



## **WHY DO WOMEN EARN LESS THAN MEN?**

### **A Synthesis of Findings from Canadian Microdata**

**By Carole Vincent**

This synthesis reviews the evidence from an important body of Canadian research using microdata available through the Canadian Research Data Centre Network to examine four hypotheses often proposed to explain the persistent gender wage gap. The results show that the different educational and professional choices that women make is the most important explanatory variable of the wage gap. However, the greater portion of the gap remains unexplained.

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### A Synthesis of Findings from Canadian Microdata

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### About this series

The Canadian Research Data Centre Network (CRDCN) knowledge synthesis series assesses the research undertaken through Research Data Centres and analyze its implications for key policy issues. Their specific objectives are to ensure that research results are absorbed by policy-makers and the public, to contribute to the development and adoption of knowledge-informed policy and to identify key evidence gaps.

The syntheses are peer-reviewed and edited by Sarah Fortin (CRDCN) and Saul Schwartz (Carleton University). They are available in English and French on the website of the CRDCN.

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# Why Do Women Earn Less Than Men?

## Summary

Two of the most important socioeconomic changes over the last few decades are the massive influx of women into the workforce and the remarkable progress that they have made in educational attainment. In spite of these developments, women still earn less than men: in 2011, the average hourly wage of women working full-time in Canada was 87 percent that of men. Why is this the case?

Four main hypotheses have been put forth to explain the fact that, still today, women are paid less than men:

1. Women are overrepresented in occupations that are at the lower end of the pay scale.
2. Women place a greater value on non-pecuniary aspects of a job.
3. Women's greater family responsibilities lead them to opt for jobs that offer a better work-life balance.
4. Gender stereotypes in many workplace organizational practices tend to better value men's patterns of employment.

This synthesis reviews the evidence from an important body of Canadian research using Statistics Canada microdata to 1. examine gender wage gap in Canada and 2. appreciate the respective merits of these four hypotheses. What light do these rigorous statistical analyses shed upon this question? Do they suggest any kind of empirical support for any one of these hypotheses?

Several findings stand out :

- The gender wage gap has decreased over the years but it is still significant, even among the younger, more-educated generations.
- Less than a third of this gap is explained by the differences in the productive characteristics of women and men, such as the level of education reached, the occupation or trade practiced, the experience accumulated, the number of hours worked, or the sector in which they work.
- The educational and professional choices that women make, in particular the fact that they are less present in certain trades and occupations, is one of the most important explanatory variables of the wage gap.
- These differences in the productive characteristics of women and men explain an increasingly smaller portion of the wage gap, so much so that the greater portion of the gap measured nowadays cannot be explained by these differences.
- The hypothesis stating that women are more interested than men in non-pecuniary aspects of a job finds some empirical support, but the importance of this factor in explaining the wage gap is relatively small compared to educational and occupational choices.
- Women with children earn less than women without. This 'family gap' remains even when accounting for the fact that motherhood possibly affects the productivity and the human capital of mothers due to temporary removal from the work force or conflicts between family and work responsibilities.
- While it is difficult to document the existence of prejudice and gender stereotypes, there are indications suggesting that, in some workplaces, such as traditionally male-dominated sectors or sectors where non-standard jobs tend to be concentrated, discriminatory practices toward women exist.

In light of these findings, the author concludes that helping young women diversify their educational and professional choices and fighting gender stereotypes are the main public policy tools to help level the playing field.

Given that young women's educational and occupational choices explain a significant proportion of the wage gap, it would seem that the diversification of educational and occupational choices might contribute to reducing wage inequality. A concerted effort should be made to ensure that women and men are in a position to make better-informed decisions in terms of career choices.

Young people tend to hold stereotypes as to which jobs are appropriate for men and for women. These stereotypes are learned at an early age and tend to be reinforced by family, media, the general social environment and even the classroom. Young women, no matter what their true skills and capabilities may be, often do not believe themselves capable of achieving the academic or professional requirements necessary for succeeding in a given job. It is therefore important to develop intervention strategies that will diversify girls' vocational interests and reinforce their confidence and their expectations of adequacy by concrete experiences.

Measures to reduce the effect of maternity on women's income should also be considered. Historically, they have improved the situation. But since women's family responsibilities seem to have a longer-term effect on working mothers' incomes, it would also be important to encourage a more balanced division of childcare responsibilities between the two parents and a greater involvement by fathers.

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# Introduction

Over the course of the last few decades, major economic, social and demographic changes have brought about a radical transformation in the lives of women and men. One of the most fundamental of these changes has been the massive influx of women into the workforce. Even though men still have a higher participation rate in paid work than do women, the gender gap in labour market participation rates has diminished over time. In the mid 1970s, less than half of Canadian women aged 25 to 54 years were in the workforce. Today, that rate has grown to more than 75 percent.<sup>1</sup>

Women's progress in the workforce is fundamentally linked to the remarkable advance that they have made in educational attainment. Twenty years ago, the percentage of women aged 25 to 54 years old with a postsecondary education was less than that of men. Today, the situation is reversed.

Having the upper hand in education does not however give women an income advantage over men. While, on average, the gender pay gap has diminished over the last 25 years, it persists. The average hourly wage of women working full-time in Canada was 76 percent of that of men in 1988; this ratio climbed to 83 percent in 2008 (to 90 percent among younger workers) and to 87 percent in 2011.<sup>2</sup> The gap between men and women in hourly wage rates went from 24.3 cents in 1988 to 18.9 cents in 1998, and then 16.7 cents in 2008. The bottom of the salary scale showed a greater reduction in the gap (nearly 12 cents) while the upper end saw the lowest reduction in the gap (less than 7 cents).<sup>3</sup>

In short, despite recent advances as well as federal and provincial employment equity and salary equity measures over the course of the last three decades, women continue to earn less than men, even among the younger, more-educated generations. Why is this the case?

Studies on this subject have proposed four main hypotheses to explain the fact that even in this day and age, women are paid less than men. These four hypotheses are not mutually exclusive, and can be based on overlapping principles. They can be summarized as follows:

1. Women are overrepresented in occupations that are at the lower end of the pay scale.
2. Women place a greater value on non-pecuniary aspects of their job.
3. Women's greater responsibility as caregivers to children and other family members may cause them to opt for jobs that will allow them a better work-life balance.
4. Gender stereotypes in many workplace organizational practices tend to better value men's patterns of employment.

While various studies carried out abroad on this topic will be taken into consideration, the main objective of this synthesis is to review the evidence generated by an important body of Canadian research over the last 10 years, using Statistics Canada microdata, to examine the gender pay gap in Canada and assess the respective merits of these four hypotheses. What light do these rigorous statistical analyses shed upon this question? Do they suggest any kind of empirical support for any one of these hypotheses?

The synthesis is organized as follows: first, I summarize the nature and scope of the gender wage gap based on various statistical analyses of the subject. Second, I examine each of the four main hypotheses in light of the selected studies. Finally, I discuss the implications of this body of work for the design of social and economic policies aimed at improving economic equality between women and men

## The wage gap 'unravelled'

Why do women earn less than men? *Is it who they are, what they do or where they work?* to paraphrase Erica Lynn Groshen, author of an important article published at the beginning of the 1990s on gender-based wage differences.<sup>4</sup> The answer to that question could be: 'None of the above' since none of these reasons can explain in and of itself, and to a large extent, the existing gap.

