, Waterloo, Wilfrid Laurier, Western, Ryerson.
Differentiated Progress	Victoria, U.B.C., SFU, Alberta, Calgary, Lethbridge, McMaster, Guelph, Western, Queen's, Toronto, McGill.

Source: University collective agreements and other information at faculty association and human resource websites.

University Salary Arrangements

The arrangements for salary advancement at Canadian universities are many and varied.⁹ They differ with respect to the granting of salary increments, the existence of salary ceilings, the granting of lump-sum awards, and provisions for salary supplements to reflect market pressures. Of these arrangements, the provisions that determine annual salary increments together with salary ceiling are the most important in shaping the structure of faculty salaries.

Salary Increments

Every university salary arrangement studied had some provision for the annual progress of faculty salaries over a career that is independent of any across-the-board increases that apply to each salary step.¹⁰ The arrangements, however, are quite varied and can be classified into three categories: lock-step, automatic plus merit and differentiated (Table 1).

Lock-step adjustments: The lock-step group consists of those universities where the annual adjustments appear to be a matter of entitlement for all members of faculty. This group includes those universities where the collective agreement makes provision for an annual adjustment to all faculty members and lacks any provision for the recognition of merit in salary adjustments. As an example, the collective agreement at Mount St. Vincent University states "each teaching faculty member who is not at the ceiling for her rank **shall** move up one grid step ...or to the ceiling of the rank, whichever is less [emphasis added]." It also includes universities that nominally allow the denial of a salary adjustment for unsatisfactory performance, but where the conditions make such an outcome

⁹ The institutions studied include all universities the Canadian Association of University Teachers website lists whose own websites provide accessible data on the collective agreements at the time of the research. See website: www.caut.org.

¹⁰ This study concerns itself solely with the structure of university professors' salaries and not with their level.

unlikely.¹¹ The stated conditions necessary to trigger the denial of a salary increment illustrates the rarity of such exceptions in these cases:

Any decision to withhold any portion of a CDI [Career Development Increment] shall be a reflection of real concern about the performance and professional development of the member concerned and shall constitute disciplinary action [Lakehead University].

A member denied a career development increment hereunder is to consider such an action a serious disciplinary warning concerning performance of required duties [Trent University].

The Plan contains a provision for denial of an increment in exceptional cases to those whose academic/professional development is judged on grounds of performance, based on the criteria which follow, to be substantially below the standard set by the majority of the employees in the relevant category...[Carleton University].

Basic plus merit: A second group of collective agreements, characterized as basic plus merit, supplement annual increments with additional ones in recognition of superior performance. As in the case of the first group, the withholding of basic increments occurs only in exceptional circumstances. In addition, the universities in this category do not differentiate with respect to the merit awards: all faculty receiving a merit award advance up the salary scales by the same number of steps unless restricted by a salary ceiling.

While universities can overcome the seniority effects of automatic or normal salary increments by granting salary recognition for strong performance, the specific features of merit arrangements will determine whether this recognition matters in practice. Some merit schemes, such as those in place at Carleton University and the University of Winnipeg, are one-time awards and do not affect the recipient's continuing salary. Even the pool for merit awards that add to base salaries differ substantially among universities.

Non-monetary features of merit awards can also be important. In some cases, the frequency with which outstanding faculty members can receive merit awards has limits. At one university, faculty members are ineligible for a further merit award for two years after receiving one. Combining this feature with a policy that gives merit awards to thirty percent of faculty annually spreads merit awards around to a high proportion of faculty. The effectiveness of merit awards depends on their implementation and the resources institutions devote to them.

The experience of Brock University provides an example of the limits to which merit can overcome the continual salary progression arising from automatic increments. Brock allocates 0.5 percent of its salary budget to merit awards, an amount equal to more than 20 percent of its total annual pool for scale increments. Despite this significant provision for recognition of merit, substantial salary overlap exists between ranks.¹² More than half of the eighty-six faculty receiving

11 These differences in language, however, may make little difference in practice. Universities appear to be reluctant to withhold increments except in the most exceptional circumstances.

12 Brock has neither a law nor a medical school that could contribute to these high salaries for associate professors. The data leave out the salaries of faculty designated as administrators.

Table 2: *Salary Ceilings at Canadian Universities*

Common Ceiling	Wilfrid Laurier, Brock, Toronto.
No Ceilings	Lethbridge, Laurentian, Waterloo, Guelph, McMaster, York, Queen's, McGill, Toronto, Western Ontario.
Ceilings for All Ranks	Brandon, Manitoba, Winnipeg, Lakehead, Trent, Ottawa, Concordia, Bishops, Mt. Allison, Dalhousie, Mt. St. Vincent, St. Francis Xavier, St. Mary's, Acadia, Memorial.
Ceilings for Associate and Assistant Professors	Victoria, UBC, Alberta, Calgary, Regina, Saskatchewan, Ryerson.

Source: University collective agreements and other information at faculty association and human resource websites.

salaries in excess of \$100,000 in 2003 do not hold the status of full professor, even though two-thirds of faculty who meet the standard earn less. The absence of salary ceilings at the assistant and associate ranks, together with automatic salary progression and the awarding of merit increments to a majority of faculty, appears to have offset the effect of merit awards in rewarding the most productive faculty.

