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THE GENDER WAGE GAP IN NEW BRUNSWICK

Prepared for GPI Atlantic

By

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Executive Summary

Introduction

1. The purpose of this study is to indicate some public treasury effects of removing wage discrimination against women in the province of New Brunswick. For this purpose, a quantitative estimate of the gender wage gap resulting from discrimination is obtained. This quantitative estimate is then used to estimate the potential effect on the provincial public treasury that would likely occur if a program aimed at removing wage discrimination in the province were introduced. The particular components of the public treasury that are considered include: government tax revenue, health care costs, and government transfers paid to individuals and families. The effect on these public treasury components is then compared with the additional employer payroll cost resulting from higher wages for women under an anti-discriminatory program.

2. The major part of analysis conducted in this study is based on micro-data obtained from the Survey of Labour and Income Dynamics (SLID). This survey is conducted annually by Statistics Canada.

Literature Review

3. The male –female earnings gap is an international phenomenon. Much of this gap is not explainable by differences in productivity-related characteristics and may therefore be attributed to gender-based labour market discrimination.

4. Among nine advanced industrialized countries in North America and Europe, Canada ranks ninth in terms of its gender earnings gap. In other words, Canada has a wider gender wage gap than other comparable countries. This is despite the fact that occupational segregation based on gender is not as prevalent in Canada as it is elsewhere.

5. Although Canadian women have experienced an increase in their wages over the past few decades, which has narrowed their wage gap with men, significant gender differences still exist that are unexplainable by differences in such productivity-related characteristics as work experience, education, etc. This unexplained portion of the gender wage gap is often attributed to gender discrimination by the economics literature.

Evidence on gender wage gap in New Brunswick

6. Overall, the wage rate paid to an average female worker in New Brunswick is about 21 percent lower than that paid to a male worker.

7. When controls are introduced for such demographic, labour market, and productivity-related characteristics as education, work experience, marital status, job tenure, job status, union status, size of firm, size of residential area, industry of employment, and occupation, the wage rate paid to a female worker in New Brunswick continues to be about 17 percent lower than that paid to a man. A similar national study conducted by Statistics Canada found this result to be 11 percent for Canada as a whole..

8. This means that close to 80 percent of the current gender wage gap in New Brunswick cannot be explained by a wide range of demographic, labour market, and productivity characteristics and is likely attributable to gender-based labour market discrimination.

9. On average, women acquire more years of schooling as well as labour market experience than do men. Yet at all educational levels, New Brunswick women earn lower wages than men, although the gap narrows as educational level increases.

10. The gender wage gap in New Brunswick persists across all demographic and labour market characteristics, confirming the case for anti-discrimination programs by government.

Public treasury effects of removing gender wage gap in New Brunswick

Impact on government tax revenue collection

11. Removal of gender wage discrimination in New Brunswick is expected to result in an increase of about 11 percent in personal income tax collection, federal and provincial combined, for that province. This overall increase emulates the increase that would occur for majority workers in the sample, i.e., those who have acquired a post-secondary education but do not possess a university degree. These workers are about 72 percent in the sample. For those with lower and higher educational levels, this increase will be lower (7.8 and 7.4 percent, respectively).

12. Due to the 11 percent overall increase in federal and provincial income tax receipts, the government of New Brunswick is expected to gain about $105 million in additional personal income tax revenues alone from removal of the current gender wage gap. Total tax receipts for the province (including personal income tax, sales tax, etc.) will increase by about $226 million. The corresponding figures for federal tax receipt increases are $178 million for increases in personal income tax and $383 million for all taxes in total. Thus, provincial and federal governments can expect a rise in their collective tax revenue of about $609 million..

13. Rough estimates indicate that removal of wage discrimination against women can result in 2,000 new tax-paying residents in New Brunswick, who would begin to earn enough income to pay taxes.

Impact on health care costs

14. Studies have shown that poverty and income inequality are important causes of differential health status within a population. For instance, one study conducted for Nova Scotia found that those belonging to lower income group (bottom 20 percent) use 43% more physician services than those in the upper middle to higher income groups (top 60 percent), those in the lower-middle income group (20-40 percent) use 33% more while those in the middle income group (40-60 percent) use 11 percent more. Another study showed that the incidence of chronic disease decreases with rise in income. Thus, one would expect that by causing their income levels to rise, removal of wage discrimination against women would help in improving their health status, thereby causing savings in health care costs to taxpayers.

15. Applying the general results found in literature on the impact of income increases on health care use, estimates of the likely savings in physician costs, hospital costs, and overall health care costs were obtained. Modest savings in annual health care costs are expected from an increase in women's income under an anti-wage discrimination program. These savings are reported below:

Savings in health care costs resulting from an anti-discrimination program in New Brunswick, 2003.

Physician costs	$7.65 million
Hospital costs	$20.0 million
All remaining health care costs*	$32.35 million
Overall savings	$60.0 million

*These costs include other health care institutions, other health professionals, drugs, capital, public health and administrative and other public health care costs calculated as a residual from the overall savings Present analysis assumes that the share of physician and hospital costs in total health care costs will remain unchanged.

These anticipated savings of $60.0 million in avoided health care costs due to low income are more than half of the overall budget deficit of $110 million incurred by the Province of New Brunswick in 2003.

Impact on public transfers

16. Public transfers made to individuals and families depend on income and demographic composition. Estimates of likely savings in various government transfers were obtained for the Province of New Brunswick based on the removal of gender wage discrimination. These estimates are provided in the following table.

Changes in receipts of government transfers by women, New Brunswick, 2003 ($ million).

Child benefits	-5.40
CPP / QPP benefits	-0.45
EI benefits	-11.30
Social Assistance	-1.58
GST / HST credit	-1.70
Workers' compensation	+0.56
TOTAL	**-18.99**

Note: Numbers may not add up due to rounding.

17. A major conclusion drawn from the above table is that removal of gender-based wage discrimination in New Brunswick would result in a small saving of about 19.0 million in government transfer payments made to individuals in that province. This translates into a saving of about 0.7 percent of the current total transfers in New Brunswick. The highest saving would result in avoided payments of Employment Insurance benefits. The small overall change in public transfers could be due to the larger role played by the demographic composition of the population in determining the values of these transfers.

Conclusions

18. The overall public treasury effect of a government program aimed at removing wage discrimination against women in New Brunswick is summarized below:

Public treasury effects of removal of gender-based wage discrimination in New Brunswick, 2003.

Component of Public Treasury	Value ($ million)
Tax increase (federal and provincial)	609.0
Savings in personal transfers	19.0
Savings in overall health care costs	60.0
Total benefit to provincial treasury	688.0

19. The employers in the province would have incurred an additional payroll cost of about $517 million had a program aimed at reducing gender discrimination been in place. This cost would be due to the 17 percent higher wages payable under the program.
20. The above data indicate that while the federal and provincial government together can enjoy a benefit of about $688 million resulting from increased taxes and savings of transfer payments and health cares costs, the additional payroll cost to employers would be only $517 million. Thus, the extra public funds raised under the program will be more than enough to compensate employers in the form of tax reduction or direct subsidy.

In sum, the present study has shown that adoption of an anti-discrimination wage program in New Brunswick could result in substantial benefits to the public treasury that can be used to subsidize employers for their higher payroll costs. To be successful, such a program must be accompanied by a decline in the employer payroll tax rates so that there is no addition to employers' payroll tax bill.

Finally, given that the positive public treasury benefits of anti-discriminatory program accrue at both federal and provincial levels, a strong cooperation between the two levels of governments is warranted for the success of such program

Chapter 1

Introduction

The purpose of this study is to indicate some of the public treasury effects that could be expected by removing wage discrimination against women in the Province of New Brunswick. For this purpose, a quantitative estimate of the gender wage gap resulting from gender-based wage discrimination is first obtained. This quantitative estimate is then used to estimate some potential effects on the provincial and federal public treasury if gender-based wage discrimination in the province were removed. The particular components of the public treasury that are considered include: government tax revenues, health care costs, and government transfers paid to individuals and families. The resulting effect on these components is also compared with the additional payroll cost that employers will face if an anti-discriminatory program were put in place.

The study is based largely on micro-data obtained from the 2000 Survey of Labour and Income Dynamics (SLID). SLID is an annual survey with a sample of about 15,000 households or 30,000 persons selected from the Labour Force Survey. The survey is intended to allow analyses of labour market transitions and changes in the economic status of people. It is designed as a panel that follows individuals for six years. It includes information on labour market activities, work experience, job characteristics, personal characteristics, and income and employer characteristics. SLID can be used for cross-sectional or longitudinal analyses.

Statistics Canada produces two sets of microdata files based on SLID. One set, the internal file, is available to researchers through remote access at Statistics Canada and allows for cross-sectional as well longitudinal analysis. The second set, the external file, contains fewer variables than does the internal file and is available to researchers on their own sites, but it allows for cross-sectional analysis only. Each file comprises three sub-files: personal, economic family, and household. Since the present analysis required the use of cross-sectional data, and most of the variables required for this study were available on the external file, it was decided to use the external file for analysis. This also allows easy verification of the results of this study by independent researchers who have easy access to the same data sets used here. Personal file and census family file were merged using the identifier "Census Family ID," labeled as D31CF26, provided with the SLID data. For the most part, only the personal file variables have been used, with the exception of the taxation data.[1]

Following the "Guidelines for Analysis and Presentation" provided in Section 5 of the SLID Micro-data User's Guide, "Internal cross-sectional weight," labelled as ICSWT26, was applied to the SLID public use micro-data in all analysis. This is a necessary procedure in a cross-sectional analyses in order to draw inferences about the population on which the SLID sample is based. However, though results in this report are

[1] The census family variables were used when calculating 2003 taxes paid by families as reported in Chapter 4.

based on the weighted samples, in most tables the reported frequencies are based on un-weighted samples to allow the reader to exercise his or her own judgment and intuition.[2]

Besides the SLID data, some published data were also used on personal taxes, government transfer payments to individuals, and health care costs. These have been referenced where used.

Chapter 2 presents a literature review, summarizing recent international and Canadian evidence on the gender wage gap. Chapter 3 analyzes the gender wage gap in New Brunswick within a human capital framework that is now standard in the labour economics literature. Quantitative estimates of the portion of the wage gap that may be attributable to discrimination are obtained in that chapter. Chapters 4 through 6 assess the potential economic benefits of introducing an anti-discriminatory wage program in the province that succeeds in removing gender-based wage discrimination. These benefits include an increase in government tax revenues, savings in avoided health care costs, and savings in avoided government transfers paid to individuals. Chapter 7 concludes the study by comparing the potential public treasury benefits with the employers' additional payroll costs, i.e., the additional wage cost, that would occur under the anti-discrimination program.

[2] Each table notes at the bottom whether the counts are based on weighted or unweighted samples. It may also be noted that although the results based on unweighted samples are not reported, they were only marginally different from those based on the weighted samples.

Chapter 2

Literature Review

Over the past forty years, the Canadian labour force has undergone significant changes in its demographic composition. With the rising inflow of immigrants of non-European origin, the proportion of visible minorities has increased. With changing social attitudes towards women joining the labour force, changes in labour demand due to growth of the service sector, and the introduction of several anti-discrimination programs, the proportion of women in the labour force has also increased. Despite converging labour force participation rates between men and women, there remains a significant wage gap between men and women. In this chapter, we review the literature on the Canadian gender wage gap, with reference to some international literature.

In the late 1990s, women who were aged 15 years and over and who worked full-time earned an average of just over 70 percent of what men earned on a weekly or annual basis. Although this represents an increase from just over 65 percent in the late 1980s, it does suggest that a huge difference in average pay continues to persist. Part of the difference reflects the fact that full-time employed women, on average, work shorter weekly and annual hours than men. But even when the wage differential is assessed on an hourly basis, women still earn only about 80 cents for every dollar earned by men.

Blau and Kahn (2000) provide a comparison of the gender earnings gap across nine western nations during the 1990s. Their results are reported in Table 2.1.

Table 2.1: Gender Wage Gap in Selected Countries, based on Average Weekly Earnings

Country	Ratio of Female to Male Average Weekly Earnings
France	0.90
Australia	0.87
Sweden	0.84
Italy	0.83
Germany	0.76
United States	0.76
Switzerland	0.75
United Kingdom	0.75
Canada	0.70

Source: Blau and Kahn (2000, p. 76).

Among the nine western countries listed in Table 2.1, Canada clearly has the widest gender wage gap. Germany, the United States, Switzerland, and United Kingdom have a somewhat smaller wage gap, but it is still significant. It is also important to note that in both Canada and the United States, women are less occupationally segregated than in most other industrialized countries, and yet the earnings gap remains significant.

In another study, Kidd and Shannon (1996) compared the gender wage gap in Canada and Australia. Using two different measures of labour market experience, the

authors found that for Canada, the female mean is at the 31st or 40th percentile, while for Australia this position is the 37th or 44th percentile.

Understanding the source of the gender earnings difference is critical to a determination of what policies, if any, may be needed to address the pay gap. The major sources of earnings differentials, as identified in labour economics literature, include age, education, occupation, industry of employment, hours of work, and work experience. Gender differences in these areas are then assessed to determine gender differences in labour market productivity. Any difference in earnings that *cannot* be attributed to these socio-demographic, employment, and productivity-related characteristics is attributed to either unobservable differences or to gender-based labour market discrimination.

