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Symbols

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.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0s	value rounded to 0 (zero) where a meaningful distinction exists between true zero and the value rounded
p	preliminary
r	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
E	use with caution
F	too unreliable to be published

Highlights

In this issue

Offshorability and wages in the service sector

- Of all jobs held in the private service sector, about one in four is potentially subject to service offshoring.
- Service-sector jobs most susceptible to service offshoring are held by workers employed in business, finance and administrative occupations (e.g., secretaries, clerks and telephone operators) or in natural and applied sciences (e.g., computer programmers, engineers and architects). More than one-half of these workers are in offshorable positions.
- Because they generally require face-to-face contact or involve a service that cannot be transmitted by information and communication technologies, jobs in sales and service occupations and those in retail trade, accommodation and food services are the least susceptible to service offshoring. Overall, at most 6% of these jobs are offshorable.
- Overall, wages in offshorable service-sector jobs and in other service-sector jobs have grown at a similar pace since the late 1990s. Between 1998 and 2009, real wages in offshorable occupations and other service-producing occupations grew roughly 15%.
- In some occupational groups, wages grew at a different pace. Among workers with similar characteristics, wages in offshorable clerical occupations grew 2 percentage points less than those in non-offshorable business, finance and administrative occupations between the periods from 1998 to 2000 and from 2006 to 2009. Meanwhile, wages in offshorable jobs in natural and applied sciences increased 5 percentage points faster than among other natural and applied sciences occupations.

Perspectives

Offshorability and wages in the service sector

Yuqian Lu and René Morissette

In the early 1980s, the notion that manufacturing jobs in advanced economies were being lost to de veloping countries gained attention. According to one popular hypothesis, 'de-industrialization' would leave the service sector polarized into high-wage 'knowledge' jobs and low-wage personal service jobs (Bluestone and Harrison 1982).

A new version of the de-industrialization hypothesis emerged recently. Some authors noted that employers had started using offshoring-outsourcing abroad-not only for manufacturing goods, but also for jobs in the service sector that had high skill requirements (Businessweek 2003 and 2004). According to this view, the rise in information and communication technologies (ICTs) and the availability of relatively skilled workers in fast-growing countries were making service offshoring feasible. These factors were assumed to enable firms to move highly paid jobs like engineering and informatics to China, India and Eastern European countries with the skilled workforce required for these jobs.[1]

Like any form of international trade, service offshoring may affect both employment and domestic wages.[2] Service-producing jobs that are offshorable that can technically be moved abroad even though they have not been relocated yet-might be subject to greater downward wage pressure than other service-sector jobs due to competition from workers in emerging economies with lower wages. As a result, the wages for offshorable jobs might grow more slowly than for other jobs.

On the other hand, offshoring is just one of many factors that contribute to occupational wage trends and even its effect may not be simple and direct. If the offshoring of some jobs yields a competitive advantage to a firm, it may expand and increase employment in closely related occupations, resulting in upward wage pressure. In addition, demand for some service-producing occupations that could be moved abroad could be growing in Canada, for reasons unrelated to offshoring. If so, there would also be upward wage pressures in these occupations.[3]

Whether wages in offshorable service occupations grew more or less than wages in other service jobs is an empirical question this article examines.

Several studies have examined the association between offshoring and wages in manufacturing. Using the share of intermediate inputs that are imported as a measure of offshoring, many studies find that foreign outsourcing increased the relative wages of nonproduction workers in manufacturing over the past few decades (Feenstra and Hanson 1996 and 1999; Hijzen et al. 2004; and Yan 2006).

Other studies have assessed the impact of trade and offshoring on wages in the service sector and across certain industries. Liu and Trefler (2008) link U.S. trade data on imports and exports of private-sector services to workers' earnings data. They find service offshoring to China and India has little impact on earnings of American service-sector workers. Ebenstein et al. (2009) show that one channel through which trade and offshoring put downward pressure on aggregate U.S. wages is the displacement of some manufacturing workers to lower-paying jobs in service industries.

To date, no Canadian study has examined the association between offshorability and the evolution of wages in the service sector. This article fills this gap by tracking wage growth in offshorable and non-offshorable service occupations over the past decade. Following Organisation for Economic Co-operation and Development (OECD) work from van Welsum and Reif (2005), offshorable service-producing occupations are defined as those that satisfy four criteria (see *Data*

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Data sources and definitions

The data used in this article are drawn from the March and September files of the Labour Force Survey. For tables 1 and 2, the sample consists of private-sector[4] employees age 15 to 64, who are not full-time students and are employed outside manufacturing, primary industries and construction. The restriction that workers be employed in one of the five occupational groups shown in Table 3 is added for the discussion of the model results.

Offshoring, outsourcing and offshorability are three distinct concepts. Blinder and Krueger (2009) point out that "*offshoring* refers to the movement of home-country jobs to another *country*¯whether or not those jobs go to another company." It is different from outsourcing, "which refers to moving jobs out of the *company*, regardless of whether those jobs leave the *country*." Finally, "offshoring, which is an *observable action*, must also be distinguished from *offshorability*, which is a *job characteristic*." A job is offshorable if the underlying tasks can "be moved overseas *in principle*, even if that movement has not actually occurred." This article examines whether wages in offshorable service-producing occupations have displayed different trends since the late 1990s, compared to other service-producing jobs.

