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ABSTRACT

Using contract-level data from the Canadian province of Ontario, we show that workers in predominately female bargaining units have more generous leave provisions but are less likely to have pension coverage than workers in similar predominantly male bargaining units. These differences persist when wages in the bargaining unit are controlled for. We explore the gender differences in pension coverage using a large cross-section of individual-level data and show that for women, lack of pension coverage is explained by gender gaps in wages and tenure which are themselves associated with marriage and child bearing. Finally, we assess the extent to which these findings are consistent with two alternative models of sex-segregation: Labor market discrimination, or a model in which segregation arises because women bear the chief responsibility for household production and tend to hold jobs which are compatible with that role.

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One of the most striking facts about the labor force is that men and women tend to be separated into jobs in which they work closely only with persons of their own sex. In order to achieve a gender-neutral distribution of persons across occupations, 60% of working women would have to change occupations (Bianchi and Rytina (1986), Fields and Wolff (1991)).[1] The gender gap in earnings is also well documented (Goldin (1991), (Smith and Ward (1989)). And the relationship between the wage gap and occupational segregation has been extensively investigated (Blau (1977), Treiman and Hartmann (1981), Groshen (1988)). But wages are now only part of a multi-faceted compensation package: Non-wage compensation accounts for between 30 and 40% of labor costs in western industrial countries (Hart et al., 1988).

Gender gaps in benefits coverage and their relationship to occupational segregation have received little research attention although their effects are potentially of great importance. For example, high poverty rates among elderly women have been linked to lack of pension coverage (Beller (1981), Galarneau, (1991)). And Keane and Moffitt (1991) argue that many female heads of family stay on welfare roles because they cannot find jobs with adequate health insurance.

In the first part of this paper, we use establishment-level data to investigate the extent to which benefits coverage varies with the percentage female in a job. Our work differs from previous efforts in several respects. First, we have information about a wide range of benefits as well as wages. Most previous

studies focus on a subset of benefits and do not control for wages, generally because of data limitations (Trzcinski (1991), Hersch and White-Means (1991), Leibowitz (1983). Secondly, we have information about the percentage female in the establishment itself, rather than an industry average (Woodbury, 1991). Hence we can control for industry differences in fringe benefit coverage and examine the effect of the percentage female per se. Finally, we investigate the extent to which gender gaps in benefits coverage differ in the public and private sectors.

We find that in the private sector, full-time workers in predominantly female jobs have less generous benefits packages and lower wages than workers in predominantly male jobs. When wages are controlled for, workers in female jobs are less likely to have pension coverage and more likely to have unpaid leave. In the public sector, workers in female jobs have lower wages, work fewer hours, and receive more paid and unpaid leave but are less likely to receive life insurance or pension coverage.

In the second part of the paper, gender differences in pension coverage are further explored using the Canadian Labor Market Activities Survey, a large cross-section of individual-level data. This work builds on previous research using the Current Population Survey (Even and MacPherson (1990), Hersch and White-Means (1991)) by controlling for wages and tenure in the models of pension coverage, by exploring the links between marriage and child-bearing and wages and tenure, and by investigating the extent to which gender gaps in pension coverage differ between the union and non-

union sectors.

I Establishment-Level Data

a) Description of the Data

The establishment-level data consist of 2,197 union contracts covering bargaining units in the Canadian province of Ontario. The contracts were collected from employers by the Ontario Ministry of Labor and represent full-time workers in bargaining units with over 200 employees. There are 1497 private sector contracts and 902 public sector contracts[2] with effective starting dates ranging from 1980 to 1990.[3]

The data include information about whether employees received a wide range of different benefits, entry-level wages for a "typical worker", the percent female in the bargaining unit, and bargaining unit characteristics such as employer size and the 3-digit SIC category.

In Table 1, the contracts are divided into those covering female, male, and integrated jobs. We define a female job as a bargaining unit in which at least 70% of the workers are female, and a male job as a bargaining unit in which at least 70% of the workers are male. The other jobs are considered integrated. The 70% figure is arbitrary, and was chosen because it is often used to define male and female jobs in comparable worth statutes (Gunderson, 1989).[4] Figures for public and private sector contracts are shown separately.

The first row of Table 1 shows the Duncan index of sex

segregation for each of the three groups (Duncan and Duncan, 1955). The Duncan index was developed to measure occupational segregation and is defined as:

$$\Sigma_i \text{ abs}\{ (\% \text{ male in job } i) - (\% \text{ female in job } i) \}/2.$$

It can be interpreted as the percentage of female workers who would have to change jobs in order to eliminate sex segregation. Given that the Duncan index is usually computed over 3-digit occupations rather than over bargaining units, it is remarkable how similar the values estimated for this sample are to the 60% figure cited above.[5] This result provides a justification for our identification of bargaining units with jobs. It is also interesting to note that the extent of sex segregation appears to be slightly greater in the public sector than in the private sector.

The next two rows confirm that most workers are in either male or female jobs, and show that female workers are concentrated in fewer bargaining units then the male workers. And the percent female in female jobs is less than the percent male in male jobs -- which indicates that women are less likely to enter male jobs than vice-versa.

Table 1 shows that workers in male jobs are paid more and work in bigger bargaining units within larger firms. And female jobs are much more likely to be in the public than the private sector. This difference is important in light of the fact that public sector jobs pay more and offer more generous benefits packages on average than private sector jobs.

Given the differences between male and female jobs, it is perhaps unsurprising that differences in benefits packages are apparent in the raw data. Definitions of all the benefits listed in Table 1 are given in Appendix Table 1. Table 1 shows that workers in female jobs are less likely to have private pension plans[6] and much more likely to be able to take unpaid leave in both the public and private sectors. The latter result can be contrasted with Leibowitz (1983), and Trzcinski (1991) who find that women are more likely to be able to take paid leave in the U.S.[7] The size of the pension gap is comparable to figures that have been reported in the U.S. by Beller (1981).

Gender differences in other benefits vary depending on whether the worker is in the private or public sector. Workers in female bargaining units in the public sector have more weeks of paid maternity leave (by law, women in Ontario get 17 weeks of unpaid maternity leave);[8] and are more likely to have paid disability leave and other kinds of paid leave than their male counterparts. They are also more likely to receive retirement benefits, major medical coverage, dental coverage, supplementary hospital insurance, life insurance, and supplementary life insurance. In the private sector, workers in female jobs are less likely to receive any of these benefits. Workers in female bargaining units in the public sector also work shorter hours than their male counterparts.[9]

Table 2 examines the ways in which employment and compensation in male and female jobs evolved over the sample period. The table

gives differences between averages computed over the 1986 to 1990 period and averages computed over the 1980 to 1984 period. The table shows that there was a decline in union employment in the private sector over the 80s which was concentrated in male jobs. In the public sector, average employment in male jobs and integrated jobs declined, while employment in female bargaining units increased. There was little change in the percentage female within any job category.

Average real wages declined, but they declined more slowly in female than in male jobs. There was little change in average annual hours or in most types of benefits coverage. The post war expansion in benefits coverage has been linked to expanding real wages and rising tax rates (Woodbury, 1991). Hence the general stagnation in the growth of benefits may be attributable to stagnant real wages and to the fact that taxes were indexed to inflation throughout the 1980s.[10]

The most striking exceptions to the pattern described above are dramatic increases in the generosity of paid maternity leave in the public sector: Workers in female jobs had an average of 4 weeks more maternity leave by the end of the period. These increases were accompanied by some reduction in the provision of paid sick leave. Workers in male bargaining units in the public sector were also 17% more likely to have unpaid leave provisions by the end of the decade.

In the private sector, all workers showed gains in the probability of pension coverage, with workers in female jobs

posting the largest gain at 18%.[11] Finally, workers in all sectors were more likely to have provisions for retirement benefits by the end of the 1980s.

In summary, Table 2 shows that during the 80s there was little increase in total compensation. However, in the private sector, female jobs became more attractive relative to male jobs without becoming any less segregated. It is less clear how the relative desirability of male and female public sector jobs changed, but it does seem that the number of jobs available to women in the public sector increased relative to the number of male jobs.

b) Estimation Results

In this section, we control for the characteristics of the job when comparing the fringe benefit packages of workers in male and female jobs. We estimate models which control for the percentage female in the bargaining unit, the employer's size and structure, union strength, industry, broad occupational group, year, city, and region. In addition, we estimate models which control for the average real wage of an entry-level worker over the life of the contract.[12]

In principal, we would like to examine the probability of benefit coverage holding total compensation constant. However, a limitation of our data is that values of the various benefits are not available. We constructed crude estimates of total compensation using aggregate information about the percentage of employee compensation spent on various fringes. Details about the

construction of this series are in a Data Appendix available from the authors on request. We found that the correlation between this series and the wage bill was .99. Since the construction of total compensation involves heroic assumptions while the wage is accurately measured, we prefer to include wages in the models estimated below.

A second problem is that the percentage female in the bargaining unit may be endogenously determined with the benefits package. However, as Table 2 suggests, there is very little variation over time in the percentage female in a given bargaining unit. Hence, we treat the percentage female as a pre-determined variable.

Employer size and structure are measured using employment in the bargaining unit, total firm employment, number of bargaining units in the firm, and whether or not the firm has bargaining units outside the province (i.e. was a national firm). Brown, Hamilton, and Medoff (1990) show that workers in larger firms typically receive more generous benefits packages as well as higher wages.

Union strength is measured using a dummy variable equal to one if there is a union shop provision. A second dummy variable is equal to one if part-time workers are specifically excluded from the contract. The exclusion on part-time workers may reflect a bargaining unit which is threatened by the allocation of union jobs to part-time workers. Greater union strength is typically associated with more generous benefits packages (Freeman (1981), Gustman and Steinmeier (1986)).

We control for five broad categories of occupations: production, professional, technical, office, and sales. Twenty-four industry dummies were defined using the 1970 3-digit SIC codes. Although it is clear that some segregation occurs along industry lines,[13] we have chosen to include broad industry controls so that we are comparing benefits packages of males and females in roughly comparable jobs. Including industry dummies also controls for any unexplained inter-industry benefits differentials that may exist analogous to inter-industry wage differentials.

