

Administrative response to the CASP Report on academic salary differentials by gender

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Introduction

Document D08-42 presented at the 11 February 2009 meeting of Senate reported the results of a detailed statistical analysis of academic salary differentials by gender at McGill. The work was undertaken on behalf of the Committee on Academic Salary Policy (CASP), which is a parity committee of McGill senior administrators and representatives from the McGill Association of University Teachers (MAUT).

The basic parameters for the study were established by CASP, but the analysis itself was undertaken by Prof. Michael Smith, Department of Sociology and a Fellow of Senate, in conjunction with Prof. Jennifer Hunt and Prof. Daniel Parent, both of the Department of Economics, and the actual data runs were performed by Mr. Charles Lavergne of Planning and Institutional Analysis (PIA). I would like to take this opportunity to thank them for their time, efforts, and expertise in these matters and for the diligence they exercised in developing the analysis. I would especially like to thank Prof. Smith for the clarity and enthusiasm he demonstrated in making the presentation.

In presenting this administrative response to the statistical report presented in D08-42, first and foremost, I would like to state that the administration is committed to adopting remedial measures in order to correct any anomalies that potentially exist. Further, we plan to put into place mechanisms to help us prevent any recurrence of identified problems once they have been fixed.

Recapitulation of salary system issues at McGill

"Slide 7" (*McGill pay policy is likely to influence outcomes*) of D08-42 nicely summarises the various components of McGill's pay policy for tenure-track professors that are likely to influence salary outcomes:

- a) variations in entry-level pay that reflect (more or less) market forces across disciplines

- b) annual pay increases that are substantially tied to merit
- c) increases in base pay that are meant to retain at McGill someone who has been offered a job elsewhere
- d) pay increases that are given as a premium for having been promoted
- e) higher pay, usually in the form of academic stipends or larger pay increases that are tied to the award of federal Canada Research Chairs, James McGill or William Dawson Chairs, or holding an endowed/named chair and based on the superior performance of academic duties.

Data availability and its impact on regression analysis of salary data

The use of regression analysis to study potential gender differences in academic salaries obviously consists of a series of serious choices.

First, in a modern research university such as McGill the determination of salary is a complex matter involving many potential factors that might influence the current level of an individual's earnings from work in the academy.

Second, while we might be able to identify on a theoretical level many such factors, we are unlikely to be able to categorise all such variables.

Third, even for those concepts which we have reason to believe influence salary, we may not be able to match the concept with a satisfactory observable piece of information for which we have clearly measured data.

Fourth, on a more technical level, the overall "specification of the model" in a regression equation may not be appropriate to the task at hand; one must consider carefully the predictor variables to be included, as well as the order (if any) of their entry into the equation or risk inadvertently affecting our perception of their relationships to salary.

Fifth, we are taking a static "snapshot" of what is probably better seen as a dynamic "motion picture", especially insofar as McGill has hired so many new professors (863 in just over 8 years).

The statistical analyses presented in D08-42 were conducted on data that are contained in McGill human resources information system (HRIS). Administrative records of that kind can only in a rather limited way provide the observations that are required for a sophisticated multivariate statistical analysis: the number of variables is limited, the precision of their measurement is not optimal, and model specifications are likely to be rough. As a

consequence in building a statistical model of salary determination based on such data, one must inevitably make a series of assumptions and compromises that may make what we are actually measuring very different from what we wish to measure (or what we think we are measuring). Let me provide a few examples of potential data deficiencies.

- 1) The statistical analyses presented by the CASP study were not able to include precise information on the effects of “retention increases” because we do not “code” that information in what is called the “annual salary policy exercise”. Yet, as noted above, it is a factor that has the potential to differentiate academic salaries.
- 2) Our current HRIS does not contain fields on any of the three academic duties covered in McGill’s Regulations relating to academic staff: research, teaching, and service. Consequently, a proxy variable, such as merit pay category could be used (and was tried in several runs in the preparation of D08-42); but, of course, in estimating salary as the dependent variable in a regression equation while using actual merit pay as a predictor may be confusing insofar as we would use a part of a salary to predict the whole of a salary.
- 3) We do not have full historical records on the amounts of research dollars obtained over the course of a career, nor do we record the total number of students taught or graduate students supervised, or the number of committees on which one sits all of which form part of the annual merit review.

