# UBC's report to the BC Human Rights Tribunal on the Gender Pay Gap in Professorial Salaries at UBC 

## Section 1 - Salary Analysis

## A. Data and Descriptive Statistics

Our analysis focused on currently active faculty members who were hired before December 4, 2012 and therefore potentially eligible to receive the 2013 pay equity adjustment. ${ }^{1}$ Following the 2010 UBC Pay Equity study and subsequent agreements with the Faculty Association, all women faculty members hired before that date received a $2 \%$ lump sum pay increase. The purpose of the current study was to determine whether or not the 2013 adjustment ameliorated the pay gap. By comparison with the 2010 study, the sample included in this study also included faculty members from UBC-Okanagan and Instructors, Senior Instructors and Professors of Teaching from the Educational Leadership stream, as these constituencies were included in the adjustment. Consistent with the 2010 study, the sample does not include eligible faculty members from the Faculty of Medicine faculty members. We also excluded 18 faculty members who are academic administrators and therefore not members of the Faculty Association. These specifications leave us with 1,572 faculty members, 561 of which are women. Table 1 shows their distribution across academic ranks, as well as the corresponding average and median salaries.

Table 1. Average and Median Research Faculty Members - December 2017

|  |  | Numbers | All of <br> All | Share of <br> Women | Average <br> Salary | Median <br> Ratio |  |  | Salary |
| :--- | :--- | :---: | ---: | :---: | :---: | :---: | :---: | :---: | :---: | Ratio2

Note: Includes all faculty members hired before December 4, 2012 as described in the text above. Omits information on instructors because of small sample. \% of All indicates \% of All Men or Women in the indicated Rank. Share of Women is in the indicated Rank. Ratio is of female to male salaries.

The proportion of women found at each rank is different from the overall proportion of women. Women are still underrepresented at the rank of Full Professor and overrepresented at all of the other ranks, in particular in the Educational Leadership stream. The raw female/male average salary ratio within ranks has been overturned at the Assistant level, it has narrowed substantially at the Associate level, but

[^0]stayed the same at the Full Professor level. The overall gender ratio has slightly narrowed from an average of 0.89 in 2010 to 0.91 in 2017, and from 0.88 in 2010 to 0.89 in 2017 for the median. More generally, gender ratios in median salaries are comparable to the ratios of average salaries. The meager improvement in the overall gender ratios by comparison to the within-rank ratios, some of which exceed parity, is largely a reflection of gender differences in representation at higher professorial ranks.

The following explanatory variables used in the current analysis expand on the variables used in the 2010 study to reflect the wider range and type of experience among current faculty members. The previous variables included: professorial ranks, several distinguished chairs, number of years in professorial ranks, and administrative units. Additional explanatory variables, denoted by an asterisk *, simply extend the previous categories to the newly available groups, such as Professor of Teaching or Instructor. These will be used in Specification 1, which most resembles that of the previous study. Other new variables, denoted by an asterisk **, are meant to capture more detailed controls for experience; they include type of appointment, numbers of years in executive positions, and starting rank at appointment. These will be used in Specification 2. The exhaustive list is reported below.

| Variable | Metric | Comments |
| :---: | :---: | :---: |
| Current Salary | Nominal 2017 \$CAN [part of the analysis is conducted using $\log$ (CurrentSalary)] | Dependent variable. Salaries not reduced by sabbatical or other leaves. <br> Administrative stipends are not included. |
| Female | (=1 if Female, 0 if Male) | The average difference between female and male salaries, all else being equal. |
| Professorial Ranks |  |  |
| Full Professor | (=1 if Full Professor, 0 Otherwise) | The average difference between salaries of full professors and the base category group, all else being equal. |
| Associate Professor | (=1 if Associate Professor, 0 Otherwise) | The average difference between salaries of associate professors and the base category group, all else being equal. |
| Assistant Professor | (=1 if Assistant Professor, 0 Otherwise) | The average difference between salaries of assistant professors and the base category group, all else being equal. |
| *Prof. of Teaching | (=1 if Professor of Teaching, 0 Otherwise) | The average difference between salaries of associate professors and the base category group, all else being equal. |
| *Senior Instructor | (=1 if Senior Instructor, 0 Otherwise) | The average difference between salaries of associate professors and the base category group, all else being equal. |
| *Instructor | Base Category |  |
| Distinguished Chairs |  |  |
| *Canada Excellence <br> Research Chair | (=1 if CERC, 0 Otherwise) | The average difference between salaries of CERC and the reference group (all others), all else being equal |
| *Killam Professor | (=1 if Killam Professor, 0 Otherwise) | The average difference between salaries of Killam Professors and the reference group (all others), all else being equal |