Dummy variables equal to one are included if the bargaining unit is located in any of six major metropolitan areas, or in each of ten broader economic regions. Our inclusion of geographic variables is analogous to the inclusion of these variables in models of wage determination. We also include year dummies to control for the changes in the structure of compensation which were documented in Table 2.

Table 3 shows linear probability models for the probability of pension coverage. We show linear probability models because some of our benefit variables are continuous and some are dichotomous. Logits produced similar estimates for the dichotomous variables. Since wages are likely to be determined simultaneously with benefits packages and are in any case a noisy index of total compensation, we instrument them using the average annual percentage wage increase realized over the previous contract and unanticipated inflation over the life of the new contract as instruments.[14] Heckman and MaCurdy (1985) demonstrate that two-

stage least squares in a linear probability model produces consistent estimates of the parameters of interest. Tests of the overidentifying restriction indicate that it cannot be rejected at the 95% level of confidence in any of our models.

The estimates demonstrate that regardless of whether or not the wage is included, the probability of pension coverage declines significantly as the percentage female in the bargaining unit increases. In keeping with most previous studies the estimates also indicate that in the private sector, the probability of pension coverage rises with the wage.[15] Pension coverage is higher in union shops in the private sector and lower in all bargaining units that specifically exclude part-time workers.

We estimated models similar to those shown in Table 3 for each type of benefit. The coefficients on the percentage female in the bargaining unit from each regression are shown in Table 4. That is, every coefficient estimate in the table is from a separate regression.

The results in column 1 confirm what was shown in Table 1: In addition to lower wages, workers in private sector female jobs have benefits packages that are less generous in most respects than those of their male peers. The only benefit a worker in a female job is more likely to receive than a worker in a male job is unpaid leave.[16]

Columns 2 and 3 show that many of the gender gaps in the composition of benefits packages become statistically insignificant when the wage is controlled for. Controlling for the wage, workers

in private sector female jobs receive more paid holidays, are more likely to get unpaid leave, and are less likely to have pension coverage.

The public sector estimates indicate that workers in female jobs are more likely to receive both paid and unpaid leave than workers in male jobs. They also work fewer hours, are more likely to receive life supplementary hospital insurance, less likely to receive life insurance, and as in the private sector, they are less likely to have pension coverage.

The following example summarizes the results in Table 4. The benefits package that would be received by an 80% female bargaining unit is compared to one that would be received by an 80% male bargaining unit with a similar starting wage. The numbers are based on the two-stage least squares estimates in columns 3 and 6 of Table 4, so they compare benefits packages in male and female jobs with the same wage:

Comparison of Benefit Packages in Female Jobs Relative to Male Jobs

	Gains	Losses
Private Sector:	.5 day holiday.	6% less likely to receive pension.
	8% more likely to receive unpaid leave.	
Public Sector:	31.5 fewer hours per year.	7% less likely to receive life ins.
	16% more likely to receive paid leave.	7% less likely to pension.
	19% more likely to receive unpaid leave.	
	11% more likely to have supplemental hospital.	

While it is difficult to value these tradeoffs, it is apparent that in the private sector, only a worker who either did not expect to stay in a job long enough to be vested, or who placed a high value on the flexibility afforded by unpaid leave provisions would prefer a female job. It is also apparent that workers would prefer a female job in the public sector to a female job in the private sector at the same wage.

The relative generosity of benefits packages in female public sector jobs is interesting in light of the fact that women are over-represented in the public sector. Union behavior may contribute to this differential since public sector unions have taken the lead in pressing for clauses concerning "women's issues", although it is not clear whether this is a cause or an effect of the high concentration of women in public sector jobs (Kumar and

Acri, 1991).

II Individual-level data

c) Description of the data

The advantages of the establishment-level data set are that it includes information about a wide range of fringe benefits, and that it allows precise identification of male and female jobs. However, it is not possible to control for the characteristics of workers using these data. A second limitation is that only unionized firms are represented. Hence, as a complement to our analysis of the contract data, we analyze a cross section of individual-level data from Labour Canada's 1986 Labour Market Activities Survey (LMAS).

This survey was conducted in 1987 under the auspices of Employment and Immigration Canada. The purpose of the survey was to collect information about patterns of work and types of jobs held during 1986. Respondents were asked to report on up to 5 jobs held in 1986. We focus on workers between the ages of 20 and 64 who worked full-time, full-year on their primary job[17], and were not unemployed, on welfare, collecting Worker's Compensation, or in school in the previous year. Workers who reported wages of less than $1. or more than $75., and those with missing wages or tenure are also excluded. These exclusions leave us with 21,157 workers.

The LMAS allows us to control for such potentially important determinants of benefits coverage as an individual's own wage (rather than a bargaining-unit wide wage measure), tenure on the

job, age, marital status, number of children, and education.[18] It is likely to be particularly important to control for wages and tenure on the job because previous research has shown that the income elasticity of demand for benefits is positive (Woodbury, 1991), and vesting provisions may prevent low-tenure workers from obtaining pension coverage.

The LMAS contains a large sample of non-union workers, so that we can see whether the results obtained using the establishment-level data are specific to the union sector. We define union workers as those who are either union members or covered by a union contract. There are 4862 union workers and 9235 non-union workers in the private sector, which implies a unionization rate of 34%.

Public sector workers are identified using industry codes. In order to maintain comparability with the contract sample, we include utilities, education, and health and welfare in the public sector. There are 7060 public sector workers. Since eighty percent of these workers were unionized and many of the non-union workers are white collar workers effectively represented by professional organizations, we do not present separate analyses of union and non-union public sector workers.

Unfortunately, the only benefit which the LMAS has information about is pension coverage. Workers were asked whether or not they were covered by a pension. It is possible that some workers in firms with pension plans answered "no" to this question because they were not yet vested.

Means of the variables used in the analysis are shown in Table

5 for the private union, private non-union, and public sectors. Variables such as age and education were grouped by the LMAS into the categories shown. The table indicates that workers in the private non-union sector are paid less, have lower tenure, are less likely to work in establishments with over 500 workers, and are much less likely to have pension coverage then other workers. Female workers are under-represented in the private union sector, and most highly represented in the public sector. Workers with certificates of higher education and university degrees are also over-represented in the public sector.

d: Estimation Results

Table 6 shows estimated differences between female and male workers in the probability of pension coverage, wages and tenure. The estimates in the first row were obtained by estimating ordinary least squares models of pension coverage, wages, and tenure which included the demographic, educational, and firm size variables shown in Table 5.[19] The figures shown are the estimated coefficients on a dummy variable equal to one if the person was female. (The equations for pension coverage are shown in the odd numbered columns of Appendix Table 2.)

These estimates indicate that women are 8 to 9% less likely than men to have pension coverage in the private sector regardless of union status. Women were 4.7% less likely then men to have pension coverage in the public sector. The private sector results are similar to those reported by Even and MacPherson (1991) for the

U.S. in that the size of the pension gap in the raw data is little narrowed by controlling for personal demographic and educational characteristics.

In the rest of Table 6, we investigate the extent to which gender gaps in pension coverage, wages and tenure are associated with specific worker characteristics. These estimates are based on regressions for pension coverage, wages, and tenure which include the demographic, educational, and firm size variables shown in Table 5 as well as interactions of these variables with the female dummy. (The regressions are shown in the even numbered columns of Appendix Table 2[20] and in Appendix Table 3.)

The estimates indicate that in the private union sector, women without children are more likely to have pension coverage then men with comparable demographic, educational, and firm-size characteristics. Women with children are much less likely to have pension coverage, and the pension gap associated with child bearing appears to increase with education (although interactions of the female dummy with education are not jointly statistically significant in the pension equation).

In contrast, the gender gap in pension coverage in the private non-union sector is only weakly associated with marital status, number of children, or education. The strongest effect in the non-union sector is that women in large firms are less likely to have pension coverage then similar men.

In the public sector, even single, childless women are less likely to have pension coverage then comparable men. There is an

additional penalty associated with marriage and child bearing, but the pension gap is narrower for university educated women and women in large "firms".

The estimates for wages and tenure suggest that while gender gaps in wages and tenure are both associated with gaps in pension coverage, on the whole it is the gender gaps in tenure associated with child bearing rather than the gender gaps in wages that are related to increases in pension gaps. For example, in the private non-union sector where average tenure is low in any case, child bearing is associated with large increases in the wage gap, but with only small increases in pension gaps.

This conjecture is tested in Table 7, which shows OLS and TSLS models for pension coverage which include the wage, tenure, and tenure squared in addition to the demographic, educational, and firm size variables discussed above. The OLS estimates suggest that a $1. increase in wages would generally have a smaller effect on the probability of pension coverage then a one year increase in tenure. Both changes would represent increases of about 10% at the sample means. Including wages and tenure reduces the estimated gender gap in pension coverage substantially, reducing it to statistical insignificance in the public sector.

However, since pensions, wages, and tenure are jointly determined, the OLS estimates suffer from simultaneity bias. The TSLS estimates are computed using the interactions of the exogenous variables with the female dummy as instruments. That is, we assume that the interaction terms affect pension coverage only through

their effects on wages and tenure.

Although this is a strong assumption, Chi-squared tests of the implied over-identifying restrictions show that it cannot be rejected in the private sector. It is rejected in the public sector, but a similar model which added the interactions with firm size to the pension model produced similar results and was not rejected by the data.

The results indicate that correcting for endogeneity increases the coefficients on wages, tenure, and on the female dummy. The fact that the coefficient on wages is biased downwards in the OLS model suggests that there is a tradeoff between wages and pensions. Since wages and tenure are positively correlated, the coefficients on tenure are also biased downwards. And when wages and tenure are not properly controlled for, the female dummy proxies for the fact that female workers generally have lower wages and tenure than male workers, and that workers with lower wages and tenure are less likely to have pension coverage.

The TSLS results suggest that once the endogeneity of wages and tenure are controlled for, the female dummy has no statistically significant effect on the probability of pension coverage except in the private non-union sector where the effect is actually positive.

III Discussion and Conclusions

We document striking differences between the benefits packages of workers in predominantly male and predominantly female jobs.