Age and Education

Age and education are two important factors that influence earnings. Recent cohorts of women and men tend to have similar levels of education. However, this is not true of older cohorts. At the same time, as a woman ages, her earnings do not rise as fast as those of a man. Thus, it is important to assess how much of the earnings gap between men and women persists after controlling for age and education. This is done for Canada in Table 2.2, which clearly indicates that even when gender differences in age and education are controlled for, the earnings gap between men and women persists.

Table 2.2: Ratio of Female to Male Earnings by Age and Education, Canada, 1997.

Panel A: Full-Time, Full-Year Workers (Ratios of Annual Wages and Salaries)			
Age	High School Graduate	Postsecondary Diploma / Certificate	University Degree
15-24	83.6	74.7	
25-34	76.4	71.5	78.9
35-44	68.9	73.8	77.8
45-54	71.3	69.0	74.6
55+	72.6	64.6	
Panel B: All Workers (Ratios of Hourly Wages)			
Age	High School Graduate	Postsecondary Diploma / Certificate	University Degree
15-24	82.7	87.3	90.6
25-34	81.5	85.2	89.4
35-44	78.4	80.8	88.9
45-54	74.3	77.4	84.9
55+	76.5	79.1	81.2

Source: Ehrenberg, Smith, and Chaykowski (2004, p. 369)

Occupation

Table 3 presents the distribution of women in selected occupational groups in the year 2002. As can be seen, women tend to be underrepresented both in low-paying occupations and in high-paying ones. Thus some of the earnings gap between men and women may be attributed to different occupational distributions.. However, the Table also suggests that even in the same occupations, women earn substantially less than men.

Table 2.3: Female-to-Male Annual Earnings Ratios and Percentage of Female Job Holders, Selected High-and Low-Paying Occupations, Full-Time Full-Year Workers, 2000

	Percentage Female	Female-to-Male Earnings Ratio
High-Paying Occupations		
Sales, Marketing and Advertising Managers	30.1	73.4
Mechanical Engineers	5.5	79.8
Electrical and Electronics Engineers	8.1	74.5
Computer and Information Systems	26.4	84.7
Low-Paying Occupations		
Retail Sales Persons and Clerks	47.0	62.6
General Office Clerks	88.3	86.9
Social Workers	76.3	90.9
Custom Service Information Clerks	71.0	86.6

Source: Adapted from Ehrenberg, Smith and Chaykowski (2004, p. 370).

Fortin and Huberman (2002) provide evidence on the evolution of occupational gender segregation and its implications for women's earnings through the twentieth century. These authors document that the first half of the century saw a considerable decline in vertical segregation, as women moved out of domestic and manufacturing

work into clerical work.[3] This created a substantial amount of horizontal segregation that persists even today, despite some recent intra-occupational shifts that saw a 22 percent increase in the proportion of females in managerial occupations and a 16 percent decline in the proportion of females in clerical occupations[4]. To study the effect of occupational segregation on the gender earnings gap, Fortin and Huberman divide the gap into "between occupation" and "within occupation" components. Since the 1990s the component attributable to within-occupation wage differentials has become predominant.

To compare the above Canadian data with European data, we review Bettio (2000). who analyzes the effect of occupational segregation on the gender earnings gap in thirteen European countries. In her analysis, she analyzes the effect of occupational segregation on the gender wage gap by changing the occupational distribution of women to make it look like that of men. In addition, she also analyzes the effect of redistribution within an occupation up the hierarchical ladder. The results of her analysis are presented in the following Table.

[3] Vertical segregation refers to hierarchical distribution within an occupation.
[4] Horizontal segregation refers to segregation at the same level of hierarchy.

Table 2.4: The Impact of Occupational and Hierarchical Segregation on the Gender Gap in Earnings, 1996 (Full-Time Employees Only)

Country	Actual Gender Gap in Regular Monthly Earnings (%)	Gender Gap in Regular Monthly Earnings (%)		Gap Due to Occupational Redistribution	Gap Due to Occupational & Hierarchical Redistribution	Percentage Contribution of Hierarchical Redistribution to the Wage Gap
		When Male and Female Occupational Distribution are the same	When Male and Female Occupational & Hierarchical Distribution are the same			
	1	2	3	4 = 2 - 1	5 = 3 - 1	6 = (2 – 3) /1
Germany	40.64	44.12	41.54	3.48	0.90	-6.35
Denmark	21.77	17.53	16.73	-4.25	-5.04	-3.64
Netherlands	37.68	33.80	27.95	-3.88	-9.73	-15.52
Belgium	24.79	27.03	26.53	2.23	1.74	-1.99
Luxembourg	29.55	28.29	26.68	-1.25	-2.86	-5.45
France	27.72	23.42	20.20	-4.30	-7.52	-11.63
U. K	41.27	36.14	38.59	-5.14	-2.68	5.96
Ireland	34.27	36.33	36.63	2.06	2.35	0.86
Italy	27.30	29.00	27.60	1.70	0.30	-5.14
Greece	24.26	24.75	22.63	0.49	-1.62	-8.71
Spain	22.97	31.98	28.36	9.01	5.39	-15.75
Austria	35.28	34.76	31.35	-0.52	-3.94	-9.68
Finland	20.25	18.23	16.47	-2.03	-3.78	-8.68

Source: Bettio (2002, p. S74)

The results of the above table indicate that the inter-occupational redistribution of women in order to follow the male pattern appears to increase the gender earnings gap by more than two percentage points in four countries (Germany, Belgium, Ireland, and Spain), to decrease it by the same amount in five countries (Denmark, the Netherlands,

France, the UK and Finland), and to influence it marginally either way in the remaining four countries (Italy, Greece, Austria, and Luxembourg).

Redistribution within occupations *and* up the hierarchical ladder within each occupation (column 3, Table 2.4) has a more definite, positive effect on the relative earnings of women, in that it decreases the gender earnings gap in 8 out of 13 countries, while leaving it unaffected in Germany and Italy. However, in the vast majority of cases, the overall improvement is entirely or mainly due to redistribution up the hierarchical ladder. If the effect of within-occupation hierarchical redistribution is isolated (by subtracting column 3 from column 2 in Table 2.4), hierarchical redistribution alone would contribute to decreasing the gender gap in earnings in practically all countries. The extent of the decrease attributable to hierarchical redistribution would be between 9 to 15 percent of the actual gap in eight countries.

In summary, while there is evidence that inter-occupational and inter-industry segregation does not consistently explain the gender wage gap in Europe, hierarchical segregation within an occupation does matter. These results are similar to the earlier study cited for Canada.

Hours and Experience

The gender earnings gap can also be attributed to differences in hours worked by men and women and differences in their labour market experience. Finnie and Wannell

show that in Canada, full-time employed women average 5 to 8 percent fewer hours per week than do men. Therefore, part of the earnings differential between full-time employed men and women can be attributed to lower hours of work among women.

Lazear and Rosen (1990) suggest that, within an occupation, women typically have less work experience than men and are less likely to be promoted. Wood, Corcoran and Courant (1993) conducted a study of lawyers who graduated from the same law school at the same time and found that women earned about 7 percent less than men initially, but after 15 years they earned 40 percent less. Some of this difference at 15 years was associated with fewer current hours of work, and some was associated with less accumulation of work experience of women. Given the primary role women have typically played in child-raising activity, these authors attributed much of this experience gap to childcare responsibilities and to career interruptions during children's infancy.

Unexplained Differences

Age, education, work experience, occupation, and hours of work should therefore explain a major portion of earnings differences by gender. One can also add to this list by including additional demographic variables and employment characteristics. It is possible, however, that some of the wage differences would remain unexplained even if all measurable factors were accounted for in the analysis. As Ehrenberg, Smith, and Chaykowski (2004) explain, there are two possible interpretations of the remaining differences in earnings. One is that there are some productivity-generating characteristics

that are not observable by the researcher (such as relative priorities of men and women, ability, etc.). The other possibility is that the unexplained wage differential is the result of gender-based discrimination in labour market.

Wage Discrimination

Labour market discrimination exists when workers with identical productive characteristics are treated differently because of the demographic groups to which they belong. Wage discrimination is said to exist when the wages paid by employers for given productive characteristics are systematically different for different demographic groups. Put differently, if men and women with equal productive characteristics are paid unequally, even in the same occupations, then wage discrimination exists. The focus of this present report is to identify whether such wage –discrimination, which cannot be explained by observable socio-demographic or employment characteristics, exists in New Brunswick.

A commonly used method of measuring wage discrimination isolates the wage differences between men and women into one component resulting from differences in productivity – related characteristics and another component that is unexplained by differences in returns to productivity-related characteristics. The latter component is often attributed to labour market discrimination. Technical details of this method are described in Appendix B.

Some notable Canadian studies have examined the gender earnings gap using the above methodology. For example, Drolet (2001) at Statistics Canada used 1997 Survey of Labour and Income Dynamics (SLID) data and found that women earned about 80 percent as much wage rate as men did in 1997. When the author accounted for differences in productivity-related characteristics such as education and experience, she found that women continued to earn about 84 percent as much wage rate as men, and when productivity-related differences as well as other differences such as occupation and place of residence were accounted for, women's wage rate remained at 89 percent of that of men. In all, Drolet considered 14 possible explanatory variables. She attributed the unexplained portion of the wage gap after controlling for those 14 variables to gender-based labour market discrimination and concluded that this discrimination accounted for more than 50% of the gender wage gap in Canada.[5]

Similar results were reported for Canada by Christofides and Swindinsky (1994) who used data from the 1989 Labour Market Activity Survey (LMAS) to examine both gender and racial labour market discrimination. These authors found that less than 30 percent of the wage differentials between white males and minority females, between white males and white females, and between white males and minority males could be attributed to productivity-related characteristics.

[5] It is to be noted that some of the 14 explanatory variables considered by Drolet, including occupational differences between men and women and supervisory responsibilities, could also be discrimination-related. Drolet's conclusion is therefore conservative, as she includes such factors in the explained productivity-related portion of the wage gap. For this reason also, her 2001 analysis notes that between one-half and three-quarters of the gender wage gap can actually be considered unexplained, depending on which variables are included in the explained and unexplained components.

Baker, Benjamin, Desauliniers and Grant (1995) examined the male-female earnings differential between 1970 and 1990. These authors found that women made modest gains over the period. However, gender differences in observable demographic and productivity-related characteristics still do not explain much of the earnings differences between men and women. The differential remains systematically across age and education groups, and among high- and low-income groups. Another study by Chaykowski and Powell (1999), using both Labour Force data and the SLID data, also shows that women's wages have increased over time, but a sizable wage difference between men and women still remains.

Conclusions from the literature review

The overall conclusions of the studies summarized above are as follows:

1. The male–female earnings gap is an international phenomenon. Much of this difference is not explainable by differences in productivity–related characteristics.

2. Among nine advanced countries of North America and Europe, Canada has the widest gender earnings gap. This is despite the fact that occupational segregation based on gender is not as prevalent in Canada as it is elsewhere.

3. Although Canadian women have experienced an increase in their wages over the past few decades, which has narrowed their wage gap with men, significant gender differences still exist that are unexplainable by differences in such productivity-related characteristics as work experience, education, etc. Such unexplained differences are often attributed to gender-based labour market discrimination in the economics literature.

Chapter 3

Identifying the Gender Wage Gap in New Brunswick

In this chapter, we will pursue the following two objectives:

1. Identification of the wage gap between male and female workers resident in the Province of New Brunswick,
2. Division of the wage gap into "explained" and "unexplained" components.[6]

Method of analysis and data used for identification of gender wage gap and its components

The analysis is based on micro-data obtained from the 2000 Survey of Labour and Income Dynamics (SLID). SLID has been described in Chapter 1.

A standard human capital model is estimated using regression analysis. In this model, a worker's wage is determined by his or her educational attainment and labour market experience.[7] Additional controls are introduced for gender, age, marital status, job

[6] The "explained" component refers to that part of wage gap which is attributable to differences in productivity-related characteristics of a worker. These are discussed in the next paragraph. The "unexplained" component is mostly attributable to discrimination, and has been labelled by Marie Drolet of Statistics Canada as "gender-based labour market discrimination" (Drolet 1999). Labour economics literature also mostly attributes the unexplained portion of the gender wage gap to discrimination. For example, please see Kaufman (2003).
[7] The human capital model is based on Mincer (1974).

tenure, type of employment (part- or full-time employment), firm size, union membership status, urban or regional residence of respondent, industry of employment, and occupation of a worker. These demographic, employment, and productivity-related characteristics together are taken as comprising the "explained" portion of the gender wage gap, while the remaining portion attributable only to gender is taken as that portion of the wage gap attributable to gender-based labour market discrimination. Hourly rather than annual wages are the focus of analysis in order to control for gender differences in hours worked.

Definitions of regression variables appear in Appendix A, while Appendix B describes the specification of the wage model and the technique used to decompose the wage differential into "explained" and "unexplained" components. To account for the econometric problem of heteroscedasticity, log of wage instead of actual wage was used as the dependent variable.[8]

In estimation of the human capital model, the unit of analysis is a paid worker resident in New Brunswick, aged 18-64, who is not enrolled as a full-time student in the reference year. Self employed individuals, individuals for whom hourly wage data or earnings data are not known, and individuals for whom the full-year full-time work

[8] Most literature on analysis of wage or earnings differentials is based on cross-sectional data, as is the present study. The use of logarithmic wages as the dependent variable is common in such literature. For an example, please see Drolet (2001), and Miller (1987).

experience equivalent (FYFTE) is not known, are excluded. Furthermore, those who reported zero wages are also excluded. [9]

Analysis of raw data

Before discussing the results of the regression analysis, it will be instructive to analyze the raw data on variables that may determine gender wage differentials, as they are obtained directly from the SLID.

