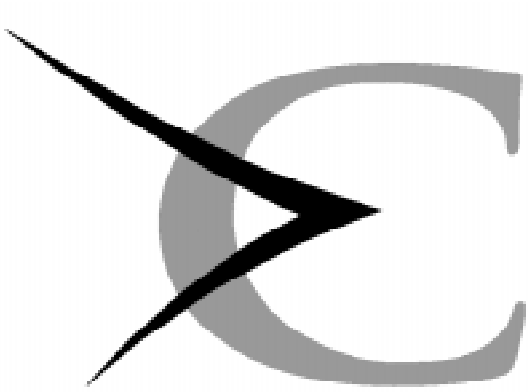

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Women's Wages in Women's Work: A US/Canada Comparison of the Roles of Unions and 'Public Goods' Sector Jobs

Michael Baker, Nicole M. Fortin

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Women's Wages in Women's Works: A US/Canada Comparison of the Roles of Unions and 'Public Goods' Sector Jobs*

Michael Baker†, *Nicole M. Fortin*‡

Résumé / Abstract

Dans cet article, nous étudions le mécanisme par lequel le taux de féminité des occupations peut avoir un effet négatif sur les salaires des femmes. Nous utilisons une comparaison internationale États-Unis/Canada pour relier les différences institutionnelles du marché du travail, les différences dans les rendements des qualifications et dans d'autres dimensions de la structure salariale, comme les rentes occupationnelles, à des différences dans la rémunération des emplois à prédominance féminine. Notre analyse, qui utilise les données américaines provenant des CPS-ORG pour 1988 et les données canadiennes provenant de l'enquête sur l'activité aussi pour 1988, démontre l'existence de différences intéressantes entre les États-Unis et le Canada quant à l'effet du taux de féminité des occupations sur les salaires des femmes. L'effet estimé pour les canadiennes, dans leur ensemble, est généralement petit et n'est pas statistiquement significatif, alors que l'effet estimé pour les américaines est relativement important et comparable aux résultats des études antérieures. Lorsque nous relions ces différences internationales aux autres déterminants de la structure salariale, nous trouvons que les taux de syndication relativement élevés, et les effets fixes relativement élevés des occupations procurant des biens publics sont à l'avantage des canadiennes. Nous trouvons aussi que les salaires relativement plus élevés des occupations intégrées aux États-Unis contribuent à l'effet négatif du taux de féminité des occupations sur les salaires des femmes dans ce pays.

In this paper, we investigate the mechanism by which the "femaleness"' of occupations has a negative effect on women's wages. We relate US/Canada differences in labor market institutions, the returns to skills and other dimensions of the wage structure, such as occupational rents, to corresponding differences in the rewards to female jobs. Our analysis, which uses US data from the CPS-ORG for 1988 and Canadian data from the 1988 LMAS, uncovers intriguing US/Canada differences in the effect of occupational gender composition on women's wages. The estimated effect for Canadian women is generally small and not statistically

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significant, while estimates for American women are relatively large and comparable to the evidence in previous studies. Relating these differences to cross-country variation in other wage determinants reveals that higher rates of unionization, and the higher occupation wage effects for certain 'public good' sector jobs such as educational services, work to the advantage of Canadian women. We also find that the relatively higher pay of "integrated" jobs in the United States helps account for the larger negative effect of gender composition on women's wages in this country.

Mots Clés : Équité salariale, salaire égal pour travail de valeur comparable, taux de féminité occupationnel, emplois publics, syndicats, comparaisons internationales

Keywords : Pay equity, comparable worth, public sector jobs, gender composition, cross-country comparison

1 Introduction

Occupational gender segregation is a leading explanation of the female/male wage gap. There is widespread evidence that the wages of both women and men decrease with the presence of females in their occupation. The underlying mechanism by which the "femaleness" of occupations negatively affects wages, however, is not fully understood: occupational crowding (Barbara Bergmann, 1974), differences in the skill requirements of "female" and "male" jobs (Solomon Polachek, 1981) or in the (unobserved) skills of individuals who fill them (David Macpherson and Barry Hirsch, 1995), and differences in the productivity of female and male jobs (Randy Hodson and Paula England, 1986) all figure as possible explanations.