| Canada Research Chair Tier 1 | (=1 if CRC1, 0 Otherwise) | The average difference between salaries of CRC-Tier1 and the reference group (all others), all else being equal |
| :---: | :---: | :---: |
| *Canada Research Chair Tier 2 | ( $=1$ if CRC2, 0 Otherwise) | The average difference between salaries of CRC-Tier 2 and the reference group (all others), all else being equal |
| Distinguished University Professor/Scholar | (=1 if DUP, 0 Otherwise) | The average difference between salaries of DUPs and the reference group (all others), all else being equal |
| *Distinguished <br> University <br> Professor/Scholar <br> Later years | (=1 if LDUP, 0 Otherwise) | The average difference between salaries of DUPs and the reference group (all others), all else being equal |
| Type of Appointment** |  |  |
| **Grant Tenure <br> Appointment | (=1 if GRT, 0 Otherwise) | The average difference between salaries of grant tenured professors and the base category group, all else being equal. |
| **Grant Tenure-Track Appointment | ( $=1$ if GTK, 0 Otherwise) | The average difference between salaries of grant tenure-track professors and the base category group, all else being equal. |
| **Tenure-Track <br> Appointment | (=1 if TRK, 0 Otherwise) | The average difference between salaries of tenure-track professors and the base category group, all else being equal. |
| Tenured Appointment | Base Category |  |
| Quadratic in Years in Academic Rank |  |  |
| Years in Academic Rank | years | Number of years in current academic rank. |
| Years in Rank Squared | years | Square of previous variable. |
| Years in Executive Position** |  |  |
| **Years as Senior <br> Executive | years | Number of years in the Senior Executives stream |
| **Years as Mid-Level Executive | years | Number of years in the Mid-Executives stream |
| **Years as Senior Executive | years | Number of years in the Senior Executives stream |
| **Years as Junior <br> Executive | years | Number of years in the Junior Executives stream |
| Professorial Rank at Hiring** |  |  |
| **Started at Rank of Full Professor | (=1 if StFull, 0 Otherwise) | The average difference between salaries of grant tenured professors and the base category group, all else being equal. |
| **Started at Rank of Associate | (=1 if StAssoc, 0 Otherwise) | The average difference between salaries of grant tenured professors and the base category group, all else being equal. |
| **Started at Rank of Assistant | Base Category |  |


| **Started at Rank of <br> Senior Instructor | (=1 if StSrInst, 0 Otherwise) | The average difference between salaries of <br> grant tenured professors and the base <br> category group, all else being equal. |
| :--- | :--- | :--- |
| **Started at Rank of <br> Instructor | (=1 if StInst, 0 Otherwise) | The average difference between salaries of <br> grant tenured professors and the base <br> category group, all else being equal. |
| Administrative Units <br> *Formerly Okanagan <br> University College <br> members | (=1 if OUC, 0 Otherwise) | The average difference between salaries of <br> Okanagan University College members and <br> the reference group (all others), all else <br> being equal |
| Departmental Units (87 <br> categories with MICB as <br> base group) | (=1 if in Department Unit no ,0 <br> Otherwise) | The average difference between salaries of <br> each department and the reference group, <br> all else being equal There are two units <br> with only one faculty member. |

Table 2 presents some summary descriptive statistics by gender and professorial rank of some of the above explanatory variables, regrouped by categories, with the addition of age. These variables account for different measures of labour market experience and show that gender differences therein have narrowed and are not statistically significant within ranks, except at the Full Professor level. Another striking gender difference appears in the number of faculty members hired as tenured Professors, especially among Full Professors. The only statistically significant gender difference appears in the number of distinguished chairs at the Associate level, which is actually favorable to women.