Differentiated progress: The final type of salary progress, progression by merit, explicitly incorporates differences into annual salary awards based on performance. In contrast to a system of basic increments, progression by merit arrangements provide a range of outcomes, which allow universities to recognize a variety of different levels of performance. For example, the arrangements at a number of universities permit the award of 0.0, 0.5, 1.5, 2.0, 2.5 and 3.0 salary increments to faculty according to their performance. University of Toronto reflects an extreme example of progression by merit, basing the granting of salary increments entirely on merit considerations and not defining their size in terms of steps.

Salary Caps

Another important dimension of collective salary arrangements is the limits or ceilings imposed on salaries (Table 2). Canadian universities take quite different approaches to salary limits. Eight universities have uniform salary scales across ranks without any ceilings, allowing faculty members to receive salary increments throughout their careers without gaining promotion to higher ranks. Another three universities, despite the absence of ceilings for assistant and associate professors, do have an overall ceiling for salaries that applies to all ranks.¹³ Seven universities have salary ceilings for the ranks of assistant and associate professor, but do not have ceilings for faculty that have attained the rank of full professor (see Appendix). Finally, fifteen universities have salary ceilings specified for all ranks. Once faculty within that rank have reached the ceiling, they become

13 At one of these universities, the University of Toronto, the ceiling is 'soft' in the sense that any salary increases beyond the ceiling must undergo individual reviews.

Table 3: *Salary Ceilings at Selected Canadian Universities*

University	Excess of Associate Maximum over Full Professor Floor		Excess of Assistant Professor Maximum over Associate Professor Floor	
	Dollars	Percentage	Dollars	Percentage
Memorial	21,084	29.4	4,518	7.6
Acadia	4,428	6.1	1,469	2.6
St Mary's	6,804	8.7	3,293	5.5
St Francis Xavier	9,671	13.3	6,152	10.8
Mount St. Vincent	6,433	8.7	2,946	5.1
Mt. Allison	15,553	21.1	17,498	30.4
Bishop's	15,010	19.2	6,566	10.6
Concordia	17,251	21.4	0	0
Carleton	35,440	45.1	19,050	32.0
Lakehead	28,700	39.6	12,865	22.3
Trent	23,838	27.7	19,989	29.4
Ottawa	29,321	41.2	14,925	25.2
Ryerson	47,496	68.3	22,938	38.8
Brandon	11,587	15.1	6,535	10.7
Winnipeg	8,753	11.5	5,047	8.4
Regina	12,601	16.8	13,889	23.7
Alberta	11,342	14.9	8,530	14.0
Simon Fraser	2,656	3.2	11,949	19.3
Northern B.C.	9,167	11.6	5,339	8.2

Source: Canada (2005).

ineligible for any salary progression until they gain promotion to the next rank and receive only those increases that affect salary scales across the board.

Whether salary ceilings overcome the effects of automatic salary increments depends on the overlap between the ceilings and the salaries of higher ranks. Table 3 shows that the actual overlap between salary scales varies greatly among the universities and can be substantial. The excess of the associate professor maximum over the full professor minimum ranges from as little as five percent to as much as sixty-eight percent, or from \$4,400 to over \$45,000. The overlap of the assistant professor maximum over the associate professor minimum, though generally smaller, ranges from no overlap to almost forty percent, or \$20,000. At three universities — Trent, Ottawa and Ryerson — the maximum salary for assistant professors exceeds the minimum for full professors.

Demonstrating the overlap in scales shows that it is possible for salaries in lower ranks to overlap those of higher ranks. Whether they in fact do depends on the pattern of actual salaries. Though data on actual salaries is limited, Statistics Canada does supply data on the median salaries by rank from a limited number of universities (Canada 2005). These data show that actual overlap is common and often substantial: the median salary of associate professors exceeds the salary minimum of full professors in six of the eleven universities that report having caps, in one case by twenty-three percent, or \$47,500. Overlap of assistant professor salaries over the minimum on the associate professor scale is less common. The median salaries of assistant professors are higher than the associate professor minimum at four universities, with a maximum overlap of seventeen percent, or \$19,000.

Other Characteristics

Although the practice of awarding increments and salary ceilings are the main determinants of salary structure, the way the value of those increments differs between ranks and between different positions within a rank can also be influenced. The entire range of possibilities exists among the surveyed institutions. Increments can increase, be uniform or decrease across ranks. Similarly, increments can decrease or be uniform within ranks, with the decreases depending in some cases on salary level and in others on the length of time spent in the rank. The policy with respect to the size of increments also differs substantially across universities.

Some universities also adjust salaries in response to outside offers to their faculty. The total resources for these purposes are generally limited at universities with lock-step salary adjustments.

Evaluating Salary Arrangements

Two standards are the basis for our evaluation of university salary systems:

Recognition criterion: Do salary arrangements allow the university to encourage and reward faculty who contribute most to the university's success?

Ability to withhold criterion: Do salary arrangements permit the university to withhold increments or some part of them from faculty whose performance is substandard?

The recognition and withhold standards criteria can be used to sort universities' salary arrangements into three categories: merit-based; seniority-based; and mixed.