Workers in female jobs are more likely to have leave provisions and less likely to have pension coverage than workers in male jobs, even when entry-level wages and other characteristics of the jobs are controlled for.

Our results raise the question of whether gender differences in benefits packages reflect the voluntary sorting of employees into jobs with wage-benefits packages that they find attractive, or labor market discrimination.[21] The voluntary sorting explanation of sex segregation on the job relies on differences in comparative advantages or preferences of men and women for household production. For example, Becker (1983) develops a model in which women have a comparative advantage in household production and bear primary responsibility for household chores.[22] According to Becker, women seek jobs with attributes consistent with this role.

If we assume that paid and unpaid leaves can be used as inputs into household production, then our results provide some support for a voluntary sorting model since female jobs are more likely to have these provisions. On the other hand, benefits such as paid vacations which might also be thought of as inputs into household production are if anything less common in female jobs.

A second implication of the voluntary sorting model is that women with the greatest commitment to household production will be most likely to trade off other benefits for benefits of use in household production. Consistent with this prediction, we find that gender gaps in pension coverage are greatest for women with children, and that single childless women are actually more likely

then similar men to have pension coverage in the private sector.

However, a model of voluntary sorting cannot explain the fact that women forego pension coverage rather than "household public goods" such as health insurance which could presumably be sacrificed at little cost if a spouse had coverage.[23] A partial explanation may be that pensions are worth less to women than they are to men: Lazear and Rosen (1987), Pesando et al. (1991), and Hersch and White-Means (1991) show that lower wages and a higher probability of turnover imply that the same pension promise is worth less to a woman than to a man.[24] It is also possible that in the U.S. where health insurance constitutes a much larger share of employer costs, one would see more evidence of the substitution of leave provisions for health insurance.[25]

Labor market discrimination is the other leading explanation of sex segregation on the job. Some authors contend that women are "crowded" into certain jobs and discouraged or prevented from taking others, with the result that wages and other conditions of work in women's jobs are depressed relative to wages and conditions in comparable jobs held by men (c.f. Blau (1977) and Bergmann (1974)).

Goldin (1991) documents employer policies which in the past excluded women from certain jobs, as well as the existence of "marriage bars" which prevented married women from holding certain jobs. The passage of the Pregnancy Discrimination Act in the U.S. (an amendment to Title VII of the 1964 Civil Rights Act) in 1978 suggests that in many cases marriage bars were replaced with what

were effectively "pregnancy bars".[26] Whether such barriers remain important determinants of segregation is controversial.[27] But our results suggest that loss of tenure associated with child-bearing is associated with the concentration of women in jobs without pension coverage.

We do find some evidence suggestive of discrimination in the private sector in that it seems unlikely that the possibility of taking unpaid leave could be valuable enough to compensate an average female worker for the loss of pension coverage. And women are strikingly under-represented in the high-wage, high-benefits union sector. Differential selection of women into these jobs and into the public sector appears to be an important topic for future research.

We also show that pension coverage in female private sector bargaining units increased during the 1980s while other aspects of the compensation package and employment remained constant. This pattern is inconsistent with the view that most women choose to take increases in compensation in the form of unpaid (or paid) leave provisions.

In summary, we find evidence consistent with both labor market discrimination and the voluntary sorting of women into jobs with characteristics compatible with household production. Our results suggest that irrespective of their source, the gender gaps in benefits coverage associated with the segregation of workers into male and female jobs are likely to have long lasting effects on the current generation of working women.

Table 1
Sample Averages in the Contract Data Set

	Private			Public		
Duncan Index	63.723			65.307		
	Female	Male	Integ.	Female	Male	Integ.
# Contracts	143	929	425	323	373	206
% Female	0.823	0.064	0.491	0.888	0.076	0.53
% Male	0.177	0.936	0.509	0.112	0.924	0.47
Missing Wage	0.357	0.307	0.268	0.142	0.091	0.218
Avg. Real Wage Over Contract if Not Missing	7.004	11.52	8.843	10.768	12.565	9.078
Employment in Bargaining Unit	448	757	688	582	1,082	912
Firm Size	1,096	2,115	2,041	3,396	13,724	8,245
Urban	0.455	0.441	0.473	0.638	0.542	0.583
Annual Hours	2076	2070	2047	1956	2065	1991
Benefits - Levels						
# Holidays	11.55	12.00	11.49	11.29	11.49	11.28
Weeks Vacation After 1 Year	2.01	2.03	2.03	2.47	2.41	2.32
Weeks Paid Maternity Leave	0.315	0.522	0.913	4.368	3.997	5.917
Benefits - 1 if yes						
Unpaid Leave	0.559	0.335	0.405	0.901	0.469	0.767
Paid Sick Leave	0.699	0.760	0.638	0.427	0.777	0.592
Paid Disability	0.098	0.112	0.151	0.972	0.177	0.476
Other Paid Leave	0.021	0.025	0.047	0.118	0.394	0.257
Pension	0.566	0.874	0.812	0.861	0.871	0.903
Retirement Benefits	0.119	0.167	0.106	0.173	0.080	0.136
Major Medical	0.664	0.736	0.696	0.944	0.949	0.908
Dental Plan	0.580	0.885	0.812	0.963	0.853	0.845
Supplementary Hospital	0.364	0.608	0.471	0.827	0.700	0.767
Life Insurance	0.867	0.929	0.859	0.975	0.807	0.835
Supplementary Life Insurance	0.063	0.108	0.080	0.282	0.147	0.078

Table 2

Changes in Benefits Between 80-84 and 86-90

	Private			Public		
	Female	Male	Integ.	Female	Male	Integ.
Total Employment (100's)	.007	-.151	0	.325	-.380	-.271
% Female in Bargaining Unit	.013	.005	.007	.022	.012	-.001
Average Real Wage Over Contract	-.300	-.508	-.104	-.512	-.996	-.666
Annual Hours	.966	-3.020	-.396	-7.310	-1.534	10.462
Benefits Changes in Average Levels						
# Holidays	.276	.054	-.041	.413	-.073	.235
Weeks Vacation After 1 Yr.	.030	.041	.006	.098	.011	-.062
Weeks Paid Maternity Leave	-.056	.189	-.146	4.399	2.777	1.878
Benefits Changes in Average Frequency						
Unpaid Leave	-.005	.034	.045	.029	.168	-.020
Paid Sick Leave	.048	.013	-.047	-.101	-.058	-.094
Paid Disability	-.022	.016	.017	.054	.065	-.103
Other Paid Leave	.045	.031	.007	.071	.063	.012
Pension	.180	.073	.069	.011	-.012	-.025
Retirement Benefits	.140	.208	.160	.318	.125	.214
Major Medical Plan	.006	.051	-.013	-.027	0.019	-.050
Dental Plan	.150	.050	.016	-.012	.034	.076
Supplementary Hospital	-.014	.037	-.041	-.085	.042	-.067
Life Insurance	.026	.007	.003	-.008	.034	.076
Supplementary Life Insurance	-.015	.011	.018	.072	.006	.044

Table 3

Probability of Pension Coverage in the Contract Data Set

	Private Sector			Public Sector		
	OLS (1)	OLS (2)	2SLS (3)	OLS (4)	OLS (5)	2SLS (6)
% Female in Bargaining Unit	-.097 (.050)[1]	-.078 (.056)	-0.100 (0.057)	-0.116 (0.071)	-.116 (.060)	-0.120 (0.060)
Average Real Wage		.029 (.006)	0.024 (0.007)		.000 (.009)	-0.002 (0.009)
Total Employment in Bargaining Unit	.009 (.008)	.010 (.008)	0.010 (0.008)	-0.013 (0.010)	-.013 (.007)	-0.013 (0.007)
Firm Size	.003 (.005)	.002 (.005)	0.003 (0.005)	-0.004 (0.002)	-.004 (.001)	-0.004 (0.001)
# Agreements in the Year	-.002 (.003)	-.006 (.004)	-0.005 (0.004)	-0.000 (0.002)	-.000 (.003)	-0.000 (0.003)
National Firm	-.021 (.059)	-.014 (.059)	-0.014 (0.059)	0.033 (0.114)	.033 (.071)	0.033 (0.071)
Union Shop	.078 (.024)	.072 (.024)	0.073 (0.024)	0.013 (0.032)	.013 (.030)	0.013 (0.030)
Contract Excludes Part Time	-.135 (.031)	-.117 (.031)	-0.120 (0.031)	-0.063 (.027)	-.063 (.026)	-0.064 (0.026)
Intercept	.817 (.091)	.508 (.113)	0.800 (0.361)	1.021 (0.078)	1.020 (.218)	0.884 (0.229)
Dummy Variables:						
Industry	(14)	(14)	(14)	(18)	(18)	(18)
Occupation	(4)	(4)	(4)	(3)	(3)	(3)
Year	(9)	(9)	(9)	(8)	(8)	(8)
City	(6)	(6)	(6)	(6)	(6)	(6)
Region	(10)	(10)	(10)	(10)	(10)	(10)
R-squared	.187	.205	.199	.379	.379	.372
Degrees of Freedom	970	969	969	732	731	731

Notes:

[1]Standard errors in parentheses.