Table 2. Summary Data (Averages) by Gender

| Gender | Rank | Numbers | Age | Years in <br> rank | Years in <br> Exec. Pos. | No. of <br> Chairs | No. Hired <br> Tenured |  |  |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Men | All | 1010 | 54.7 | 10.4 | 1.4 | 78 | 337 |  |  |
| Women | All | 561 | 53.4 | 7.9 | 0.9 | $* * *$ | 43 | 118 | $* * *$ |
| Men | Full | 587 | 57.5 | 12.0 | 2.0 | 71 | 265 |  |  |
| Women | Full | 210 | 56.8 | 9.0 | $* * *$ | 1.9 | 23 | 72 | $* * *$ |
| Men | Associate | 301 | 51.4 | 8.5 | 0.6 | 6 | 68 |  |  |
| Women | Associate | 222 | 51.4 | 7.9 | 0.4 | 18 | $* * *$ | 40 |  |
| Men | Assistant | 56 | 46.8 | 8.0 | 0.0 | 1 | 0 |  |  |
| Women | Assistant | 41 | 46.1 | 7.0 | 0.0 | 2 | 0 |  |  |
| Men | Prof Teach | 11 | 53.0 | 4.1 | 1.6 | 0 | 2 |  |  |
| Women | Prof Teach | 16 | 55.8 | 2.3 | $* * *$ | 1.3 | 0 | 0 | $*$ |
| Men | Senior Instr | 54 | 52.4 | 7.5 | 0.7 | 0 | 2 | 6 |  |
| Women | Senior Instr | 72 | 53.2 | 6.3 | 0.3 | 0 | 0 |  |  |

Asterisks indicate significant statistical differences between men and women: ${ }^{* * *}$ at the 0.01 level,
** at the 0.05 level and * at the 0.10 level.
Taken together the descriptive statistics reported in Tables 1 and 2 show that gender differences in professorial salaries are less a concern at the lower professorial ranks than at higher professorial
ranks. This could be due not only to possibly slower progression through the ranks but also to a lower likelihood of female faculty being hired at higher ranks than male faculty members.

## B. Empirical Methodology

We review the methods used in the economic analysis of discrimination. The two main methods aim to supplement the layperson's view which sees a positive simple difference, D , in the mean salary between men and women as evidence of discrimination:

$$
D^{L}=E(\text { Salary } \mid \text { Men })-E(\text { Salary } \mid \text { Women })
$$

where $E$ (Salary|Men) indicates that we are computing the mean of the salaries of men and $E$ (Salary|Women) indicates that we are computing the mean of the salaries of women. The problem with the layman's view is that men and women may have different levels of productive characteristics. A typically argument is that women may have lower levels of labour market experience, and we have to take that into account in our computation.

The economist's view argues that one should account for productivity related characteristics, called X, in the computation of the mean difference, that is we should compute a conditional mean,

$$
D^{E}=E(\text { Salary } \mid X, M e n)-E(\text { Salary } \mid X, \text { Women })
$$

For example, the average salaries reported in Table 1 are conditional means on gender and rank, that is where $X=r a n k .{ }^{2}$ If we assume that we can model the conditional mean salary as a function of the characteristics, $X$, and use $F$ as a shorthand for female ( $F=1$ if a women and 0 if a men), we get the equation

$$
\begin{equation*}
E(\text { Salary } \mid X, F)=X^{\prime} \beta+\alpha F+E(\varepsilon \mid X, F) \tag{1}
\end{equation*}
$$

where $X^{\prime}$ is a vector (comprise many) of characteristics, and $\varepsilon$ denotes some unobserved characteristics or errors, whose conditional mean goes to zero. We can bring this equation to the data to estimate the parameters $\alpha$ and $\beta$, which can loosely be interpreted as the price or the return to the characteristics. For example, if $X$ was years in rank, we would expect $\beta_{y r s}$ in rank to be close to the career progression increments, if there were no other yearly salary increases. In practice, we will estimate (1) as a multivariate equation by Ordinary Least Squares (OLS).

If we can agree that there is no gender bias in productive characteristics and that no important characteristics have been omitted, we will see a negative estimated coefficient of the female dummy, $\hat{\alpha}$, as evidence of discrimination. Of course, our choice of characteristics is rarely ideal, it is thus more accurate to say that the coefficient $\hat{\alpha}$ captures the salary disadvantage of women that is not "explained" or "accounted for" by the productive characteristics X.

Another popular methodology proposed by Blinder (1973) and Oaxaca (1973) is based on the construction of a counterfactual average salary. The idea is to come up with an adjusted salary gap that would take into account some of the differences in the productive characteristics of men and women. For example, it asks what would be the average salary of women if women's average characteristics were paid the same price as men's.