Van Welsum and Reif (2005) argue that occupations that are potentially affected by service offshoring share many characteristics. First, they make intensive use of information and communication technologies (ICTs). Second, they produce an output that can be traded or transmitted by ICTs. Third, their knowledge content is highly codifiable. Fourth, they require no face-to-face contact.

Using these four criteria, van Welsum and Reif (2005) select a subset of Canadian occupations, based on the 1991 Standard Occupational Classification (SOC), that are potentially affected by service offshoring. Because the occupation-level data in the Labour Force Survey are based on the 2001 National Occupational Classification for Statistics (NOC-S), our subset of occupations is, with minor exceptions, identical to that of van Welsum and Reif (2005).[5]

Offshorable service-producing occupations
Management Occupations

A121 Engineering Managers
A122 Computer and Information Systems Managers
A123 Architecture and Science Managers
A301 Insurance, Real Estate and Financial Brokerage Managers
A302 Banking, Credit and Other Investment Managers
A303 Other Business Services Managers
A311 Telecommunication Carriers Managers
A312 Postal and Courier Services Managers
A392 Utilities Managers

Business, Finance and Administrative Occupations

B011 Financial Auditors and Accountants
B012 Financial and Investment Analysts
B013 Securities Agents, Investment Dealers and Brokers
B014 Other Financial Officers
B022 Professional Occupations in Business Services to Management
B111 Bookkeepers
B112 Loan Officers
B114 Insurance Underwriters
*B211 Secretaries (Except Legal and Medical)
*B212 Legal Secretaries
*B213 Medical Secretaries
*B214 Court Recorders and Medical Transcriptionists
*B311 Administrative Officers
*B312 Executive Assistants
*B412 Supervisors, Finance and Insurance Clerks
*B511 General Office Clerks
*B513 Records Management and Filing Clerks
*B514 Receptionists and Switchboard Operators
*B522 Data Entry Clerks
*B524 Telephone Operators
*B531 Accounting and Related Clerks
*B532 Payroll Clerks
*B533 Customer Service Representatives – Financial Services
*B534 Banking, Insurance and Other Financial Clerks
*B553 Customer Service, Information and Related Clerks
*B554 Survey Interviewers and Statistical Clerks
B523 Desktop Publishing Operators and Related Occupations

Natural and Applied Sciences and Related Occupations

C181 Computer and Network Operators and Web Technicians
C011 Physicists and Astronomers
C012 Chemists
C013 Geologists, Geochemists and Geophysicists
C014 Meteorologists
C015 Other Professional Occupations in Physical Sciences
C021 Biologists and Related Scientists
C031 Civil Engineers
C032 Mechanical Engineers
C033 Electrical and Electronics Engineers
C034 Chemical Engineers
C041 Industrial and Manufacturing Engineers
C042 Metallurgical and Materials Engineers
C043 Mining Engineers
C044 Geological Engineers
C045 Petroleum Engineers
C046 Aerospace Engineers
C047 Computer Engineers (Except Software Engineers)
C048 Other Professional Engineers, not elsewhere classified
C051 Architects
C052 Landscape Architects
C053 Urban and Land Use Planners
C054 Land Surveyors
C061 Mathematicians, Statisticians and Actuaries
C071 Information Systems Analysts and Consultants
C072 Database Analysts and Data Administrators
C074 Computer Programmers and Interactive Media Developers
C152 Industrial Designers
C172 Air Traffic Control and Related Occupations

Data sources and definitions (concluded)

Social Science, Education, Government Service and Religion

E012	Lawyers and Quebec Notaries
E031	Natural and Applied Science Policy Researchers, Consultants and Program Officers
E032	Economists and Economic Policy Researchers and Analysts
E033	Business Development Officers and Marketing Researchers and Consultants

Occupations in Art, Culture, Recreation and Sport

F011	Librarians
F013	Archivists
F021	Authors and Writers
F022	Editors
F023	Journalists
F025	Translators, Terminologists and Interpreters

Sales and Service Occupations

G131	Insurance Agents and Brokers

Morissette and Johnson (2007) disaggregate offshorable service-producing occupations into two groups: professional occupations and clerical occupations (denoted above by an asterisk). The former group includes jobs held by highly skilled workers such as engineers, architects, computer programmers, translators and journalists. The latter includes occupations (requiring a lower skill level) such as secretaries, data entry clerks and telephone operators. Natural and applied sciences and related occupations will be denoted as "natural and applied sciences occupations" while occupations in social science, education, government service and religion will be denoted as "social sciences occupations."

Several non-standard industry groupings are used in the article. High-skill service industries include finance, insurance, real estate and leasing, professional, scientific, and technical services, business, building, and other support services. Public service industries include education services, health care and social assistance, and public administration. Other service-producing industries include wholesale trade, transportation and warehousing, performing arts and heritage, and amusement.