Recent studies of the gender wage gap that exploit cross-country comparisons emphasize the role of labor market institutions, wage structures (Francine Blau and Lawrence Kahn, 1998), and family policies (Jane Waldfogel, 1998). In this paper we adopt a similar tact in our investigation of the effect of gender composition on female wages. We relate US/Canada differences in labor market institutions, the returns to skills and other dimensions of the wage structure, such as occupational rents, to corresponding differences in the rewards to female jobs. This specific cross-country comparison may be particularly informative, as education levels, living standards and culture are broadly comparable in the two countries. Also, their labor markets have been buffeted by common economic shocks and shared demographic trends.

We focus on a year, 1988, when antidiscrimination policies aimed at raising female wages—comparable worth—were relatively rare in both countries (Nan Weiner and Morley Gunderson, 1990). In Canada, comparable worth policies were restricted to the federal public sector and the province of Quebec. In both instances, the provisions were complaint based and seldom used. Policies in the United States were only marginally more advanced. Comparable worth was largely a creature of the state and local public sectors; by 1987, only 20 states had made some sort of comparable worth award. In short, at this time the labor markets in both countries were largely untouched by this sort of policy intervention.

Our analysis uncovers intriguing US/Canada differences in the effect of occupational gender composition on women's wages. The estimated effect for Canadian women is generally small and not statistically significant, while estimates for American women are relatively large and comparable to the evidence in previous studies. Relating these differences to cross-country variation in other wage determinants reveals that

higher rates of unionization, and the higher occupation wage effects for certain 'public good' sector jobs, work to the advantage of Canadian women. We also find that the relatively higher pay of "integrated" jobs in the United States helps account for the larger negative effect of gender composition on women's wages in this country[1].

2 US/Canada Differences in the Wage Penalty to Female Jobs

In table 1 we present estimates of the relationship between the gender composition of occupations and the wages of women, aged 16-64, in the two countries as of 1988. We restrict the analysis to women to focus on the group that provides the most provocative US/Canada differences[2]. Our Canadian sample is drawn from the Labor Market Activity Survey (LMAS), while the US data is from the Outgoing Rotation Groups of the Current Population Survey (CPS-ORG). We begin by regressing log hourly wages on the indicated demographic controls and occupation fixed effects. These estimated fixed effects are then regressed on the proportion of occupational employment that is female (PFEM), weighting by the sum of the individual level LMAS or CPS-ORG supplied weights by occupation. Our measures of PFEM are obtained from 1990 US and 1991 Canadian census data. We construct a "crosswalk" between the US 3-digit and Canadian 4-digit occupation codes, each of which originally comprised close to 500 categories. The crosswalk produces a total of 310 (cross-country) consistent codes for the analysis. A full description of the data and estimation methods is reported in Michael Baker and Nicole Fortin (1998).

The story of the analysis emerges early, in the estimates from the "no controls" specification reported in the first column of rows 1 and 2 of table 1. The penalty to PFEM in the United States is -0.192, while in Canada it is -0.022, an estimate we cannot reject is equal to 0. The US/Canada difference is -0.170 which given its standard error, 0.104, is significantly different from 0 at conventional levels. Adding human capital controls does not change the inference. The US/Canada difference is now -0.160 with a standard error of 0.081. Finally in the

[1] Female jobs are defined as jobs with a femaleness rate of 60 percent or higher; male jobs are defined as jobs with a femaleness rate of at most 30 percent. Other jobs are called integrated.

[2] The results for men are reported in Baker and Fortin (1998).

last specification we add controls that attempt to replicate the conditions in which a comparable worth program might be implemented; that is, partial out wage variation that is likely to be tolerated under the relevant legislation. Here the cross-country difference is smaller but the message is the same: in the United States occupational gender composition has a statistically significant negative effect on women's wages while in Canada it does not[3].