Table 3.1 compares the profiles of male and female workers. It is observed that, compared to an average male worker, an average female worker in New Brunswick is a year older, and has attained about half a year of additional schooling. Because she is a year older, her potential years of work experience are also slightly higher, 20.5 compared with 19.9 for a man.[10] However, the average New Brunswick female worker's actual full year, full-time labour market experience is 5 years less than that of a male worker (13 years for females, 18 years for males), i.e., about 28 percent lower. Thus, an average New Brunswick female worker's post-schooling work experience is only about 63 percent of her potential experience while men's post-schooling work experience is more than 90 percent of their potential labour market experience.

[9] Considering only those with nonzero wages may give rise to a self-selection bias in the results of the regression analysis. However, as in other studies, it is assumed that the direction of self-selection bias is the same for men and women in the sample.
[10] Potential years of experience are defined as the years of experience a person would have gained had he or she been continuously working since finishing education. Assuming a person begins education at age 6, the potential years of experience are calculated as: (age – years of schooling – 6).

This result may be attributed to discontinuity in the labour market attachment of women. This labour market discontinuity, in turn, is often related to the child-rearing responsibilities many women have in their lives. However, in some cases the discontinuity could also be the consequence of discrimination that a female worker may face in hiring processes. The same two reasons may also apply to higher job turnover rates among women who, by the end of year 2000 in New Brunswick, had spent 10 fewer months on average with any single employer than a man had (only 84 months instead of 94 months for men).

There is also a much higher proportion of New Brunswick women who work part-time than do men (about 11 percent of women versus only about 2 percent of men).[11] A high percentage of part-time female workers cite family-related responsibilities as the reason for part-time work.

Tables 3.2 and 3.3 report gender pay differences in New Brunswick by demographic and work-related characteristics, respectively. Hourly wage rates and annual earnings are analyzed by these characteristics. Table 3.2 results indicate that among all demographic groups, New Brunswick women earn consistently less than men. Pay differences between New Brunswick men and women increase with age and experience and are wider among men and women who are married than among those who are

[11] Further investigation of these results is required. It is possible that the low percentage of part-timers given here is due to the exclusion of full-time students from the analysis. Further work on this variable will be undertaken in the coming weeks.

unattached. The wage differences are narrower in middle-sized urban areas than in both rural areas and the most densely populated urban areas.[12]

Table 3.3 results show that the gender pay differences in New Brunswick are the broadest in the agriculture and forestry sectors and narrowest in public administration. In only one of the control variables are women paid more than men, with women working part-time in New Brunswick being paid higher wages on average than part-time employed men. Gender pay differences are also greater among non-unionized workers in New Brunswick than among unionized workers. No consistent pattern is observed in the gender wage gap with respect to time spent with an employer. Among different occupations, pay differences are broadest within the service and primary sectors and narrower within professional and managerial occupations. Finally, as firm size increases beyond 99 employees, gender pay differences increase.[13]

Table 3.4 reviews the gender wage differential in New Brunswick at different levels of educational attainment. Substantially more women in the sample have acquired post-secondary education than men (about 68 percent of women compared to 59 percent

[12] The male to female wage ratios are almost equal for rural areas and for the most populated urban areas (1.29 and 1.28, respectively). For the two middle-sized urban area categories, population less than 29,000 and population 29,000-99,000, the ratios differ slightly (1.26 and 1.22) and are lower than in the rural and densely populated areas.

[13] Assuming some the wage gap is due to discrimination, this result could be observed because smaller firms tend to be less discriminatory due to the competitive business environment they face. This is because first of all, it is very difficult for firms to make money, the more competitive the business environment is. Secondly, if firms do not pay competitive wages to employees, they face the risk of losing them to competitors.

of men). Yet despite this educational advantage, New Brunswick women's wages overall remain lower than for those of men.

The main conclusion of this section is that in New Brunswick, wage differences between men and women exist for all demographic groups, all labour market characteristics, and all educational levels, with women consistently earning less than men in every category with the sole exception of part-time work.

Analysis of regression results

We now turn to a division of the gender wage gap into its "explained" and "unexplained" components. For this purpose, we first use regression analysis to estimate a wage model.

Except for experience, years of schooling, and job tenure variables, all other explanatory variables are of a qualitative nature and hence are represented as dummy variables. Detailed definitions of these variables and descriptions of their computations appear in Appendix A. Appendix B describes the specification of wage models and also discusses the technique used to decompose the wage differential into its components.

Differences in the average values of log of wage rate paid to a woman and to a man provide a ratio of the wage of a woman to that of a man. In the sample used for

regression analysis, the difference in natural log values of wages is found to be 0.24 (Table 3.6). Considering the anti-log of this value gives the value 0.79. This means that, on average, a female worker in New Brunswick earns 21 percent lower wages on an hourly basis than does a male worker. Thus, on an hourly basis, New Brunswick women earn 79 cents on average for every dollar earned by men in that province.

Table 3.5 presents results of the regression analyses. Three specifications of the log wage model were estimated. Specification I comprised only human capital (experience, job tenure, and years of schooling) and demographic variables (gender and marital status). In specification II, additional independent variables are included to control for work history, such as the type of employment (part-time versus full-time), size of the firm employing a worker, and union membership status. An additional control for the differential impact of the size of residential area was also introduced to account for differential competitive environment faced by firms. Specification III further expanded the list by including controls for industry of employment and occupation.

The effect of gender is incorporated in each model by including a dummy variable for gender. This variable was introduced to assess the impact on the intercept of the regression as well as on the slope. To account for the impact on slope, each of the independent variables was interacted with the gender dummy variable. As discussed in Appendix B, this method allows the assessment of the differential impact of each of the independent variables on wage rates for women, compared with men. This approach also

permits one to conduct a statistical test of significance for the differential impact of each independent variable.

Table 3.5 results also show that the gender variable has a negative coefficient in all specifications and, given that the corresponding absolute t-values exceed 2 in all specifications, the coefficient is statistically significant. This means that after differences in the long list of productivity-related characteristics between men and women have been controlled, women's wages remain lower than men's.[14]

Next, we evaluate the wage differences between men and women with respect to each of the productivity-related characteristics. For this purpose, we will evaluate the estimated coefficients of interaction variables.

It is observed that in all specifications, the effect of both education and job tenure on wages is statistically significantly higher for women than for men.[15] This is indicated by the t-values of their corresponding interaction variable coefficients. This means that each additional year of education raises women's wages by more than it does for men. As indicated by the results for job tenure variable, women experience a more rapid rise in their wage than do men, the longer they stay with one employer.

Specifications II and III also indicate that the union membership variable is statistically significant. Hence, unionized workers earn more than non-unionized workers.

[14] The t-test is performed at a 0.05 level of significance. An absolute t-value that exceeds 2 indicates that there is a 95 percent chance that the impact of included independent variables on wages is different from that of the excluded variable.
[15] Similar results were reported by Drolet (2001), who used national data for Canada.

The statistical significance of differential slope coefficient for the union variable and its positive sign also indicate that unionization also raises women's wage rate by more than it raises the wage rate of men. In other words, the union versus nonunion wage differential is wider for women than it is for men.

All other interaction variables are found to have no statistically significant impact on hourly wages.

We conclude on the basis of the above results that there exist large, statistically significant differences in the earnings of New Brunswick men and women that are unrelated to the productivity-related characteristics used in this study.[16]

The regression estimates can also be used to calculate how much of the wage gap between men and women is attributable to productivity-related characteristics and how much is "unexplained". The method used to perform these calculations is described in Appendix B. The results are presented in Table 3.6.

The Table 3.6 results indicate that after controlling for differences in productivity-related characteristics between men and women, the female to male ratio of wages in New Brunswick is between 81 to 84 percent, depending upon the number of demographic and productivity-related characteristics controlled by the researcher. In other words, a

[16] This conclusion is mainly derived from the result of the gender variable coefficient in the regression model.

woman earns about 16 to 19 percent lower wages than does a man with similar demographic and productivity-related characteristics. Since the total wage differential is 21 percent, 2 to 5 percentage points of the wage differential can be attributed to differences in demographic, employment, and productivity-related characteristics including labour market experience, education, marital status, job type (full-time versus part-time), job tenure, union membership, firm size, industry of employment, and occupation.

Major Conclusions

The analysis in this chapter was based on a Statistics Canada study of the persistent gender wage gap in Canada (Drolet 1999, 2001) and is believed to be the first such analysis conducted at the provincial level. Important findings are summarized as follows:

1. Overall, the wage rate paid to an average female worker in New Brunswick is about 21 percent lower than that paid to a male worker.
2. When controls are introduced for such demographic, labour market, and productivity-related characteristics as education, work experience, age, marital status, job tenure, job status, union status, size of firm, size of residential area, industry of employment, and occupation, the wage rate paid to a female worker in New Brunswick continues to be about 17 percent lower than that paid to a man.
3. This means that close to 80 percent of the current gender wage gap in New Brunswick cannot be explained by a wide range of demographic, labour market,

and productivity characteristics and is likely attributable to gender-based labour market discrimination.

4. Women acquire more years of schooling as well as labour market experience than do men. Yet at all educational levels, New Brunswick women earn lower wages than men, although the gap narrows as educational level increases.
5. The gender wage gap in New Brunswick persists across all demographic and labour market characteristics, confirming the case for anti-discrimination programs by government.
6. Women are able to acquire only 63 percent of their potential years of experience while men gain about 90 percent. Reduced labour market experience is the most significant component of the explained wage differential (Table 7).

Table 3.1: Gender differences in work history, New Brunswick, 2000

	Male Mean	Female Mean
Average age in years	39	40
Average number of years of schooling	13.1	13.5
Average number of potential years of work experience (=age-years of schooling-6)	19.9	20.5
Actual full-year full-time work experience in years	18	13
Percentage of potential years of work experience actually spent working full-year full-time	90.452%	63.414%
Female to male ratio of full-year full-time work experience	72.22%	
Duration of job held at the end of current year in months	94	84
Percentage of persons who worked part-time	1.97	10.97
Among hours worked part-time, percent citing reasons:		
family-related responsibilities	0	17.61
voluntarily employed part-time	65.46	72.33
going to school	14.88	1.90
own illness	0	2.40

Source: SLID (2000) micro-data (External data file on persons), weighted sample.

Table 3.2[17]: Gender pay differential by age, marital status, work experience and residence size, New Brunswick, 2000

Characteristic	All Workers : Hourly wage rates		Full-year Full-time Annual Earnings		Counts	
	Male	Female	Male	Female	Male	Female
Age group						
18-24	9.77	8.54	15786	14771	84	72
25-34	15.26	13.02	32009	22289	201	182
35-44	16.42	13.87	35630	26148	278	276
45-54	19.13	14.33	43274	25394	206	213
55-64	21.09	13.64	43208	27190	67	56
Total Counts					836	799
Marital Status						
Married/Common law	17.84	13.88	39996	24827	624	578
Single	12.27	11.23	22163	21561	155	123
Others	17.12	12.85	30502	23551	55	98
Total counts					834	799
Full year full time work experience						
0-2 years	10.73	9.28	14649	13738	55	90
3-5 years	13.31	11.37	24414	20033	61	107
6-9 years	14.83	13.42	33617	23522	78	93
10-19 years	16.40	14.00	35855	25972	194	219
20-29 years	18.11	15.22	41842	28715	202	162
30-39 years	21.16	16.86	47557	35970	92	27
40+ years	16.49	13.22	32898	22878	154	101
Total Counts					836	799
CMA/Urban Size class						
Rural	14.80	11.95	30769	20036	236	228
Less than 29000	16.57	13.36	35447	24181	0	0
29,000-99,000	17.08	14.16	35918	26426	292	273
99,000-499,000	17.50	13.75	38753	25437	308	298
Total counts					836	799

[17] Source: SLID (2000) PUMF personal file. The sample is of paid workers resident in New Brunswick, aged 18-64, who are not enrolled as full-time students in the reference year. Self-employed individuals, individuals for whom hourly wage data or earning data are not known, and individuals for whom the full-year full-time work experience equivalent (FYFTE) is not known, are excluded. The variables labelled Ecage26 (Age), Marst26 (Marital Status), FYFY (Full-time work exp), Uszga25 (Urban size) are utilized to create dummy variables to achieve this table. The difference in counts between the subcategories (i.e. age, marital status etc.) is attributable to the records in the sample having "not responded", "not in sample" and "missing values" categories. The results are based on the weighted sample, while counts are based on the un-weighted sample.