Many researchers have examined the question of the extent to which the pay gap between men and women is a consequence of differences in their observable productive characteristics, such as level of education, occupation, years of experience, sector of employment, or the number of hours worked. The results of these studies suggest that less than a third of observed pay gap may be explained by the different choices that men and women make regarding their participation in the workforce.

A widely-used methodological approach for tackling this matter involves splitting the observed gaps into two components: The first component, the *explained* one, results from the different choices that men and women make regarding field of studies, occupations, industry, work schedule or number of hours worked. The second component, the *unexplained* one, is based upon the difference in the *economic rate of return* to productive characteristics, depending upon whether you are a man or a woman. Some people identify this second component of the wage gap as gender-based wage discrimination, but most researchers talk of the unexplained component.<sup>5</sup>

In a study published in 2010, Michael Baker and Marie Drolet offer an extensive analysis of the persistence of pay gaps between men and women, using many data sources, including the Labour Market Activity Survey (LMAS), the Survey of Labour and Income Dynamics (SLID), the Labour Force Survey (LFS) and the Census. Table 1 below is a compilation of their findings.<sup>6</sup>

First of all, we notice that the pay gaps have diminished over the course of time (column 1): while they were close to 30 percent in the period 1986 to 1988, they were about 15 percent for the period 2006 to 2008. A second point to note (second column) is that only a small part of this gap can be explained by gender differences in productive characteristics

### Method for the selection of the studies

I first searched the CRDCN's online bibliography for studies in French and in English focusing on differences between men and women regarding their experience as participants in the labour force, and especially the presence and the evolution of gender inequities in paid work. I used several keywords (gender, gender gap, labour, employment, wages, compensation, women, satisfaction, *sexes, genre, écarts entre les sexes, travail, emploi, salaires, rémunération* and *femmes*) and included the following surveys: National Graduates Survey; Adult Education Survey; Workplace and Employee Survey; National Longitudinal Survey of Children and Youth; General Social Survey; Youth in Transition Survey; Survey of Consumer Finances; Labour Force Survey; Survey of Labour and Income Dynamics; and the Canadian Census.

The Longitudinal Survey of Immigrants to Canada was not included. Studies based on data from this survey indicate that immigrants' experiences in the labour force vary according to gender, with women facing more obstacles than men. However, this question is not studied in detail in the present synthesis.

Organising the studies according to the database used allows us to figure out the perspective adopted the authors. For example, research based on the National Graduates Survey is primarily focussed on choice of field of study and men's and women's education and experience in the workforce, while papers based on the Workplace and Employee Survey rather examine working conditions and organizational practices. More information on the surveys mentioned in this synthesis is available at [www.rdc-cdr.ca](http://www.rdc-cdr.ca)

I also searched by author name using a list of researchers who have published extensively on this topic. I subsequently examined the abstracts or, if necessary, the full text of the article to determine the pertinence of including these papers in the synthesis. Other sources were also consulted, such as online bibliographies EconLit, Google Scholar and IDEAS. Works cited in the most relevant papers as well as later works of particularly prolific authors in the domain were also examined. And finally, my own network of colleagues and contacts helped me to identify other relevant research, mainly in Canada, but also from abroad.

The studies that were selected for inclusion in the synthesis were ones based on rigorous methodology and which offered solid results that would allow us to better understand the value of the four hypotheses previously mentioned.

(e.g. education levels, job tenure, occupation, industry, age, province of residence or marital status). Gender differences in these characteristics would have produced pay gaps of just 10 percent in favour of men from 1986 to 1988 and less than 3 percent from 2006 to 2008, which is very low compared to the actual gaps of 30 and 15 percent found for these periods. Thus, the *explained* component of the pay gap is relatively small, while the *unexplained* component (third column) is substantial, and even increases as the pay gaps diminish over time, going from 62 percent in 1987 to a peak of 92 percent in 2007.

**Table 1: Breakdown of gender pay gap, Full-Time Workers Aged 25–54, Canada**

Year	Pay gap <sup>a</sup> (1)	Explained component <sup>b</sup> (2)	Unexplained component (3)	Percentage unexplained (3)/(1)
1986	0.295	0.095	0.199	67 %
1987	0.287	0.108	0.179	62 %
1988	0.287	0.086	0.200	70 %
1996	0.197	0.050	0.147	74 %
1997	0.194	0.029	0.165	85 %
1998	0.194	0.026	0.168	87 %
2006	0.169	0.026	0.143	85 %
2007	0.157	0.013	0.144	92 %
2008	0.166	0.026	0.141	85 %

**Notes:** <sup>a</sup> The wage gap is expressed as the difference between the natural logarithm of average hourly wage for men and the logarithm of average hourly wage for women. The logarithmic transformation applied to salaries changes the unit of estimation from a difference in dollars to a difference in percent. This is common practice in empirical studies that examine earnings determinants. The study seeks to take into account the fact that a pay raise of a dollar is more significant for a low-income earner than it would be for a high-income earner, which is why it is important to express the variations in percentage. <sup>b</sup> Explained component based on gender differences in educational attainment job tenure, occupation, industry, age, province of residence and marital status.

**Source:** Labour Market Activity Survey (LMAS), Survey of Labour and Income Dynamics (SLID) and Labour Force Survey (LFS), excerpted from Baker and Drolet, 2010, *A New View of the Male/Female Pay Gap*, Policy analysis, p.428-464.

These findings lead the authors to conclude that the pay gap is less and less a result of the differences between men and women in terms of their respective productive characteristics. Rather, the gaps would seem to be due to differences in the rate or return that men and women receive from these characteristics. Women with similar observable qualifications would appear to obtain less than men do.

Using the 2006 Labour and Income Dynamics Survey (LIDS), Alexandre Ouimet also concludes that more than two-thirds of the estimated average pay gap cannot be explained by differences in the productive characteristics of men and women.<sup>7</sup>

More recently, using data from the National Graduates Survey (NGS), Brahim Boudarbat and Marie Connolly analyzed the experiences of five cohorts of new postsecondary graduates (graduates from 1986, 1990, 1995, 2000 and 2005).<sup>8</sup> Table 2 presents selected results from their study. Findings show that a pay gap persists, even among the younger generations. We also note that for a given cohort, pay gaps increase over time: five years after graduation, the gender gap is higher than it was two years after graduation. Among young graduates in 1995, women earned 7 percent less than men two years after graduation and 14 percent less than men five years after graduation. In the cohort of 2000, this trend is less pronounced: the pay gap goes from 8.1 percent two years after graduation to 8.9 percent five years after graduation. And these pay gaps are those that remain after gender differences in observable productive characteristics are taken into account.

**Table 2: Decomposition of the gender pay gaps for postsecondary graduates two years and five years after graduation, Canada**

Year	Pay Gap <sup>a</sup> (1)	Explained component <sup>b</sup> (2)	Unexplained component (3)	Percentage unexplained (3)/(1)
1997 (1995 graduates)	0.072	0.012	0.060	83%
2000 (1995 graduates)	0.141	0.032	0.109	77%
2002 (2000 graduates)	0.081	0.027	0.054	67%
2005 (2000 graduates)	0.089	0.037	0.052	58%
2007 (2005 graduates)	0.059	–	–	100%

**Notes** <sup>a</sup> Pay gap is expressed as the difference between the natural logarithm of average hourly wage for men and the logarithm of average hourly wage for women. Therefore, a positive sign means that men earn more than women. <sup>b</sup> Component explained by gender-based differences in level of studies completed, field of study, number of degrees held, employment status, degree of over-qualification in employment, job tenure, occupation industry, age, province of residence, marital status, number and age of children, immigration status and presence of a disability.