The application of the evaluation criteria takes into account the effective, rather than the formal, features of a university's collective agreement. A university is treated as failing to meet the withhold criterion if its salaries overlap between ranks to such a degree that the ceilings fail to limit salary progression effectively. For present purposes, a university is judged not to have met the withhold criterion if its associate professor ceiling salary exceeds its full professor minimum salary scale by more than ten percent.¹⁴ Similarly, a university will be treated as failing the recognition criterion if it offers one-time merit awards that are not incorporated into base salaries.

A first group of universities is classed as having merit-based salary arrangements based on their ability to tailor salary progression to performance.¹⁵ A university is treated as being in this group if either its salary increments take the form of differentiated awards based on performance, or its salary increments

14 Varying this threshold by a few points scarcely alters the classification.

15 It is possible that the distinction between these and the other universities may be overstated: whether the degree for differential salary treatment in response to faculty performance allowed by their policies is realized depends on how the universities administer their salary policies in practice.

Table 4: *Salaries Greater than \$100,000: Department of Economics at York University, 2003*

Salary Range	Number	
	Associate Professor	Professor
>\$115,000		3
\$110,000 < \$115,000	3	1
\$105,000 < \$110,000	5	2
\$100,000 < \$105,000	3	2
Total	11	8

Source: Ontario (2004).

consist of a basic component together with merit awards and has effective ceilings to salary progress by rank. Satisfaction of either condition allows a range of salary increments in recognition of performance and means that salary progression based on job tenure alone is either absent or severely limited.¹⁶ As a result, these arrangements meet both the merit and denial criteria.

The universities with merit systems differ in their use of salary ceilings: some have no ceilings at all, while others have ceilings at the assistant and associate ranks. Such salary ceilings would be unnecessary if salary administration closely reflects the contributions of faculty. Still, these ceilings provide an additional safeguard if salary administrators fail to use the flexibility inherent in their salary arrangements to recognize differences in performance.

At the other extreme is a group of universities considered to have seniority-based salary arrangements that fail both the recognition and withhold criteria. Their salary arrangements combine automatic increments with the absence of salary ceilings and significant merit awards so that only the passage of time affects the progression of faculty members' salaries up the scale. Some universities are included in this group because their collective agreements make no provisions for salary ceilings or for merit awards. Another group of universities is included in this group even though their collective agreements include either salary ceilings or provisions for merit awards because these features are effectively inoperative.

The salary structure of the Department of Economics at York University illustrates the consequences of this seniority approach to salaries (Table 4). Of the faculty earning more than \$100,000 in 2003, eleven had the rank of associate professor and eight were full professors. Aside from the three highest paid full professors, the size distribution of salaries is similar or, if any thing, skewed higher for the associates. Further, the salary of the lowest-paid full professor falls short of that of all eleven associate professors. If gaining full professor status is an indicator of academic performance, the salaries for this department do not reflect it.

¹⁶ Basic plus merit salary systems may create problems absent in pure merit systems by creating salary anomalies when the amounts available for merit vary over time. A really good or poor performance in a year when the merit pool is unusually large or small is built into the base salary and is reflected in all future across-the-board increases. As a result, the timing of professors' performances can result in salary differences.

Table 5: *Status of Faculty Associations by Institution, 2003*

Recognized as Union and Member of CAUT Defence Fund	Acadia, Bishop's, Brandon, Brock, Cape Breton*, Carleton, Concordia, Dalhousie, Lakehead, Laurentian, Manitoba, Memorial, Moncton*, Mt. Allison, Mt. St. Vincent, New Brunswick, Ottawa, Queens, Regina, St. Mary's, Trent, Western Ontario, Wilfred Laurier, Windsor, Winnipeg, York.
Recognized as Union and Non-Member of CAUT Defence Fund	Ryerson, Saskatchewan.
Recognized as Union and Uses Arbitration Either Through Agreement or Through Legislation	Alberta, Calgary, Lethbridge, UBC
Not Certified as a Trade Union	SFU, Victoria, UNBC, McMaster, Guelph, Toronto, Waterloo, McGill, St. Francis Xavier.

Source: Canadian Association of University Teachers (2003).

* Denotes institutions not included in this study

Finally, this paper treats universities as having mixed salary arrangements if they meet only one of the recognition and withhold criteria. Universities that award lock-step salary increments and pass either the recognition or withhold criteria by having significant merit awards or effective salary ceilings at the assistant and associate professor ranks fall under this classification.

Who Does What

Canadian universities have chosen a wide variety of salary arrangements ranging from pure seniority to pure merit systems. Those universities that have chosen different salary arrangements appear to differ from each other in terms of i) their collective bargaining arrangements, ii) their emphasis between undergraduate versus graduate and professional education and iii) the measures of their quality.

Bargaining Arrangement

The bargaining arrangements used for setting faculty salaries differ substantially by university and a combination of government policy and faculty choice determines those arrangements. All provinces except Alberta and British Columbia allow university faculty to form unions with powers similar to other sectors, including the right to strike. In lieu of union status, faculty bargaining units in Alberta have the right of arbitration.