The contributions of different types of jobs—female, integrated, and male—to the aggregate results are explored in figure 1. We plot kernel regressions (solid line), and linear regressions (dashed line), of the relationship between PFEM and average occupational log wages in the two countries, weighting by occupation size. The vertical line denotes the level of PFEM, 0.6, at which the occupational classification switches from integrated to female. The kernel regression in panel (a) clearly identifies an important contribution of integrated occupations to the negative slope of the US regression line. In fact, when we omit women who work in integrated occupations, the estimated penalty to PFEM in this country is much smaller and no longer statistically significant (row 3 of table 1). In Canada, deleting women in integrated occupations actually increases the penalty to PFEM in some specifications (row 4), although the estimates remain statistically insignificant, and there is little effect in the specification with sectoral controls. In our account of the US/Canada differences in rows 1 and 2, we investigate the role of differences in these sorts of occupation wage effects.

3 Accounting for the US/Canada Differences

An often discussed, distinctive feature of the US wage structure is the increase in returns to skills that occurred in the 1980s. While there are large US/Canada differences in the returns to education for males, in 1988 the returns for females are virtually identical in the two countries (see Baker and Fortin, 1998). Any reconciliation of our results in this dimension, therefore, must be found in cross-country variation in the returns to unobserved skills. We construct a simulation in which the US wage distribution is compressed to mimic the Canadian distribution.

[3]Using the occupational crosswalk rather than the country specific codes leads to smaller penalties in the US data, but the Canadian estimates are virtually unchanged. For example, using country specific codes the estimated parameter on PFEM (sectoral controls) is -0.164 (0.043) for the United States and -0.066 (0.037) for Canada.

More precisely, we re-estimate the US penalty to PFEM using US log wages normalized so that their estimated standard deviation is equal to its (estimated) Canadian counterpart[4]. The results, reported in row 5 of table 1, indicate that compressing the US wage distribution does lead to smaller estimates of the penalty to PFEM. Nevertheless, this modification can account for at most 10 percent of the US/Canada difference.

A striking cross-country difference that could potentially have greater explanatory power is in union coverage rates. In our samples 16 percent of American women (15 percent of those in female jobs) are covered by collective bargaining agreements compared to 37 percent of Canadian women (43 percent of those in female jobs). The cross-country differences are heightened at finer levels of disaggregation. Health care workers (around 10 percent of female workers) have very high rates of union coverage in Canada: more than 85 percent for nursing and therapy occupations, and roughly 60 percent for technologists. In the United States union coverage rates in these occupations are less then 20 percent. Teachers (5 percent of female workers) provide another important example. Union coverage among elementary and secondary teachers is close to 90 percent in Canada and only 60 percent in the United States. The cross-country difference for post-secondary teachers is even larger: the coverage rates are 75 percent and 25 percent, respectively.

To simulate Canadian union coverage for the United States, we take advantage of the fact that our data carry sample weights and use the reweighting procedure outlined in John DiNardo, Nicole Fortin and Thomas Lemieux (1996)[5]. The results in row 6 demonstrate that this cross-country difference has greater "bite", but the US penalty to PFEM is still substantial. Furthermore, there is little difference between the simulated and estimated results conditioning on industry effects ("sectoral controls"). This may reflect the fact that as union density declined dramatically in the United States in recent times, unions lost some of their ability to compress wages.

Another salient difference between the two countries is in the relative ranking of occupations. Let $p_{ki} = F^C(\ln w_{ki})$ be the rank of wage w_{ki} in the overall (men and women combined) wage distribution, $F^C(\ln w)$, of each country C. Next, compute the rank of occupation k as the average rank, $p_k^C = \sum_{i \in K} p_{ki} = \overline{F^C(\ln w_{ki})}$, of its wages. In figure 2 we graph

[4]Note that performing a similar simulation on the residuals from our first step estimation does not affect the resulting occupation fixed effects used in our second step and is thus ineffective in our econometric framework.