**Source:** National Graduate Survey (and follow-up surveys), excerpted from Boudarbat, B. and M. Connelly, 2013, « The gender wage gap among recent post-secondary graduates in Canada: a distributional approach », Canadian Journal of Economics, vol. 46, no 3, p. 1037-1065.

As Baker and Drolet had found, a substantial proportion of that pay gap remains unexplained (last column). For example, among young graduates in 2000, more than half of the gap is unexplained five years after graduation. In the case of the 2005 cohort, gender-based differences in the level of educational attainment and other productive characteristics would in fact justify a gap in favour of women, to the point that the *unexplained* component of the gap, two years after graduation, is 100 percent.<sup>9</sup>

Also worth mentioning: the gender-based pay gap for respondents at the beginning of their careers (two years after graduation) narrowed among low to middle income earners but widened among workers at the higher end of the pay scale in the first decade of the 21<sup>st</sup> century. The authors conclude that women in the workforce have managed to breach the salary ‘floor’ but are still having difficulty breaking through the ‘glass ceiling’.

### Methodological considerations

To conclude this section, three methodological points should be mentioned and taken into consideration when examining the studies on gender pay gap and comparing their results.

The first point relates to the fact that the choice of factors generally accepted as explaining the pay gap is not without controversy. Differences between men and women with regard to observable productive characteristics – which make up the explained component of the pay gap – are generally presented as objective differences in the sense that they are not a result of discriminatory factors, as opposed to the unexplained component of the gap. Some researchers, however, have called into question this objectivity. Including the choice of occupation, for example, has been a subject of criticism. Some people argue that educational choices made by men and women not only reflect personal preferences, but are also the consequence of gender stereotypes that exist in the workplace or in school, with girls and women often being excluded, de facto, from certain more traditional male career or study paths. These people suggest that including career choice (or other factors that do not

necessarily reflect a personal choice) may lead to underestimating the role and impact of discriminatory practices. The variables included in the explained component of the gap is therefore important, and the ensuing results must be analysed with these considerations in mind.

A second methodological question involves how remuneration is measured. Some researchers compare average annual earnings while others look at hourly wages. Choosing one or the other is not without consequence. Contrary to the trend in hourly wages, we see hardly any progress in women's annual earnings: since the beginning of the 1990s, the female-male ratio in annual salaried earnings for full-year full-time workers has remained more or less the same at just over 70 percent. Some analysts believe that annual earnings better reflects the real purchasing power of workers. Others believe that a comparison based on annual earnings is misleading, as it does not show whether women earn less because they spend fewer hours doing paid work or because they earn less for each hour worked. When examining studies on this subject, it is therefore important to take into consideration which measure has been used. In the present paper, we will be primarily examining gaps based on the hourly wage rate.

Finally, it is important to recognize the risks of interpreting the evolution of gender-based pay gaps using raw or 'uncorrected' data. As Marie Drolet explains in a study released in 2011, raw data are most often subject to 'selection biases'. For example, there would be a selection bias if women working in the 1980s had an above-average earning potential compared to women who did not work. As the employment percentage of women rose year after year, it is possible that a large number of women entering the workplace would have below average earnings potential. This change would affect measurement of gender wage gaps, and it would be important to take it into account when comparing the gap in the 1980s to that in later periods. Indeed, Drolet indicates that after selection bias is taken into account, the adjusted wage gap shrinks more than previously reported for 1988 to 2008 across all age categories: an additional 1.6 percentage-point increase over the 7.6 percentage-point change in the unadjusted gap. Conversely, reductions in pay gaps for 25-29 year olds noted in her study would be overestimated if the selection bias was not taken into account.

## Possible causes of the gender wage gap

While we can be pleased by the diminution of the gender wage gap over the last few decades, the situation remains a cause for concern, and we can legitimately ask ourselves why this gap persists. In this section, we shall take a closer look at the four main hypotheses that have been proposed to explain this gap.

### **Women are overrepresented in occupations that are at the lower end of the pay scale.**

Women's career choices and notably the fact that they are not well represented in certain occupations can contribute to the pay gap between men and women. Historically, in Canada as in other countries, there has been a significant occupational segregation between genders. Women have chosen a much narrower range of occupations than men, and they represent a large portion of workers employed in the 20 poorest-paid occupations.<sup>10</sup>

According to the Labour Force Survey, two thirds of the female workforce were working in four main sectors in 2009: teaching, nursing and health care, office and administrative work, and sales and service. Less than one third of men, on the other hand, were employed in these sectors.<sup>11</sup> Women represent a particularly high percentage of workers in teaching (65.9 percent), nursing (87.1 percent) and clerical and administrative positions (75.5 percent). Conversely, their presence is rather weak in the fields of construction, transportation and other trades; just 6 percent of employees in these sectors are women.

However, women strengthened their presence in several traditionally male-dominated occupations between 1996 and 2006.<sup>12</sup> Of note, women have made important gains in management positions in sales, marketing and advertising, as well as among physical science professionals and senior positions in engineering, architecture, natural sciences and information systems. Women are also making their presence felt in more lucrative sectors, such as medicine, dentistry and other careers in medical diagnostics and treatment.

Gender segregation is also evident with respect to educational choices. At the college level in 2007, women represented 87 percent of college graduates in education and 84 percent of graduates in the fields of health care, parks and recreation, and the fitness industry. They were a clear minority in apprenticeship and trades, except in the food service industry.<sup>13</sup> Women's enrolment in other male-dominated programmes, such as construction or electronic and mechanical trades remained under 4 percent in 2007. An even more startling fact is that the percentage of women who *completed* their programme of studies in these fields was less than 2 percent in 2007.

At the university level, we note some breakthroughs in traditionally male-dominated fields of study: women now represent the majority of graduates in physical and life sciences and technologies, medicine and dentistry, as well as in agriculture, natural resources and conservation.<sup>14</sup> Data from the 2011 National Household Survey, show that women between 25 and 34 years old hold almost two-thirds (62.2%) of the degrees in medicine. The proportion of women with a university degree in biological and biomedical sciences was more than two-thirds (64.2%), again among those aged 25 to 34 years.<sup>15</sup>

Several researchers have wondered to what extent gender segregation in the educational and professional choices has contributed to gender wage gaps. The previously cited studies which break down gender pay gaps into *explained* and *unexplained* components offer important insight into this matter. Baker and Drolet (2010), Boudarbat and Connelly (2011) as well as Ouimet (2010) all arrive at the conclusion that gender differences with regards to professional choices as well as the type of industry in which people work play an important role in the *explained* component of pay gaps.

Among the many factors considered by Baker and Drolet, the choice of career path stands out as an important element, though less important than differences in industry.<sup>16</sup> The authors point out that the heavy concentration of women in the health care sector would be the principal reason behind pay gaps observed between 1981 and 2008.

Boudarbat and Connelly come up with similar conclusions. Gender differences in fields of study could explain about a quarter of the wage gaps. Two other factors that play a key role are occupation and industry.