Table 4

Coefficients on the Percentage Female in the Bargaining Unit
(from regressions similar to those in Table 3)

	Private Sector			Public Sector		
	OLS (1)	OLS (2)	2SLS (3)	OLS (4)	OLS (5)	2SLS (6)
Observations	1020	1020	1020	785	785	785
Annual Hours	15.790 (6.484)[1]	9.799 (7.353)	11.668 (7.436)	-50.510 (17.763)	-53.745 (14.866)	-52.606 (14.911)
Average Real Wage	-4.027 (.250)			-1.527 (.249)		
Benefits - Levels						
Holidays (# days)	0.179 (0.168)	.791 (.189)	0.860 (0.191)	0.101 (0.158)	.118 (.139)	0.123 (0.140)
Paid Vacation After One Year (# Weeks)	-0.061 (0.026)	-.053 (.028)	-0.051 (0.029)	-0.086 (0.071)	-.071 (.076)	-0.074 (0.076)
Paid Vacation After Five Years (# Weeks)	-0.181 (0.049)	-.045 (.051)	-0.056 (0.052)	0.043 (0.043)	.065 (.056)	0.071 (0.056)
Paid Vacation After Ten Years (# Weeks)	-0.292 (0.068)	.066 (.069)	0.071 (0.069)	-0.048 (0.063)	-.033 (.087)	-0.032 (0.088)
Weeks Paid Maternity	-0.032 (0.308)	-.567 (.403)	0.471 (0.406)	-1.284 (1.233)	-1.379 (1.108)	-1.148 (1.112)
Benefits - 1 if yes						
Unpaid Leave	0.214 (0.069)	.120 (.078)	0.138 (0.079)	0.346 (0.086)	.319 (.083)	0.317 (0.083)
Paid Sick Leave	0.035 (0.052)	.053 (.066)	0.057 (0.066)	0.095 (0.078)	.099 (.088)	0.107 (0.088)
Paid Disability	-0.056 (0.027)	-.047 (.037)	-0.052 (0.038)	0.055 (.058)	.070 (.068)	0.068 (0.068)
Other Paid Leave	-0.004 (0.023)	-.022 (.030)	-0.021 (0.031)	0.235 (.088)	.249 (.071)	0.261 (0.071)
Pension	-0.196 (0.056)	-.078 (.056)	-0.100 (0.057)	-0.116 (0.071)	-.116 (.060)	-0.120 (0.060)
Retirement Benefits	-0.097 (0.048	-.008 (.056)	0.030 (0.056)	0.022 (0.057)	.032 (.066)	0.049 (0.066)
Major Medical	-0.088 (0.061)	-.017 (.070)	-0.018 (0.071)	-0.025 (0.048)	-.029 (.043)	-0.026 (0.043)
Supplementary Hospital	-0.156 (0.069)	-.030 (.078)	-0.014 (0.079)	0.165 (0.074)	.171 (.077)	0.179 (0.077)

Table 4 (continued)

	Private Sector			Public Sector		
	OLS (1)	OLS (2)	2SLS (3)	OLS (4)	OLS (5)	2SLS (6)
Dental	-0.115	.013	0.009	-0.016	-.008	-0.007
	(0.046)	(.051)	(0.051)	(0.039)	(.035)	(0.035)
Life Insurance	0.034	.050	0.042	-0.109	.127	-0.122
	(0.027)	(.041)	(0.042)	(0.041)	(.036)	(0.037)
Supplementary Life Insurance	-0.123	-.054	-0.047	0.052	.050	0.063
	(0.038)	(.044)	(0.045)	(0.061)	(.065)	(0.065)

Notes:

[1]Standard errors in parentheses.

Table 5
Means of Variables for Individual-Level Data

	Private Union	Private Non-union	Public
# Obs.	4929	9302	7167
Female	.193	.408	.501
Wage	13.04 (4.47)[1]	10.57 (6.06)	13.446 (5.616)
Tenure	11.502 (8.909)	7.044 (7.126)	10.172 (7.666)
Pension	.767	.377	.813
Married	.795	.732	.756
Has Kids 0-2	.014	.015	.010
Has Kids 3-15	.179	.154	.165
Number of Kids	1.231 (1.165)	1.140 (1.173)	1.122 (1.156)
Age 25-34	.337	.350	.281
Age 35-44	.286	.262	.337
Age 45-54	.195	.156	.209
Age 55-64	.114	.084	.122
Some High School	.593	.560	.335
Some Post Secondary	.081	.101	.090
Certificate[2]	.121	.146	.217
University Degree	.045	.109	.295
Firm Size 20-99	.117	.182	.147
Firm Size 100-499	.138	.105	.196
Firm Size 500+	.518	.268	.421
Don't Know Firm Size	.167	.128	.133

Notes:

[1]Standard errors in parentheses.

[2]Any post-secondary certificate which is not equivalent to a university degree.

Table 6

Differences Between Female and Male Workers in Probability of Pension Coverage, Wages, and Tenure

	Private Union			Private Nonunion			Public		
	Pension (%)	Wages ($)	Tenure (years)	Pension (%)	Wages ($)	Tenure (years)	Pension (%)	Wages ($)	Tenure (years)
All Workers[1]	-.090 (.015)	-2.489 (.149)	-1.618 (.273)	-.080 (.009)	-2.522 (.119)	-1.561 (.170)	-.047 (.009)	-3.542 (.108)	-1.588 (.140)
	Base Case: Age = 25-44, Firm Size = 20-99[2]								
Single no Child Some Post Secondary	.150	-.061	1.836	.053	-.521	.591	-.059	.000	1.358
Married no Child Some Post Secondary	.103	-.544	1.512	-.021	-1.803	-.039	-.126	-.697	-.936
Married 1 Child Each Age Some Post Secondary	-.552	-1.202	-5.035	.084	-3.217	-1.058	-.212	-1.276	-2.632
Married 1 Child Each Age Univ. Degree	-.701	-2.303	-2.806	.003	-5.089	-.974	-.119	-.666	-1.628
Married 1 Child Each Age Univ. Degree Firm Size 500+	-.767	-2.686	-3.865	-.089	-6.331	-1.700	-.053	-1.231	-3.114

Notes:

[1]Coefficients on "female" from regressions for the probability pension of coverage which control for demographic, educational and firm size characteristics.

[2]Computed from regressions which include demographic, educational, and firm size characteristics as well as a complete set of interactions with the female dummy.

Table 7

Probability of Pension Coverage Among Individual Workers

	Private Union		Private Non Union		Public	
	(1) OLS	(2) 2SLS	(3) OLS	(4) 2SLS	(5) OLS	(6) 2SLS
Female	-.044 (.016)[1]	.053 (.063)	-.031 (.010)	.061 (.024)	-.008 (.009)	.043 (.028)
Wage	.014 (.001)	.047 (.027)	.009 (.001)	.040 (.010)	.010 (.001)	.029 (.013)
Tenure	.016 (.002)	.037 (.019)	.020 (.002)	-.002 (.020)	.022 (.002)	.060 (.016)
Ten Sq.	-.030 (.006)	-.061 (.045)	-.033 (.005)	.008 (.046)	-.051 (.005)	-.204 (.047)
Married	.014 (.015)	-.012 (.022)	.011 (.010)	-.003 (.012)	.005 (.010)	.007 (.011)
Has Kids 0-2	.014 (.048)	-.013 (.055)	.010 (.036)	-.012 (.039)	.042 (.041)	.051 (.045)
Has Kids 3-15	-.011 (.018)	-.003 (.020)	-.011 (.014)	-.012 (.016)	-.016 (.014)	-.016 (.015)
Total # Kids	-.008 (.006)	-.005 (.007)	.000 (.005)	-.001 (.005)	-.006 (.005)	-.010 (.005)
Age 25-34[2]	.056 (.024)	-.053 (.051)	.033 (.014)	.022 (.026)	.057 (.020)	-.035 (.035)
Age 35-44	.037 (.026)	-.153 (.081)	.068 (.015)	.037 (.042)	.040 (.021)	-.097 (.056)
Age 45-54	.014 (.027)	-.226 (.101)	.038 (.017)	.025 (.065)	.041 (.022)	-.051 (.065)
Age 55-64	.023 (.031)	-.248 (.126)	.038 (.021)	.065 (.096)	.027 (.024)	-.024 (.073)
Some Highschool[3]	.046 (.016)	.019 (.030)	.054 (.016)	.017 (.019)	.053 (.018)	.020 (.035)
Some Post-Secondary	.047 (.025)	-.010 (.061)	.074 (.020)	-.003 (.029)	.012 (.022)	-.037 (.052)
Certificate	.056 (.022)	-.011 (.080)	.081 (.019)	-.018 (.035)	.067 (.020)	-.023 (.069)
University Degree	.048 (.031)	-.060 (.140)	.127 (.021)	-.082 (.069)	.048 (.020)	-.087 (.105)
Employer Size 20-99[4]	.062 (.028)	.043 (.032)	.099 (.013)	.078 (.014)	.200 (.017)	.158 (.023)
Employer Size 100-499	.196 (.028)	.135 (.039)	.246 (.015)	.200 (.020)	.295 (.016)	.244 (.025)

Table 7 (continued)

	Private Union		Private Non Union		Public	
	(1) OLS	(2) 2SLS	(3) OLS	(4) 2SLS	(5) OLS	(6) 2SLS
Employer Size 500+	.232 (.025)	.123 (.054)	.401 (.012)	.353 (.023)	.296 (.015)	.245 (.025)
Don't Know Employer Size	.206 (.027)	.139 (.042)	.245 (.014)	.224 (.017)	.216 (.017)	.179 (.023)
Industry Dummies	(14)	(14)	(14)	(14)	(17)	(17)
Province Dummies	(9)	(9)	(9)	(9)	(9)	(9)
Intercept	.120 (.061)	-.194 (.190)	-.040 (.039)	-.137 (.056)	.313 (.038)	.107 (.081)
R-squared	.208	.161	.319	.272	.237	.181
Degrees of Freedom	4885	4885	9258	9258	7120	7120
Chi-squared[5]		17.192		8.357		34.320

Notes:

[1]Standard errors in parentheses.
[2]Left out age category is 20-24.
[3]Left out education category is "none or elementary". "Certificate" refers to a post-secondary degree which is not a university degree. "University" refers to a university degree.
[4]Left out employer size category is 0-19. Employer size refers to employment in all of Canada.
[5]Critical value of Chi-sq with 13 df = 22.362 at the 95% level of confidence.

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Notes:

1. This figure was about 66% in 1900 (Goldin 1991) and remained relatively constant until 1970 (see Blau (1977), Beller (1984), Fuchs (1975), Blau and Hendricks (1979), for estimates for the 1960's and 1970's). Mincer (1984) contains some discussion of the extent of occupational segregation in other industrialized countries.

2. The Canadian definition of the "public sector" is rather broad and includes most hospitals, nursing homes, and utilities, as well as Crown Corporations such as Air Canada, Atomic Energy of Canada, and Petro-Canada.