Table 3.3[18]: Gender pay differentials by various work-related characteristics, New Brunswick, 2000

Characteristic	Hourly Wage		Annual Earnings		Count	Count
	Male	Female	Male	Female	Male	Female
Industry						
Manufacturing	16.91	12.24	39000	23550	178	63
Public Administration	19.93	18.04	43778	40245	79	68
Don't Know	20.07	16.48	50807	33027	24	32
Agriculture/Forestry	15.82	10.71	32547	14332	56	18
Utilities/Construction	16.25	11.89	29958	23901	106	13
Services	15.72	12.90	33045	22301	393	605
Total Counts					836	799
Status						
Full-Time	16.71	13.40	36162	25595	786	693
Part-Time	9.24	12.45	10271	11911	14	90
Total Counts					800	783
Union						
CBA[19]/ Union Member	17.93	17.59	40049	33377	236	237
Not Unionized	15.96	11.48	33519	20200	585	557
Total Counts					821	794
Job Tenure						
Less than 1 year	13.02	10.08	18323	12264	164	134
1-5 Years	15.06	11.66	33030	21024	285	319
6-10 Years	17.07	14.79	37714	27446	135	112
11-19 Years	19.73	15.88	47025	31266	145	157
20+ Years	21.09	18.65	48479	38208	106	77
Total Counts					835	799

[18] Source: SLID (2000) PUMF personal file. The sample is of paid workers resident in New Brunswick, aged 18-64, who are not enrolled as full-time students in the reference year. Self-employed individuals, individuals for whom hourly wage data or earning data are not known, and individuals for whom the full-year full-time work experience equivalent (FYFTE) is not known, are excluded. Variables labelled Nai3g10 (Industry), Fllprt1 (Status), Uncoll1 (Union Status), Jobdur1 (Job Tenure), S91g2e6 (Occupation) and NBEMPL1 (Firm Size) are utilized to create dummy variables to achieve this table. Differences in counts between the subcategories (i.e. age, marital status etc.) are attributable to the records in the sample having "not responded", "don't know" and "missing values" categories. Results are based on the weighted sample while counts are based on the un-weighted sample.

[19] CBA stands for "collective bargaining agreement".

Occupation						
Clerical/Supervisors	15.82	12.59	33649	23909	47	151
Don't Know	18.10	17.16	43975	33730	43	33
Professional/Manager	22.60	16.71	50222	31013	115	290
Natural/Social Sciences	22.72	19.26	47315	36491	82	35
Services	14.44	9.18	31066	14654	363	251
Primary processing/Machinery	14.11	9.93	29997	16952	146	39
Total Counts					799	799
Firm Size						
<20 employees	14.52	11.15	28894	19228	304	300
20-99 Employees	16.52	14.02	35532	26225	243	229
100-499 Employees	18.41	14.18	42386	27719	190	161
500+ Employees	20.69	16.90	45600	29944	71	76
Total Counts					808	766

Table 3.4 Gender differential in education level, New Brunswick, 2000

	All workers : Hourly wage rates		Counts		Percentage Distribution		Gender Composition (%)	
	Male	Female	Male	Female	Male	Female	Male	Female
Overall	18.16	14.27			100	100	51.20	48.80
High school or less	14.22	9.96	339	256	40.70	32.24	56.97	43.03
Above high school, below Bachelor's degree	16.36	13.26	381	399	45.74	50.25	48.85	51.15
Bachelor'ss and above	23.89	19.59	113	139	13.60	17.51	44.84	55.16

Source: SLID (2000) PUMF personal file. This table is for the sample that has been described in Tables 2 and 3.

Table 3.5: Regression Table

	Specification I		Specification II		Specification III	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
(Constant)	1.532	303.42	1.618	319.225	1.901	314.76
GENDER	-0.457	-60.57	-0.380	-49.96	-0.481	-44.77
Experience	0.010	89.67	0.010	89.76	0.008	77.88
Years of schooling	0.063	182.43	0.062	186.67	0.041	117.20
Job tenure	0.001	85.27	0.001	65.95	0.001	75.15
Married	0.095	37.30	0.101	41.601	0.078	34.10
Excluded group: Single/divorced/Common Law/Widowed/Separated						
Part-Time			-0.315	-38.81	-0.240	-31.58
Excluded group: Full time						
Firm size < 20 Employees			-0.130	-61.44	-0.121	-60.39
Excluded group: Firm size>20 Employees						
CBA/Union			0.055	24.97	0.069	33.15
Excluded group: Non-union member						
URBAN (Size < 29000)			-0.037	-16.97	-0.021	-10.39
Excluded group: Urban size > 29000						
Industry:						
Utilities / Construction					0.034	7.18
Manufacturing					-0.045	-11.14
Service					-0.129	-30.73
Public Admin					-.021	-4.07
Excluded group: Primary industries						
Occupation:						
Managerial / Professional					0.274	69.71
Science/Govt/Religion					0.331	81.11
Clerical					0.031	6.582
Service					-0.006	-1.64
Construction/Trade/Transportation					0.021	6.582
Excluded group: Primary industry workers, Machine operators, assemblers, supervisors, processing labourer in manufacturing.						

Table 3.5 Continued

Interaction variables:						
Experience	-0.004	-24.93	-0.004	-25.12	-0.004	-26.24
Yrs of schooling	0.015	29.39	0.006	12.419	0.010	19.34
Job tenure	0.001	43.89	0.000	26.347	0.000	19.03
Married	0.049	14.18	0.043	12.83	0.039	12.45
Part time			0.251	28.92	0.247	30.37
Firm size<20			0.052	17.29	0.049	17.05
CBA/Union			0.193	59.01	0.117	37.21
Urban size <29000			0.000	-0.13	-0.021	-7.096
Utilities/Construction					-0.111	-10.17
Manufacturing					0.073	8.80
Service					0.142	9.594
Public Admn					-0.021	15.47
Managerial/Professional					0.028	-3.154
Science/Govt/Religion					0.108	3.564
Clerical					-0.029	15.09
Service					0.089	-4.55
Construction/Trade/Transportation					0.057	8.88
R-Square (adjusted)	0.475		0.527		0.582	
F-Value	21435		13966.74		53.606	
No. of observations (weighted sample)	213,386		213,386		213,386	
No. of observations (unweighted sample)	1252		1252		1252	

Table 3.6: Decomposition of gender wage gap into its components, New Brunswick, 2000.

	Unadjusted differential (in logs)	Explained (differences due to productivity-related factors)	Unexplained (differences due to rewards to productivity-related factors	Adjusted
		$(X_m-X_f)B_m$	$(B_m-B_f)X_f$	$\exp(-((B_m-B_f)X_f)$
Specification I	0.24	0.0281	0.2089	0.8114
Specification II	0.24	0.0629	0.1738	0.8404
Specification III	0.24	0.0514	0.1853	0.8308

Notes:

1. The unadjusted log differential of 0.24 means that the ratio of female wages to male wages is about 0.79(=exp(-0.24). In other words, an average female worker earns 21 percent lower hourly wages than a male worker.

2. The adjusted differential shows that after differences in productivity-related factors have been controlled, the ratio of women's hourly wage rate to men's hourly wage rate remains about 81 to 84 percent. In other words, a woman possessing the same productivity-related characteristics as a man earns between a 16 to 19 percent lower wage rate than the man, a result attributed to such unobservable characteristics as differences in abilities, motivation, or discrimination. Because there is no evidence to indicate lower abilities or motivation on the part of female workers, we accept Statistics Canada's characterization of the unexplained portion of the gender wage gap as gender- based labour market discrimination (Drolet 1999). Labour economics literature (for example Kaufman, 2003) also attributes the unexplained portion of the gender wage gap to discrimination.

3. All numbers are rounded off to two and four decimal places.

Table 3.7: Reasons for gender wage gap, 2000.

	Specification I (%)	Specification II (%)	Specification III (%)
Experience	17.64	17.0	14.0
Years of Schooling	-9.64	-9.5	-6.4
Job tenure	4.6	3.5	3.8
Married	-0.73	-0.8	-0.6
Part-Time		13.8	10.5
Firm size<20		1.9	1.7
CBA/Union		0.03	0.04
Urban		0.6	0.34
Industry			15.4
Occupation			-17.2
Total Explained	11.87	26.53	21.58
Total Unexplained	88.3	73.47	78.42
Total	100	100	100

Source: Based on regression results of Table 5. Method described in Appendix B.

Chapter 4

Removal of Gender Wage Discrimination and the Potential Rise in Government Tax Revenues in New Brunswick

The previous chapter concluded that in the province of New Brunswick, female workers, on average, are paid about 17 percent lower wages than male workers for reasons unrelated to differential labour market characteristics.[20] Literature attributes this "unexplained" component of the wage differential to discrimination in wage payments. The persistence of this large wage difference between men and women provides raises the rationale for programs aimed at removing discrimination against women. Such anti-discrimination programs may be justified by several economic and non-economic benefits of removing gender discrimination in labour market. In the present chapter, some evidence will be provided on an important economic benefit, increase in government tax revenues, that may be expected by removing gender discrimination in New Brunswick.

The higher female incomes resulting from a pay equity program aimed at removing wage discrimination can result in an increase in a variety of taxes including income tax, sales tax, property tax, etc. Due to paucity of data, the present report will focus on estimating changes in personal income tax only. These estimated changes will then be combined with published data on *total taxes* to estimate changes in *total taxes* received in New Brunswick by federal and provincial governments.

[20] The three specifications of wage model used in previous chapter indicated unexplained wage differences between men and women in the 16 to 19 percent range. The model with most controls yielded a 17 percent unexplained difference. To analyze the effect of removing wage discrimination in this chapter and the rest of this report, we will use the 17 percent result.

Method of computation and data used

To compute personal income tax benefits to the governments resulting from an increase in the female wage rate the following steps were used:

1. The portion of the wage gap attributable to discrimination was estimated at three different levels of educational attainment: less than high school, high school and above but below university degree, and university degree. The distinction of educational levels was made to account for different degrees of gender wage discrimination at high paying and low paying jobs. Due to lack of data on some variables in different educational groups, regression estimates of the first of the three wage equations that were specified in the first report, were obtained for each educational level separately. This regression includes the logarithmic wages as dependent variable and number of years of experience, schooling, job duration / tenure and marital status as independent variables in addition to their interaction with the dummy variables created for gender. A complete definition of these variables is included in Appendix A.

   The estimated regression coefficients were used to obtain breakdowns of wage differentials into explained and unexplained portions. As before, the unexplained portion of the wage differential is attributed to wage discrimination

against female workers. Economic literature has described that portion of the gender wage gap which cannot be explained by a wide range of demographic variables (e.g. age, education, marital status) and employment characteristics (e.g. work experience, job tenure and length of time with employer) as "gender-based labour market discrimination."[21] The present study accepts that designation.

2. A wage elasticity of personal income taxes was estimated at each education level, using regression analysis. The wage elasticity measures the percentage rise in personal income tax resulting from a one percent rise in the wage rate.[22]
3. The estimated wage elasticity was multiplied by the percentage of the wage gap attributed to discrimination.
4. Female income tax payments at all levels of education were multiplied by the results obtained in (3) above to arrive at the adjusted tax payments. These payments are the amounts of additional personal income tax that would be paid if discrimination were removed in New Brunswick.

In all of the above steps, micro data from SLID 2000 were used. As before, a sample weight was applied. The weight variable is available on the SLID file and is labelled as ICSWT26.

A program aimed at removing discrimination is expected to result in a rise of wages paid to female workers. Economic theory predicts such wage increases to have both

[21] For example, see Oxaca (1973) and Drolet (2000).
[22] The regression equation used logarithm of income taxes as the dependent variable and logarithm of wage rate as the independent variable.

supply and demand side effects in the labour market. The supply side effect could result from increased labour force participation of women, who may find the new wage to be higher than their reservation wage. The demand side effect could result in a decline in employment of women because employers may demand fewer female workers at higher wage rates.

Canadian literature that has investigated labour supply response to wage changes in Canada has generally found that the wage elasticity of labour supply is inelastic for both sexes.[23] This means that a one percent rise in wages causes the labour force participation of both men and women to rise by less than a percent. There is a wide variation in results. Some studies have found the female response to be stronger than the male response. However, other studies have found that male and female labour supply responses to wage changes are similar and low. The present study also assumes that the female labour supply response to a rise in wage rates under an anti-discrimination pay program in New Brunswick will be insignificant.

A literature review on the labour demand effect of a change in wage rate could not find any evidence for Canada. However, studies in Europe, Australia, and the United States have found that a pay equity program has no significant employment effect.[24] In sum, pay equity initiatives in those countries are unlikely to affect rates of labour force participation, employment, and unemployment.

[23] This literature has been reviewed in Benjamin, Gunderson and Riddell (2002, pp. 55-56). .
[24] This literature has been reviewed in Gunderson (1994).

To estimate the wage elasticity of demand for labour, one must first estimate a production function for the economy of New Brunswick using data across industries. Such an analysis is beyond the scope of this project. However, a regression equation specifying the logarithm of employment broken down by industry, gender, and marital status as the dependent variable and corresponding average annual wages and salaries, average labour market experience, and average number of years of education, showed no statistically significant effect of annual wages and salaries on employment in an industry. Following this result and the ones mentioned for other western countries, the present study therefore assumes that a pay equity program in New Brunswick would have no significant negative effect on female employment in that province.

Discussion of Results

As before, the sample used in the present analysis comprised of all paid workers eighteen years of age and older who were paid employees in 2000. Results are reported for the overall sample, for those who acquired less than high school education, for those with high school or more education but with no university degree, and for those who held a university degree.

We first present raw data on average hourly wage rates in Table 4.1:

Table 4.1: Average Hourly Wage Rate by Gender and Education Level, New Brunswick.

Education Level	Male		Female	
	Count	Mean ($)	Count	Mean ($)
Overall average	836	16.57	799	13.36
For those with educational level:				
Lower than High school	149	13.21	85	8.76
High school, and above but no university degree	571	15.92	570	12.44
University degree	113	23.89	139	19.59

Source: Tabulations by author based on SLID, 2000 weighted sample. Counts are for unweighted sample.