More recently, a Statistics Canada study shows that in 2011, half of the pay gap between men and women aged 25 to 54 years may be explained by the fact that women are overrepresented in certain industries and occupations.<sup>17</sup> This study also shows that changes in career choice, in terms of occupation or industrial sector, were among the three main factors responsible for the reduction in the gender wage gap between 1981 and 1998. The other important factor is the fact that women show a greater propensity to remain in the same job for longer periods of time. However, changes in professional choices from 1998 to 2011 do not allow us to explain such a large proportion of the

Women now represent the majority of graduates in physical and life sciences and technologies, medicine and dentistry, as well as in agriculture, natural resources and conservation.

reduction in pay gaps. The increased participation of female university graduates in high-paying fields of study is one of the unmeasured factors that may have tended to narrow gender wage differences in the 2000s.

We must however note that, according to recent estimates, between a quarter and a third of graduates are employed in jobs that do not correspond to their field of studies, and therefore their incomes have little relationship to their choice of major.<sup>18</sup> Additionally, gender wage gaps remain significant among graduates within the same field of studies. Based on National Graduates Survey (NGS) data, Boudarbat and Connolly show for example that in certain fields of studies, men earn up to thirty percent more than do women who graduate with the degree.<sup>19</sup>

Certain authors such as Morley Gunderson and Frank Reid have examined the question as to what the pay gap would be if the female work force had the same distribution as the male work force.<sup>20</sup> Their analysis showed that occupational segregation would explain only about 20 percent of pay gaps in Canada in the 1970s. To our knowledge, there are no studies examining the question from this point of view for more recent periods.

Occupational segregation is a phenomenon that exists in different forms. Often, a distinction is made between *horizontal* and *vertical* segregation, with the former designating a concentration (or overrepresentation) of women in certain fields of activity or employment. The latter, sometimes also referred to as *hierarchical* segregation, relates to the concentration (or overrepresentation) of women at certain levels of the hierarchy, regardless of the sector of activity.

Using census data, Nicole Fortin and Michael Huberman offer a historical perspective on the phenomenon of occupational segregation, putting special emphasis on the question of the relative importance of horizontal and vertical segregation.<sup>21</sup> By breaking down pay gaps into one component related to the presence of horizontal segregation, and another component related to the presence of vertical segregation, the authors demonstrate that, at the end of the 1990s, overrepresentation of women in the lowest levels of the hierarchy (vertical segregation) seems to have had a greater role in pay gaps than was the case for overrepresentation of women in certain occupational streams (horizontal segregation), at a ratio of nearly 2 to 1. During the preceding decades, it was the contrary. It would be interesting to have the results for such an analysis for more recent decades. Unfortunately, Fortin and Huberman's study has not been updated with more recent data.

### **Women may place a greater value on non-pecuniary aspects of a job.**

It is often stated that personal preferences regarding aspects of a job that one finds important could also play a role in the persistence of gender wage gaps. According to psychologist Susan Pinker, many studies have shown that for most women, getting a position higher up in the corporate hierarchy and a better rate of pay is near the bottom of the wish list; this is not the case among men. Women would be more inclined to accept a lower rate of pay for a position that they find otherwise gratifying. 'The satisfaction that they get from the job, the intellectual challenge that it poses and the humanitarian goal that it pursues are more important than the pay that is offered,' she states in an interview with *Le Devoir* newspaper after the release of her book *The Sexual Paradox: Extreme Men, Gifted Women and the Real Gap* in 2008.

Several researchers have attempted to verify this hypothesis. Brahim Boudarbat and Claude Montmarquette examined the process by which students at Canadian universities choose one field of study over another.<sup>22</sup> They looked at the role played by economic factors such as salary expectations, as well as other factors that tend to influence career decisions, such as the level of education attained by the students' parents.

Using data from the National Graduates Survey, the authors created a sample of bachelor graduates, some of whom had graduated in 1990 and others in 1995. Another sample was made up of 1986

bachelor graduates, which allowed them to generate estimates of the probability of finding a job which corresponded to the student's chosen field of studies, as well as an estimate of earnings expectations for each field of study. Their findings suggest the existence of gender-based differences regarding the importance attributed to earnings expectations. Generally speaking, men and women seem equally influenced by the potential financial returns from choosing a particular field of study; the higher the expected earnings for a given field of study, the greater chance a student will choose this academic path. However, men appear to be more influenced by short-term payoffs while women are more interested in medium to long term gains.

Gender discrepancies are strongest among young people whose parents are also university graduates. The degree to which earnings expectations affects a young woman's decision will vary depending on her parents' - and specifically her mother's - level of education. Among young men, parents' education levels have a fairly low influence on the decision-making process, and expected earnings is the predominant factor in their decision. Expected earnings have little effect on young women whose mothers hold a university diploma; this, according to the study's authors, leaves more room for non-pecuniary factors to play a role in their choice of a field of study.

Additionally, women in a relationship, either at the moment when they chose their field of study or during the course of the four years following their entry into university, appear to have a greater tendency to choose certain health care or education majors. Boudarbat and Montmarquette draw the conclusion that, for a young person to choose a field of study that initially holds very little interest for them, there needs to be a considerable difference in anticipated earnings. But for that to happen, it is necessary that young people be well aware of the financial advantages of the various career choices, which raises the question of the quality of the labour market information made available to young people.

John Helliwell and Haifang Huang also examined the importance of pecuniary and non-pecuniary aspects for career choices. In a study released in 2010, they analyzed the extent to which employment earnings and other aspects of work contributed to the level of satisfaction with life in general.<sup>23</sup> They developed a methodology to attribute a monetary value to a variety of aspects of jobs.

Their results suggest that certain non-pecuniary attributes (for example, if the job requires certain specialized abilities, offers a variety of responsibilities, requires juggling many incompatible demands, or if the work environment fosters confidence) are particularly significant. Working in an environment that fosters confidence results into a much higher level of satisfaction with life in general. Thus, according to their estimates, a one point increase on a scale of 1 to 10 measuring the degree of trust in management appears to have the same effect on general satisfaction with life as would a 31 percent raise in salary.

Women give twice the weight to this aspect of employment than do men: for men, a one point increase on the scale would have the same effect on general life satisfaction as would a 24 percent pay increase, but for women this would be the equivalent of a 42 percent pay increase. The authors conclude that women may be more inclined to work in a setting where there is a strong level of trust in management. The authors suggest that this type of workplace might be more likely to offer more flexible hours policies. However, their study does not offer convincing evidence to support this argument.

The degree to which earnings expectations affects a young woman's decision will vary depending on her parents' - and specifically her mother's - level of education. Among young men, parents' education levels have a fairly low influence on the decision-making process, and expected earnings is the predominant factor in their decision.

A study by Nicole Fortin, based on data from the World Value Survey, seems to confirm that a part of the gender wage gap may be explained by the fact that women have a markedly stronger preference for jobs that pay less, but that offer a better working environment.<sup>24</sup> In a study using American data, she also examined the role played by non-cognitive personality traits, such as self esteem, the belief that external factors, rather than one's own actions decide success, or even the relative importance ascribed to pay versus working conditions.<sup>25</sup> According to her results, gender differences based on the set of non-cognitive factors would explain just slightly more than 5 percent of observed pay gaps. Gender-based differences regarding the relative weight given to salary versus working conditions appear to dominate among all of the non-cognitive factors. She posits that women are less inclined to feel that their work is worth higher pay. In an American study using an experimental approach to examine this very hypothesis, Mary Rigdon concludes that the fact that women generally ask for a lower starting wage than do men, appears to be a contributing factor in observed pay gaps.<sup>26</sup>