3. The sample is limited to contracts covering 200 or more employees because smaller bargaining units do not report wage data. Some contracts were also missing benefits data. Our sample of contracts with non-missing wage and benefits data includes 9.4% of all the union agreements reached in bargaining units with over 200 workers. These agreements cover 37.1% of the employment in these establishments. Because our focus is on workers with a strong attachment to the labor market, 173 contracts with wage and benefit data were excluded because they covered part-time workers. A few contracts that were missing the percentage female in the bargaining unit were also excluded. Further details about the data are in a Data Appendix available from the authors on request.

4. Ontario's comparable worth statute defines a male job as one that is 70% male and a female job as one that is 60% female. The computations described in this section are affected very little if we adopt these criterion.

5. A few other authors have examined segregation by establishment. Bielby and Baron (1984) find that 231 out of 393 California establishments studied had job descriptions that were completely sex-segregated. Groshen (1988) found that segregation by establishment lowered the wages of women by 12% on average.

6. This result is consistent with evidence for the United States which shows that 40% of full-time women compared to 55% of full-time men are covered by private pension plans (Beller, 1981).

7. A possible explanation is that in Canada, employees may be eligible for unemployment insurance when they take unpaid leave.

8. The law providing for 17 weeks of unpaid maternity leave is part of the Ontario Employment Standards Act, and came into effect in 1974.

9. If we had included contracts covering part-time workers in the analysis, the difference in hours would have been even greater as most of the contracts covering part-time workers cover female jobs in the public sector.

10. Federal tax rates and brackets were indexed to the CPI in 1973. Provincial taxes are calculated as a percentage of the federal tax. In 1983 and 1984, tax increases were limited to 6 and 5% respectively. Thereafter, tax increases were indexed to increases in the CPI over 3%. Effective in 1988, the number of tax brackets was reduced and taxes in the top bracket lowered from 34% to 29% (Perry, 1990).

11. Aggregate figures which include both union and non-union workers show a decrease of .3% between 1978 and 1986 (Statistics Canada (1980), Queen's University Industrial Relations Center (1988)). This can be contrasted with Bloom and Freeman's finding that pension coverage declined 1.9% in the United States between 1980 and 1989 (1992).

12. A typical contract specifies an initial wage increase followed by several "scheduled" wage increases at specified dates. We have all scheduled wage increases in the data set. Hence, it is possible to compute the nominal wage at each month of the contract. We deflate these using the Ontario Consumer Price Index (1986=100), and then take the average over the contract. We also estimated models which included the difference between the average top and entry-level real wages. The results were similar to those reported below.

13. The percentage female in each industry is shown in a Data Appendix available from the authors on request. Male jobs are more likely to be in a primary industry or in transportation, and less likely to be in manufacturing or services. There are also striking differences in patterns of segregation between the public and private sectors. In the private sector, there are no predominantly female bargaining units in professional and technical occupations and female bargaining units are over-represented in sales occupations. In the public sector, female bargaining units are over-represented in professional and office occupations.

14. The use of unanticipated inflation over the life of the contract as an instrument follows Card (1990). The construction of unanticipated inflation is discussed in the Data Appendix. We assume that parties set nominal wages at the beginning of the contract in order to achieve some target real wage over the life of the contract. Unanticipated inflation causes the actual real wage to deviate from the target. Hence it is correlated with the real wage over the life of the contract, but because it is unanticipated at the time of the contract negotiations, it should not be

correlated with other contract provisions.

15. See Brown (1980), Moore (1987), Mitchell (1988), Shiller and Weiss (1980), and Smith and Ehrenberg (1983), Woodbury (1991). However Montgomery, Shaw, and Benedict (1992) find a one-for-one tradeoff between the present value of lifetime wages and pension coverage, and Montgomery and Shaw (1992) show that compensating differentials are smaller in union firms then in non-union ones.

16. These results can be contrasted with those of Trzcinski (1991). In a study of the leave provisions of U.S. firms, she finds that the probability that a firm offers paid sick leave rises with the percentage female. Percentage female has no statistically significant effect on the probability that the firm offers sickness and accident insurance (paid disability), or unpaid leave. Her models do not control for the wage, although they do control for the percent female in the industry.

17. Some workers have more than one job. The primary job is taken to be the one with the highest earnings.

18. It proved impossible to distinguish between male and female jobs on the basis of the available occupation data.

19. We treat the number of children and marital status as exogenous variables. Mroz (1987) shows that assuming that marital status and children are exogenous does not bias estimates of female labor supply elasticities. We assume that if these variables are not endogenously determined with wages and hours, then they are not endogenously determined with pension coverage either.

20. It is interesting to note that the probability of pension coverage is twice as high at each level of education for men and women in the non-union sector as it is for workers in the union sector, relative to the left out group that has only elementary education. This finding can be compared to the fact that unions are associated with lower wages for skilled workers relative to unskilled workers (Lewis, 1986).

21. A third hypothesis which can not be readily investigated with our data is that men and women choose different jobs because they have made different human capital investments (c.f. Mincer and Polachek (1974, 1978), Polachek (1979, 1981)). This hypothesis has been criticized by England (1982) who shows that women who expect to be constantly employed are as likely to be in predominantly "female" occupations as those who do not. Corcoran, Duncan, and Ponza (1984) show using the Panel Study of Income Dynamics that: 1) wage growth and depreciation of human capital does not seem to be lower in female jobs, and 2) women with long absences from the labor market are no more likely to concentrate their work experience in female jobs than other women. Moreover, we observe

that sex segregation is common even among highly educated workers (Fuchs, 1975).

22. As Becker (1983) points out, such a comparative advantage can be economically rather than biologically determined. He says that "Exploited women may have an 'advantage' at unpleasant activities only because the monetary value of the disutility tends to be smaller for exploited (and poorer) persons. Or exploited persons are not allowed to participate in activities that undermine their exploitation". Other analysts of the division of labor within the household emphasize early socialization (Marini and Brinton (1984)). Finally, some would view the fact that most women continue to bear primary responsibility for household production while working outside the home as a form of discrimination, albeit one that is not often addressed by economists (Reskin and Hartmann, (1986)).

23. Pensions may in fact have a household public goods aspect if a surviving spouse is entitled to benefits. In 1986, 44.9% of Canadian pensions had survivor benefits compared to 4% of U.S. pensions. Sixty-nine percent of public sector pensions had these benefits compared to 26% of private sector pensions. The survivor is generally entitled to half of the benefit that the retiree would have received (Pesando et al., 1991). Also, in Canada pension sharing in the event of divorce became mandatory in 1987, although take-up rates have remained low (Galarneau, 1991).

24. Lower wages and higher turnover outweigh the actuarial considerations emphasized by Kotlikoff and Wise (1987) and Moore (1987).

25. In 1986 U.S. employers spent 8.8% of payroll on life and health insurance. The comparable figure for Canada was probably less than 3% (the figure for life and health combined with leave provisions is 5.4% and leave provisions accounted for half of this total in 1978, the last year for which more detailed figures are available.) (U.S. Chamber of Commerce (1987), Statistics Canada (1980), Queen's University Industrial Relations Section (1988)).

26. The constitutionality of the PDA was not finally upheld by the Supreme Court until 1987.

27. Some evidence against the "crowding" hypothesis is that Corcoran, Duncan, and Ponza (1984) find using the Panel Study of Income Dynamics that one third of the women in the sample switched from a male job to a female job at least once.

Appendix Table 1

Variable Definitions

Insurance Benefits Variables are coded 1 if the bargaining agreement contains a provision for employer contributions to the benefit plan.

Supp. Hosp	Supplementary hospital plan[1]
Major Med.	Major medical plan[1]
Dental	Dental care
Life	Life and accidental death and dismembership insurance plan
Supp. Life	Supplementary life insurance plan
Pension	Ontario Municipal Employees Retirement System, or a private pension plan, or a Registered Retirement Savings Plan (RRSP)
Retirement Bnfts	Any of the above health or life insurance benefits provided for retired employees

Time-off Benefits

Holidays	Number of holidays per year (half days are counted as half)
Vacation-1yr	Number of weeks vacation provided at one year of service
Vacation-5yr	Number of weeks vacation provided at five years of service
Vacation-10yr	Number of weeks vacation provided at ten years of service
Sick leave	1 if paid sick leave provision
Disability	1 if paid disability is provided either on a per disability or a maximum duration of indemnity basis[2]
Paid Maternity	Number of weeks paid maternity leave
Paid leave	1 if any of the following leave provision are provided as paid leave: Paternity, family illness, marriage, special/emergency
Unpaid leave	1 if any of the following are provided as unpaid leave: Paternity, family illness, marriage, special/emergency, adoption, education, sabbatical, personal, unpaid maternity leave in excess of the legally required 17 weeks

Bargaining Unit Characteristics

Employment	Size of the bargaining unit at the effective date
Firm size	Total unionized employment for the firm at the effective date
National	1 if agreement covers employees outside of Ontario, incl. U.S.
Union shop	1 if closed or union shop[3]
Avg wage	Avg real wage over the life of the contract (using ONT CPI)
Pct wage diff	Percent wage difference between the top and the base wage
Wage increase	Avg annual percent wage increase realized over the contract
Unexpected inflation	Actual percent change in the CPI over the contract less the expected percent change in the CPI

Notes:

[1] Major medical plans and supplementary hospital insurance cover services which are not provided by the Ontario Health Insurance Plan (OHIP) such as optometry, perscription drugs, additional home nursing care and so on.

[2] Sick leave is administered by the employer and financed as a wage item. Disability is usually financed through an insurer.

[3] A closed shop requires that all employees in the bargaining unit must be union members when hired. A union shop requires that all employees become members, as a condition of employment. One percent of contracts have a closed shop provision; 25% have a union shop provision.