The main findings presented in D08-42

Nonetheless, as noted above we did have available data through the 2007 HRIS electronic personnel files. These administrative records consisted of 1382 individuals, all tenured or tenure-track professors at McGill who held appointments as assistant, associate, or full professors, with the exception of those MDs holding what are called “geographic full-time university” or GFT-U appointments. Where possible, some additional fields were added by integrating data from the financial information system or from detailed records from the Academic Personnel Office.

In order to place in context the excellent multivariate statistical analysis, D08-42 provides a number of descriptive statistics about the study population. “Slide 10” (*Some pay relevant differences described*) and “Slide 20” (*What do these slides tell us?*) give some data on several factors, but without introducing any controls on other variables. These factors were included in the presentation of the results of the regression analysis, where controls were employed.

The factors that may have an impact on differentiating salaries to the possible disadvantage of women professors at McGill were indicated to be:

- a) time to promotion (women seem to take longer to be promoted from associate to full professor)
- b) merit pay (does not appear to be a factor, at least over the last 4 years)
- c) holding a “named” chair (men are more likely to hold such awards)
- d) being at the top end (in the long tail) of the pay distribution (top 20 to 30 earners are all men)
- e) Faculty-specific dynamics (some variability across SSHRC, NSERC, and CIHR groupings)
- f) “anomaly and retention” pool of the annual academic salary exercise (women do not appear to be disadvantaged, either in access or amounts distributed).

Based on the regression analyses that were provided, on “Slide 32” (*Three methodological conclusions*) argues that:

- a) Controls on departments do not appear to make much difference (either university-wide or in faculty-specific analyses)
- b) Differences in earnings at the upper end of values across genders do matter (because results vary when earnings are log-transformed or when median regression is used)
- c) Within the University there is marked heterogeneity.

On “Slide 33” (*Substantive conclusions*) provides the following wrap-up of the statistical analyses undertaken, which I paraphrased here:

- a) At the University level, after controls for work experience and department, the ordinary least squares (OLS) regression (which uses arithmetic means) shows women earning 3.2% less than men, while the median regressions (which use the 50th percentile) indicates the potential difference to be 1.8% less
- b) Within the Faculty of Arts, after controls for work experience and department, women seem to have 4% less than men using OLS, but the relationship more or less disappears when rank is added

- c) Within the Faculty of Medicine, there was no significant difference in the pay of men and women using log-transformed earnings; there was a difference of about \$4,000 using raw dollars, but it is not “statistically significant”
- d) Within the Faculty of Science, there is no evidence of a female earnings disadvantage
- e) In all cases differences are eliminated when the effects of being recruited from outside at the full professor level and/or when awards (CRCs, Dawson and McGill chairs, other awards) are controlled.

Some additional descriptive information

Let me return briefly to the earlier discussion of the components of the salary system that is used to determine academic pay at McGill: negotiated starting salary conditioned by external market forces, largest component of annual increases determined by merit (but added to base), retention premium to stay at McGill based on external offers, pay increases (recently re-introduced after a considerable hiatus) for promotion, and academic stipends for holding “named” chairs.

First, we have no data in the HRIS on starting salary. This may be an important component of an initial differential compounding over time to pay differences by gender if women are offered and accept lower salaries than comparable male colleagues.

Second, a chart presented in Senate D08-42 (Slide 15) shows that women in the last four merit exercises have not been disadvantaged, but we do not have easily available data for earlier periods.

Third, McGill’s academic renewal program started in 2000 and by the start of the academic year 2008, we had hired 863 new professors; the University has retained 86% of the 291 women who have been hired and 87% of the 572 men.

Fourth, the probability of being promoted from assistant professor without tenure to associate professor with tenure has so far been the same men and women in those cohorts that have completed the tenure review process (2000, 2001, and 2002).