[5]We first estimate the probability of each worker being covered (or not covered) in each country using a probit model based on similar covariates. We then reweight each US worker by ratio of the estimated probability of being covered (or not covered) in Canada over the corresponding probability in the United States.

the resulting relative positions of the occupations which comprise at least half a percent of female workers. The Canadian ranks are plotted against the US ranks, so that occupations that have the same standing in the two countries will fall on or around the 45 degree line. 'Public good' sector jobs are denoted by squares. These include occupations in the educational, medical and social services sectors, which employ 30 percent of female workers in both countries. Other jobs are denoted by circles, which vary in size with weighted occupational sample size.

Occupations above the 45 degree line rank higher in Canada. Here the teaching occupations and nursing assistants figure predominantly. The relatively low ranking of teaching occupations in the United States is consistent with the industry-wage effects estimated by Jean Helwege (1992)[6]. Interestingly, the commonly used public/private split might not capture these differences, as medical services are mostly private in the United States and mostly public in Canada. Occupations below the 45 degree line, such as managers, financial officers and sales managers (all integrated occupations), rank higher in the United States. Applying the Canadian occupational ranking to the US wage structure, we obtain

$$\ln w_k^{US/CAN} = (F^{US})^{-1}[p_k^{CAN}] = (F^{US})^{-1}[\overline{F^{CAN}(\ln w_{ki})}],$$

where $\ln w^{US/CAN}$ is an estimate of the average US wage in occupation k had the Canadian ranking of occupations prevailed. We next adjust the wages in our US sample, by adding the difference $(\ln w_k^{US/CAN} - \ln w_k^{US})$, the change in the average occupational wage due to the change in rank:

$$\widehat{\ln w_{ki}^{US}} = \ln w_{ki}^{US} + (\ln w_k^{US/CAN} - \ln w_k^{US}).$$

For example, secondary teachers are ranked at the 80th percentile of the overall wage distribution in Canada and at the 62nd percentile in the United States. Since the US log wages corresponding to the 62th and 80th percentile are 2.31 and 2.62, respectively, to adjust for the differences in occupational ranking, we add a premium of 0.31 to the individual log wages of US secondary teachers. The impact of this adjustment is dramatic. As is clear in row 7, it accounts for 67 percent (human capital) to almost 100 percent (sectoral controls) of the US/Canada difference in the wage penalty to PFEM. Returning to the argument of figure 1, the changes in relative position raise the standing of some important female

[6]She finds that educational services industry-wage effects have steadily declined in the United States since the 1940s and were the second lowest in 1980. Helwege also identified negative industry-wage effects in the government sector and the medical services sector. Admittedly, these industry-wage effects are computed from a sample of white males!

occupations in the United States, and decrease the standing of some of integrated occupations, thus tipping the regression line back to the horizontal plane. Finally, adding back the adjustment for differences in unionization (row 8) further dampens the relationship between occupational gender composition and wages.

4 Interpretation and Conclusions

Occupational gender segregation may have different effects on women's wages in different countries: women in the United States and Canada face very different wage penalties to the femaleness of their occupations. Our analysis isolates the contributions of labor market institutions and occupational wage effects to this cross-country difference. In particular, a low female unionization rate in the United States and low occupation-industry wage-effects for certain 'public good' sector jobs, such as educational services, work to the detriment of American women.

The role of unions may simply proxy a story based on unobserved ability. Some occupations in Canada have higher unionization rates, and as a consequence relatively more able individuals as workers. Furthermore, the role of this institution may be understated in our comparisons if its effect varies with its level. The higher rates of unionization in certain Canadian occupations in tandem with threat effects, may amount to de facto complete unionization of certain jobs.

The occupational wage effects are harder to accommodate in an unobserved ability framework. A political economic approach may shed more light. There are some key cross-country differences in the funding of certain jobs that would not be captured by simple public sector controls. For example, the larger role of Canadian provincial (versus local) governments in the funding of public education, may provide that country's educational workers with greater influence. By the same argument, the greater decentralization of these occupations would contribute to the lower occupation fixed effects in the United States. An explanation of the differences in relative standing of these occupations across the two countries remains an important topic for future research, and input to an account of the wages for "women's work".