It is observed that, overall, an average female worker is paid about 19.4 percent lower wage rate than an average male worker.[25] The wage gap is wider at lower educational levels than it is at higher educational levels, ranging from about 34 percent for those with high school or less education to about 18 percent for those with a university degree.

Table 4.2 presents the unexplained portion of the wage gap noted in Table 4.1 above, after controlling for experience, job duration and marital status.[26] The

[25] Data reported in Table 1 are based on the raw data obtained directly from the SLID. The regression model estimated in chapter 3 estimates the unadjusted wage differential between New Brunswick men and women to be about 21 percent. The 19.4 percent result noted here falls within a 95 percent confidence interval around the 21 percent estimate. This difference could be due to rounding of numbers and also because of slightly smaller sample used for regression analysis.

[26] To estimate the wage equations by educational level, only the first of the three wage equations, specified in the first progress report, was estimated. This is because of the lack of data in the original (unweighted) sample.

unexplained portion of wage is obtained by estimating a regression equation of the wage model specified in chapter 3.

Table 4.2: Unexplained Percentage Wage Differences by Gender and Education, New Brunswick.

Overall difference	17 percent
For those with educational level:	
Lower than High School Education	23 percent
High School or above but no university degree	18 percent
University degree	15 percent

Source: Based on wage regressions estimated using SLID, 2000, weighted sample. The overall result of 17 percent is based on the results of the first report.

The above table shows that the effect of discrimination on gender wage differential is substantially greater at lower educational levels which correspond to lower-paying jobs.

To assess the impact of a pay equity program that aims at removing the discriminatory component of the wage rate differential between male and female workers, the results of Table 4.2 can be applied to the wage rates earned by female workers as reported in Table 4.1 to adjust the wage rate earned by females. The adjusted wage rates are presented in Table 4.3.

Table 4.3: Potential Average Hourly Wage Rate, by Gender and Education Level Under an Anti-discrimination Pay Program, New Brunswick.

Education Level	Male		Female	
	Count	Mean ($)	Count	Mean ($)
Overall	836	16.57	799	15.63
For those with educational level::				
Lower than high school	149	13.21	85	10.78
High school or above but no university degree	571	15.92	570	14.68
University degree	113	23.89	139	22.53

Source: Table 4.1. Female results have been raised by percentage of unexplained wage gap obtained in Table 4.2.

The hourly wage rates reported for female workers in Table 4.3 are those they would be paid if a pay equity program aimed at eliminating the discriminatory (or unexplained) component of male / female wage differential were in place. Therefore, the differences in wage rates earned by male and female workers in the above table are attributed to such labour market and demographic characteristics as number of years of labour market experience, job tenure, and marital status.[27]

[27] In this report, the wage gap attributable to discrimination has been defined as the percentage by which the female wage is *below* that of male wage for reasons that cannot be explained by a wide range of demographic variables and employment characteristics. Thus, to analyze the effect of a pay equity program aimed at eliminating the discriminatory portion of the gender wage gap, 17 percent is added to the wages of females in order to obtain the wages ($15.63) that would be paid to a female worker if pay equity were in place. One may also do the adjustment by considering the male wage and subtracting 4 percent (the explained differential), which would give a higher figure for female wages, $15.91, instead of $15.63 as reported above. Still another method of adjustment would be to bring the male wage down to female wage levels by subtracting the current wage difference of $3.21 multiplied by 19 percent (which is the percentage of the total gender wage differential that is "explained" by differential demographic and labour market characteristics). This method would yield an adjusted wage of $15.96. The current report is based on the most conservative estimate of female wages that would be paid under a pay-equity program. Overall wage rate of women is assumed to rise to $15.63 under the program.

Table 4.4 presents the average income taxes paid by male and female workers in New Brunswick at both federal and provincial levels. It may be noted that although the analysis of wages and income so far has been conducted using the 2000 SLID, there were some significant changes in tax laws in 2003 because of which it is necessary to adjust the income tax figures available for 2000 from the SLID. These adjustments have been discussed in detail in Appendix C. All of the data that are reported on taxes in this report refer to 2003.

Table 4.4: Average Income Taxes Paid, Federal and Provincial, by Gender and Education Level, New Brunswick, 2003 (Estimates).

Education Level	Male		Female		Overall Mean ($)
	Count	Mean ($)	Count	Mean ($)	
Overall	836	7452	799	4092	5848
For those with education equal to:					
Lower than high school	149	5332	85	1514	3913
High school or above but no university degree	571	7085	570	3555	5378
University degree	113	11870	139	7776	9655

Source: Computations by author discussed in Appendix A. All results are based on weighted sample. All counts are from the original (unweighted) sample.

The differences in taxes reflect the differences in wages reported in Table 4.1. To assess the increase in income taxes resulting from the increase in wage rates that will take place under an anti-discrimination program, one must obtain the relationship between these taxes and wage rates. For this purpose, the wage elasticity of income taxes was estimated using regression analysis. Results are presented in Table 4.5.

Table 4.5: Wage elasticity of Personal income taxes paid, New Brunswick.

	Wage Elasticity
Overall	1.995
For those with education level:	
Lower than high school	2.164
High school and above, but Below university degree	2.104
University degree	1.682

Source: Based on separate regression equations of log of hourly wages on log of Personal income taxes paid using micro data from SLID (2000), weighted sample.

The elasticity values measure the percentage change in income taxes that would take place for every percentage change in wages. Overall, the average worker in New Brunswick pays 1.995 percent higher income taxes (provincial and federal) when his or her wages rise by one percent. This elasticity value is significantly lower for those who have acquired a university degree.

The Table 4.5 results are combined with Table 4.2 results to provide the percentage change in personal income taxes, provincial and federal combined, resulting from wage adjustment under an anti-discrimination or pay equity program. Results are reported in Table 4.6.

Table 4.6: Percentage change in personal income taxes paid by women due to wage adjustment under an anti-discrimination or pay equity program, New Brunswick.

	Tax Adjustment (%)
Overall	33.92
For those with education level:	
Lower than high School	49.77
High school and above, but Below university degree	37.87
University degree	25.23

Source: Calculated as a product of wage elasticity and unexplained percentage of wage discrimination.

The above results show that a government program aimed at eliminating gender wage discrimination in New Brunswick would result in an increase of personal income tax receipts to the federal and provincial governments together by about 34 percent on average. Such a program would result in the steepest percentage increase in income tax payments, about 50 percent, by women working in low paying jobs that require low levels of education, where the gender wage gap is most marked. However, the sharpest absolute increase in tax receipts would be for university-educated women, reflecting their higher overall wages.

This is demonstrated in Table 4.7, where the adjusted taxes for the year 2003 are reported.

Table 4.7: Average Personal Income Taxes Paid, Federal and Provincial, Adjusted for Discrimination by Gender and Education Level, New Brunswick, 2003.

Education Level	Male		Female		Weighted Mean ($)
	Count	Mean ($)	Count	Mean ($)	
Overall	836	7452	799	5480	6488
For those with education equal to:					
Lower than high school	149	5332	85	2267	4218
High school or above but no university degree	571	7085	570	4900	5992
University degree	113	11870	139	9738	10694

Source: Male data are from Table 4.4. Female data reported in Table 4.4 were multiplied by the percentage rise in tax reported in Table 4.6. Counts are based on unweighted sample.

Based on the above results, we now compute the net percentage change in government receipts of personal income taxes if an anti-discrimination program were to be introduced. These are reported in Table 4.8.

Table 4.8: Percentage increase in average personal income tax receipts of federal and provincial governments under an anti-discrimination program, New Brunswick, 2003.

Education level	Average Income tax receipt before anti-discrimination program ($)[1]	Average Income tax receipt after anti-discrimination program ($)[2]	Percentage increase	Dollar increase in average income tax ($)
Overall	5848	6488	10.9	640
For those with education equal to:				
Lower than high school	3913	4218	7.8	305
High school and above but no university degree	5378	5992	11.4	614
University degree	9655	10694	7.6	1039

[1]Based on Table 4.4. [2] Based on Table4. 7. All percentages are rounded.

The table 4.8 results indicate that the average income tax receipts of federal and provincial governments would rise by about 11 percent if an anti-discrimination program were to be introduced in the province of New Brunswick. The percentage rise is observed to be higher at educational levels below a university degree as anti-discrimination program is expected to provide greater monetary benefits to female workers with lower educational attainment who may be employed at lower paying jobs.

Impact of pay equity on overall receipts of federal and provincial taxes in New Brunswick

In the above section, estimates of increases in an average individual's personal income tax resulting from an anti-discrimination pay program in New Brunswick were analyzed. Personal income tax forms a major portion of total taxes. However, other tax categories such as corporation income tax, property tax, sales tax, etc. must also be considered. Since SLID collects data on federal and provincial personal income taxes only, one has to combine the results from the previous section with published data to estimate changes in total federal and provincial tax payments in the province.

Separate data on aggregate federal tax collections by categories and on consolidated provincial tax collections by categories are available on the Web site of Statistics Canada. Data on collection of various federal taxes in each province are not available. Therefore, an aggregate of provincial and federal taxes was estimated by using the following steps:

1. Data on tax collections by provinces / territories and by the federal government were obtained. These are presented in Table 4.9.

Table 4.9: Total and Income tax collection by the Federal Government and Provincial and Territorial Governments (2003-2004).[1]

Source of Collection	Personal Income tax collected ($ Million)	Total Tax collected ($ Million)[1]
Federal Government[1]	92, 306	168, 710
Provincial & Territorial Governments	52, 229	142, 236
Total	144, 535	310,946

[1] Federal government data on personal income taxes are calculated as the difference between Total and Provincial & Territorial Governments' data.

Source: http://www.statcan.ca/english/Pgdb/govt01a.htm, http://www.statcan.ca/english/Pgdb/govt02a.htm. http://www.statcan.ca/english/Pgdb/govt55a.htm.

2. The above table shows that the personal income tax collected on the behalf of federal, provincial and territorial governments was about 46.5 percent of their total tax collection in 2003.
3. It is assumed in this study that in each province and territory, the personal income tax collected on the behalf of federal, provincial and territorial governments was 46.5 percent of their total tax collection. Total provincial personal income tax collected in the province of New Brunswick only was about $952 million in 2003-04[28]. The SLID micro data show that the average provincial personal income tax is about 59.8 percent of federal tax and about 37 percent of total personal income tax collected in New Brunswick. This means that the federal income tax collected in New Brunswick was

[28] http://www.statcan.ca/english/Pgdb/govt56a.htm

about $1592 million in 2003-2004[29], while the total personal income tax collection was $2573 million. In turn, this means that about $5533 million worth of taxes were collected in that province during 2003-2004 on behalf of federal and provincial governments.[30]

It was reported in the previous section that eliminating the discriminatory portion of the gender wage gap in New Brunswick could result in an increase of federal and provincial personal income tax collection by 11 percent. This means that overall, a program aimed at removing discrimination against women could have produced an increase of about $283 million in personal income tax collection for both the provincial and federal governments, in the year 2003. From this increase in revenue, $105 million would have accrued to the New Brunswick government. [31] Assuming that the percentage of personal income tax as a proportion of total tax collection remains at 46.5 percent, this would have amounted to a projected increase of about $609 million in total federal and provincial tax collection in the province of New Brunswick if a program aimed at removing discrimination were in place.[32] From that increase in total tax revenue, the province of New Brunswick would have gained about $226 million.[33]

[29] Separate data on collection of federal income taxes by province are not available through published sources.
[30] This assumes personal income tax to be 46.5 percent of total taxes.
[31] This is calculated as 37 percent of $283 million.
[32] The personal income tax collection would have increased from $2573 million to $2856 million which, in turn, would have resulted in an increase in total tax collection from $5533 million to $6142 million. As mentioned earlier, the estimated rise in female wages under a pay equity program is based on the most conservative calculations. Hence, the projected tax benefit of $609 million is also the most conservative figure.
[33] This is calculated as $105 million divided by 0.465.

The number of new taxpayers under the anti-discrimination wage program

A program aimed at removing gender discrimination in New Brunswick is also expected to raise the number of taxpayers by causing their earned income to rise. To compute the number of new taxpayers, I first obtained information on taxpayers as presented in Table 4.10.

Table 4.10: Wages and Salaries, Total Income and Income Tax, Taxpayers in New Brunswick, 2003.

	Minimum Value ($)	Maximum Value ($)	Average Value ($)	Count
Wages and Salaries	4,200	260,000	32,254	254,017
Total Income	7,600	260,000	34,683	254,017
Income tax	10	91,674	6,405	254,017

Source: SLID (2000), based on computations of 2003 personal income tax (federal and provincial) described in the text above. Sample was weighted to arrive at counts.

Under an anti-discriminatory program, one would expect wages and salaries of female earners to rise by about 17 percent. This means that some female workers earning below $4,200 prior to the introduction of the program would now become taxpayers. Such workers currently earn a minimum of $3,590 in wages and salaries.[34]

The weighted sample from SLID micro data show that in the year 2000, wages and salaries of 698 men were in the range $3,590 to $4,200 while about 2,000 women earned their wages in this range. Assuming all else constant, these 2,000 women could become taxpayers in the year 2003 if a program aimed at removing gender wage

[34] This is calculated as $4200 divided by 1.17.

discrimination were in place.[35]

Conclusions

The major conclusions of the analysis presented in this chapter are summarized as follows:

1. Since the Canadian tax system is progressive in nature, it was found necessary to first estimate the extent of wage discrimination at different educational levels: less than high school, post high school but no university degree, and university degree. The least level of education corresponds to low paying jobs while the university degree usually corresponds to middle level to high paying jobs. It was found that the extent of wage discrimination against women with less than high school education is the highest - women earn about 23 percent lower than men at this educational level. This wage disadvantage reduces to 15 percent if a woman acquires university degree.