[^1]If we had estimated equation (1) separately by gender, using the subscripts $g=m, f$ to denote the male and female equations, we could write the average salaries by gender, $\overline{\text { Salary }_{m}}$ and $\overline{\text { Salary }}$, as the product of the average characteristics of each gender, $\bar{X}_{m}^{\prime}$ and $\bar{X}_{f}^{\prime}$, times the gender-specific estimated returns to these characteristics, $\widehat{\beta_{m}}$ and $\widehat{\beta_{f}}$,

$$
\overline{\text { Salary }_{m}}=\bar{X}_{m}^{\prime} \widehat{\beta_{m}} \text { and } \overline{\text { Salary }_{f}}=\bar{X}_{f}^{\prime} \widehat{\beta_{f}}
$$

given that the conditional mean error goes to zero $(E(\varepsilon \mid X, F)=0)$.
Then we can write the gender difference in average salaries, adding and subtracting the counterfactual average salary that women would have earned at the male returns , $\bar{X}_{f}^{\prime} \widehat{\beta_{m}}$,

$$
\begin{gather*}
\overline{\text { Salary }_{m}}-\overline{\text { Salary }_{f}}=\bar{X}_{m}^{\prime} \widehat{\beta_{m}}-\bar{X}_{f}^{\prime} \widehat{\beta_{f}}+\bar{X}_{f}^{\prime} \widehat{\beta_{m}}-\bar{X}_{f}^{\prime} \beta_{m} \\
=\left(\bar{X}_{m}^{\prime}-\bar{X}_{f}^{\prime}\right) \widehat{\beta_{m}}+\left(\widehat{\beta_{m}}-\widehat{\beta_{f}}\right) \bar{X}_{f}^{\prime} \tag{2}
\end{gather*}
$$

where the first term in the last equality captures the impact on the gender salary gap of differences in the average characteristics of men and women, $\left(\bar{X}_{m}^{\prime}-\bar{X}_{f}^{\prime}\right)$, evaluated at the male returns, $\widehat{\beta_{m}}$, and the second term measure differences dues to differential returns, sometimes called the unexplained part, sometimes called the part due to discrimination.

This decomposition could have used as alternative counterfactual average salary, the average salary that men would have earned at the female returns, $\bar{X}_{m}^{\prime} \widehat{\beta_{f}}$, in which case equation (2) would be written as:

$$
\begin{equation*}
\overline{\text { Salary }_{m}}-\overline{\text { Salary }_{f}}=\left(\bar{X}_{m}^{\prime}-\bar{X}_{f}^{\prime}\right) \widehat{\beta_{f}}+\left(\widehat{\beta_{f}}-\widehat{\beta_{m}}\right) \bar{X}_{m}^{\prime} \tag{3}
\end{equation*}
$$

where the first term now captures the impact on the gender salary gap of differences in the average characteristics of men and women evaluated at the female returns. Because they are based on different counterfactuals and evaluate the impact of gender differences in characteristics using potentially different returns, the male or the female returns, the results of the decompositions using equation (2) and (3) can be different. For example, when female returns to characteristics are lower than male returns, the part explained by characteristics will be smaller and the part unexplained will be larger.

Another alternative takes equation (1) as the correct specification, assuming that the female dummy essentially captures the discriminatory components of the salary structure and thus the returns to characteristics in this equation represent the non-discriminatory salary structure. It is implemented by constructing two counterfactual average salaries, the average salary that women would have earned at the pooled returns, $\bar{X}_{f}^{\prime} \hat{\beta}$, and the average salary that men would have earned at the pooled returns, $\bar{X}_{m}^{\prime} \hat{\beta}$, the decomposition is then written as

$$
\begin{equation*}
\overline{\text { Salary }_{m}}-\overline{\text { Salary }_{f}}=\left(\bar{X}_{m}^{\prime}-\bar{X}_{f}^{\prime}\right) \hat{\beta}+\left[\bar{X}_{m}^{\prime}\left(\widehat{\beta_{f}}-\hat{\beta}\right)-\bar{X}_{f}^{\prime}\left(\widehat{\beta_{f}}-\hat{\beta}\right)\right] \tag{4}
\end{equation*}
$$

where the first term captures the impact on the gender salary gap of differences in the average characteristics of men and women, evaluated at the pooled returns, and where the last term in bracket will correspond to the parameter $\alpha$ of equation (1). The sub-components of this last term can be interpreted as the advantage of men, $\bar{X}_{m}^{\prime}\left(\widehat{\beta_{f}}-\hat{\beta}\right)$, and the disadvantage of women, $\bar{X}_{f}^{\prime}\left(\widehat{\beta_{f}}-\hat{\beta}\right)$. The decomposition (4) provides an interpretation of equation (1) based on counterfactual average salaries.