Twenty-five of the faculty associations this study examines are certified as unions as well as belonging to the Canadian Association of University Teachers' (CAUT) Defence Fund (Table 5). This fund provides financial support to striking faculty members based on an accumulated fund financed through member contributions. Five other faculty associations have union certification in their provinces "but use arbitration for settlement, either through a clause in their collective agreement, or through legislation" (Canadian Association of University

Table 6: Faculty Strikes Since 1997

Date	Institution	Duration
1997	York	55 days
1998	Brandon	4 days
1999	Mt. Allison	26 days
2000	University College of Cape Breton	35 days
2000	Moncton	36 days
2000	Memorial	13 days
2001	Manitoba	4 days
2002	Dalhousie	26 days

Source: Canadian Association of University Teachers (Various).

Table 7: Salary Arrangements and Union Status

Salary Arrangement	Union	Non-Union
Seniority	14	1
Mixed		
with Merit	7	1
with Ceilings	3	0
Merit	5	8

Source: University collective agreements and Canadian Association of University Teachers (2003).

Teachers 2003). Nine faculty associations do not have union certification. These exceptions include McGill University in Quebec, McMaster University, University of Guelph, University of Toronto, and University of Waterloo in Ontario and St. Francis Xavier University in Nova Scotia and SFU, Victoria and UNBC in British Columbia.

The difference in status among faculty associations determines the means they can use to reach collective agreements with their employers. Those with union status are able to use the threat of a strike to press their demands. Members of the CAUT Defence Fund followed through with this threat on twenty-nine occasions from 1978 to 2003. The eight strikes from 1997 through 2003¹⁷ lasted from four to forty-five days (Table 6).

The differences in salary structures among universities appear to relate closely to the status of the bargaining unit. Table 7 shows recognized unions were the bargaining agents at fourteen of the sixteen universities with seniority-based agreements and at ten of the eleven universities with intermediate arrangements. In contrast, only five of the thirteen universities with merit-based systems were unionized.

17 CAUT Defence Fund. See website: <http://defencefund.caut.ca/English/FAQ.htm>.

Table 8: *Salary Arrangements by University*

Type of University	Medical/Doctoral	Comprehensive	Undergraduate
Merit-Based	Alberta, Calgary, McMaster, McGill, Queen's, Saskatchewan, Toronto, U.B.C., Western Ontario.	Guelph, Simon Fraser, Waterloo, Victoria.	
Mixed			
With Merit Increments			Brock, Lakehead, Laurentian, Lethbridge, Ryerson, Trent, University of Northern B.C., Wilfred Laurier.
With Effective Ceilings			Acadia, Mount St. Vincent, St. Mary's
Seniority-Based	Dalhousie, Manitoba, Ottawa.	Carleton, Concordia, Memorial, Regina, University of New Brunswick, Windsor, York.	Bishops, Brandon, Mount Allison, St. Francis Xavier, Winnipeg.

Source: University collective agreements and other information at faculty association and human resource websites.

This finding of a relation between unionization and seniority arrangements is consistent with the general evidence on the effects of unions showing that unions foster wage equalization (Benjamin, Gunderson and Riddell 2002). Automatic salary increments together with the absence of salary ceilings or merit awards are sufficient to prevent any salary differences in the future for faculty who are at the same salary step.

Type of University

The patterns of salary arrangements also vary among universities according to their classification (Table 8) in the Maclean's Guide to Universities (Johnston 2005). Medical-doctoral universities tend to use merit as a basis for salary determination: nine of the twelve meet the criteria for merit with the rest using seniority. The pattern of salary arrangements at comprehensive and undergraduate universities tilts more towards seniority. Four of the eleven comprehensive universities have merit-based salaries and the remaining seven use seniority-based salaries. Five of the sixteen undergraduate institutions have seniority-based salaries with the remaining ten having mixed salary arrangements.

Salary Structure Matters

Landmark decisions take place as seldom as twice in a professor's career, first at time of tenure and promotion to associate professor and later at promotion to full professor. Moreover, these assessments occur early in their career. Professors may pass all the landmarks by their tenth year in a forty-year career, leaving thirty years with no major assessments. The limited number of these landmark assessments means universities must rely on salary arrangements as their main means for rewarding and motivating their faculty.

To the degree that salary arrangements affect faculty incentives, differences in faculty productivity should reflect the choice of arrangements. This section examines the relationship between salary arrangements and a number of measures made of the performance of Canadian universities and their faculty. These measures include graduate satisfaction and student quality measures, the success of faculty in gaining research support, and data on references made to faculty publications by their peers.

Student Response

How students view universities provides a perspective on how well they perform their educational function. Students can express themselves in various ways. They can respond to questions asking them about their experiences at university. Students can also express their views through their enrolment decisions. Here, students and their parents reflect their view of the best university for the students' interests and aspirations.

In 2005, Maclean's magazine for the first time 'delivered a report card' from 12,224 recent university graduates (graduates of 1999, 2000 and 2001) about their university experience. Among the questions asked, the ones on 'teaching and instruction' and the 'learning environment' appear most closely related to the quality of professors' teaching.¹⁸ All but one of the universities rated by Maclean's cooperated with the survey by sending letters to selected graduates inviting them to participate in the survey.¹⁹ The present study adopted the percentage of students rating universities 'very good' and 'good' with respect to the measures of student satisfaction.