There are several limitations. The analyses are based on a single definition of offshorability. Alternative definitions could yield different results. Since no firm-level data on the intensity of service offshoring are currently available, the evidence presented here may reflect demand-side factors other than service offshoring that cannot be measured with the Labour Force Survey (LFS). Finally, no distinction is made between service offshoring to low-wage countries and service offshoring to high-wage countries. These two types of offshoring may have quite different impacts on the Canadian labour market.

sources and definitions). They make intensive use of ICTs, produce an output that can be traded or transmitted by ICTs, require no face-to-face contact, and their knowledge content is highly codifiable.

Offshorable service-producing occupations

Of all jobs held in the private service sector, about one-quarter are potentially subject to service offshoring (Table 1).[6] This pattern is observed in most provinces. Service-sector jobs most susceptible to offshoring are held by workers employed in business, finance and administrative occupations (e.g., secretaries, clerks and telephone operators) or in natural and applied sciences (e.g., computer programmers, engineers and architects): more than one-half of these workers are in offshorable positions. Because they generally require face-to-face contact or involve a service that cannot be transmitted by ICTs, jobs in sales and service occupations and those in retail trade, accommodation and food services are the least likely to be relocated to another country. At most 6% of the jobs in these categories are offshorable.[7]

Service-sector jobs held by low-educated workers are not the most susceptible to offshoring. In fact, the opposite is true. Overall, about 40% of service-sector jobs held by university graduates were at risk of being relocated in 2009, more than twice the rate of 16% observed for jobs held by individuals having a high school education or less.

Because of their overrepresentation in clerical jobs, many of which are offshorable, women are more likely than men to be in offshorable service-producing occupations. Women in all age groups are more likely to be in offshorable jobs, but there is some variation in gender patterns across education levels. While women with a high school education or less are at least three times more likely than their male counterparts to be in jobs subject to service offshoring, female university graduates are no more likely than male university graduates to be in such jobs.

Other gender differences are worth noting. In 2009, men employed in large firms (those with 500 employees or more) were roughly twice as likely to be in

Table 1 Service-sector jobs susceptible to offshoring

	1999			2009		
	Both sexes	Men	Women	Both sexes	Men	Women
			%			
All service-sector jobs	**25.6**	**17.0**	**32.8**	**25.3**	**20.3**	**29.5**
Age						
15 to 24	13.9	8.6	18.8	14.2	10.8	17.2
25 to 34	28.4	20.9	35.1	27.0	25.7	28.2
35 to 44	28.4	19.2	35.8	28.7	23.8	32.8
45 to 54	27.1	16.5	35.3	26.9	18.2	33.1
55 to 64	22.8	11.7	32.5	24.6	15.8	31.2
Education						
High school or less	17.6	5.9	28.2	16.2	7.2	24.2
Postsecondary	29.4	19.6	36.0	26.4	20.0	30.5
University degree	42.1	43.6	40.5	41.2	44.4	38.1
Industry						
Retail trade, accommodation and food services	6.3	3.0	8.7	6.1	3.8	7.8
High-skill services	55.0	43.2	64.8	54.1	47.9	59.7
Public services	17.7	4.9	20.1	15.6	7.4	16.9
Other service-producing industries	15.0	5.7	31.6	14.9	6.0	28.5
Occupation						
Management	21.1	20.4	22.0	24.1	26.4	21.5
Business, finance and administrative	76.4	52.5	84.2	72.3	58.9	77.5
Natural and applied sciences and related	56.3	53.6	65.9	55.5	55.5	55.6
Social science, education, government service and religion	11.7	20.7	7.8	13.9	28.0	9.4
Art, culture, recreation and sport	17.1	16.6	17.4	21.4	16.4	26.0
Sales and service	2.0	1.5	2.3	2.3	1.6	2.7
Province						
Newfoundland and Labrador	17.8	9.4	25.1	17.4	11.0	22.5
Prince Edward Island	19.1	11.4	24.7	21.2	16.3	24.6
Nova Scotia	21.8	12.1	29.7	23.2	15.9	28.6
New Brunswick	23.0	14.8	29.5	27.0	18.7	33.4
Quebec	26.5	15.8	36.3	26.6	21.1	31.3
Ontario	27.3	20.3	33.1	26.7	22.7	29.9
Manitoba	23.7	14.3	32.0	21.9	13.5	29.4
Saskatchewan	20.5	10.4	29.3	23.3	12.4	32.8
Alberta	23.7	15.5	30.8	23.7	19.6	27.4
British Columbia	24.2	15.2	31.4	22.8	18.0	26.7
Firm size						
Less than 20 employees	22.6	10.1	31.3	22.3	11.7	29.2
20 to 99 employees	20.5	12.3	28.6	21.0	15.6	26.0
100 to 499 employees	24.3	18.8	29.5	23.5	20.7	25.9
500 or more employees	30.7	23.3	37.2	29.5	26.2	32.4
Unionized						
No	27.4	18.7	34.5	27.3	22.2	31.5
Yes	15.4	8.5	22.5	14.1	10.1	17.7
Hourly wages (2009$)						
Less than $10.00	8.2	3.2	10.7	8.4	5.0	10.0
$10.00 to $14.99	22.3	8.0	31.7	19.0	9.4	24.7
$15.00 to $19.99	30.4	12.5	44.7	26.4	14.7	35.2
$20.00 to $24.99	32.4	18.4	47.7	29.4	18.9	39.5
$25.00 or more	39.0	34.8	46.9	37.8	35.6	41.2