## C. Results

We provide estimation results using all four equations introduced above. We begin by providing a summary table of the various analyses conducted using the above four methodologies, plus additional regressions using the logarithm of annual salary [ $\log ($ salary $)]$ as the dependent variable.

Table 3. Summary Table Effect of Gender (Female) on Professorial Salaries

| Method | Equation | Gender Effect | Std. Err. | t-stat | $P>\|t\|$ | \% of <br> UBC <br> Average <br> Salary |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLS -Dummy for Gender (Specification 1) | (1) | -374.79 | 1029.92 | -0.4 | 0.72 | -0.002 |
| OLS -Dummy for Gender <br> (Specification 2) | (1) | 53.26 | 911.61 | 0.06 | 0.95 | 0.0003 |
| OLS -Dummy for Gender on $\operatorname{Ln}$ (Salaries) (Specification 1) | (1) | -0.0018 | 0.0056 | -0.33 | 0.74 | 0.000 |
| OLS -Dummy for Gender on Ln(Salaries) (Specification 2) | (1) | 0.0004 | 0.0051 | 0.08 | 0.94 | 0.000 |
| Oaxaca-Blinder <br> Decomposition Pooled Coefficients with Gender Dummy (Specification 1) | (4) | -374.79 | 954.64 | -0.39 | 0.70 | -0.002 |
| Oaxaca-Blinder <br> Decomposition Male Coefficients (Specification 1) | (2) | -571.01 | 1344.23 | -0.42 | 0.67 | -0.003 |
| Oaxaca-Blinder <br> Decomposition Female Coefficients (Specification 1) | (3) | -1714.35 | 1309.64 | -1.31 | 0.19 | -0.010 |

Note: In Specification 1, the explanatory variables are professorial ranks, distinguished chairs, number of years in professorial ranks, and administrative units. Specification 2 adds type of appointment, numbers of years in executive positions, starting rank at appointment.

All methodologies find a non-statistically significant female salary disadvantage ranging from a negative -1714.35 to a positive 53.26 with large standard errors. These female penalties and premiums are not statistically different from zero at the $5 \%$ or $10 \%$ level, and from each other. These results stand in sharp contrast to the 2010 analysis where all four equations estimated a statistically significant female penalty of about $2 \%$. Here, the estimation on log salary yields what is called a "clean zero", that is not only an estimate that is not statistically significant but a point estimate that is close to zero. The dummy variable method yields a positive point estimates, although not statistically significant, with Specification 2. This is consistent with the fact that introducing more controls, especially for experience, generally reduces
the female penalty which makes Specification 1 more conservative. For the three Oaxaca-Blinder decompositions, only the results from Specification 1 are presented to preserve space.

Table 4 and 5 give more details about the estimation results for both Specifications, but does not report the Departmental dummies to preserve space. Table 4 reports the results of the estimation of equation (1) which is performed on the pooled sample (men and women together) by Ordinary Least Squares. The coefficient of the female dummy (Gender) provides an estimate of the gender differences in salaries not accounted for by the explanatory variables. Columns (1) and (3) use the more parsimonious Specification (1), while columns (2) and (4) include a more extensive set of explanatory variables of Specification (2). Columns (1) and (2) use the Current Salary as dependent variable, and Column (3) and (4) use the natural logarithm of Current Salary. The table reports the estimated coefficients of the regression and the standard errors of the coefficients underneath. In addition, statistical significance is indicated with the usual star system indicated at the bottom of the table. Although not reported in the Table, Departmental dummies are included in all regressions.

Note that the measures of the correlation between the actual and predicted salaries, the adjusted Rsquares, are relatively high for cross-sectional data, ranging from $79 \%$ to $84 \%$, and show that the specifications are very successful.