Table 9 shows the differences in the proportion of students rating universities as 'very good' and 'good' according to their salary arrangements. Among all universities, there were no significant differences in satisfaction rating for universities with merit salaries relative to all others. Within the categories of institutions, undergraduate schools with seniority salary systems achieved a significantly higher average rating (77.6 to 67.2) for very good and a higher, but not significant, rating (97.0 to 96.6) for good than their counterparts with mixed salary systems. Comprehensive and medical/doctoral universities showed a very different pattern. The comprehensive universities with merit salary arrangements

¹⁸ Other questions cover library resources, student services, extracurricular environment and entire educational experience.

¹⁹ York University was the sole institution not to cooperate with Maclean's.

Table 9: *Salary Arrangements and Student Responses*

	Student Responses (Number of Institutions in Brackets)			
	Merit	All Non-Merit	Seniority	Mixed
1. Percent of students rating university as 'very good.'				
All Universities	62.2 (13)	64.8 (25)		
Medical/Doctoral	60.6 (9)		54 (3)	
Comprehensive	66 (4)		55 (6)	
Undergraduate			77.6 (5)	66.2 (11)
2. Percent of students rating university as 'good.'				
All Universities	95.5 (13)	95.5 (25)		
Medical/Doctoral	94.4 (9)		92.7 (3)	
Comprehensive	96.3 (4)		93.5 (6)	
Undergraduate			97.0 (5)	96.6 (11)

Source: University collective agreements and Johnston (2005).

Notes: Number of institutions in brackets. Data are not available for York University, which did not grant MacLean's magazine access to its graduates.

Bold type denotes differences that are statistically significant at the five percent level.

received significantly higher ratings (66 to 55 for 'very good' and 96.3 to 93.5 for 'good') than those with seniority arrangements. Although the medical/doctoral universities with merit salaries received a higher proportion of 'very good' (60.6 to 54) and 'good' responses (97.2 to 96.3) than those with seniority salaries, the difference was not statistically significant.

Student Quality

The results from Maclean's data on the average grades of admitted students offer a different perspective than those on graduate surveys. Since better students gain priority for admissions, average admission grades indicate those universities that students with the widest range of choices choose to attend. While such choices reflect many factors such as proximity, extracurricular activities and the decisions

Table 10: *Salary Arrangements and Student Quality*

	Entering Grade Point Average (Number of Institutions in Brackets)			
	Merit	All Non-Merit	Seniority	Mixed
All Universities	86.4 (13)	81.4 (26)		
Medical/Doctoral	86.9 (9)		83.7 (3)	
Comprehensive	85.4 (4)		81.1 (7)	
Undergraduate			82.8 (5)	80.3 (11)

Source: University collective agreements and Johnston (2005).

Note: Bold type denotes differences that are statistically significant at the five percent level.

of friends, students will certainly give a heavy weighting to their perception of the quality of education they expect to receive from an institution.

The average grade measure (Table 10) shows that students entering universities with merit salary arrangements had a significantly higher entering GPA (86.4 to 81.4) than those entering other institutions. Among undergraduate schools, universities with seniority salary systems fared significantly better with respect to entering GPA (82.8 to 80.3) than universities with mixed salary systems. On the other hand, the entering GPA for universities with merit-based salary systems was significantly higher than for seniority-based systems in both the comprehensive (85.4 to 81.1) and the medical/doctoral (86.9 to 83.7) categories. Indeed, all four universities with merit-based salaries in the comprehensive group had higher entering GPAs than the universities with seniority salaries in the group.

Student Views: Summary

The two measures of student views on university quality appear to conflict. While undergraduate universities with seniority-based salary systems rank high in the graduate survey results, they are not the institutions that the best students choose to attend. These results can be reconciled if we assume students continually make poor choices of universities and only realize the mistake once they are there. However, this explanation seems unlikely since students convey their experiences to hometown friends and their families so that the experiences of one class of students would reflect on the attendance choices of students who follow them.

The two measures differ because students' expressed their choices as responses to survey questions in one and attendance choices in the other. There are two reasons for attaching more significance to enrolment decisions: this measure gives

more weight to the decisions of better students and, in addition, reflects actions rather than words. The enrolment choices of students with higher grades are more likely to express the judgments of students overall because these students have a broad range of choices, whereas students with lower grades will not be likely to waste an application to a university where they have little chance for admission. Since the choice of university has the potential to shape the remainder of a student's life, they would not take the decision lightly. Consequently, enrolment decisions of the best students should be the best indicators of students' judgments on universities and the quality of education they offer.

Research Grants

The ability of professors to compete for research funding provides one indicator of faculty research performance. The Maclean's Guide to Universities (Johnston 2005) reports the value of peer adjudicated research grants per eligible faculty member received by faculty from two sources: i) the Social Sciences and Humanities Research Council and the Canadian Council, and ii) the National Sciences and Engineering Research Council and the Canadian Institutes of Health Research. This study uses these two categories as separate indicators to allow for emphasis differences among fields at separate universities (Table 11).

Universities with merit salary arrangements received more than twice the size of social science and humanities research grants per faculty member (\$10,371 to \$4,572) of universities with other salary arrangements, a difference that was statistically significant. While universities with merit salaries also earned larger grants in the medical/doctoral category (\$11,724 to \$8,501) and the comprehensive category (\$7,327 to \$5,789), these differences were not statistically significant. Similarly, there were no statistically significant differences for undergraduate universities.