**Women's greater family responsibilities may lead them to opt for jobs that offer better work-life balance.**

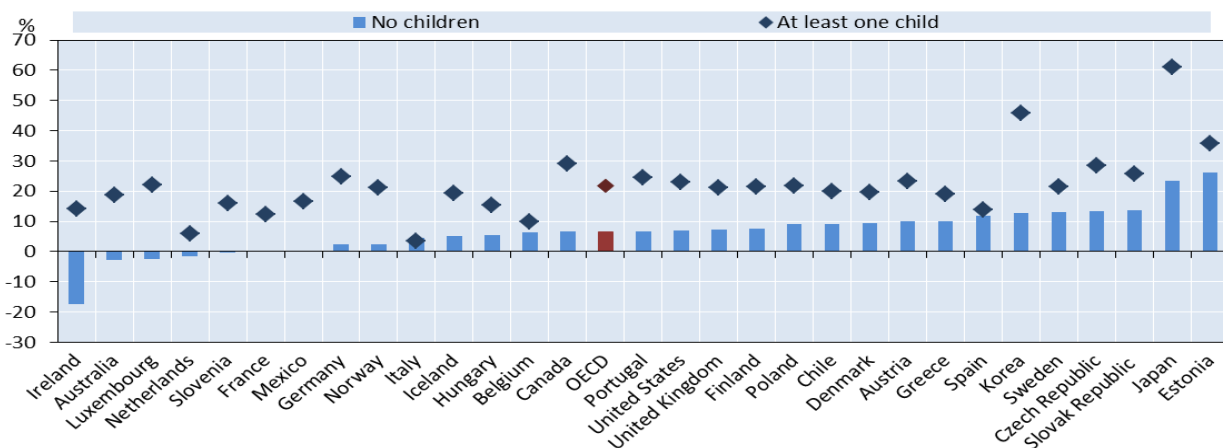
In spite of significant progress with regards to sharing domestic responsibilities, women remain the primary caregivers for children, spending an average of 50 hours per week in this role, according to data from the General Social Survey of 2010. This amount is more than twice the burden that men assume.<sup>27</sup>

Women who have had children earn less than women who do not have children. This 'family gap' is a well-documented phenomenon. In 2012, the Organisation for Economic Cooperation and Development (OECD) published comparative data showing that the cost of maternity in terms of reduced wages remains very high among member countries of the OECD.

As is show in Figure 1, among 25 to 44 year olds with full-time employment, the gender wage gap for workers without children is 6.6 percent across all member countries of the OECD.<sup>28</sup> Among workers with at least one child aged 15 years or less, the gap grows by 15 percentage points, to 21.8 percent. In Canada, the increase is even more extreme: the gender wage gap among childless workers is consistent with the average across OECD member countries (6.5 percent); for Canadian workers with children, the gap sits at 29 percent.

Various researchers have looked more closely at this issue, using econometric analyses to examine whether the division of family and personal responsibilities between men and women and whether length of time on the job, and frequency of employment interruptions, notably due to maternity leaves, contribute to the pay gaps. In Canada, one of the most often-cited studies is that of Shelley Phipps, Peter Burton and Lynn Lethbridge.<sup>29</sup> Using data from the General Social Survey of 1995, the authors seek to

**Figure 1: Gender pay gaps by presence of children, full-time workers aged 25 to 44 years, selected OECD countries, 2007 to 2010<sup>a</sup>**



**Note:** <sup>a</sup> Measured as the difference between male and female median wages divided by male median wages.  
**Source:** Multiple databases, excerpted from OECD, 2012, *Closing the Gender Gap: Act Now*

test two hypotheses that can be summarized as follows: compared to women who do not have children, working mothers receive a lower compensation from their participation in the labour force because (1) they acquire less human capital due to maternity-related employment interruptions and/or (2) their family responsibilities tend to make them less productive as workers.

Their results show that an important part of pay differences between women who have had children and those who have not remains *unexplained*. That is to say there remains a large pay gap between women who have children and those who have not, even when taking into account the facts that working mothers' productivity may be lower because of career interruptions related to childcare, that their human capital may decrease during a temporary absence from paid employment; or that their productivity may be lower when they do return to work, because of conflicting family and career responsibilities. In other words, these circumstances cannot in and of themselves explain the totality of the 'family gap'. Other factors, some of which may be attributed to effects of discrimination, could be at play.

Table 3 presents a compilation of their results. In the base model, the authors do not take into account the fact that working mothers accrue fewer years of job experience because of maternity/child care-related interruptions leaves, nor do they consider the number of hours devoted to unpaid work. Model 2 is more sophisticated and does account for job interruptions; model 3 is even more complete as it takes into account a larger group of explanatory variables. The authors can then determine the relative contribution of a number of factors that could explain differences in annual pay between women who have children and women who have not.

**Table 3: Impact on annual income of various characteristics, full-time workers aged 25 to 54 years, 1995, Canada<sup>a</sup>**

Characteristics	Base model		Model 2	Model 3
	Men	Women	Women	
Ever had a child	0.049	-0.172*	-0.122*	-0.078***
Ever married or common law	0.262*	0.086	0.086	-0.078***
Number of years of job experience	0.044*	0.039*	0.042*	0.041*
Number of years of job experience, squared	-0.001*	-0.001*	-0.001*	-0.001*
Duration of childcare-related employment interruptions	-	-	-0.018*	-
Duration of childcare-related employment interruptions followed by a return to the same job	-	-	-	-0.008
Duration of childcare-related employment interruptions followed by a job change	-	-	-	-0.022*
Duration of employment interruptions because of lack of available work	-	-	-0.067**	-0.064**
Duration of employment interruptions for health-related reasons	-	-	0.005	0.012
Duration of employment interruptions for other reasons	-	-	-0.005	-0.005
Number of hours per week spent on housework	-	-	-	-0.005*
Number of hours per week spent on child care	-	-	-	0.000
Number of hours per week spent on senior care	-	-	-	-0.003

**Note:** <sup>a</sup> The figures reported here are estimated coefficients based on ordinary least squares and according to various model specifications. An asterisk (\*) indicates a statistical significance of 10 % and two asterisks (\*\*) represent a statistical significance of 5 %.

**Source:** General Social Survey of 1995, excerpted from Phipps, S., P. Burton and L. Lethbridge, 2001, "In and out of the labour market: Long-term Income Consequences of child-related interruptions to women's paid work", *Canadian Journal of Economics*, Vol. 34, No. 2, p. 411-429.

These results demonstrate first of all that the ‘family gap’ exists for working mothers but not for working fathers: in the base model, the gap attributable to having a family is 17.2 percent. In other words, for a woman, the act of having a child reduces annual income from paid work by 17.2 percent, when a limited number of factors are considered. Men, on the other hand, only see a family-related impact on their income depending on whether they cohabit (married or common-law) or not. Men who are cohabiting or who have cohabited tend to have a higher income than those who live alone.

The ‘family gap’ sits at 30 to 40 percent during the year of the birth and the year that follows. In more concrete terms, the author estimates that salary loss, on average, is about \$11,000 in the year that the child is born and then nearly \$8,000 over the course of the following year. It is only as of the seventh year after the child’s birth that the motherhood earnings penalty disappears.

Second, when the authors take into account the fact that working mothers accrue fewer years of working experience because of temporary interruptions to paid employment, and that this group could even see a depreciation in its human capital (Model 2), the family gap drops from 17.2 to 12.2 percent. When potential conflicts between family and career responsibilities are also included (model 3), the family gap is further reduced, dropping from 12.2 to 7.8 percent.