Table 4. Ordinary Least Squares Regression on Annual Salaries and Ln(Annual Salaries)

| Explanatory <br> Variables | Coefficient <br> (std. err.) | Coefficient <br> (std. err.) | Coefficient <br> (std. err.) | Coefficient <br> (std. err.) |
| :---: | :---: | :---: | :---: | :---: |
| Gender | $\begin{aligned} & -374.785 \\ & (1029.92) \end{aligned}$ | $\begin{aligned} & 53.259 \\ & (911.61) \end{aligned}$ | $\begin{aligned} & -0.002 \\ & (0.006) \end{aligned}$ | $\begin{aligned} & 0.000 \\ & (0.005) \end{aligned}$ |
| PROF | $\begin{aligned} & 70486.871^{* * *} \\ & (9781.59) \end{aligned}$ | $\begin{aligned} & 64382.603^{* * *} \\ & (9890.02) \end{aligned}$ | $\begin{aligned} & 0.512^{* * *} \\ & (0.091) \end{aligned}$ | $\begin{aligned} & 0.502^{* * *} \\ & (0.084) \end{aligned}$ |
| ASSOC | $\begin{aligned} & 36027.019 * * * \\ & (9769.39) \end{aligned}$ | $\begin{aligned} & 34138.511^{* * *} \\ & (9828.66) \end{aligned}$ | $\begin{aligned} & 0.310^{* * *} \\ & (0.091) \end{aligned}$ | $\begin{aligned} & 0.321^{* * *} \\ & (0.084) \end{aligned}$ |
| ASST | $\begin{aligned} & 11475.927 \\ & (9797.48) \end{aligned}$ | $\begin{aligned} & 8597.773 \\ & (9473.64) \end{aligned}$ | $\begin{aligned} & 0.139 \\ & (0.092) \end{aligned}$ | $\begin{aligned} & 0.119 \\ & (0.082) \end{aligned}$ |
| PROFTeach | $\begin{aligned} & 41826.260^{* * *} \\ & (10189.51) \end{aligned}$ | $\begin{aligned} & 39667.614^{* * *} \\ & (10085.15) \end{aligned}$ | $\begin{aligned} & 0.341^{* * *} \\ & (0.093) \end{aligned}$ | $\begin{aligned} & 0.375 * * * \\ & (0.085) \end{aligned}$ |
| SrINSTR | $\begin{aligned} & 16033.713 \\ & (9858.10) \end{aligned}$ | $\begin{aligned} & 16471.305 \\ & (9858.21) \end{aligned}$ | $\begin{aligned} & 0.159 \\ & (0.092) \end{aligned}$ | $\begin{aligned} & 0.202^{*} \\ & (0.084) \end{aligned}$ |
| KIL | $\begin{aligned} & 34678.705^{* * *} \\ & (6368.28) \end{aligned}$ | $\begin{aligned} & 26842.988^{* * *} \\ & (7933.23) \end{aligned}$ | $\begin{aligned} & 0.178 * * * \\ & (0.029) \end{aligned}$ | $\begin{aligned} & 0.141^{* * *} \\ & (0.038) \end{aligned}$ |
| CRC1 | $\begin{aligned} & 32587.765^{* * *} \\ & (4198.35) \end{aligned}$ | $\begin{aligned} & 32712.696 * * * \\ & (4681.33) \end{aligned}$ | $\begin{aligned} & 0.156^{* * *} \\ & (0.018) \end{aligned}$ | $\begin{aligned} & 0.158^{* * *} \\ & (0.020) \end{aligned}$ |
| CRC2 | $\begin{aligned} & 10640.735^{* * *} \\ & (1925.63) \end{aligned}$ | $\begin{aligned} & 10472.209 * * * \\ & (2017.27) \end{aligned}$ | $\begin{aligned} & 0.066^{* * *} \\ & (0.011) \end{aligned}$ | $\begin{aligned} & 0.066^{* * *} \\ & (0.011) \end{aligned}$ |
| DUS | $\begin{aligned} & 21687.677^{* * *} \\ & (4079.99) \end{aligned}$ | $\begin{aligned} & 23849.015^{* * *} \\ & (4146.55) \end{aligned}$ | $\begin{aligned} & 0.109^{* * *} \\ & (0.020) \end{aligned}$ | $\begin{aligned} & 0.117^{* * *} \\ & (0.021) \end{aligned}$ |
| LDUS | $\begin{aligned} & 17738.036^{* *} \\ & (6537.30) \end{aligned}$ | $\begin{aligned} & \text { 16785.043* } \\ & \text { (7539.25) } \end{aligned}$ | $\begin{aligned} & 0.095^{* *} \\ & (0.032) \end{aligned}$ | $\begin{aligned} & 0.090^{*} \\ & (0.037) \end{aligned}$ |