Appendix Table 2

Probability of Pension Coverage Among Individual Workers - OLS

	Private Union		Private Non Union		Public	
	(1)	(2)	(3)	(4)	(5)	(6)
Female	-.090 (.015)[1]	-.125 (.084)	-.080 (.009)	.141 (.042)	-.047 (.009)	-.038 (.060)
Married	.026 (.015)	.038 (.018)	.024 (.011)	.052 (.015)	.009 (.011)	.054 (.018)
Married and Female		-.047 (.034)		-.074 (.021)		-.067 (.022)
Has Kids 0-2	.027 (.049)	.053 (.051)	.014 (.036)	-.018 (.040)	.023 (.042)	.022 (.050)
Has Kids 3-15	-.015 (.018)	.000 (.020)	-.012 (.015)	-.018 (.019)	-.018 (.014)	-.007 (.019)
Total # Kids	-.009 (.006)	-.005 (.007)	.001 (.005)	.009 (.006)	-.006 (.005)	.004 (.007)
Female * Kids 0-2		-.503 (.203)		.125 (.101)		-.040 (.092)
Female * Kids 3-15		-.094 (.049)		.006 (.030)		-.026 (.028)
Female * Total # Kids		-.029 (.017)		-.026 (.010)		-.020 (.010)
Age 25-34[2]	.121 (.024)	.097 (.029)	.074 (.014)	.084 (.020)	.116 (.020)	.142 (.037)
Age 35-44	.153 (.025)	.128 (.030)	.155 (.015)	.172 (.022)	.156 (.020)	.175 (.037)
Age 45-54	.155 (.026)	.143 (.031)	.157 (.016)	.180 (.023)	.175 (.021)	.191 (.038)
Age 55-64	.178 (.029)	.172 (.033)	.171 (.020)	.193 (.027)	.164 (.023)	.172 (.039)
Female * Age 25-34		.105 (.052)		-.008 (.028)		-.047 (.044)
Female * Age 35-44		.105 (.055)		-.038 (.031)		-.034 (.044)
Female * Age 45-54		.020 (.058)		-.068 (.033)		-.036 (.045)
Female * Age 55-64		-.038 (.072)		-.073 (.040)		-.020 (.049)

Appendix Table 2 (continued)

	Private Union		Private Non Union		Public	
	(1)	(2)	(3)	(4)	(5)	(6)
Some High School[3]	.056	.060	.080	.101	.072	.120
	(.017)	(.018)	(.016)	(.021)	(.019)	(.024)
Some Post-Secondary	.069	.064	.113	.123	.036	.095
	(.025)	(.027)	(.021)	(.026)	(.023)	(.030)
Certificate	.081	.080	.114	.136	.112	.128
	(.022)	(.024)	(.019)	(.024)	(.020)	(.026)
University Degree	.085	.107	.183	.211	.111	.121
	(.031)	(.034)	(.021)	(.025)	(.020)	(.024)
Female * Some High School		-.011		-.058		-.113
		(.046)		(.033)		(.038)
Female * Some Post-Secondary		.032		-.045		-.133
		(.063)		(.042)		(.046)
Female * Certificate		.018		-.075		-.060
		(.061)		(.039)		(.041)
Female * Univ. Degree		-.127		-.126		-.040
		(.078)		(.045)		(.040)
Employer Size 20-99[4]	.072	.042	.117	.131	.226	.126
	(.028)	(.032)	(.013)	(.016)	(.017)	(.027)
Employer Size 100-499	.229	.219	.283	.311	.331	.202
	(.028)	(.032)	(.016)	(.020)	(.016)	(.025)
Employer Size 500+	.289	.271	.114	.505	.338	.206
	(.026)	(.029)	(.019)	(.016)	(.015)	(.023)
Don't Know Employer Size	.242	.240	.183	.286	.241	.153
	(.027)	(.031)	(.021)	(.019)	(.018)	(.026)
Female * Size 20-99		.138		-.035		.159
		(.067)		(.026)		(.034)
Female * Size 100-499		.043		-.074		.213
		(.067)		(.031)		(.033)
Female * Size 500+		.072		-.127		.225
		(.059)		(.023)		(.030)
Female * Don't Know Size		-.021		-.050		.132
		(.065)		(.029)		(.035)
Intercept	.277	.281	.055	-.030	.455	.459
	(.061)	(.064)	(.040)	(.043)	(.038)	(.052)

Appendix Table 2 (continued)

	Private Union		Private Non Union		Public	
	(1)	(2)	(3)	(4)	(5)	(6)
Dummy Variables:						
Industry	(14)	(14)	(14)	(14)	(17)	(17)
Province	(9)	(9)	(9)	(9)	(9)	(9)
R-squared	.173	.181	.287	.294	.197	.210
Degrees of Freedom	4888	4872	9261	9245	7123	7107
F-Tests for Interactions = 0						
Children		7.073 (.0001)		3.314 (.019)		3.353 (.018)
Age		2.846 (.023)		2.017 (.089)		.410 (.802)
Education		1.171 (.322)		2.195 (.067)		5.409 (.000)
Employer Size		2.842 (.023)		7.617 (.0001)		16.584 (.000)

Notes:
[1]Standard errors in parentheses.
[2]Left out age category is 20-24.
[3]Left out educational category is "none or elementary". "Certificate" refers to a post-secondary degree which is not a university degree. "University" refers to a university degree.
[4]Left out employer size category is 0-19. Employers size refers to employment in all of Canada.

Appendix Table 3

Individual Level Wage and Tenure Equations

	Private Union		Private Non Union		Public	
	(1) Wage	(2) Tenure	(3) Wage	(4) Tenure	(5) Wage	(6) Tenure
Female	-1.468 (.812)[1]	.871 (1.484)	.978 (.491)	1.756 (.624)	.426 (.764)	1.197 (1.093)
Married	.732 (.172)	.554 (.314)	1.123 (.172)	.592 (.225)	.630 (.226)	.686 (.324)
Married and Female	-.483 (.329)	-.324 (.602)	-1.282 (.242)	-.630 (.318)	-.697 (.280)	-.636 (.400)
Has Kids 0-2	.675 (.493)	.589 (.901)	.554 (.450)	-.382 (.590)	-.850 (.631)	-1.612 (.902)
Has Kids 3-15	-.085 (.193)	-.469 (.352)	.063 (.212)	.006 (.278)	-.034 (.244)	-.256 (.349)
Total # Kids	-.023 (.067)	-.024 (.122)	.174 (.068)	.296 (.089)	.195 (.085)	.247 (.122)
Female * Kids 0-2	-.102 (1.965)	-5.026 (3.591)	-.039 (1.145)	.723 (1.500)	.192 (1.171)	-1.612 (.902)
Female * Kids 3-15	-.264 (.478)	-.165 (.874)	-.547 (.345)	-.284 (.452)	-.085 (.361)	-.256 (.349)
Female * Total # Kids	-.146 (.161)	-.678 (.295)	-.414 (.109)	-.729 (.142)	-.343 (.122)	-.743 (.175)
Age 25-34[2]	1.649 (.277)	3.129 (.506)	1.719 (.224)	2.014 (.293)	1.709 (.470)	2.601 (.671)
Age 35-44	2.488 (.288)	8.022 (.527)	3.937 (.245)	4.742 (.320)	3.605 (.473)	7.253 (.676)
Age 45-54	2.835 (.296)	12.819 (.541)	4.721 (.263)	8.515 (.344)	4.275 (.478)	11.556 (.684)
Age 55-64	2.914 (.323)	17.752 (.591)	3.674 (.304)	12.307 (.398)	4.286 (.501)	12.711 (.716)
Female * Age 25-34	.269 (.507)	.550 (.927)	-.238 (.318)	.037 (.416)	.077 (.560)	.254 (.801)
Female * Age 35-44	-.253 (.536)	-.906 (.979)	-1.762 (.347)	-.839 (.455)	-.679 (.566)	-.629 (809)
Female * Age 45-54	-.493 (.567)	-3.087 (1.037)	-3.146 (.376)	-2.747 (.492)	-1.289 (.579)	-2.519 (.827)
Female * Age 55-64	-.626 (.693)	-5.050 (1.267)	-2.465 (.453)	-3.845 (.594)	-1.771 (.620)	-1.069 (.887)

Appendix Table 3 (continued)

	Private Union		Private Non Union		Public	
	(1) Wage	(2) Tenure	(3) Wage	(4) Tenure	(5) Wage	(6) Tenure
Some High School[3]	.945	.340	1.985	-3.845	2.706	.501
	(.176)	(.321)	(.235)	(.594)	(.301)	(.430)
Some Post-Secondary	1.733	-.173	-1.395	1.300	4.367	-.175
	(.271)	(.494)	(.474)	(.391)	(.376)	(.537)
Certificate	2.730	-1.260	-1.576	.427	5.414	-.549
	(.237)	(.433)	(.447)	(.360)	(.335)	(.478)
University Degree	4.398	-2.979	7.409	-.003	8.254	-1.061
	(.331)	(.605)	(.281)	(.368)	(.310)	(.443)
Female * Some Highschool	-.463	-1.206	-1.074	-.681	-1.299	-.510
	(.446)	(.816)	(.378)	(.495)	(.490)	(.700)
Female * Some Post-Secondary	.712	-.625	-1.395	-.606	-2.259	.009
	(.614)	(1.122)	(.474)	(.621)	(.581)	(.831)
Female * Certificate	-1.132	.341	-1.576	-.455	-1.121	1.077
	(.591)	(1.081)	(.447)	(.585)	(.519)	(.741)
Female * Univ. Degree	-.389	1.604	-3.267	-.597	-1.649	1.013
	(.754)	(1.378)	(.505)	(.662)	(.503)	(.720)
Employer Size 20-99[4]	.381	-.146	1.018	.999	1.054	.938
	(.308)	(.564)	(.186)	(.244)	(.341)	(.487)
Employer Size 100-499	1.145	1.814	2.372	1.683	1.571	2.064
	(.306)	(.560)	(.226)	(.296)	(.320)	(.457)
Employer Size 500+	2.080	3.103	3.081	3.360	1.951	3.128
	(.279)	(.510)	(.178)	(.234)	(.290)	(.415)
Don't Know Employer Size	1.402	1.655	1.235	1.261	1.344	1.849
	(.301)	(.549)	(.214)	(.280)	(.329)	(.471)
Female * Size 20-99	.426	1.040	-.187	-.596	.497	-.102
	(.650)	(1.187)	(.291)	(.381)	(.438)	(.626)
Female * Size 100-499	-.176	-.355	-.984	-.456	.249	-.801
	(.647)	(1.183)	(.356)	(.467)	(.414)	(.592)
Female * Size 500+	.043	-.019	-1.429	-1.322	-.068	-1.588
	(.571)	(1.044)	(.266)	(.349)	(.377)	(.539)
Female * Don't Know Size	-.320	.712	.565	-.454	-.322	-1.401
	(.629)	(1.149)	(.325)	(.426)	(.446)	(.638)
Intercept	7.270	3.693	3.185	1.532	5.034	3.675
	(.620)	(1.133)	(.491)	(.643)	(.656)	(.939)