Note: Private-sector employees age 15 to 64, employed outside manufacturing, primary industries and construction. Full-time students are excluded.
Source: Statistics Canada, Labour Force Survey, March and September, 1999 and 2009.

offshorable jobs as their counterparts employed in small firms (those with less than 20 employees). For women, the difference was less pronounced.

Some of the attention focused on service offshoring stems from the likelihood that many offshorable service-sector jobs are well-paid. The data support this notion. In 2009, 38% of service-sector jobs susceptible to service offshoring paid $25.00 or more per hour (in 2009 dollars), up from 29% in 1999 (Table 2).[8] In both years, very few of these jobs (at most 7%) paid less than $10.00 per hour.

In 2009, two-thirds of offshorable jobs were held in business, finance and administrative occupations. Close to three-quarters were held by workers with postsecondary education or a university degree or by those employed in high-skill services. More than 90% of employees in these jobs were not unionized and about two-thirds were women.

Offshorability and wage growth

Overall, wages in offshorable service-sector jobs and in other service-sector jobs grew at a similar pace in recent years. Between 1998 and 2009, real wages in offshorable occupations and other service-producing occupations grew roughly 15% (Chart A).[9] Notable differences in wage growth were observed only in two broad occupational groups: management occupations and natural and applied sciences and related occupations.[10] In management occupations, wages in offshorable jobs grew 12 percentage points slower than in other jobs. The reverse was true in natural and applied sciences, where wage growth in offshorable jobs exceeded that in other jobs by 6 percentage points. So within broad occupational groups, wages in offshorable jobs did not systematically grow less than wages in jobs not susceptible to offshoring.[11]

Some of the observed differences in wage growth might result from changes in workers' characteristics. For instance, workers' average labour market experience, seniority and education levels may have risen faster in some occupations than others, which could result in differing wage growth between offshorable and other jobs.

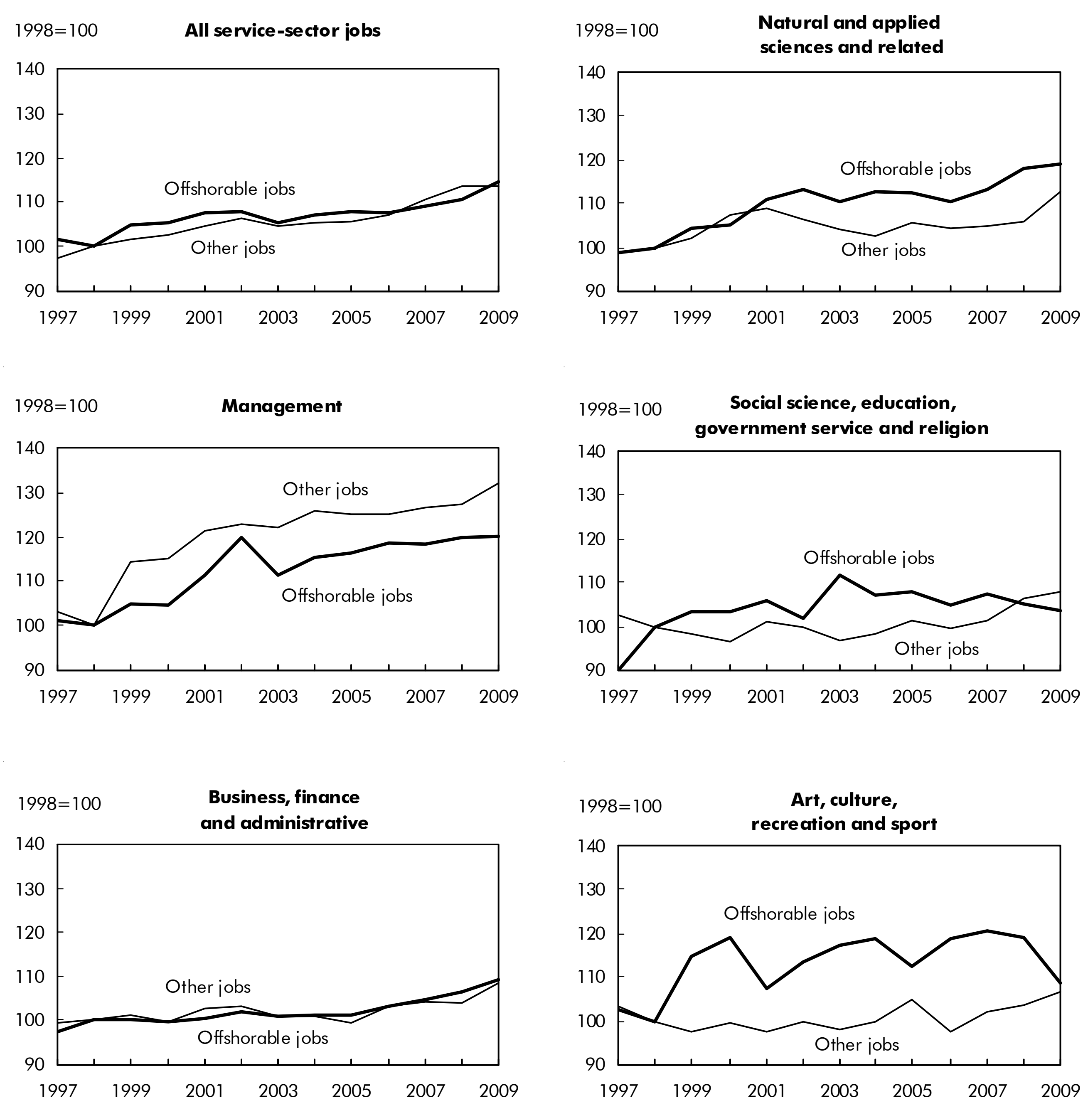
To control for the influence of these factors, multivariate analyses were conducted for each of the five occupational groups shown in Chart A. The question asked was: controlling for workers' characteristics such as age, seniority and education levels, did wages in offshorable jobs grow at the same rate as wages in other jobs?[12]