Medical science grants exhibited similar patterns. Universities with merit salaries earned significantly larger research grants, indeed more than three times larger, than those earned by faculty at universities with other salary arrangements. Similarly, medical/doctoral universities and comprehensive universities with merit salaries also gained significantly higher medical science research grants (\$85,411 to \$53,667 for medical/doctoral and \$64,882 to \$31,708 for comprehensive). The differences among undergraduate universities (\$17,349 to \$11,836 for mixed salary systems) were not statistically significant.

Recognition of Research

Thomson's ISI database, which documents the citations received for articles authored by university faculty, offers another perspective on university research performance. These data provide information on citations received, number of articles and citations per article attributed to the faculty at different universities. For present purposes, this study uses ISI's data on the number of citations identified with each university in a specific field over the period 1997-2002, divided by the number of faculty the university has in that field. Expressing a

Table 11: *Salary Arrangements and Value of Research Grants Per Faculty*

	Research Grants (Number of Institutions in Brackets)			
	Merit	All Non-Merit	Seniority	Mixed
1. Social sciences and humanities grants.				
All Universities	10,371 (13)	4,572 (26)		
Medical/Doctoral	11,724 (9)		8,501 (3)	
Comprehensive	7,327 (4)		5,789 (7)	
Undergraduate			3,301 (5)	3,302 (11)
2. Medical science grants.				
All Universities	79,904 (13)	24,345 (26)		
Medical/Doctoral	85,411 (9)		53,667 (3)	
Comprehensive	64,882 (4)		31,708 (7)	
Undergraduate			11,837 (5)	17,349 (11)

Source: University collective agreements and Johnston (2005).

Note: Bold type denotes differences that are statistically significant at the five percent level.

university's citations per faculty as a ratio to those for the leading university gives a citation index for each field. Averaging citation indexes by field gives an overall index that protects against differences in citations by field.²⁰

The results from the ISI (Table 12) are consistent with those from the research grant data. Universities with merit salary arrangements receive significantly higher index scores when compared to all other universities (4.3 to 1.4) and to other comprehensive universities with seniority salary arrangements (3.4 to 1.7). While universities with merit-based salaries in the medical doctoral category also have higher index scores (4.6 to 2.6), the difference was not significant. There are, on the other hand, no significant differences (1.0 citations for seniority salary systems and 0.9 for mixed salaries) among undergraduate universities.

20 The study reviewed ten fields of study: Biology, Chemistry, Economics, History, Literature, Mathematics, Physics, Political Science, Psychology and Sociology.

Table 12: *Salary Arrangements and Citation/Faculty Ranking*

	Index of Citations per Faculty Member (Number of Institutions in Brackets)			
	Merit	All Non-Merit	Seniority	Mixed
All Universities	4.3 (13)	1.4 (24)		
Medical/Doctoral	4.6 (9)		2.6 (3)	
Comprehensive	3.4 (4)		1.7 (7)	
Undergraduate			1.0 (5)	0.9 (9)

Source: University collective agreements; Departmental websites; Johnston (2005), and Thomson (2001). The overall citation index for each institution is composed of the sum of its citation indexes over ten fields. An index value of 1 is given to the university with the highest citation/faculty rate in each field. A university's index value in each field equals the ratio of its citation/faculty rate to the institution with the highest citation rate.

Notes: Bold type denotes differences that are statistically significant at the five percent level. Citation data are not available for Ryerson and U.N.B.C.

Summary and Conclusions

Canadian universities have a wide variety of salary structures, ranging from pure merit systems where salaries are determined by the combined judgments of department chairs, deans, vice presidents, and presidents, to pure seniority systems where professors' salaries are determined solely by their starting salaries and their years of service.

Economic analysis suggests that pure seniority salary arrangements may be suitable under conditions where the contributions of individual workers are difficult to measure, where a team's productivity depends on that of its weakest members, or where employer loyalty to the enterprise may be vital to its success. However, these conditions do not appear to apply strongly to the jobs of professors. The research contribution of faculty is measurable and different levels of teaching performance are identifiable. Weak contributions by some faculty, while pulling down the overall performance of an academic unit, need not harm the performance of stronger colleagues. Loyalty matters less to universities than to innovative enterprises where leakage of information may jeopardize their competitive advantage, or where workers acquire valuable firm specific know-how.

Why the Structure of Salaries Matters

The salary structures at Canadian universities appear to matter. Evidence shows that the performance of universities with merit salaries exceeds that of other universities. They perform better in a variety of research-based and student

quality measures without any sacrifice in other dimensions, such as student satisfaction. While such associations by themselves do not necessarily imply causation, the findings conform to the predicted consequences of different salary arrangements.

Pure seniority-based salary arrangements appear in general to be ill suited to the needs of universities. They provide for salary advancement to all faculty members without regard for performance, failing to provide professors with incentives to be productive or to give recognition for their accomplishments. Under this system, a tenured professor could receive automatic salary increments every year and reach a university's salary ceiling without the need to demonstrate performance. In the absence of a salary ceiling, these increments would continue right up to retirement. Seniority-based salary arrangements are also unfair to those faculty members who consistently make strong contributions through their teaching and research. They experience the same salary progress as all others, based on their seniority and not their contributions.