The reasons for job interruptions appear to be significant. According to Phipps et al, health-related interruptions or other types of interruptions do not appear to have any statistical impact on income. Unemployment-related interruptions appear to have the most deleterious impact on earnings, with a penalty of around 6 percent. Interruptions related to childcare also bring about a penalty of around 2 percent. But in these cases, the penalty is not statistically significant unless the woman returns to work in a different position or job from the one she occupied prior to the employment interruption, which speaks to the importance of job-protection measures.

A more recent study done by Xuelin Zhang using Statistics Canada’s Longitudinal Worker File from 1983 to 2004 also compares employment and salary pathways for working mothers and childless working women, with a particular interest in long-term repercussions.<sup>30</sup> The results of these analyses are striking: the ‘family gap’ sits at 30 to 40 percent during the year of the birth and the year that follows. In more concrete terms, the author estimates that salary loss, on average, is about \$11,000 in the year that the child is born and then nearly \$8,000 over the course of the following year. It is only as of the seventh year after the child’s birth that the motherhood earnings penalty disappears. The study also concludes that the penalty is even higher for working mothers who change employers after the birth of their child.

The author estimates that maternity benefits compensate for about half of this loss. Rather than a cumulative loss of about \$19,000 during the 2 years following the birth of a child, losses would in reality be around \$10,000 when maternity benefits from Canada Employment Insurance program are taken into account. Among women who also receive maternity benefits from their employer – this would be about a third of women, according to data from the Workplace and Employee survey – the penalty would be that much less.

Zhang’s results also throw an interesting light on the validity of the endogenous motherhood hypothesis, employment interruption would be less costly for them. However Zhang’s analyses, which follow the according to which the relationship between maternity and salary loss would be as follows: women who are experiencing a drop in income would be more likely to decide to have a child because an employment interruption would be less costly for them. However Zhang’s analyses, which follow the progress of women’s income gains for women for up to three years *before* the birth of their child, find no empirical support for this hypothesis.<sup>31</sup>

## Organizational practices in many work places may better value men's patterns of employment.

Organizational perceptions and practices in the workplace are another element that tends to contribute to differences in the way men and women experience working life. Despite the fact that barriers in recruiting and other discriminatory practices towards women are illegal, prejudices could still influence corporate practices. Of the four hypotheses examined in this synthesis, this one is undoubtedly the most difficult to document. However a few studies allow us to at least shed some indirect light on the question.

Gordon B. Cooke and Isik U. Zeytinoglu did a series of studies using data from the Workplace and Employee Survey (from 1999 and 2000) to examine how men and women in non-standard employment experience employment.<sup>32</sup> Non-standard employment included permanent part-time work, temporary full-time work, and temporary part-time work.

The overrepresentation of women in these type of employment is well documented. Cooke and Zeytinoglu dug deeper to determine how the employment experience differed among these workers, depending on whether they were men or women. The results of their research suggest that women stand at a disadvantage on several levels, the most notable of which would be the chance of getting a promotion: compared to women working full-time full-year, women in non-standard employment are about half as likely to receive a promotion. Men, on the other hand, have a different experience: those in temporary part-time positions are less likely to be promoted, but those in a temporary full-time position or a permanent part-time position appear to be at no disadvantage for promotions than are men working in full-time full-year positions. Their analyses take into account a series of factors that may have an effect, such as type of industry, size of the business, level of education and number of years of work experience.

In another study, they demonstrate that women appear to be similarly penalized in terms of training opportunities. They observe that whether men are in standard or non-standard employment, they are equally likely to have access to training and education opportunities paid for by their employer, but women in temporary positions are one third less likely to have this access compared to their female peers in full-time year round positions.

A study by Taylor Shek-wai Hui using data from the Adult Education and Training Survey also points to an unequal access between the two sexes with regard to training and educational opportunities.<sup>33</sup> Hui does however note that it is difficult to pinpoint the nature of the causal relationship between gender and training. He points out that American studies have shown that people who plan to take a break from the labour force, as for example in the case of having a baby, seem to have a tendency to avoid fields of work which require regular skills upgrades involving on-the-job training or educational activities. Additionally, even though women seem to have less access than do their male counterparts to employer-financed training opportunities, little is known about the repercussions of these differences in terms of professional growth and in salary trajectories of men and women.

The conclusions of Jennifer Hunt, using National Graduates Survey data from 1993 and 2003 are very

Organizational perceptions and practices in the workplace are another element that tends to contribute to differences in the way men and women experience working life. Despite the fact that barriers in recruiting and other discriminatory practices towards women are illegal, prejudices could still influence corporate practices. Of the four hypotheses examined in this synthesis, this one is undoubtedly the most difficult to document.

instructive. She attempts to understand why female graduates in science and engineering were leaving the profession at a much faster rate than their male counterparts, and also at a greater rate than female graduates in other fields.<sup>34</sup>

In previous studies on this subject, various hypotheses were put forward, such as conflict between family responsibilities and long working hours, or the sense of isolation brought on by being a minority in the workplace. A lack of networking, resource-sharing or mentoring among women could cause managerial selection, recruitment and promotional practices that favour men. The presence of overtly discriminatory practices towards women as well as a hostile male-centric culture was also noted.

Hunt's results are particularly interesting. Comparing differences between genders across various fields – science, engineering and others – she shows that aspects relating to workers' characteristics and their preferences regarding various facets of their jobs such as wages and working conditions do not in fact play a key role. Maternity leaves or employment interruptions are not deciding factors either. In fact, even though more women than men cite family-related responsibilities as a reason for leaving their profession, the fields of science and engineering are no different than any others from this point of view. Rather, the most important factor in the exodus seems to be a larger dissatisfaction among women regarding advancement opportunities and wages. This is particularly true in the field of engineering, where dissatisfaction relative to advancement possibilities may explain more than 60 percent of the gender-based difference in the attrition rate.

One way to avoid discrimination in the workplace is to choose self-employment. If workplace discrimination allows us to explain a part of gender-based pay gaps, could we then assume that these pay gaps are lower among the self-employed than they are among salaried employees? In fact, gender gaps among the self-employed also exist and persist: of particular note, we find more self-employed women with low income than we do men.<sup>35</sup> There are however relatively few studies based on Canadian data that attempt to explain the cause of this phenomenon. Using data from the Survey of Labour and Income Dynamics, Rybczynski (2009) provides indications suggesting that, when it comes to borrowing, liquidity constraints may contribute to income gaps observed among self-employed workers.<sup>36</sup> Her study does not however allow us to draw a clear conclusion regarding the presence or absence of discriminatory practices among lenders.

## Food for thought for public policies

It is now obvious that in spite of the significant progress that women have made, they continue to earn less money than men. Yes, gender pay gaps have narrowed, but why do they persist today? Let us return to the four hypotheses that we examined, as well as the observations we could draw from our review of the literature.

First observation: The various studies that we examined suggest that women's choice of career, and particularly the fact that they are not well represented in certain better-paying jobs, has a significant impact on gender pay gaps. Compared to men, and despite several breakthroughs in traditionally male-dominated fields, women continue to congregate in a more limited range of occupations and sectors of the workforce, and they represent the majority of employees working in the lowest-paid and the lower-ranking positions. Statistical analyses based on Canadian data lead us to conclude that gender differences in educational and occupational choices may explain about a third of gender pay gaps when all of these factors are taken together.