2. Removal of discrimination is expected to raise women's wages which in turn could cause their tax payments to rise. Since SLID data allow assessment of personal income tax, a wage elasticity of income tax was computed separately for each educational level using regression analysis. It was found that a one-percent rise in wages can result in about two percent rise in taxes, overall. The elasticity values are slightly higher at lower educational level.

3. Combining the magnitudes of wage discrimination and of tax elasticity at different educational levels, the percentage increases in personal income tax were estimated. These increases would occur if a program aimed at removing wage discrimination were to be introduced in New Brunswick. Overall, such a program is expected to result in about 11 percent rise in personal income tax (federal and provincial combined). This overall rise emulates the rise that would occur for those who have acquired a post-secondary education but do not possess a university degree. This result is observed because such workers are majority in the

[35] This is a rough calculation that assumes that these 2,000 women did not pay taxes only because of low wages and salaries.

sample, about 72 percent. For those with lower and higher educational levels, this rise will be lower (7.8 and 7.4 percent, respectively).

4. Due to the 11 percent overall rise in federal and provincial income tax receipts, the government of New Brunswick is expected to gain about $105 million in personal income tax revenues only. Total tax receipts for the province will rise by about $226 million. The corresponding figures for the Canadian government are $178 million and $383 million, respectively.

5. Rough estimates indicate that a government program aimed at removing wage discrimination against women can also result in 2,000 new tax-paying residents in New Brunswick.

Chapter 5

Effect of Removal of Wage Discrimination on Health Care Costs in New Brunswick

In the determination of health status, several factors play important roles. Most commonly listed in the population health literature are socio-economic determinants like income, employment, and education; health care inputs; lifestyle; environment; and human biology (Folland, Goodman, and Stano, 2002; Colman 2002).

The demand for health care inputs such as physician care, hospital care, etc depends upon price, income, time price, and coinsurance rates, as well as on health status. One would expect that as income rises, demand for health care inputs would rise. However, some health care inputs like hospital and physician services are publicly provided in Canada. Therefore one would expect demand for such services to be independent of income. In this situation, one would expect that income would affect health status, not only as an independent determinant of health status as abundant evidence now indicates, but also through its effect on a person's lifestyle. This is because higher income can help an individual produce better health by engaging in activities like regular exercise and good nutrition that improve health. In turn, this could lead the demand for health care inputs to be lower for higher income groups than for lower income groups.

A recent study conducted for Nova Scotia by Kephart, Thomas and MacLean (1998) has shown that persons belonging to lower income group (bottom 20 percent) use

43% more physician services than upper middle to higher income groups (top 60 percent), those in the lower-middle income group use 33% more and those in middle income group use 11 percent more. Another study by Colman (2002) also showed that the incidence of chronic disease among Nova Scotians declines with increased income. These findings are consistent with the health determinants literature that suggests that higher incomes improve health and should lead to savings in health care costs through diminished demand for physician, hospital, and other health care services and resources.

To calculate potential savings in health care costs resulting from the increase in female wages that would occur under an anti-discrimination pay equity program, we assume the distribution of physician per capita costs according to income levels to be the same in New Brunswick as that found for Nova Scotia by Kephart, et al. According to Canadian Institute for Health Information (CIHI, 2004; Table D.1.4.3), physician costs in New Brunswick were $357 million in 2003. The same source also indicates that these physician costs were 12.8 percent of total health care expenditures in the province, and 34.1 percent of total hospital expenditures (CIHI, 2004; Table D.1.4.2).

The present sudy also assumes that differential use of physician services by income level is proportional to consumption of hospital and other health care services. There is strong evidence in the literature to support this assumption, such as a Statistics Canada study on use of hospital services according to income group, which found that low-income women over the age of 40 are 92% more likely to be hospitalized than high-income women (Colman 2002). Nevertheless, because no direct evidence on use of health care services by income group has yet been assembled for New Brunswick, we present

the following results as illustrative extrapolations from the existing literature rather than as definitive data for the Province of New Brunswick. Clearly, further research in this important area is required at the provincial level to establish these results more directly and definitively.

Using the above information from Kephart et al. (1998), however, we may estimate likely physician costs by income groups in New Brunswick to be roughly as presented in Table 5.1:[36]

Table 5.1: Estimated Distribution of Physicians Costs By Income Groups, New Brunswick, 2003.

Income group	Physicians Cost
Lower (20 percent):	$104.83 million
Lower middle (20 to 40 percent):	$97.50 million
Middle (40-60 percent):	$81.40 million
Upper middle + (top 60 percent):	$73.31 million
Total physician costs in NB (from CIHI)	$357 million

Source: Calculation by author based on Canadian Institute of Health Information (2004) and Kephart, Thomas, and MacLean (1998) estimates of the income distribution of physician costs in Nova Scotia..

Table 5.2 provides the income distribution of pre-tax income in New Brunswick based on the SLID micro-data.

[36] The income groups are defined according to normal convention and may differ from those used by Kephart, et al whose groupings, based on Statistics Canada definitions, account for income and demographic information.

Table 5.2: Income Distribution in New Brunswick, 2000.

Income group	Income cut-off	Frequency
Lower (bottom 20 percent):	$ 16,000	55,650
Lower Middle (20 to 40 percent):	$ 24,275	55,650
Middle (40 to 60 percent	$ 33,000	55,650
Upper middle + (top 60 percent):	$ 260,000	55,650

Source: SLID (2000), weighted sample.

The above two tables provide data for Table 5.3 which indicates the estimated distribution of per capita physician cost by income groups in New Brunswick.

Table 5.3: Distribution of Per Capita Physician Costs by Income Groups, New Brunswick, 2003.

Income group	Cost per capita
Lower (bottom 20 percent)	$ 1,884
Lower middle (20-40 percent)	$ 1,752
Middle (40-60 percent)	$ 1,463
Upper middle plus (top 60 percent)	$ 1,317

Source: Computations by author based on Tables 5.1 and 5.2.

Table 5.3 results indicate that the highest income group accounts for the lowest share of total physician costs on per capita basis, and the poorest group accounts for the highest share.

As noted above, a partial explanation for these results is likely that the poorest section of society demands more health services (on per capita basis) both because of the stresses of low income per se, and because this sector cannot afford to live a healthy lifestyle[37]

On the other hand, the upper income segment of the society demands less health care because of 1) better health status possible due to better affordability of healthy lifestyle and 2) the age distribution of those in the middle to high income group; most tend to be 25-64 years of age which correspond to the healthiest and most productive years in one's life

It was shown earlier that removal of wage discrimination against women would result in an *overall* wage increase of 17 percent for women. We assume that this proportionate wage increases will cause identical proportionate increases in total income. This means that the removal of wage discrimination would cause some women in each income group to move to the next higher income group. Table 5.3 presents the number of

[37] Health consciousness is also related to education as exhibited in the health status and lifestyle behaviours of individuals at different education levels. Education in turn is highly correlated with income.

women who would move up into the next income bracket due to removal of wage discrimination.

Table 5.4: Number of women who would move to the next income group when their wages rise by 17 percent under the anti-discrimination program

Income Group	Those earning	Frequency
Lower	$13,675 to $16,000	9,438
Lower-Middle	$20,748 to $24,275	16,259
Middle	$28,205 to $33,000	11,413

Source: SLID (2000).

The above Table shows that removal of wage discrimination would help 9,438 women to move up from lower income to lower-middle income group; 16,259 women to move up from lower-middle income group to middle income group and 11,413 women to move up from middle to upper middle and higher income group.

Based on Tables 5.3 and 5.4, we conclude that 9,438 women will save about $1.25 million in public physician cost, 16259 women will save about $4.7 million, and 11,413 women will save about 1.7 million resulting in total savings of about $7.65 million.

Now, given that the physician costs are about 37.5 percent of hospital costs, the savings in hospital costs could amount to about $20 million.

Finally, physician costs are also about 12.8 percent of total health care expenditure in New Brunswick. This means that savings in total health care costs of about $60 million could be realized under an anti-wage discrimination program. In other words, based on evidence of excess use of health care services by lower income groups, it is possible that total health care costs in New Brunswick could be reduced by 2 percent due to the reduced demands on health care services that would likely result from elimination of gender-based wage discrimination in New Brunswick. Table 5.5 summarizes the savings in health care costs and their components.

Table 5.5: Potential savings in health care costs resulting from resulting from removal of gender wage discrimination in New Brunswick, 2003.

Physician Costs	$7.65 million
Hospital costs	$20 million
Overall savings in health care costs	$ 60 million

Source: Computations by author as described in text. The overall savings of health care costs include savings of costs of the following items: physicians, hospitals, other institutions, other professionals, drugs, capital, public health and administration, and other health spending.

In conclusion, modest savings in health care costs may be expected to result from an anti-wage discrimination program in New Brunswick. In fact, as will be noted in chapter 7, the Province of New Brunswick incurred a deficit of about $110 million in 2003 in its budget. Thus, the above noted savings in health care costs

represent more than half of the province's budget deficit.

Chapter 6

Removal of Wage Discrimination and the Payment of Personal Government Transfers in New Brunswick

In this chapter, an assessment will be made of the effect of removing the discriminatory component of the gender wage differential on government transfer payments to families and individuals in the Province of New Brunswick.

The main objective of many government transfer programs is to help alleviate potential poverty, financial hardship, and income inequality. The eligibility criteria for most components of government transfers depend upon earnings and the demographic composition of households. Simon and Akbari (1996) have shown that both in Canada and in the United States, the structure of a family is an important determinant of the transfer payments received by that family

Method of analysis and discussion of results

The method of computing changes in government transfer payments resulting from an anti-wage-discrimination program is the same as that used in computing changes in health care costs in the previous chapter. Average receipts of personal transfers by women in lower, lower middle and upper middle and higher income groups are obtained

first. These averages are then used to compute changes in transfer payments when women in various income groups move to next higher income brackets when discrimination is eliminated by legislation.

Table 6.1 reports the average receipts of personal transfers by women in lower, lower-middle, middle and upper middle to higher income groups.

Table 6.1: Income distribution of personal transfers received by women in New Brunswick, 2000 ($).

	Lower income group (under $16,000)	Lower middle income group (16,001- 24275)	Middle income group (24276-33000)	Upper middle + Group (33000 +)
TOTAL	**1,870**	**2,281**	**1,596**	**753**
Child benefits	506	695	471	214
CPP / QPP benefits	32	124	107	91
EI benefits	1155	1058	921	315
Social Assistance	73	124	1	5
GST / HST credit	104	162	94	15
Workers' compensation	0	118	2	113

Source: SLID (2000) external personal file, micro-data.

It was reported in the previous chapter that an anti-wage-discrimination program in New Brunswick would cause 9438 women to move up from lower to lower middle income group, 16,259 women to move up from lower middle to middle income group, and 11,413 women to move up from middle to upper middle and higher income group.. Since average receipts of transfers vary by income group, changes in the receipts of transfer payments are expected under the anti-wage discrimination program. The changes are reported in Table 6.2.

Table 6.2: Estimated changes in receipts of government transfers by women, New Brunswick, 2000

	When 9438 women move up from lower to lower middle income group		When 16259 women move up from lower middle to middle income group		When 11,413 women move up from middle to upper middle + group		TOTAL ($ million)
	Per capita ($)	Total ($ million)	Per capita ($)	Total ($million)	Per capita ($)	Total ($ million)	
TOTAL	**411**	**3.9**	**-685**	**-11.1**	**--843**	**-9.6**	**-16.8**
Child benefits	189	1.8	-224	-3.6	-257	-2.9	**-4.7**
CPP/QPP benefits	92	0.9	-17	-0.3	-16	-0.2	**-0.4**
EI benefits	-97	-0.9	-137	-2.2	-606	-6.9	**-10.0**
Social Assistance	51	0.5	-123	-2.0	4	0.05	**-1,4**
GST / HST credit	58	0.5	-68	-1.1	-79	-0.9	**-1.5**
Workers' compensation	118	1.11	-116	-1.9	111	1.3	**0.5**

Source: Computations by author based on Tables 5.4 and 6.1.The per capita changes are differences in Table 6.1 values for two adjacent income groups. Totals may not add up due to some rounding.

The reason for a rise in most of the transfer payment components for those moving from lower to lower middle income group could be the age distribution in the two groups. Most persons in the lower income group tend to be very young individuals or full-time students with low income who are not eligible for the transfer payments. The consistent drop in the EI benefits with rise in income could be due to shorter duration of unemployment experienced by those at higher income levels and also due to larger work disruptions at lower income levels.

Since New Brunswick data for 2003 transfer payments were not available at the time of this analysis, a growth rate was calculated based on published data for 1999 and 2000 and applied to the totals reported in the above table. Results are reported in Table 6.3.

Table 6.3: Estimated changes in receipts of government transfers by women, New Brunswick, 2003.