Table 2 Composition of service-sector jobs susceptible to offshoring, by various characteristics

	1999	2009
	%	
Both sexes	**100.0**	**100.0**
Men	30.5	36.1
Women	69.6	63.9
Age		
15 to 24	8.2	7.6
25 to 34	32.5	27.7
35 to 44	32.6	27.1
45 to 54	20.2	25.2
55 to 64	6.6	12.4
Education		
High school or less	34.9	27.6
Postsecondary	37.3	35.6
University degree	27.8	36.8
Industry		
Retail trade, accommodation and food services	7.8	7.4
High-skill services	70.1	71.1
Public services	7.4	7.4
Other service-producing industries	14.7	14.1
Occupation		
Management	8.6	8.7
Business, finance and administrative	69.8	66.2
Natural and applied sciences and related	15.2	16.6
Social science, education, government service and religion	2.1	3.4
Arts, culture, recreation and sport	1.7	2.1
Sales and service	2.7	3.1
Province		
Newfoundland and Labrador	0.9	0.9
Prince Edward Island	0.3	0.3
Nova Scotia	2.5	2.5
New Brunswick	2.1	2.2
Quebec	23.3	23.3
Ontario	42.1	42.3
Manitoba	3.3	2.9
Saskatchewan	2.3	2.4
Alberta	10.0	10.7
British Columbia	13.3	12.5
Firm size		
Less than 20 employees	24.9	21.2
20 to 99 employees	15.4	15.1
100 to 499 employees	13.4	13.4
500 or more employees	46.3	50.3
Unionized		
No	90.8	91.6
Yes	9.2	8.4
Hourly wages (2009$)		
Less than $10.00	6.5	5.0
$10.00 to $14.99	23.9	16.8
$15.00 to $19.99	23.3	24.3
$20.00 to $24.99	17.4	16.5
$25.00 or more	28.9	37.5

Note: Private-sector employees age 15 to 64, employed outside manufacturing, primary industries and construction. Full-time students are excluded.
Source: Statistics Canada, Labour Force Survey, March and September, 1999 and 2009.

Chart A Offshorability and wage growth in service-sector jobs



Source: Statistics Canada, Labour Force Survey, 1997 to 2009.

Whether wages grew less among offshorable occupations than among other occupations between the 1998 to 2000 period and the most recent period (2006 to 2009) depended on the occupational group considered.[13] Wages in offshorable jobs in natural and applied sciences occupations grew 5 percentage points faster than those in broadly comparable jobs (Table 3).[14,15] There is no evidence of differentiated and statistically significant wage growth in other occupational groupings.

The higher wage growth among offshorable natural and applied sciences occupations may partly reflect movements of offshorable jobs across industries or firms of different sizes. If offshorable jobs in natural and applied sciences occupations became increasingly concentrated in high-paying industries or in large firms over the past decade, they would tend to exhibit stronger wage growth than other jobs as a result of this change. To assess whether wage growth in offshorable occupations located in a given industry and in firms of a given size differed from that in other comparable occupations, controls for industry and firm size were needed.[16] After these controls were added, wages in offshorable jobs in natural and applied sciences occupations still grew faster than those in other broadly comparable jobs: the difference in wage growth dropped from 5 percentage points to 4 percentage points. Thus, the relatively strong wage growth observed in offshorable natural and applied sciences occupations did not result from compositional effects related to industry or firm size.

The numbers shown in Table 3 indicate that wages in offshorable and non-offshorable business, finance and administrative occupations grew at the same pace for the periods from 1998 to 2000 and from 2006 to 2009. Yet these numbers measure average wage growth across a diverse set of occupations. Offshorable positions in business, finance and administrative occupations include both professional occupations (e.g., financial auditors and accountants, and financial and investment analysts) and clerical jobs (e.g., secretaries, data entry clerks and telephone operators) whose wages may have evolved differently over the past decade.