| YrsRank | $\begin{aligned} & \text { 2882.781*** } \\ & \text { (267.79) } \end{aligned}$ | $\begin{aligned} & 2719.068^{* * *} \\ & (234.33) \end{aligned}$ | $\begin{aligned} & 0.017^{* * *} \\ & (0.001) \end{aligned}$ | $\begin{aligned} & 0.016^{* * *} \\ & (0.001) \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: |
| YrsRank2 | $\begin{aligned} & -94.516^{* *} \\ & (11.58) \end{aligned}$ | $\begin{aligned} & -104.203^{* * *} \\ & (10.39) \end{aligned}$ | $\begin{aligned} & -0.001^{* * *} \\ & 0.000 \end{aligned}$ | $\begin{aligned} & -0.001^{* * *} \\ & 0.000 \end{aligned}$ |
| OUC | $\begin{aligned} & -14264.306^{* * *} \\ & (2204.95) \end{aligned}$ | $\begin{aligned} & -12756.986^{* * *} \\ & (2410.81) \end{aligned}$ | $\begin{aligned} & -0.084^{* * *} \\ & (0.015) \end{aligned}$ | $\begin{aligned} & -0.073^{* * *} \\ & (0.016) \end{aligned}$ |
| YrsSrEx |  | $\begin{aligned} & 4624.424^{* * *} \\ & (1018.03) \end{aligned}$ |  | $\begin{aligned} & 0.020^{* * *} \\ & (0.004) \end{aligned}$ |
| YrsMidEx |  | $\begin{aligned} & 1931.741^{* * *} \\ & (404.20) \end{aligned}$ |  | $\begin{aligned} & 0.010^{* * *} \\ & (0.002) \end{aligned}$ |
| YrsOthEx |  | $\begin{aligned} & 983.211 \\ & (513.92) \end{aligned}$ |  | $\begin{aligned} & 0.006^{*} \\ & (0.003) \end{aligned}$ |
| YrsJrEx |  | $\begin{aligned} & 1911.005^{* * *} \\ & (424.24) \end{aligned}$ |  | $\begin{aligned} & 0.011^{* *} \\ & (0.002) \end{aligned}$ |
| StInst |  | $\begin{aligned} & -4626.904 \\ & (4555.20) \end{aligned}$ |  | $\begin{aligned} & -0.048 \\ & (0.027) \end{aligned}$ |
| StSrlnst |  | $\begin{aligned} & 4372.353 \\ & (6612.38) \end{aligned}$ |  | $\begin{aligned} & -0.001 \\ & (0.042) \end{aligned}$ |
| StAssoc |  | $\begin{aligned} & -1893.732 \\ & (1539.16) \end{aligned}$ |  | $\begin{aligned} & -0.016 \\ & (0.008) \end{aligned}$ |
| StFull |  | $\begin{aligned} & 9435.376^{* * *} \\ & (2821.66) \end{aligned}$ |  | $\begin{aligned} & 0.042^{* * *} \\ & (0.013) \end{aligned}$ |
| Department | mies | included but not reported |  |  |
| $\begin{aligned} & \text { R-squared A } \\ & \mathrm{N} \end{aligned}$ | $\begin{aligned} & 0.792 \\ & 1572 \end{aligned}$ | 0.827 1572 | 0.813 1572 | $\begin{aligned} & 0.84 \\ & 1572 \end{aligned}$ |

Asterisks indicate statistical significance, ${ }^{* * *}$ at $1 \%$ level, ${ }^{* *}$ at 5\% level and * at $10 \%$ level.

As indicated earlier, when the more detailed measures of experience including type of appointment, numbers of years in executive positions, starting rank at appointment are added as controls in columns (2) and (4), the gender coefficient becomes positive although not statistically significant. Among these variables, starting as Full Professor (StFull), and the number of years in Senior executive positions (YrsSrEx) are the ones that have the most significance and impact. The results confirm the relative importance of the under-representation of women at higher ranks among the most critical explanatory factors for gender differences in professorial salaries. But this also raises questions about their exogeneity (or disassociation with any discriminatory process) with respect to salaries of these additional variables, another reason why Specification (1) is more conservative.