	Value in 2003 ($ million)
TOTAL	**-19.0**
Child benefits	**-5.40**
CPP / QPP benefits	**-0.4**
EI benefits	**-11.3**
Social Assistance	**-1.6**
GST / HST credit	**-1.7**
Workers' compensation	**0.6**

Source: Computations by author applying growth rates to the last column of table 6.2. Totals do not add up due to rounding of some numbers in Table 6.2. .[38]

A major conclusion drawn from the above table is that an anti-discrimination pay equity program in New Brunswick would have resulted in a small saving of about 19.0 million in government transfer payment made to individuals in that province This translates into a saving of about 0.5 percent of total transfers in New Brunswick.[39]

The relatively small impact of wage increases on receipts of transfer payments other than EI benefits could be due to the fact that the demographic composition of the population plays a larger role in determining the value of those transfer receipts than a rise in wages.

[38] Statistics Canada, "CANSIM Table 384-0009 - Government transfer payments to persons, provincial economic accounts, annual (Dollars)" provides a time series of government transfer payments data up to the year 2001. A simple growth rate was computed for the period 2000-01 and applied to obtain the 2003 data reported in Table 6.3.

[39] Based on the source listed in the above footnote, 2003 total transfer payments were estimated to be $3,724.74 million (showing abut 13 percent rise from their value in 2001).

Chapter 7

Conclusions

Blau and Kahn (2000) found that in the 1990s Canada had the widest gender wage gap among nine advanced industrialized nations in the western world. A national study conducted at Statistics Canada (Drolett, 1999) that used econometric analysis to analyze the causes of the gender wage gap found that Canadian women earn about 11 percent lower hourly wage than their male counterparts due to discrimination – that is, for reasons that cannot be explained by any demographic, employment, or productivity-related characteristics.

The present study used econometric analysis to obtain estimates of the gender wage gap in New Brunswick that can be attributed to discrimination against women in the labour market. Overall, women in the Province of New Brunswick are found to earn 21 percent lower hourly wages than men. The components of this wage gap include 4 percentage points due to lower productivity-related characteristics, such as work experience, job tenure, industry of employment, occupation, firm size, and place of residence; and 17 percent due to discrimination (i.e. that cannot be explained by demographic or productivity-related characteristics). In other words, due to gender-based labour market discrimination, New Brunswick women earn 17 percent lower wages than men. For Canada as a whole, this percentage was found by a Statistics Canada study to be about 11 percent.

An implication of the above results is that if a pay equity program successfully removed gender-based wage discrimination in the province, women's wages could rise by 17 percent. This increase in wages has the potential for benefits to the public treasury. This study assessed the impact of the removal of gender wage discrimination on government tax revenues and on two major public services,– government transfers made to individuals and health care costs. Impacts on major components of these two services were also assessed. The overall results can be summarized as follows:

Table 7.1 Public treasury effects of an anti-wage-discrimination program in New Brunswick, 2003.

Component of Public Treasury	Value ($ million)
Tax increase	609.0
Savings in personal transfers	19.0
Savings in health care costs	60.0
Total benefit to the treasury	**688.0**

Source: Results obtained in chapters 4 to 6. The tax increase is calculated for federal and provincial governments ($383 million and $226 million, respectively)

As shown in Table 7.1, the positive public treasury effect of removal of gender discrimination in New Brunswick will be about $688.0 million for federal and provincial governments. Out of this total, the province of New Brunswick will enjoy a benefit of about $305 million .[40]

[40] This is calculated as the increase in provincial taxes of about $226 million, savings in personal transfer of $19 million and savings in health care cost of about $60 million.

The proposed anti-discriminatory program would result in an increase in the employers' payroll costs, i.e., an increase in employers' wage bill, by about 17 percent. This increase will be about $517 million.[41] Hence the overall gain of $688 million to public treasury would have been more than enough to subsidize the employers for their higher payroll cost. In other words, the additional taxes collected by governments as a result of higher female wages as well as the resultant savings in health care and transfer payment costs could be returned to employers in the form of reduced taxes in direct proportion to their increased payroll costs. Such a revenue-neutral solution would make the proposition more attractive to employers and help maintain competitiveness. The amount leftover after subsidizing the employers' cost could be used for other purposes such as paying off the provincial debt, paying for social programs, etc.

One additional public treasury benefit that we didn't consider in this study is the Mandatory Employer-Related Costs (MERC), or simply the employer payroll taxes, . like Employment Insurance premium, Canada Pension Plan Premium, and Workers' Compensation Board payments. For the purposes of this study, it is assumed that anti-discrimination legislation would be accompanied by a proportionate downward adjustment in MERC so that total MERC receipts by government would not change as a result of higher female wages.

[41] This amount has been calculated, using SLID microdata, for women in the age group 18-64 who were paid employees and were not full time students. These women numbered 126,618, based on weighted sample. Their average annual wage and salaries were $24,000.

Finally, this study has shown combined revenues for both federal and New Brunswick governments from an anti-discrimination program that will exceed the additional payroll cost to the employers in that province. Hence, a revenue neutral program aimed at removing gender discrimination in the province would require federal and provincial cooperation. .

Appendix A

LIST OF REGRESSION VARIABLES AND THEIR DEFINITIONS

The econometric model used in the present study is based on a human capital model that is now standard in the labour economics literature.

DEPENDENT VARIABLE

Logarithm of wage

Composite hourly wage earned for all paid-worker jobs during the year is a calculated variable on the SLID file. Its calculation is based on the implicit hourly wages for all paid-worker jobs, weighted using total hours paid for each. If there is a problem with the earnings data from the labour interview, the variable may be imputed using annual wages and salaries and total hours paid. This variable is used in logarithmic form to account for the problem of heteroscedasticity in regression.
(Based on SLID variable positioned: 102).

LIST OF INDEPENDENT VARIABLES

1. Gender = 0 if male
   = 1 if female
   (Based on variable on SLID Positioned: 40).

2. Experience = Number of years of work experience (full-year full-time equivalent). Definition includes all work (part-time and full-time) since first starting to work full-time. A value of zero is given for people with less than a year of experience and for those who never worked full-time. (Position on SLID: 109).

3. Yrs of schooling = Number of years of schooling completed by person (full-time equivalents).
   (Position on SLID: 473).

4. Job tenure = Duration of job up to the end of current reference year, expressed in months.
   (Position on SLID: 111).

5. Married = 1 if married

= 0 if Common-law, separated, divorced, widowed and single (never married)
(Based on variable on SLID Positioned: 41).

6. Part-time = 1 if work is part-time
= 0 if work is full-time
(Based on variable on SLID positioned: 116).

7. Firm size < 20 employees = 1 if number of employees at workplace is below 20.
= 0 otherwise
(Based on variable on SLID positioned: 149).

8. CBA/Union = 1 if member of a union and covered by a collective bargaining agreement.
= 0 otherwise
(Based on variable on SLID positioned: 142).

9. Urban (size < 29999) = 1 if adjusted size of area of residence is less than or equal to 29999 or rural
= 0 otherwise
(Based on variable on SLID positioned: 49).

Industry of employment variables
(Based on variable on SLID positioned: 144)

10. Utilities / Construction = 1 if industry is utilities or construction (codes: 03-04)
= 0 otherwise.

11. Manufacturing = 1 if industry is manufacturing (code: 5)
= 0 otherwise.

12. Service = 1 if industry is trade; transportation and warehousing; finance, insurance, real estate and leasing; professional, scientific and technical services; management, administrative and other support; educational services; health care and social assistance; information, culture and recreation; accommodation and food services; other services (codes: 6 –15)
= 0 otherwise.

13. Public Admin = 1 if industry is Public Administration (code: 16)
= 0 otherwise
Excluded group comprises agriculture; forestry, fishing, mining oil and gas (codes: 01 –02)

Variables for Occupations
(Based on variable on SLID positioned: 134)

14. Managerial / Professional = 1 if occupation is: senior management; other management; professional occupations in business and finance; financial, secretarial and administrative occupations; professional occupations in health, nurse supervisors and registered nurses; technical, assisting and related occupations in health; teachers and professors (codes: 1-4, 7-8, 10).
= 0 otherwise.

15. Science / Govt / Religion = 1 if occupation is in: natural and applied science and related occupations; social science, government service and religion.
= 0 otherwise.

16. Clerical = 1 if occupation is clerical, including supervisors (code: 05).
= 0 otherwise.

17. Service = 1 if occupation is in: arts, culture, recreation and sport; wholesale, technical, insurance, real estate specialists, and retail, wholesale and grain buyers; retail salesperson, sales clerk, cashier, retail trade supervisor; chefs and cooks, occupations in food an beverage services; including supervisors; protective services; childcare and home support; sales and service n.e.c., including travel and accommodation, attendant in recreation and sport as well as supervisors; contractor and supervisor in trade and transportation. (codes: 11-18).
= 0 otherwise.

18. Construction / Trade / Transportation = 1 if the occupation is construction trades; other trades occupations; transport and equipment operators; trade helpers, construction, and transportation labourers and related occupations.
= 0 otherwise.

Excluded group comprises occupations unique to primary industry; machine operators and assemblers in manufacturing, including supervisors; and labourer in processing, manufacturing and utilities (codes: 23-25).

Appendix B

ECONOMETRIC ANALYSIS OF WAGE DIFFERENTIAL AND ITS DECOMPOSITION

ESTIMATION OF WAGE MODEL

Both female and male observations are used to estimate the following regression:

(1)

$$\ln W_i = \alpha_m + \alpha_f \text{ female} + \beta_m X_i + \beta_f X_i \text{ female} + u_i$$

where w is the hourly wage for individual i; α is the intercept term; X is a vector of human capital and other wage-determining characteristics; β are a vector of estimated regression coefficients showing the return of each characteristic; m denotes males and f denotes females; female = 1 if individual is a female and 0 otherwise.

The coefficient α_f attached to the dummy variable female is the *differential intercept coefficient*, which shows by how much the value of the intercept term for women differs from that for men.

The coefficient β_f is the *differential slope coefficient*, which shows by how much the slope coefficient of men's wage equation differs from the slope coefficient of women's wage equation.

Assuming that $E(u_i) = 0$, from equation (1) individual regressions for men and women may be derived:

(2)

Men

$$E(Yi \mid \text{female} = 0, X_{m)} = \alpha_m + \beta_m X_m$$

(3)

Women

$$E(Yi \mid \text{female} = 1, X_{fi)} = \alpha_m + \alpha_f + (\beta m + \beta f) X_{fi}$$

Simple t tests can be used to test a hypothesis on an *individual* coefficient. For instance, a t test can be used to test the hypothesis whether the differential intercept term is significantly different from the male intercept term. For differential slope coefficients, the t test can tell us whether the female returns to a characteristic are significantly different from the male returns.[42]

[42] An absolute value of t that exceeds 2 suggests that the hypothesis that the coefficient of the corresponding variable is zero can be rejected with 95 percent confidence and one can conclude that this variable has an effect on the dependent variable.

The advantage of this approach is that it allows us to pinpoint the source(s) of the difference in male and female wage equations – for instance, differences due to intercept only (parallel regressions), slope (concurrent regressions), or both slope and intercept (dissimilar regressions).

An F test is used to test a hypothesis on a *set* of coefficients. That is, the F test is used to test whether a set of slope coefficients is zero simultaneously. For instance, suppose we want to test whether all the female differential slope coefficients are equal to zero simultaneously. The t test may tell us that an individual coefficient is not significantly different from zero but it does not mean that ALL slope coefficients are not significantly different from zero. The latter hypothesis can be tested using the F-test.

DECOMPOSITION OF WAGE DIFFERENTIAL

The decomposition of the gender wage differential into "explained" and "unexplained" components is based on the "residual method" attributable to Oxaca (1973).

The dependent variable in all regressions is the log of hourly wage rates. Each coefficient is the percentage change in hourly wage rates associated with a one-unit change in each explanatory variable.

Using equations 2 and 3, it can be shown that the average wage differential between men and women can be decomposed into two components:

$$\overline{W}m - \overline{W}f = (\overline{X}m - \overline{X}f)\,\hat{B}m + (\hat{B}m - \hat{B}f)\,\overline{X}f$$

Where $(\overline{X}m - \overline{X}f)\,\hat{B}m$ is the difference in the wage-determining characteristics evaluated at the male pay structure (explained component) and $(\hat{B}m - \hat{B}f)\,\overline{X}f$ is the difference in the returns to these characteristics as well as to differences in the constant term (unexplained component).

In the present paper, the coefficient of each interaction variable measures: $(\beta_m - \beta_f)$.

APPENDIX C

This study is based mainly on micro-data obtained from the 2000 Survey of Labour and Income Dynamics (SLID). The SLID also collected data on provincial and federal income taxes paid by individuals and families. However, data for later years are not yet available. Since several significant changes in New Brunswick tax laws were made after 2000, it was necessary for the present study to incorporate those changes into personal income tax calculations.

For the 2002 taxation year, the New Brunswick Low-Income Tax Reduction was enhanced to ensure that all single tax filers with incomes up to $11,000 and families earning up to $18,000 were no longer subject to provincial income tax. Commencing in the 2003 taxation year, the New Brunswick Low-Income Tax Reduction was further enhanced so that all single tax filers with incomes up to $12,500 and families earning up to $20,000 are no longer subject to provincial income tax. Eligible low-income families with dependent children may also receive the New Brunswick Child Tax Benefit and the New Brunswick Working Income Supplement, depending upon their income level.