Second observation: The hypothesis stating that women are more interested in non-pecuniary related aspects of their employment than are men has an empirical foundation. While this factor's importance is recognized from a statistical point of view, its contribution to the pay gaps that we observe remains relatively small compared to the proportion of gaps related to segregation of occupational choices. It should be noted also add that the analyses included in the present paper do not allow us to make a clear

determination whether these gender-based differences regarding perceived value of non-financial aspects of one's job reveal different *preferences* or different *life circumstances* leading women and men to make different choices in terms of employment. Do women prefer occupations or activity sectors that offer them more flexibility, at the price of a lower rate of pay? Or do women accept a lower wage because it represents the only way to balance the roles of mother and worker? This distinction is an important one, but the analyses do not allow us to draw a clear conclusion.

Third observation: Women with children earn less than women who do not have children. This 'family gap' is a well-documented phenomenon, backed by empirical data. But maternity engenders monetary costs that cannot be explained only by the facts that working mothers' productivity may be lower because of career interruptions related to child care; that their human capital may see a deterioration as a consequence of their temporary removal from the work force; or that they may find themselves in a situation of conflict between family and work responsibilities.

Fourth observation: There are indications suggesting that, in some workplaces, such as traditionally male-dominated sectors or sectors where non-standard jobs tend to be concentrated, discriminatory practices toward women may still persist. However, it is difficult to document the existence of prejudice and gender stereotypes in the workplace, and especially difficult to determine using statistical data the effect of these prejudices and stereotypes on salary discrepancies. There are few large-scale databases that allow us to attempt to analyze these questions. The simple fact that a significant proportion of gender pay gaps remains unexplained suggests the possibility that such discriminatory practices are at play.

What may we then conclude from these observations in terms of creating a better economic equality between women and men?

Given that young women's educational and occupational choices explain a significant proportion of the observed gap, it would seem that a diversification of educational and occupational choices might contribute greatly to reducing wage inequality. A concerted effort should be made to ensure that women and men are in a position to make better-informed decisions in terms of career choices and in so doing, overturn gender stereotypes among young people in choice of field of study.

Vocational psychology demonstrates that young people hold ingrained stereotypes as to which jobs are appropriate for men and which are appropriate for women. Gender stereotypes are learned at an early age, and they tend to be reinforced by family, media, the general social environment and even the classroom.<sup>37</sup> Therefore, young women, no matter what their true skills and capabilities may be, often do not believe themselves capable of achieving the academic or professional requirements necessary for succeeding in a given job. Because they believe themselves to not have a great chance of mastering certain occupations or careers, they tend to put limits on the range of career opportunities to which their skills and aptitudes would allow them access. It is therefore important to develop intervention strategies that will diversify girls' vocational interests and reinforce their confidence and their expectations of adequacy. This can be done by offering them concrete experiences encouraging them to realize that they do in fact have the necessary skills.

The better educated and informed parents are – especially mothers – the lower the risk of girls (and boys, one would hope) clinging to gender stereotypes and the greater the chance that future generations will be more amenable to broadening their horizons and shaking loose certain psychological barriers. As well, awareness campaigns regarding diversification of career choices and a more balanced mix of genders in the workforce across many different sectors should target men as much as they target women.

While the two genders demonstrate significant differences in terms of vocational interests, these interests are not set in stone, especially at a young age, and they are moulded by different socialization experiences. The better educated and informed parents are – especially mothers – the lower the risk of girls (and boys, one would hope) clinging to gender stereotypes and the greater the chance that future generations will be more amenable to broadening their horizons and shaking loose certain psychological barriers. As well, awareness campaigns regarding diversification of career choices and a more balanced mix of genders in the workforce across many different sectors should target men as much as they target women.

Steps should also be considered to reduce the effect of maternity on women's pay. Historically, measures put in place have succeeded in improving the situation. For example, maternity benefits have helped to substantially reduce the 'family gap'. Legislative measures to protect a woman's job during a maternity leave are also very important, given that the 'family gap' is less significant for a mother who returns to work with the same employer after the birth of her child. These measures have in fact been improved upon across all provinces in the wake of changes made to the Employment Insurance programme

relating to maternity leaves: all provinces now protect a job for at least 52 weeks in the case of maternity or parental leaves.

Since women's family responsibilities seem to have a longer-term effect on working mothers' incomes, it would also be important to encourage a better balanced division of childcare responsibilities by the two parents. A greater involvement by fathers is in fact one of the main directions identified by the OECD in the fight against gender inequalities.<sup>1</sup> Instituting a paternity leave reserved for fathers would be one good way to accomplish this.

Since women's family responsibilities seem to have a longer-term effect on working mothers' incomes, it would also be important to encourage a better balanced division of childcare responsibilities by the two parents. A greater involvement by fathers is in fact one of the main directions identified by the OECD in the fight against gender inequalities.<sup>38</sup> Instituting a paternity leave reserved for fathers would be one good way to accomplish this. This measure is already in place in Quebec. It will be interesting to examine its effects in the mid- to long-term.

We must remember however that all of these measures can only operate on a small proportion of observed pay gaps. According to the studies mentioned in the present paper, a large part of observed gaps remains unexplained. Paradoxically, even as the gap narrows, the portion of it that cannot be explained is growing. This is probably the most frustrating conclusion of this survey: it is difficult to take effective action when the target is perpetually on the move.

It is possibly this very context that should guide our response to legal measures put into place at federal, provincial and international levels regarding employment

equity and equal pay for equal work. Since the mid-1970s, various laws, international agreements and public policies have been enacted in order to encourage better economic equality between men and women (see summary included in the box below.)

Employment equity policies have been enacted so that women, as well as Aboriginals, persons with a disability and visible minorities are protected by equitable employment practices. These policies are aimed at barriers limiting integration of underrepresented populations in various types of jobs or employment sectors. For women, this means fighting barriers and practices that limit female representation in male-dominated jobs or sectors, which are often those with better pay.

Pay equity policies based on the principles of *wage parity* (comparing wages of men and women occupying the same position) and *comparable worth* (comparing employment categories)

have also been put into practice Canada-wide. These policies are aimed at correcting the negative effect on wages caused by occupational segregation, through an adjustment to pay scales in positions predominantly occupied by women.

Without contesting the pertinence of such measures, some researchers do however question their effectiveness. Nicole Fortin and Michael Huberman, for example, note that the impact of these measures in terms of reducing pay gaps seems therefore quite low, since relatively few women actually benefit from them. The authors express a certain degree of scepticism as to the real effectiveness of these laws in a context where, according to them, discriminatory practices and gender stereotypes persist in a wide variety of workplaces.<sup>39</sup>

Improvements in women's situation in the workforce have gone hand in hand with the enactment of various measures aimed at creating greater economic equality between men and women. However, there are no real in-depth analyses that would allow us to measure the effects and scope of these measures. This avenue of research would merit further investigation.

#### Employment and pay equity in Canada

- **1977:** The *Canadian Human Rights Act* is enacted; Article 11 forbids pay discrimination among men and women performing work of equal value.
- **1981:** Canada ratifies the *The Convention on the Elimination of All Forms of Discrimination against Women* which states that women have a right to equal pay for work of equal value.
- **1985:** Manitoba enacts its *Pay Equity Act*, forcing public sector employers and unions to negotiate a system of employment evaluation.
- **1986:** The federal government enacts the *Federal Contractors Program* aimed at fighting discrimination in the work force and encouraging workplace equity. Under this program, organisations with a minimum of 100 employees who obtain a federal government contract of \$200 000 or more must put into practice an employment equity policy. (This requirement was abolished in 2012.)
- **1987:** Ontario enacts its *Pay equity act*.
- **1988:** Nova Scotia and Prince Edward Island enact a *Pay Equity Act*.
- **1989:** New Brunswick enacts the *Pay Equity Act*.
- **1995:** British Columbia enacts *Public Sector Employers Council Pay Equity Policy Framework*.
- **1996:** Quebec enacts the *Loi sur l'équité salariale*.
- **1997:** Saskatchewan enacts its *Equal Pay for Work of Equal Value and Pay Equity Policy Framework*.
- **2009:** Quebec enacts the *Loi modifiant la Loi sur l'équité salariale* aimed at encouraging and facilitating the achievement and maintenance of pay equity in all businesses employing 10 or more workers.