Fifth, the chances of holding any type of named chair (endowed, CRC-I, CRC-II, James McGill, or William Dawson), which is in most cases accompanied by a salary increase or an academic non-administrative stipend, vary considerably by gender to the apparent disadvantage of women faculty members. Among endowed chairs, of which McGill has 113, only 13.3% (15 individuals) are held by women; 6 women and 13 men who hold endowed chairs also hold CRCs or JM-WD awards.

Conclusions and administrative action plan

Within these regression results, some salary observations may be below their predicted values because they belong there, others may be above those values for no apparent reason. The last conclusion presented on Slide 33 of D08-42 states: “In all cases differences are eliminated when the effects of being recruited from outside at the full professor level and/or when awards (CRCs, Dawson and McGill chairs, and other awards) are controlled.” In other words, university-wide the regression model does not detect any statistically significant gender effects AFTER the point when rank (where it is not confirmed to be endogenous to the model) and/or holding a named chair (or being hired at full professor) are introduced into the equations. While most of the gender inequalities appear to be functions of other variables (rank, years since PhD, awards), questions still remain on potential policy implications and procedural matters where such inequalities might instead be inequities.

In order to address the issues raised in Senate D08-42, the administration will undertake a number of concrete steps in the following areas.

I. Identification and correction of salary, awards, and promotion anomalies

- 1) **Qualitative analyses:** Faculty-by-Faculty, department-by-department, the salaries of women academics will be examined to discover if anomalies exist; if found they will be corrected.
- 2) **Award-holders:** The relative under-representation of women among award-holders will be explored and University-wide and Faculty-specific mechanisms will be put into place to correct the situation. The information will be shared with the Principal’s Task Force on Diversity, Excellence, and Community Engagement.
- 3) **Potential promotion gap:** The Office of the Provost will undertake a detailed study of the identified “promotion gap” and the potential attrition gap for women faculty members advancing through the ranks and working with the Principal’s Task Force on Diversity, Excellence, and Community Engagement will explore ways to correct any problems in this regard.

II. Improvements in record keeping to facilitate improved data analyses

- 4) **Data:** Working with the Executive Director of PIA and the Chief Information Officer (CIO), the Provost will ensure that McGill’s enterprise data warehouse (EDW), which is currently under construction, will contain appropriate and detailed information on factors that may affect gender differences in academic salaries; these variables will be entered into future statistical models.

- 5) **Benchmarking:** We will undertake to benchmark McGill policies and performance not only against the current situation, but also to measure future progress relative to the top research-intensive universities in North America especially in relation to hiring, promotion, salaries, and departmental/Faculty leadership.

III. Targeted interventions to address possible structural biases

- 6) **Working environments:** The Provost and Deans will work closely with the Principal's Task Force on Diversity, Excellence, and Community Engagement in exploring McGill's overall and some unit-specific working environments for women faculty members. The objectives will be to ensure that (a) central and local academic leaders are attuned and sensitive to potential difficulties, (b) faculty members are aware of available and appropriate policies, and (c) women have ample opportunity for career advancement.
- 7) **"Family-friendly" policies and practice:** Working closely with the Principal's Task Force on Diversity, Excellence, and Community Engagement, an administrative working group reporting to the Provost will be struck to explore these matters and to help determine ways to implement improvements.

IV. Detailed reassessment of McGill's academic salary policy measures

- 8) **McGill's pay system for professors:** The Office of the Provost will immediately undertake a full re-examination of the premises of McGill's current salary system and our academic salary and total compensation policy measures and bring them forward as a major agenda item for the Committee on Academic Salary Policy starting in September 2009. Results will be shared with the Principal's Task Force on Diversity, Excellence, and Community Engagement.

V. Accountability and monitoring of the actions to be taken

- 9) **Reports:** Using the CASP study as a baseline the Office of the Provost, in conjunction with PIA, will develop statistical reports for that group's consideration and deliberations at the level of each academic unit.
- 10) **Keep Senate informed regularly:** The results of the above activities, as well as future analyses as deemed appropriate by CASP will be brought back to Senate by the Provost for information, discussion, and advice starting in the academic year 2010-2011 and every other year thereafter.