When offshorable business, finance and administrative occupations are disaggregated into professional and clerical occupations, interesting patterns emerge. Compared to non-offshorable jobs in this grouping, offshorable professional occupations displayed faster wage growth (3 percentage points), while offshorable clerical occupations experienced slower wage growth (-2 percentage points) for the periods from 1998 to 2000 and from 2006 to 2009 (Table 4). The slower wage growth experienced by the clerical group is not recent: it was also observed from 1998 to 2000 and from 2001 to 2005. This implies that wages in offshorable and non-offshorable clerical occupations diverged early in the decade and then grew apace in the second half of the decade.

Table 3 Wage growth and offshorable occupations

	Controls for workers' characteristics		Full set of controls	
	β	t value	β	t value
Management				
2001 to 2005 versus 1998 to 2000	-0.01	-1.06	0.00	0.18
2006 to 2009 versus 1998 to 2000	-0.03	-1.81	-0.01	-0.83
Business, finance and administrative				
2001 to 2005 versus 1998 to 2000	-0.01	-1.74	-0.01	-1.09
2006 to 2009 versus 1998 to 2000	0.00	0.04	0.00	0.47
Natural and applied sciences and related				
2001 to 2005 versus 1998 to 2000	0.04*	2.88	0.03*	2.49
2006 to 2009 versus 1998 to 2000	0.05*	3.56	0.04*	3.25
Social science, education, government service and religion				
2001 to 2005 versus 1998 to 2000	0.01	0.55	0.01	0.40
2006 to 2009 versus 1998 to 2000	-0.03	-1.28	-0.04	-1.45
Art, culture, recreation and sport				
2001 to 2005 versus 1998 to 2000	0.00	-0.11	-0.01	-0.33
2006 to 2009 versus 1998 to 2000	0.02	0.67	0.02	0.52

* statistically significant at the 5% level

Note: Private-sector employees age 15 to 64, employed outside manufacturing, primary industries and construction, and holding a job in one of the five occupational groups shown above. Full-time students are excluded. Data from 1998 to 2009 are pooled. Separate regressions are run for each occupational group. See Multivariate models for details.

Source: Statistics Canada, Labour Force Survey, March and September, 1998 to 2009.

Table 4 Wage growth and selected offshorable occupations

	Controls for workers' characteristics		Full set of controls	
	β	t value	β	t value
Business, finance and administrative				
Offshorable clerical occupations				
2001 to 2005 versus 1998 to 2000	-0.02*	-3.09	-0.02*	-2.61
2006 to 2009 versus 1998 to 2000	-0.02*	-2.76	-0.02*	-2.27
Offshorable professional occupations				
2001 to 2005 versus 1998 to 2000	0.01	1.04	0.02	1.49
2006 to 2009 versus 1998 to 2000	0.03*	3.05	0.03*	3.01
Natural and applied sciences and related occupations, excluding mining and oil-related offshorable jobs				
2001 to 2005 versus 1998 to 2000	0.04*	2.86	0.03*	2.49
2006 to 2009 versus 1998 to 2000	0.05*	3.54	0.04*	3.25

* statistically significant at the 5% level
Note: Private-sector employees age 15 to 64, employed outside manufacturing, primary industries and construction, and holding a job in one of the two occupational groups shown above. Full-time students are excluded. Data from 1998 to 2009 are pooled. Separate regressions are run for each occupational group. See Multivariate models for details.
Source: Statistics Canada, Labour Force Survey, March and September, 1998 to 2009.

It is possible that increases in competition from workers in emerging countries predominantly affect wages of less-skilled workers. This could happen if, say, demand for telephone operators or data entry clerks grew at a slower pace than demand for computer programmers. If so, offshorable jobs held by less-educated employees would tend-to a greater degree than would be observed among highly educated workers-to display slower wage growth than those held by their counterparts employed in non-offshorable positions. This might be true especially in non-unionized firms, where wage concessions from workers might be easier to obtain.

Table 5 provides limited support for this hypothesis. For the periods from 1998 to 2000 and from 2006

Multivariate models

Multivariate analyses are used to estimate whether offshorable service-sector occupations and other service-sector occupations displayed similar wage growth between the late 1990s and the late 2000s. The following wage equation is estimated using the ordinary least squares (OLS) method:

$$\begin{aligned}\ln(\mathit{HOURLY\ WAGE})_{it} = \ & \beta_0 + \beta_1 \mathit{OFFSHORE}_{it} + \beta_2 \mathit{PERIOD\_0105}_{it} + \beta_3 \mathit{PERIOD\_0609}_{it} \\ & + \beta_4 \mathit{OFFSHORE}_{it} {*} \mathit{PERIOD\_0105}_{it} + \beta_5 \mathit{OFFSHORE}_{i} {*} \mathit{PERIOD\_0609}_{it} \\ & + \beta_6 X_{it} + \beta_7 Z_{it} + \varepsilon_{it}\end{aligned}$$