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## NOTES

<sup>1</sup> Statistics Canada (2011), *Women in Canada: a Gender-based Statistical Report*.

<sup>2</sup> Labour Market Activity Survey (LMAS), Survey of Labour and Income Dynamics (SLID) and Labour Force Survey (LFC), excerpted from Drolet (2011) 'Why Has the Gender Wage Gap Narrowed?'

<sup>3</sup> Drolet (2011) 'Why Has the Gender Wage Gap Narrowed?' Data for 2009 to 2012 are available. However, we have chosen to report the historical data taken from Drolet's study in order to ensure that data are completely comparable.

<sup>4</sup> Groshen, E.L. (1991) 'The Structure of the Female/Male Wage Differential: Is it Who You Are, What You Do or Where You Work?'

<sup>5</sup> In Chapter 4 of his thesis written in French, Ouimet (2010) proposes an in-depth and very pedagogical description of methods used in the breakdown of explained and unexplained components of pay gaps. Drolet (2001, 2011) and Boudarbat and Connolly (2013) also describe the methodology and discuss its limits. English-language publications by Fortin (2008), Baker and Drolet (2010) and Fortin and Huberman (2002) are other references which help to better understand the methodology.

<sup>6</sup> Baker and Drolet (2010) 'A New View of the Male/Female Pay Gap.'

<sup>7</sup> Ouimet (2010) *Discrimination salariale au Canada*.

<sup>8</sup> Boudarbat and Connolly (2013) 'The Gender Wage Gap Among Recent Post-secondary Graduates in Canada.'

<sup>9</sup> The complete list of characteristics that the authors took into account is: level of education, field of study, number of degrees, employment status, degree of over-qualification for the job, job tenure, occupation, industry, age, province of residence, marital status, number and ages of children, immigration status and presence of a disability.

<sup>10</sup> According to census data. See Cool (2010) 'Wage Gap Between Women and Men.'

<sup>11</sup> These observations are excerpted from Ferrao (2010) 'Paid Work.'

<sup>12</sup> These statistics are taken from table 3 in McMullen and al. (2010) 'Women in Non-traditional Occupations and Fields of Study.'

<sup>13</sup> Turcotte (2011) 'Women and Education.'

<sup>14</sup> These statistics are taken from table 5 in McMullen and al. (2010) 'Women in Non-traditional Occupations and Fields of Study.'

<sup>15</sup> These statistics are taken from Statistics Canada (2013) *Education in Canada*.

<sup>16</sup> The industry in which a person works is determined by *the main economic activity of the employer* (for example, agriculture, health care, retail sales) whereas the occupation reflects the *type of work done* (for example, manager, cook, technician.) There is often a direct correlation between the two since certain occupations are predominant in certain industrial sectors. However, various occupations may be present in a given sector.

<sup>17</sup> Morissette, Picot and Lu (2013) 'The Evolution of Canadian Wages Over the Last Three Decades.'

<sup>18</sup> See in particular the results of Boudarbat and Chernoff (2010) 'The Determinants of Education-Job Match Among Canadian University Graduates.' and Yuen (2010) 'Concordance et non-concordance entre l'emploi et les études.'

<sup>19</sup> Boudarbat and Connolly (2013) 'The Gender Wage Gap Among Recent Post-secondary Graduates in Canada.'

<sup>20</sup> Gunderson and Reid (1983) 'Sex Discrimination in the Canadian Labour Market.'

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- <sup>21</sup> Fortin and Huberman (2002) 'Occupational Gender Segregation and Women's Wages in Canada.'
- <sup>22</sup> Boudarbat and Montmarquette (2009) 'Choice of Fields of Study of Canadian University Graduates.'
- <sup>23</sup> Helliwell and Huang (2010) 'Well-being and Trust in the Workplace.' The authors use data from the Equality, Security and Community Survey (2002-2003 data), the General Social Survey of 2003 and the US Social Capital Benchmark Survey of 2001.
- <sup>24</sup> Fortin (2005) 'Gender Role Attitudes and the Labour Market Outcomes of Women across OECD Countries.'
- <sup>25</sup> Fortin (2008) 'The Gender Wage Gap Among Young Adults in the United States.'
- <sup>26</sup> Rigdon (2012) 'An Experimental Investigation of Gender Differences in Wage Negotiations.'
- <sup>27</sup> General Social Survey, 2010, excerpted from Statistics Canada (2011) *Women in Canada*.
- <sup>28</sup> The data are taken from various national surveys. Canadian data come from the Survey of Labour and Income Dynamics of 2008. Here, pay gaps are stated as the difference between the *median* pay for men and for women, divided by the *median* pay for men.
- <sup>29</sup> Phipps, Burton and Lethbridge (2001) 'In and Out of the Labour Market.'
- <sup>30</sup> Zhang (2008) 'The Post-childbirth Employment of Canadian Mothers and the Earnings Trajectories of Their Continuously Employed Counterparts, 1983 to 2004.'
- <sup>31</sup> Various other studies tackle dynamics and determining factors in women's participation in the labour force after childbirth, or else the impact of parental leave or childcare subsidy policies on the employment experience of working mothers. These most often use data from the National Longitudinal Survey of Children and Youth, the General Social Survey or the Survey of Labour and Income Dynamics. However, these studies have a rather indirect relationship with the main question that we are discussing here, gender-based pay gaps, which is why we did not include them in this synthesis.
- <sup>32</sup> See in particular Cooke and al. (2009) 'Barriers to Training Access,' Zeytinoglu and Cooke (2008) 'Non-standard Employment and Promotions,' and Cooke and Zeytinoglu (2006) 'Females Still Face Barriers to Training.'
- <sup>33</sup> Hui (2012) *The Relationship Between Funding, Learning Objectives, and Choice of Programs and Courses for Adult Learning*.
- <sup>34</sup> Hunt. (2010) 'Why Do Women Leave Science and Engineering?'
- <sup>35</sup> In 2000, Statistics Canada published the Survey of Self-Employment on behalf of Human Resources and Skills Development Canada (HRSDC) in order to gather data about socio-demographic characteristics of self-employed people as well as their experience of working life and their financial security. This survey has not been repeated, and gender-based data do not seem to have had a particular emphasis.
- <sup>36</sup> Rybczynski (2009) 'Are Liquidity Constraints Holding Women Back?'
- <sup>37</sup> The discussion that follows is based principally on the work of the Standing Committee on the Status of Women (2010) *Building the Pipeline*, that of the European Commission (2009) *Gender Segregation in the Labour Market*, and that of The National Alliance for Partnerships in Equity Education Foundation (2009) *Nontraditional Career Preparation*.
- <sup>38</sup> See OECD (2012) *Closing the Gender Gap*.
- <sup>39</sup> Fortin and Huberman (2002) 'Occupational Gender Segregation and Women's Wages in Canada.'