Salary arrangements also matter for reasons beyond incentives, attraction or retention. Elimination or reduction of the seniority-based elements in university salaries would benefit higher education. Funds would no longer be committed to raising the salaries of faculty members who fail to demonstrate adequate performance, allowing these funds to be directed towards attracting, retaining, and encouraging more productive faculty; or towards financing lower class sizes and other priorities in higher education.

Still, merit-based salary arrangements are not a panacea. Their administration should support risk taking in teaching and even research. Such a system should avoid a tendency to just count the numbers of publications without regard for quality or focus on popular measures for teaching. Merit-based salary arrangements must have the flexibility to provide substantial increments for faculty who are successful in research activity that has a long gestation. This longer focus is especially important in the humanities where the best research often takes place later in a career because of the time it takes to accumulate knowledge. The increasing focus of teaching dossiers allows a greater emphasis on content, rigour and method in evaluating teaching.

Do Undergraduate Universities Have Different Needs?

Differences in salary structure measures across types of universities does raise the question whether different universities have different needs. The salary arrangements at undergraduate universities differ from those at medical/doctoral or comprehensive institutions: no undergraduate university surveyed had a pure merit-based salary arrangement. In addition, graduates of undergraduate institutions with seniority-based salaries expressed greater satisfaction and had higher entering GPAs than those of undergraduate institutions with mixed salary arrangements.

The salary structures at smaller undergraduate universities may differ from other institutions for a number of reasons. The greater emphasis on teaching may make merit awards less suitable as the basis for salary progression, particularly if judging teaching is more difficult than judging research. Yet this does not appear

to be the whole story. Universities do judge the quality of both teaching and research to make tenure and promotion decisions. Possibly more important, a small department more closely resembles a piano moving team because cooperation may be vital to make it work effectively. Moreover, the administrative burden may be shared among a smaller group. In these circumstances outsiders may find it difficult to measure individual contributions.

The suggestion that the greater emphasis undergraduate universities place on teaching requires different salary arrangements raises questions regarding salary levels. Universities expect professors to do research as well as teach. If the professor's job at undergraduate universities is solely to teach, their duties are comparable to those of teachers at post-secondary institutions such as community colleges and the lecturers hired by universities who specialize in teaching. The top professorial salaries at undergraduate institutions, while lower than those at medical/doctoral and comprehensive institutions, exceed those at community colleges and those paid to university lecturers by substantial margins, ranging from \$20,000 to \$50,000. Moreover, teaching loads are generally higher at community colleges. These differences are difficult to justify unless the job of professor differs from these other positions by an expectation for research.

What Can Be Done

Overall, the findings of this study offer support to the stewardship of university administrations and boards of governors who resist the pressures for seniority-based salaries. Their universities perform better with respect to the quality of their students and to measures of research success.

The lessons for universities with seniority-based salaries are less clear. Faculty and their negotiators; university administrators and their negotiators; and boards of governors surely know, in general, the consequences of seniority-based salaries.²¹ Certainly, there is a personal appeal to faculty from the knowledge they will face the prospect of few or no meaningful performance assessments once they gain tenure. The same forces that drive other unions to equalize wages across workers seem to drive university unions, or quasi-unions. Less understandable are the motives of university administrators who do not resist pressures for seniority-based salaries. During difficult salary negotiations, there may have been an appeal for concessions with respect to performance assessment by offering a cheaper way to labour peace than putting out the hard dollars needed to raise salaries. This study clearly shows this view to be an illusion: the long run costs of seniority-based salaries can be substantial, can be substantial, especially at comprehensive and medical/doctoral institutions.

Increased awareness of the consequences of seniority-based salary by itself seems unlikely to produce any change. Elsewhere, the forces of competition limit inefficient salary arrangements. Enterprises burdened with inefficient wage structures find it difficult to survive competition from others that have better arrangements. Unfortunately, resistance to seniority-based salaries is weak at

21 This assertion may be overly strong in light of the responses to the author's requests for information about annual salary increment distribution. The responses suggest that universities do not normally collect and review this information.

universities because of the limited ways in which they compete. It is true that they compete for the best students. Top students enhance a university's reputation and professors prefer to teach to those who are bright, alert and dedicated. Still, the failure to attract good students has few implications for a university's finances.

Universities that compete most effectively draw their students from among the best, who make them their first choice. But first choice universities limit their intake because they receive full funding only up to the enrolment quotas set by their provincial governments. Potential matches between willing universities and willing students will not be realized when they push enrolment beyond the universities' funding quotas. Universities that have not met their enrolment quotas receive the full funding denied to a student's first choice when they accept the same student for admission. Less competitive universities can attract and gain funding for students by being the second or lower choice of students unable to gain admission at their first choice. Universities meet their funding quotas whenever the number of places available in a province falls short of the number of qualified applicants who wish to attend.²²

This limited competition among universities is a direct consequence of current funding arrangements where students follow finance. Students, however, do not need to follow funding. As often pointed out by economists, there are alternative arrangements where funding follows students. Governments could, as they do now, set a level of funding for each qualified student together with an overall ceiling for students to be funded in their province, but allow a university's funding to be determined by the number of students it attracts and accepts, and not by quotas. A university's funding would then be for the number of eligible students they attract from the total pool financed by the government.