Appendix Table 3 (continued)

	Private Union		Private Non Union		Public	
	(1) Wage	(2) Tenure	(3) Wage	(4) Tenure	(5) Wage	(6) Tenure
Dummy Variables:						
Industry	(14)	(14)	(14)	(14)	(17)	(17)
Province	(9)	(9)	(9)	(9)	(9)	(9)
R-squared	.313	.422	.419	.279	.384	.324
Degrees of Freedom	4872	4872	9245	9245	7107	7107
F-Tests for Interactions = 0						
Children	.794 (.497)	3.653 (.012)	10.289 (.0001)	13.239 (.0001)	3.979 (.008)	8.292 (.0001)
Age	1.275 (.278)	10.464 (.0001)	30.670 (.0001)	21.930 (.0001)	7.969 (.0001)	9.918 (.0001)
Education	2.663 (.031)	2.401 (.048)	11.821 (.0001)	.519 (.722)	4.560 (.001)	5.355 (.0003)
Employer Size	.624 (.645)	.831 (.505)	8.309 (.0001)	3.659 (.006)	1.355 (.247)	4.190 (.002)

Notes:
[1]Standard errors in parentheses.
[2]Left out age category is 20-24.
[3]Left out educational category is "none or elementary". "Certificate" refers to a post-secondary degree which is not a university degree. "University" refers to a university degree.
[4]Left out employer size category is 0-19. Employers size refers to employment in all of Canada.

Data Appendix

The Contract-Level Data:

The sample comes from the collective bargaining agreement files of the Ontario Ministry of Labour. During the 1980s the Ontario government collected approximately 38,000 contracts governing employment in Ontario's unionized sector. Each contract contains the following information: effective date and expiration date, employment in the employer's Ontario operations by gender as of the effective date, occupational group, and identification codes for employer, union, and location.

Our sample is limited to the approximately 23,000 contracts covering bargaining units with over 200 workers because only these contracts have wage data. We were also forced to exclude contracts in the construction industry and for teachers because these were missing benefits data.[1] Of the remaining contracts, Table 1 shows that only 2770 had information about benefits and 2149 had information about both benefits and wages. Although these contracts represent only 9.4% of all contracts covering over 200 workers, they cover 37.1% of all employment in these bargaining units. The rest of Table 1 shows that our sample of private sector contracts focuses on the largest employers in each industry. In the public sector, the percentage of contracts is closer to the percentage of employment indicating that the contracts in the sample are representative of all public sector contracts, at least in terms of size.

Table 1 indicates that even among bargaining units with over 200 workers, there are many contracts with missing wage data. Table 2 divides the sample into contracts with and without wage data so that the characteristics of the two groups can be compared. Table 2 indicates that as expected, bigger bargaining units are more likely to report the wage (except in the federal government). Also, bargaining units with a high percentage female are less likely to report the wage. However, there appears to be little difference in the benefits packages of the two groups.

In Table 3, we investigate whether the probability that the wage is missing is related to the percentage female in the bargaining unit, when other characteristics of the bargaining unit such as size and industry are controlled for. The table indicates that there is no statistically significant relationship. We conclude then, that the contracts in our sample are selected on the basis of size, but not on the basis of the percentage female in the bargaining unit.

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[1] The problem seems to be that benefits in construction and teaching are not specified in the same units as in other industries.

A. Employment and Firm Size

The full sample of 38,000 contracts was used to check the consistency of the employment data and to determine total unionized employment per firm (i.e. our measure of firm size). Bargaining units which appear with benefits data at one point in time may also appear with missing benefits data at other contract dates. Where possible, we verified large changes in employment by referring to Labour Canada's Collective Bargaining Review, however this could be done only for the larger agreements.[2] In cases where there was a significant discrepancy, we used the published figure.

The construction of firm size takes account of the following operational difficulties: 1) all bargaining units within a firm do not renegotiate in the same years, 2) the beginning and end of the sample period are plagued by incomplete coverage (as seen in Table 1), and 3) employer codes may change from one agreement to the next for the same bargaining unit.

To overcome the first problem, employment was assumed to be constant over the duration of each contract. Firm size was then constructed for each employer in each year by taking the sum of employment for all ongoing contracts. Each contract was assigned the firm size corresponding to the year in which the contract became effective.

To overcome the end-of-sample holes in the data we assumed employment was unchanged and ongoing through 1991 for all bargaining groups with contracts expiring after 1987 for which no renewal agreement was observed. (This assumption affected the firm size in 4% of the contracts in the estimation sample.) The beginning-of-sample holes were overcome by "carrying employment back" to the first year in which the firm was observed by assuming that each agreement was preceded by at least one agreement of equal duration (excepting contracts that were coded as "first agreements"). This assumption also affected about 4% of the contracts in the estimation sample.

A change in employer code may occur for one of four reasons: 1) a coding error, 2) the firm changed its name, 3) the name was inconsistently entered sometimes as the subsidiary name and sometimes as the parent name, and 4) a change in ownership occurred. A change in ownership will affect the construction of firm size when there are multiple bargaining units for the firm which do not renegotiate in concurrent years. Within the full sample of 38,000 contracts there are 11,461 bargaining units. Of these, 1255 experienced a change in employer code between

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[2] The Collective Bargaining Review publishes data for all agreements covering 500 or more workers.

agreements. Ownership changes, valid name changes, and subsidiary-to-parent name changes were identified by searching Moody's International and Dun's Key Canadian Businesses. The construction of firm size took account of the date at which ownership changes occurred.

Missing data for the gender breakdown in employment was imputed by taking the average percent female in preceding and subsequent contract renewals. This affected about 9% of the contracts in the estimation sample.

B. Wages

Each contract specifies a base and top wage rate[3] (up to ten rates of each type may be specified along with the date at which each rate becomes effective). The average real wage over the life of the contract was constructed by determining the wage in effect in each month of the contract, deflating the wage by the monthly CPI for Ontario (1986=100), and averaging the real wage over the duration of the contract.

Unexpected inflation is calculated as the difference between the actual and expected average percent change in the CPI over the life of the contract (an AR(12) was fitted to the Ontario CPI and the estimates were used to predict the CPI in each month of every contract)[4].

C: Industrial Mix

Industry dummies were defined using the 3-digit SIC codes for 1970. The breakdown of the sample by industry, and the percentage female in each industry are shown in Table 4. The table illustrates the fact that some sex-segregation occurs along industry lines: For example, the average percent female is only 7% in mining and minerals but it is 81% in "other health care". (In our data, the largest single industry in this latter group is nursing homes.)

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[3]The base rate is the wage corresponding to the lowest skilled group covered by the agreement. Nearly all of the agreements with base wages also specify a top rate corresponding to the highest skilled group.

[4]The equation for the predicted CPI was fitted to monthly data from 1/1979-8/1991. The fitted equation follows; the coefficient estimates on the first, third and fifth lag are statistically significant.

$$CPI_t = .75 + .86\ CPI_{t-1} + .08\ CPI_{t-2} + .23\ CPI_{t-3} + .15\ CPI_{t-4} - .26\ CPI_{t-5} - .01 CPI_{t-6} + .08\ CPI_{t-7} + .16\ CPI_{t-8} - .06\ CPI_{t-9} - .13\ CPI_{t-10} - .01\ CPI_{t-11} - .04\ CPI_{t-12}. \quad R_2 = .99$$

D: Value of Total Compensation

An important limitation of this data set is that it does not have information about the value of the fringe benefits received. In most cases, we have the percentage of the premium that the employer pays, rather than the premium itself. Hence, it is difficult to determine the employer cost of total compensation. A crude attempt at determining total compensation is illustrated in Table 5. In columns 1 to 3, we show Canada-wide figures for various benefits as a percent of total compensation in 1978, 1986, and 1991, the only years for which figures were available. These figures include both union and non-union establishments. They show an increase in benefits as a percent of total compensation between 1978 and 1986. Since there is no corresponding increase in benefits coverage or in real wages in our union sample, we believe that much of this increase reflects the extension of benefits to non-union workers.

In column 4, we show average figures for benefits as a percent of total compensation in our sample which are based on the following assumptions. We assume that if they are offered, pensions, medical insurance, life insurance, retirement benefits and dental plans cost 7, 2, 2, 1, and .5% of the wage bill respectively. We assume that paid maternity leaves, sick leaves, disability leaves and other paid leaves last 4, 1.5, 16, and 1 week respectively, and that apart from sick leaves, leaves are taken by one in ten employees if available. Sick leaves are assumed to be taken by every employee. Note that we can value paid vacations and holidays relatively accurately using the wage.

In column 5, we show the average dollar value of each benefit computed assuming that all employers offer each benefit, and spend the percentage of total compensation given in column 4. These figures show what the employer cost of the complete benefits package would be if it were offered by an average employer.

Individual Level Data:

The Labor Market Activities Survey was conducted in 1987 under the auspices of Employment and Immigration Canada. The purpose of the survey was to collect information about patterns of work and types of jobs held during 1986. Respondents were asked to report on up to 5 jobs held during 1986. The extract used in this paper was constructed by Thomas Lemieux (Economics Department, University of Montreal.) Lemieux identifies the primary job held by referring to the information on wages and hours of work. The job that accounts for the largest share of earnings is the primary job.

Most of the variables used in our analysis appear just as they did in the survey. For example, age, firm size, and education are

only reported as categorical rather than as continuous variables (Statistics Canada, 1986). We group children 3 to 5 with children 6 to 15 because there did not appear to be any important differences in wages or tenure between women with children 3 to 5 and those with older children.

The most important variable to have been constructed is tenure on the current job, which is constructed using the beginning dates and ending dates of each job. We also identified the public sector using the industry codes. For the sake of comparability with the contract-level data, we include hospitals, universities, and utilities, in the public sector.