The resulting changes in New Brunswick personal income tax by different income groups are reported in Tables A1 and A2.

To incorporate the effects of the above changes as recorded in Tables 6 and 7, the provincial income tax data included in the SLID were adjusted. In discussions with the

New Brunswick Department of Finance, the author confirmed that the taxable income and total income are similar.[43]

To calculate tax adjustments, the SLID (2000) external cross sectional person file was first merged with the census family file using the census family ID for respondents provided in the data files. After this, the author wrote an SPSS syntax to calculate the 2003 provincial income tax paid by each individual after adjusting the 2000 tax. The tax adjustment for single taxpayers is based on Table C1. However, since information on adjustments required for multiple earner families and for those with children are not available, the data obtained for "one earner family with no children", as reported in Table C2, were assumed to apply to all families. The direction of the bias in multiple earner families and in families with children is not known, however, the author does not expect the bias to be significant.

[43] The difference, according to the New Brunswick Department of Finance, could arise due to RRSP contributions.

TableC.

1

New Brunswick Personal Income Tax
Savings For 2004 Compared to 1999
(For Single Individual with Earned Income)

Taxable Income	Provincial Tax							
	1999	2000	2001	2002	2003	2004	Tax Change (2004 - 1999)	Percentage Change (2004 vs. 1999)
$10,000	$258	$226	$0	$0	$0	$0	-$258	-100.00%
$12,500	$502	$459	$293	$152	$0	$0	-$502	-100.00%
$15,000	$747	$692	$644	$503	$281	$282	-$465	-62.20%
$20,000	$1,236	$1,158	$1,106	$1,079	$981	$983	-$253	-20.48%
$25,000	$1,715	$1,623	$1,559	$1,530	$1,515	$1,518	-$197	-11.47%
$30,000	$2,216	$2,110	$2,011	$1,981	$1,965	$1,969	-$247	-11.16%
$35,000	$2,965	$2,839	$2,681	$2,602	$2,560	$2,564	-$401	-13.52%
$40,000	$3,727	$3,580	$3,400	$3,316	$3,269	$3,273	-$454	-12.17%
$45,000	$4,507	$4,341	$4,141	$4,057	$4,010	$4,012	-$495	-10.98%
$50,000	$5,287	$5,101	$4,882	$4,798	$4,751	$4,753	-$534	-10.10%
$55,000	$6,067	$5,862	$5,623	$5,539	$5,492	$5,494	-$573	-9.44%
$60,000	$6,862	$6,637	$6,364	$6,280	$6,233	$6,235	-$627	-9.14%
$65,000	$7,732	$7,485	$7,164	$7,049	$6,985	$6,987	-$745	-9.64%
$70,000	$8,602	$8,333	$7,990	$7,875	$7,811	$7,813	-$789	-9.18%
$75,000	$9,472	$9,181	$8,816	$8,701	$8,637	$8,639	-$833	-8.80%
$100,000	$13,847	$13,421	$12,946	$12,831	$12,767	$12,769	-$1,078	-7.79%

Assumptions: Taxpayer is assumed to claim the personal amount, EI premium and CPP contributions.
The slight difference between the 2003 and 2004 tax figures is caused by the reduction of EI premium.
Results may not add due to rounding.

Source: http://www.gnb.ca/0162/tax/singleearner.gif (Dated: 3-July-04).

Table C.2

New Brunswick Personal Income Tax Savings For 2004 Compared to 1999

(For One-Earner Family with No Children)

Taxable Income	Provincial Tax							
	1999	2000	2001	2002	2003	2004	Tax Change (2004 - 1999)	Percentage Change (2004 vs. 1999)
$10,000	$0	$0	$0	$0	$0	$0	$0	0.00%
$12,000	$0	$0	$0	$0	$0	$0	$0	0.00%
$15,000	$124	$82	$0	$0	$0	$0	-$124	-100.00%
$20,000	$613	$547	$477	$250	$0	$0	-$613	-100.00%
$25,000	$1,102	$1,013	$949	$903	$583	$586	-$516	-46.85%
$30,000	$1,614	$1,500	$1,402	$1,353	$1,283	$1,286	-$328	-20.31%
$35,000	$2,373	$2,229	$2,072	$1,975	$1,923	$1,926	-$447	-18.82%
$40,000	$3,143	$2,970	$2,791	$2,688	$2,632	$2,636	-$507	-16.14%
$45,000	$3,923	$3,731	$3,532	$3,429	$3,373	$3,374	-$549	-13.98%
$50,000	$4,703	$4,491	$4,273	$4,170	$4,114	$4,115	-$588	-12.49%
$55,000	$5,483	$5,252	$5,014	$4,911	$4,855	$4,856	-$627	-11.43%
$60,000	$6,278	$6,027	$5,755	$5,652	$5,596	$5,597	-$681	-10.84%
$65,000	$7,148	$6,875	$6,555	$6,421	$6,348	$6,349	-$799	-11.18%
$70,000	$8,018	$7,723	$7,381	$7,247	$7,174	$7,175	-$843	-10.51%
$75,000	$8,888	$8,571	$8,207	$8,073	$8,000	$8,001	-$887	-9.98%
$100,000	$13,238	$12,811	$12,337	$12,203	$12,130	$12,131	-$1,107	-8.36%

Assumptions: Taxpayer is assumed to claim the personal amount, spousal amount, EI premium and CPP contributions.
The slight difference between the 2003 and 2004 tax figures is caused by the reduction of EI premium.
NB child tax benefit and working income supplement were not included in the above calculations.
Results may not add due to rounding.

Source: http://www.gnb.ca/0162/tax/oneearner.gif (Dated: 3-July-04)

Table C3: Consolidated federal, provincial, territorial and local government revenue and expenditure

	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
	$ millions				
Revenue	**414,170**	**446,959**	**436,240**	**442,638**	**459,091**
Own source revenue	414,170	446,959	436,240	442,638	459,091
Income taxes	178,423	191,144	188,091	178,857	188,126
Personal income taxes	138,443	143,116	144,735	140,411	144,535
Corporation income taxes	36,155	43,262	38,910	33,722	39,178
Taxes on payments to non-residents	3,499	4,312	4,150	4,377	4,168
Property and related taxes	40,255	41,063	41,734	42,527	43,794
General property taxes	33,193	33,345	34,379	35,422	37,042
Other property and related taxes	3,231	3,547	3,679	3,870	3,401
Consumption taxes	80,088	87,870	88,988	96,367	98,583
General sales taxes	51,323	55,523	56,077	60,145	61,564
Gasoline and motive fuel taxes	11,789	11,745	11,743	12,339	12,759
Alcoholic beverages and tobacco taxes	6,190	6,203	7,201	8,797	9,444
Customs duties	2,104	2,807	3,018	3,189	2,870
Other consumption taxes	1,121	1,205	1,288	1,883	1,808
Health insurance premiums	1,950	2,178	2,282	2,996	3,018
Contributions to social security plans	29,957	30,087	29,697	31,054	30,736
Other taxes	3,559	3,701	3,761	4,118	4,079
Natural resource taxes and licences	512	706	639	598	649
Motor vehicule	2,689	2,737	2,768	2,915	2,977

licences					
Sales of goods and services	32,217	34,689	34,690	35,855	36,729
Investment income	28,859	37,749	30,897	32,554	34,727
Other revenue from own sources	8,088	7,020	4,961	6,509	7,023
Note: Fiscal year ending March 31.					

Source: http://www.statcan.ca/english/Pgdb/govt01a.htm Dated: 3-July-04.

Table C4: Federal general government revenue and expenditure

	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
	$ millions				
Total revenue	**180,336**	**193,825**	**192,304**	**191,418**	**199,801**
Own source revenue	179,781	193,253	191,694	190,872	199,178
Income taxes	112,933	122,318	120,560	115,361	124,178
Consumption taxes	36,011	38,963	39,675	43,529	44,029
Other taxes	531	585	518	496	503
Contributions to social security plans	18,934	19,116	18,496	18,753	17,893
Sales of goods and services	4,264	4,472	5,028	5,061	4,882
Investment income	6,328	7,057	6,833	7,231	6,740
Other revenue from own sources	780	741	584	440	954
General purpose transfers	539	555	591	524	601
Specific purpose transfers	16	17	18	22	22
Note: Fiscal year ending March 31.					

Source: http://www.statcan.ca/english/Pgdb/govt02a.htm Dated: 3-July-04

Table C5: Consolidated provincial government, revenue and expenditures

	2000	2001	2002	2003	2004
	$ millions				
Total revenue	**216,086**	**238,130**	**229,785**	**235,032**	**247,470**
Own source revenue	183,274	203,757	194,273	197,811	204,437
Income taxes	65,490	68,826	67,531	63,496	63,948
Personal income taxes	53,006	53,933	53,300	51,404	52,229
Corporation income taxes	12,157	14,439	13,934	11,745	11,474
Consumption taxes	43,999	48,824	49,221	52,742	54,458
General sales tax	25,633	27,653	28,136	29,498	30,487
Alcoholic beverages and tobacco taxes	2,986	2,955	3,463	4,679	5,019
Gasoline and motive fuel taxes	7,003	6,937	6,985	7,466	7,641
Other consumption taxes	835	909	994	1,107	1,194
Property and related taxes	8,080	8,716	8,340	8,196	8,605
General property taxes	3,081	3,151	3,112	3,225	3,336
Other property and related taxes	1,168	1,394	1,552	1,737	1,919
Other taxes	13,291	14,058	13,831	14,808	15,225
Motor vehicle licences	2,689	2,737	2,768	2,915	2,977
Natural resource taxes and licences	405	610	634	596	649
Health and drug insurance premiums	1,950	2,178	2,282	2,996	3,018
Contributions to social security plans	7,341	7,496	7,743	8,330	8,776
Sales of goods and services	20,078	21,823	20,325	20,434	21,373
Investment income	20,447	28,465	21,895	22,783	25,476
Other revenue from own sources	2,598	3,370	3,105	4,025	3,558
Total expenditures	**213,952**	**225,645**	**238,595**	**244,984**	**257,987**
General government services	3,657	3,573	4,140	4,212	4,230
Protection of persons and property	7,763	8,167	8,647	8,817	9,030
Transportation and communication	9,486	8,552	8,758	9,433	9,782
Health	62,834	67,947	73,751	80,197	86,211
Social services	37,263	39,647	41,662	41,815	43,644
Education	49,533	51,608	55,559	55,455	58,546
Resource conservation and industrial development	8,752	8,922	9,984	11,205	11,420
Environment	1,681	1,401	1,528	1,548	1,649
Recreation and culture	1,975	2,235	2,241	2,391	2,537
Labour, employment and immigration	917	891	957	957	966
Housing	2,366	2,662	2,099	1,888	2,092
Regional planning and development	1,028	1,013	1,130	1,180	1,180
Research establishments	244	281	417	548	577
Debt charges	25,410	25,919	24,477	23,479	23,328
Other expenditures	1	1,382	1,662	665	1,549
Surplus (deficit)	**2,134**	**12,485**	**-8,811**	**-9,951**	**-10,516**
Note: Fiscal year ending March 31.					

Source: http://www.statcan.ca/english/Pgdb/govt55a.htm Dated: 3-July-04

Table C6: Consolidated revenue & expenditures, provinces & territories ($ million)

	2004				
	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick
Total revenue	**247,470**	**4,761**	**1,129**	**7,531**	**6,236**
Own source revenue	204,437	2,961	728	5,259	4,238
Income taxes	63,948	882	195	1,684	1,069
Personal income taxes	52,229	733	165	1,413	952
Corporation income taxes	11,474	143	30	270	111
Consumption taxes	54,458	1,057	276	1,756	1,352
General sales tax	30,487	625	171	985	798
Alcoholic beverages and tobacco taxes	5,019	141	38	162	97
Gasoline and motive fuel taxes	7,641	135	37	249	235
Other consumption taxes	1,194	..	..	..	..
Property and related taxes	8,605	7	51	80	365
General property taxes	3,336	1	49	..	305
Other property and related taxes	1,919	..	..	1	4
Other taxes	15,225	193	28	166	130
Motor vehicle licences	2,977	57	11	74	78
Natural resource taxes and licences	649	3	0	2	6
Health and drug insurance premiums	3,018	..	..	11	..
Contributions to social security plans	8,776	158	24	157	131
Sales of goods and services	21,373	427	111	921	490
Investment income	25,476	202	35	421	665
Other revenue from own sources	3,558	36	8	64	36
Total expenditures	**257,987**	**5,129**	**1,223**	**7,350**	**6,346**
General government services	4,230	92	55	61	94
Protection of persons and property	9,030	209	38	264	177
Transportation and communication	9,782	340	92	227	509
Health	86,211	1,663	355	2,546	2,019
Social services	43,644	606	122	832	662
Education	58,546	1,239	281	1,775	1,468
Resource conservation and industrial development	11,420	150	109	224	225
Environment	1,649	64	18	26	49
Recreation and culture	2,537	54	19	61	56
Labour, employment and immigration	966	10	5	13	35
Housing	2,092	48	6	80	61
Regional planning and development	1,180	22	7	39	31
Research establishments	577	..	..	1	..
Debt charges	23,328	587	114	1,154	860
Other expenditures	1,549	..	11	0	25
Surplus (deficit)	-10,516	-368	-94	181	-110
Note: Fiscal year ending March 31.					

Source: http://www.statcan.ca/english/Pgdb/govt56a.htm Dated: 3-July-04.

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