Adoption of this system of finance would make universities accountable to those who matter most. No longer would they have to satisfy government officials according to their complicated and comprehensive templates of performance measures. Universities would be accountable to students, the ones who are undertaking the education that universities provide. While students do not have the same arsenal of quantitative measures as government ministries, they do have qualitative measures based on first-hand educational experience. They could show their satisfaction or dissatisfaction by voting with their feet, taking their funding with them. Universities that fail to attract students would lose their assured funding. This changed accountability would shift the basis of funding from statistical proxies developed by government administrators to those things that matter to the students whose education, after all, is one of the main purposes of universities.

Some may worry that leaving university finances dependent on the choices of students will lead to an overemphasis on teaching and a downgrading of research. This concern may be overstated: student competition for entry (as measured by average grades) currently is greatest at those universities with the strongest

22 In 2003, fewer than half of the students entering university registered at the university that was their first choice. See Ontario (2003).

research performance.²³ Students appear to be astute consumers who understand the value of research and appreciate that, as graduates, they will benefit from the recognition of their university's research. If the balance still short changes research, governments can direct a share of university funding based on research performance.

Universities may act differently when their funding ties in more closely to the number of students they attract. Given the importance of faculty salaries in university budgets, universities will need to re-examine their salary policies and link salaries more closely to performance. In short, they must treat students as customers. Calling students 'customers' — which they are — invariably provokes strong reactions from many circles. Maybe they are right to protest: most customers have choices among suppliers that truly compete. Students are better served if universities appreciate that their own well-being depends on meeting their students' needs. Current salary policies may be the victims, and students the beneficiaries, of such a realisation.

23 The correlation between entering GPA and citations per faculty member is 0.51. Similarly, student competition for entry in the U.S. is greatest at the top research universities, despite complaints about excessive emphasis on research and neglect of teaching.

Appendix

Two Sides of Salary Caps

Salary caps at the assistant and associate professor levels are a mixed blessing. As stressed above, they have the benefit of slowing the salary progression resulting from automatic and near automatic salary increments. Their downside is that they restrict salaries, making it difficult to recruit or retain faculty in disciplines where market pressures have driven up salaries. A cap may mean that beginning assistant professors in these fields may receive salaries well up the salary range for this rank and, as a result, face few salary increments before they run up against the ceiling well before the usual time for promotion.

A number of universities overcome the downside of salary caps by adding market differentials to salaries in disciplines with shortages of qualified staff. These differentials, determined in relation to the prevailing salaries in the discipline, are explicitly added to base salaries as determined by the normal salary scales and do not count against salary caps. Faculty members, as a result, will face the same number of salary steps as their colleagues before reaching the salary cap that applies to them.

The practices with respect to market differentials differ widely among Canadian universities. Some universities have no need for explicit market differentials because the absence of salary ceilings by rank gives them the flexibility to offer competitive salaries when needed. Other universities, even though they do not have salary ceilings, follow tight protocols that limit their flexibility with respect to starting salaries. Some, but not all, with salary ceilings for assistant and associate professors make use of market differentials. The size of the differentials and the procedures that govern them differ from university to university.

References

- Benjamin, Dwayne, Gunderson, Morley, and Riddell, W. Craig. 2002. *Labour market economics: theory, evidence and policy in Canada*. Whitby, Ontario: McGraw-Hill Ryerson.
- Canada. 2005. Statistics Canada. "Salaries and Salary Scales of Full Time Teaching Staff at Canadian Universities, 2003-2004." Postsecondary and Adult Learning Section, Education, Skills and Learning Research Papers. Cat. No. 81-595-MIE2005031. Ottawa.
- Canadian Association of University Teachers. 2003. "Defence Fund Chairs' Report to CAUT Council." Fall 2003. Available from Internet website:
<http://defencefund.caut.ca/English/Reports/Fall2003.htm>.
- Canadian Association of University Teachers. Various. "Defence Fund Chairs' Report to CAUT Council." Various Years. Available from Internet website:
<http://defencefund.caut.ca/English/Reports/default.htm>.
- Johnston, Ann Dowsett, ed. 2005. "Maclean's Guide to Canadian Universities 2005." Toronto: Rogers Publishing.
- Ontario. 2003. Ontario Council of Universities. "Application Statistics." Available from Internet website: <http://www.cou.ca>.
- Ontario. 2004. Ontario Ministry of Finance. "Disclosure for 2003 under the Public Sector Salary Disclosure Act, 1996, Universities." Available from Internet website:
<http://www.gov.on.ca/FIN/english/engarchp8.htm>.
- Smith, Adam. 1776. "An Inquiry into the Nature and Causes of the Wealth of Nations." Adam Smith Institute, Book 5, Chapter 1, Part 3, Article 2. Available from Internet website:
<http://www.adamsmith.org>.
- Thomson. 2002. Research Service Group, University Science Indicators, ISI Database, Deluxe Version, Canada, 1981-2001.
- University of Toronto Faculty Association. 2004. "UTFA Newsletter #1." February 24, 2004. Available from Internet website: <http://www.utfafaculty.org/newsletters/>.

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