Table 5 reports the results of the Oaxaca-Blinder Decomposition corresponding to the different counterfactual experiments described in equation (2), (3) and (4) using Specification (1). ${ }^{3}$ The unexplained part of the gender salary differential is not statistically significant whatever the alternative choices of counterfactual. The decomposition results in the first column of Table 5 follow the

[^2]specification of column (1) from Table 4, therefore the unexplained part from the pooled regression is equal to the coefficient of gender from the preceding table. Professorial rank remains the most important explanatory factor, whose explanatory power accounts for $55-58 \%$ of the gender salary gap. It is followed by Departmental indicator variables which explain from $20 \%$ to $25 \%$ of the salary gap. Using the pooled coefficients, the explanatory factors account for almost all of the gap 97.6\%.

Table 5. Oaxaca-Blinder Decompositions

| Coefficients of Counterfactual Salaries: | Pooled ${ }^{\text {a }}$ Coeff. |  | $\begin{aligned} & \% \text { of } \\ & \text { gap } \end{aligned}$ | Male Coeff. |  | $\begin{aligned} & \% \text { of } \\ & \text { gap } \end{aligned}$ | Female Coeff. |  | $\begin{aligned} & \% \text { of } \\ & \text { gap } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Raw Gender <br> Salary <br> Differentials | 15412.44 | *** |  | 15412.44 | *** |  | 15412.44 | *** |  |
| Accounted for by differences in characteristics |  |  |  |  |  |  |  |  |  |
| Rank | 8867.35 | *** | 57.53\% | 8988.05 | *** | 58.32\% | 8496.08 | *** | 55.12\% |
| Chairs | 729.75 | * | 4.73\% | 700.41 |  | 4.54\% | 1381.06 |  | 8.96\% |
| Years in Rank | 1541.71 | ** | 10.00\% | 1832.10 |  | 11.89\% | 724.82 | * | 4.70\% |
| Departmental Dummies | 3898.85 | * | 25.30\% | 3320.88 | ** | 21.55\% | 3096.13 | ** | 20.09\% |
| Total Explained | 15037.66 | *** | 97.57\% | 14841.43 | *** | 96.30\% | 13698.09 | *** | 88.88\% |
| Total Unexplained | 374.79 |  | 2.43\% | 571.01 |  | 3.70\% | 1714.35 |  | 11.12\% |

${ }^{\text {a }}$ Pooled Coefficients with Gender Dummy
Asterisks indicate statistical significance, *** at 1\% level, ** at 5\% level and * at 10\% level.

The fact that the different choices of reference wage structure yield different size results indicates that there are aspects of the wage structure, as indicated by differences in the explanatory power of years in rank which may deserve more attention. Nevertheless, there is a substantial reduction in the unexplained gender gap, which was found to be around $20 \%$ in 2010, now it ranges from $2.4 \%$ to $11 \%$ depending on the reference wage structure. But it is not found to be statistically significant as also indicated in Table 3.
D. Conclusions

The current analysis revisits gender differences in professorial salaries at UBC with a different sample that includes faculty members for UBC-Okanagan and faculty members in the Educational Leadership stream focusing on members that were hired prior the 2012 pay equity adjustment. This sample was selected for analysis because this constituency was included in the pay adjustment; the BCHRT's approval requires UBC to report on the effectiveness of the $2 \%$ salary adjustment to the base salaries of all female full-time tenured or tenure-track faculty members, effective as of July 1, 2010, in ameliorating the pay gap. The main finding of the analysis is the previous gender penalty of about $2 \%$ has not reappeared. Indeed, among this group of faculty members, it is fair to say that no statistically significant gender penalty can be found.


[^0]:    ${ }^{1}$ The following individuals are members of the current working group: Jennifer Berdahl, Bekkah Coburn, Sara-Jane Finlay, Nicole Fortin, Shanda Jordan Gaetz, James Johnson, Sandy Liu, Jennifer Love, Oxana Marmer, Stephanie McKeown, Dory Nason, Deena Rubuliak, Vinayak Vatsal

[^1]:    ${ }^{2}$ The word "mean" designates a population measure of the first moment of the distribution, while the word "average" is an estimate of the population mean for the sample at hand.

[^2]:    ${ }^{3}$ The estimations were performed using the STATA software, and the "Oaxaca" procedure coded by Jahn (2008).