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Table 1

Number of Collective Bargaining Agreements[1]

Effective Year	Full Sample	Agreements with benefits data			Agreements with both wage and benefits data		
		Number	Percent	Pct of Emplymnt	Number	Percent	Pct of Emplymnt
1980	181	2	1.1	4.5	2	1.1	4.5
1981	699	54	7.7	46.7	42	6.0	43.1
1982	2,173	189	8.7	44.1	127	5.8	27.6
1983	2,739	291	10.6	42.4	191	7.0	29.6
1984	3,196	511	16.0	56.0	353	11.0	40.2
1985	2,829	459	16.2	58.7	343	12.1	49.0
1986	2,764	376	13.6	53.6	302	10.9	45.2
1987	2,786	387	13.9	51.2	331	11.9	46.3
1988	2,661	293	11.0	41.4	267	10.0	38.8
1989	2,208	204	9.2	26.2	188	8.5	24.6
1990	632	4	0.6	0.7	3	0.5	0.7
Total	22,871	2,770	12.1	45.9	2,149	9.4	37.1

Number of Collective Bargaining Agreements, By Industry

Industry	Full Sample	Agreements with benefits data			Agreements with both wage and benefits data		
		Number	Percent	Pct of Emplymnt	Number	Percent	Pct of Emplymnt
Primary	500	88	17.6	79.2	73	14.6	61.6
Manufacturing	11,773	1,231	10.5	50.4	902	7.7	37.2
Transportation	1,501	134	8.9	65.5	91	6.1	53.7
Trade	2,649	92	3.5	44.2	60	2.3	34.2
Finance	517	8	1.5	21.2	7	1.4	19.2
Services	3,195	118	3.7	28.9	70	2.2	18.8
Federal	347	152	43.8	44.2	105	30.3	25.8
Municipal	1,465	446	30.4	27.8	425	29.0	27.1
Provincial	924	501	54.2	55.2	416	45.0	51.4
Total	22,871	2,770	12.1	45.9	2,149	9.4	37.1

[1] Sample excludes Public sector agreements covering fewer than 200 workers, and agreements in the construction industry.

Table 2

Breakdown by Public/Private and Wage/No wage

	Private		Federal		Municipal		Provincial	
	Wage Sample	No Wages	Wage Sample	No Wages	Wage Sample	No Wages	Wage Sample	No Wages
# Contracts	1,141	530	104	48	419	22	411	85
Part- Time	0.037	0.077	0.058	0.167	0.124	0.091	0.182	0.165
Avg. Real Wage	10.232	0	11.125	0	11.651	0	10.651	0
Employment	711	583	1,224	1,916	635	295	1,176	436
Firm Size	1,874	1,983	35,196	45,963	2,521	1,825	7,193	1,218
Missing % Female	0.050	0.091	0.038	0.188	0.007	0	0.056	0.059
% Female if not missing	0.259	0.260	0.191	0.300	0.293	0.437	0.689	0.680
Urban	0.432	0.504	0.221	0.083	0.697	0.727	0.606	0.482
Industry								
Manufacturing	0.742	0.725	0.096	0.021	0	0	0.002	0.012
Primary	0.063	0.030	0	0	0	0	0.005	0
Transportation	0.078	0.085	0.288	0.500	0.126	0.182	0.019	0.082
Trade	0.051	0.064	0	0	0	0	0.012	0
Service	0.060	0.094	0.144	0	0.368	0.500	0.837	0.906
Occupation								
Professional	0.004	0.025	0.173	0.542	0.012	0.091	0.294	0.129
Technical	0.007	0.004	0.144	0.063	0	0	0.027	0.024
Production	0.909	0.877	0.394	0.083	0.432	0.682	0.504	0.812
Office	0.049	0.062	0.279	0.292	0.265	0.136	0.156	0.035
Sales	0.032	0.028	0	0	0	0	0	0
Police and fire	0	0	0.010	0.021	0.253	0.045	0.019	0

Table 2 (cont.)

	Private		Federal		Municipal		Provincial	
	Wage Sample	No Wages	Wage Sample	No Wages	Wage Sample	No Wages	Wage Sample	No Wages
Benefits								
# Holidays	11.730	11.610	11.210	10.380	11.610	11.660	11.010	10.990
#Wks Vac. after 1 yr	2.030	2.010	2.720	2.580	2.250	2.410	2.490	2.250
Unpaid Leave	0.387	0.345	0.692	0.542	0.492	0.636	0.808	0.847
Wks Paid Maternity Lv.	0.784	0.577	10.327	8.896	0.706	1.455	6.107	4.988
Paid Sick Leave	0.713	0.653	0.817	0.604	0.757	0.773	0.377	0.424
Paid Disability	0.119	0.094	0.058	0.083	0.148	0.091	0.954	0.894
Other Paid Leave	0.041	0.034	0.760	0.542	0.255	0.227	0.139	0.059
Pension	0.826	0.745	0.798	0.833	0.938	0.955	0.749	0.812
Retirement Benefits	0.150	0.117	0.048	0	0.131	0.045	0.163	0.188
Major Medical Plan	0.726	0.653	0.962	0.604	0.957	0.955	0.871	0.894
Dental Plan	0.843	0.747	0.548	0.146	0.990	1.000	0.871	0.906
Employer Pays OHIP	0.968	0.917	0.923	0.563	0.998	1.000	0.912	0.929
Supplemental Hospital	0.522	0.525	0.769	0.521	0.702	0.727	0.725	0.729
Life Insurance	0.899	0.828	0.404	0.146	0.971	0.909	0.905	0.894
Supp. Life Insurance	0.094	0.089	0.067	0.063	0.105	0.045	0.316	0.047
Annual Hours	2063	2062	2015	1998	2045	2067	1953	1946

Table 3
Linear Probability Models with Dependent Variable=1 if Wage Missing

	Private Sector	Public Sector Emp > = 200
% Female in Bargaining Unit	-.020 (.054)[1]	-.016 (.012)
Total Employment in the Bargaining Unit	-.029 (.008)	-.102 (.005)
Firm Size	.021 (.005)	-.002 (.001)
# Bargaining Units	-.013 (.004)	-.002 (.001)
National	-.144 (.066)	-.226 (.052)
Union Shop	.021 (.025)	.002 (.009)
No Part-time	-.011 (.034)	.033 (.007)
Industry Dummies	yes(17)	yes(21)
Occupation Dummies	yes(4)	yes(4)
Year Dummies	yes(10)	yes(11)
City Dummies	yes(6)	yes(6)
Region Dummies	yes(10)	yes(10)
Intercept	1.196 (.449)	.264 (.279)
R-squared	.155	.266
Degrees of Freedom	1410	7136

NOTE:
[1]Standard errors in parentheses.

Table 4

Percent female in bargaining unit, By Industry[1]

Industry	Number of Contracts	Average % female	Std. Dev.
Forest products	184	12.52	17.48
Food and tobacco	165	31.34	21.30
Mining and minerals	115	7.05	14.44
Plastics and chemicals	96	21.87	25.35
Textiles & apparel	136	62.58	25.90
Metal smelting	140	7.97	15.79
Tools and machines	83	13.87	19.35
Appliances, electrical, hi-tech	149	37.48	27.60
Transportation equipment	172	22.09	28.47
Transportation	144	9.95	19.18
Utilities	91	24.51	25.13
Retail	93	33.11	22.59
Hotel and restaurant	48	54.41	17.81
Finance, Insurance and Real Estate	4	17.25	18.97
Personal services	6	76.13	6.12
Other services	95	35.08	28.82
Education	117	46.39	38.78
Cultural	20	73.04	19.21
Hospital	304	80.74	17.55
Other health care	63	81.14	14.42
University	52	42.18	22.26
Police and fire	117	2.22	2.05
Federal	85	21.83	23.84
Provincial	38	42.62	24.29
Municipal	112	29.13	28.65

[1] Excludes Public sector bargaining agreements covering less than 200 workers.

Table 5

Benefits as a Percent of Total Compensation

	Canada				
	(1) 1978[1]	(2) 1986[2]	(3) 1991[3]	(4) Sample Average[4]	(5) Employer Cost ($)[5]
Vacation	4.8	6.5	5.9	---	---
Vacation after 1 yr.	---	---	---	(3.4)	(951.)
Vacation after 5 yrs.	---	---	---	4.6	1291.
Vacation after 10 yrs.	---	---	---	(5.7)	(1580.)
Paid Holidays	3.6	3.7	3.6	3.6	997.
Sick Leave	1.0	---	---	1.6	645.
Disability	---	---	---	.4	679.
Maternity	---	---	---	1.3	172.
Other Paid Leave	.2	---	---	.02	45.
Life and Health Insurance	1.6	---	---	---	---
Life	---	---	---	1.4	437.
Health	---	---	---	1.3	437.
Dental	---	---	---	.3	109.
All Leaves plus Life & Health	(2.8)	5.4	5.8	(6.3)	(2524.)
Pension Plans	3.4	4.1	5.7	4.7	1529.
Retirement Benefits	---	---	---	.1	218.
Other	.2	2.4	.5	1.18	240.
Total[6]	14.8	22.1	21.5	20.5	6799.

Notes:

[1]Source is Statistics Canada (1980).

[2]Source is Queen's University Industrial Relations Center (1988).

[3]Source is Peat et. al. (1991).

[4]Based on the following assumptions: Pensions, Medical Insurance, Life Insurance, Retirement Benefits and Dental Plans cost 7, 2, 2, 1 and .5 percent of the wage bill respectively. Paid maternity leaves, sick leaves, disability leaves, and other paid leaves last 4, 1.5, 16 and 1 weeks respectively and apart from sick leaves, leaves are taken by one in ten employees if available. Sick leaves are assumed to be taken by every employee.

[5]We assume that every employer offers the benefit and take the average cost over all employers.

[6]Does not include mandatory payments to unemployment insurance, Canada and Quebec Pension plans, worker's compensation or provincial health insurance. Excludes rest periods, profit sharing plans, bonuses, and other "miscellaneous payments". Figures in parentheses are not included in the totals.