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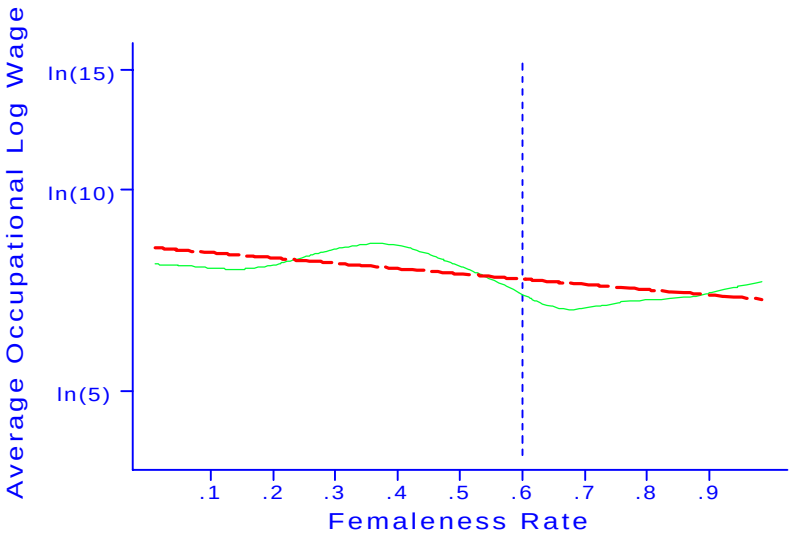
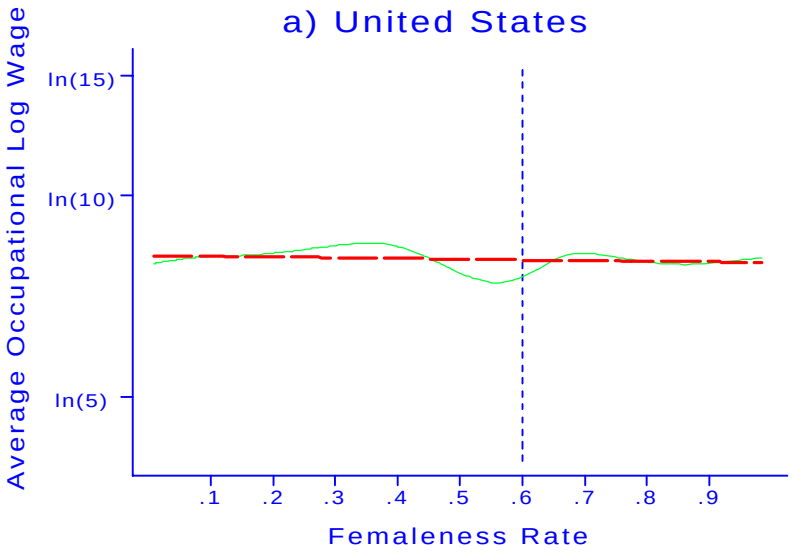
Table 1 — Estimated and Simulated Effect
of Gender Composition on Women's Wages

	Specification:	No Controls	Human Capital	Sectoral Controls
Estimates:				
1:	United States	-.192 (.077)	-.179 (.061)	-.136 (.051)
2:	Canada	-.022 (.070)	-.019 (.053)	-.060 (.042)
Subgroup Estimates:				
3:	United States (female and male jobs only)	-.034 (.094)	-.055 (.078)	-.016 (.065)
4:	Canada (female and male jobs only)	-.089 (.070)	-.093 (.053)	-.062 (.042)
Simulations:				
5:	1+ Canadian variance	-.176 (.070)	-.164 (.056)	-.124 (.047)
6:	1+ Canadian union structure	-.156 (.078)	-.158 (.061)	-.131 (.051)
7:	1+ Canadian ranking of occupations	-.075 (.079)	-.061 (.062)	-.019 (.055)
8:	6+ Canadian ranking of occupations	-.034 (.082)	-.035 (.064)	-.009 (.055)

Note: Estimated standard errors are in parentheses. The standard errors for the simulations do not take into account errors from the simulation experiments and should be viewed as lower bounds. Human capital conditions on a quartic in age and on six education classes. Sectoral controls add dummies for province (10) or region (9), metropolitan area, industry(12), employment in the federal, provincial or state, and local public service, union status and part time work.