where the dependent variable is the natural logarithm of hourly wages of worker i in year t, and where ε_{it} is an error term uncorrelated across individuals and years. Controls for workers' characteristics, X_{it}, include education, gender, a quadratic term in age and seniority, and interaction terms between gender and age, and gender and seniority, as well as province indicators. Also included are a constant term, an offshorability indicator ($\mathit{OFFSHORE}_{it}$, equal to 1 if a job is offshorable, 0 otherwise), two indicators for the periods from 2001 to 2005 and from 2006 to 2009 ($\mathit{PERIOD\_0105}_{it}$ and $\mathit{PERIOD\_0609}_{it}$,) and interaction terms between period indicators and the offshorability indicator. Apart from these variables, the full set of controls includes the following job-related characteristics, Z_{it}: 69 industry categories, 4 firm-size categories (1 to 19, 20 to 99, 100 to 499, and 500 employees or more), 10 occupation groups, union status and full-time status.

When separate analyses are conducted by education level and union status, controls for education levels and union status are omitted. In all analyses, the period from 1998 to 2000 is the reference (or omitted) period.

The numbers shown in tables 3 to 7 are the estimated values of β_4 and β_5. They measure the degree to which wages in offshorable service-sector jobs and those in other service-sector jobs grew at a different pace between the period from 1998 to 2000 and the periods from 2001 to 2005 and from 2006 to 2009. For instance, an estimated value of 0.10 for β_4 (β_5) implies that, for the periods from 1998 to 2000 and from 2001 to 2005 (2006 to 2009), wages in offshorable service-producing occupations grew 11 percentage points faster than wages in other service-producing occupations. The 11 percentage-point figure is obtained by taking the antilog of 0.10 minus 1.

All t-values shown in tables 3 to 7 take the LFS (Labour Force Survey) complex survey design into account.

Table 5 Wage growth and offshorable occupations, by education level and union coverage

	Controls for workers' characteristics		Full set of controls	
	β	t value	β	t value
Non-unionized workers				
High school or less				
2001 to 2005 versus 1998 to 2000	-0.06*	-6.97	-0.05*	-6.04
2006 to 2009 versus 1998 to 2000	-0.06*	-6.60	-0.05*	-5.93
Some postsecondary				
2001 to 2005 versus 1998 to 2000	-0.02*	-2.67	-0.02*	-2.58
2006 to 2009 versus 1998 to 2000	-0.03*	-3.46	-0.03*	-3.18
University degree				
2001 to 2005 versus 1998 to 2000	-0.01	-0.96	-0.01	-1.22
2006 to 2009 versus 1998 to 2000	-0.01	-1.00	-0.02	-1.46
Unionized workers				
High school or less				
2001 to 2005 versus 1998 to 2000	-0.04*	-2.39	-0.03*	-1.96
2006 to 2009 versus 1998 to 2000	-0.02	-1.21	-0.01	-0.60
Some postsecondary				
2001 to 2005 versus 1998 to 2000	-0.01	-0.54	-0.01	-0.71
2006 to 2009 versus 1998 to 2000	0.01	0.34	0.00	0.12
University degree				
2001 to 2005 versus 1998 to 2000	-0.03	-1.19	-0.02	-0.86
2006 to 2009 versus 1998 to 2000	0.01	0.43	0.01	0.51

* statistically significant at the 5% level
Note: Private-sector employees age 15 to 64, employed outside manufacturing, primary industries and construction, and holding a job in one of the five occupational groups shown in Table 3. Full-time students are excluded. Data from 1998 to 2009 are pooled. Separate regressions are run for each education-union coverage cell. See Multivariate models for details.
Source: Statistics Canada, Labour Force Survey, March and September, 1998 to 2009.

to 2009, wages of workers with a high school education or less and who were employed in non-unionized offshorable jobs grew 5 to 6 percentage points less than those of their counterparts employed in non-offshorable positions. In contrast, wages of non-unionized university graduates employed in offshorable positions and those holding other jobs did not differ significantly. The same patterns were observed for 1998 to 2000 and for 2001 to 2005. This implies that among non-unionized employees with a high school education or less, offshorable jobs and other jobs displayed the same wage growth between the periods from 2001 to 2005 and from 2006 to 2009.

Another scenario is that growing competition from abroad might operate mainly by putting downward pressure on pay rates of workers at the bottom of the wage distribution. If so, wage growth in offshorable jobs would lag behind that of other jobs to a *greater degree* among low-paid positions than among better-paid positions. This hypothesis is examined in Table 6. It receives limited support from the data: for the periods from 1998 to 2000 and from 2006 to 2009, wage growth in offshorable jobs lagged behind that of other jobs to a greater extent in low-paid positions than in high-paid positions in management occupations and in business, finance and administrative occupations, but not in natural and applied sciences occupations.[17] For instance, wages in low-paid offshorable jobs in business, finance and administrative occupations grew 4 percentage points slower than wages in low-paid non-offshorable jobs. At the same time, wages in high-paid offshorable jobs in that occupational group grew 4 percentage points faster than wages in high-paid non-offshorable jobs. However, the opposite pattern is found in natural and applied sciences occupations. In other occupational groups, differences in wage growth between offshorable and non-offshorable jobs were not statistically significant.