a) United States



b) Canada

Figure 1. Kernel Regression of Average Occupational Female Wages on Gender Composition

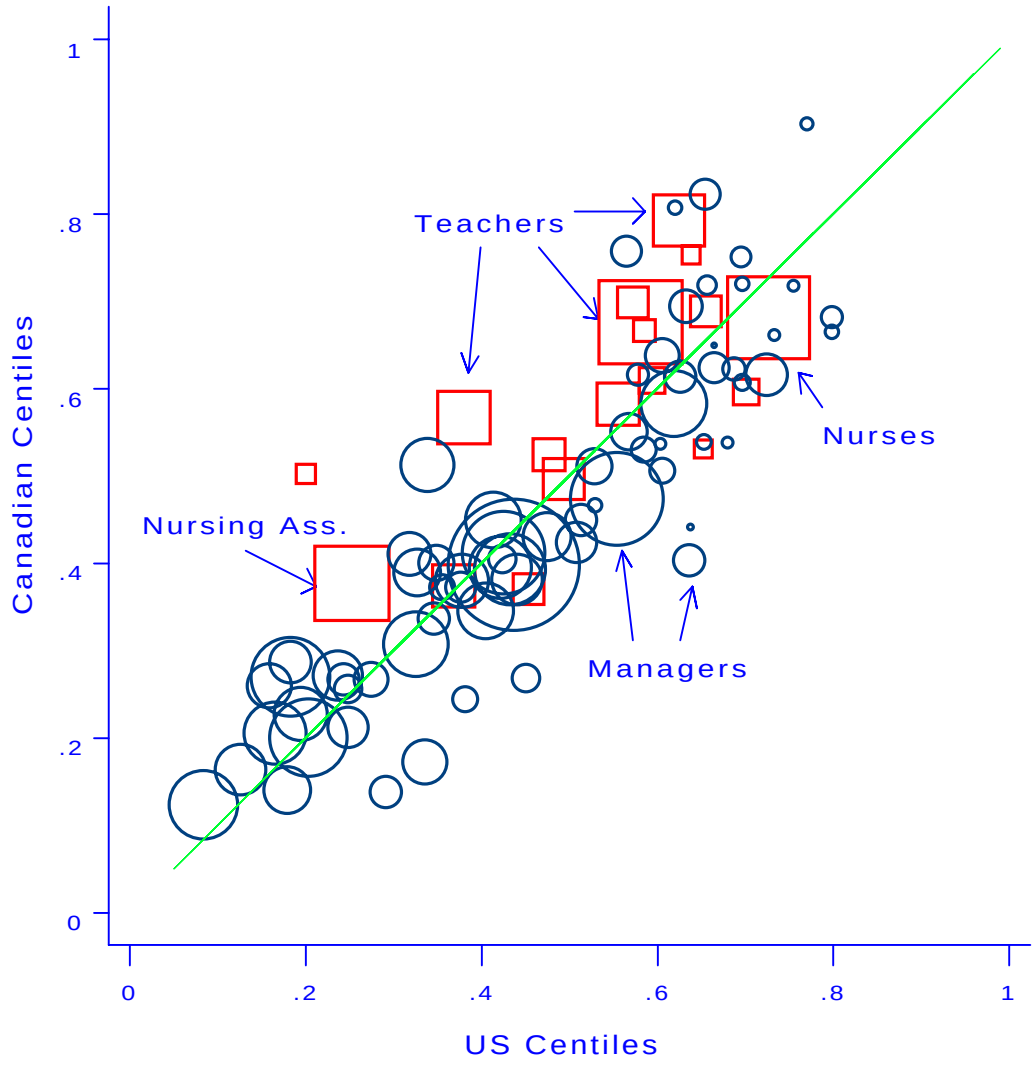


Figure 2. Ranking of Women's Occupational Wages in the Overall Wage Distribution

`Public Good' Jobs □ Other Jobs ○

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