Offshorability and wage growth among newly hired employees

Analyses that include all workers in selected sectors are not well-suited for detecting changes in the wages employers offer workers when new positions become available (as a result of quits and/or firm expansions). Analyzing the evolution of wages of newly hired employees can help identify channels through which Canadian firms may respond to growing competition within industries and from abroad. More intense competition on the product market could induce some companies to reduce their labour costs by lowering the wages offered to new hires, while maintaining or increasing wages of workers with greater seniority. Under this scenario, differences in wage growth between offshorable and non-offshorable jobs would be bigger among newly hired employees than among their counterparts with greater seniority.

Table 7 provides some mixed evidence for this hypothesis. Between the periods from 1998 to 2000 and from 2006 to 2009, wage growth in offshorable jobs appears to lag behind that of other jobs to a greater degree among newly hired employees than among other employees in management occupations and business, finance and administrative occupations. Yet the opposite pattern was observed in natural and applied sciences occupations. In other occupational groups, wage growth parameters are imprecisely estimated.

Together, the numbers presented in tables 3 to 7 highlight two facts. First, whatever potential factors are considered, wages in offshorable service-sector jobs did not grow systematically more or less than those in other service-sector positions over the past decade. Second, in some cases, offshorable jobs displayed weaker wage growth than other jobs for the periods from 1998 to 2000 and from 2001 to 2005, but similar wage growth afterwards. Since there is no clear reason why the effect of offshoring would be limited to one time period, the slower wage growth observed in some offshorable jobs from 1998 to 2000 and from 2001 to 2005 might well be driven by factors other than service offshoring.[18]

Conclusion

In recent years, the emergence of ICTs and the growing availability of highly skilled workers in fast-growing countries like China and India have allowed Canadian firms to move some service-sector jobs offshore. Such a change in service

Table 6 Offshorability and wage growth at the bottom and top of the wage distribution, by occupation

	Controls for workers' characteristics		Full set of controls	
	β	t value	β	t value
Management				
2001 to 2005 versus 1998 to 2000				
Bottom third	0.00	-0.19	0.00	-0.18
Top third	-0.03*	-2.97	-0.03*	-2.88
2006 to 2009 versus 1998 to 2000				
Bottom third	-0.06*	-3.58	-0.06*	-3.61
Top third	-0.04*	-3.55	-0.04*	-3.35
Business, finance and administrative				
2001 to 2005 versus 1998 to 2000				
Bottom third	-0.02*	-2.41	-0.02*	-2.67
Top third	0.02*	2.73	0.03*	3.35
2006 to 2009 versus 1998 to 2000				
Bottom third	-0.04*	-5.21	-0.04*	-5.34
Top third	0.04*	4.74	0.04*	5.32
Natural and applied sciences and related				
2001 to 2005 versus 1998 to 2000				
Bottom third	0.10*	6.26	0.09*	5.93
Top third	0.03*	2.49	0.03*	2.43
2006 to 2009 versus 1998 to 2000				
Bottom third	0.11*	6.69	0.10*	5.92
Top third	0.05*	3.75	0.04*	3.59
Social science, education, government service and religion				
2001 to 2005 versus 1998 to 2000				
Bottom third	0.06	1.75	0.06	1.84
Top third	0.06*	2.74	0.07*	3.14
2006 to 2009 versus 1998 to 2000				
Bottom third	-0.03	-0.83	-0.01	-0.39
Top third	0.02	1.04	0.03	1.20
Art, culture, recreation and sport				
2001 to 2005 versus 1998 to 2000				
Bottom third	-0.02	-0.95	-0.03	-1.32
Top third	0.02	0.83	0.02	0.78
2006 to 2009 versus 1998 to 2000				
Bottom third	-0.02	-0.63	0.01	0.32
Top third	0.01	0.31	-0.01	-0.46

* statistically significant at the 5% level

Note: Private-sector employees age 15 to 64, employed outside manufacturing, primary industries and construction, and holding a job in one of the five occupational groups shown above. Full-time students are excluded. Data from 1998 to 2009 are pooled. Separate regressions are run for each occupation-tier cell. See Multivariate models for details.

Source: Statistics Canada, Labour Force Survey, March and September, 1998 to 2009.

Table 7 Offshorability and wage growth, by seniority and occupation

	Controls for workers' characteristics		Full set of controls	
	β	t value	β	t value
Management				
2001 to 2005 versus 1998 to 2000				
Newly hired employees	-0.02	-0.62	-0.01	-0.49
Other employees	-0.01	-0.50	0.01	0.77
2006 to 2009 versus 1998 to 2000				
Newly hired employees	-0.05	-1.64	-0.04	-1.16
Other employees	-0.02	-1.00	0.00	-0.12
Business, finance and administrative				
2001 to 2005 versus 1998 to 2000				
Newly hired employees	-0.04*	-2.98	-0.03*	-2.53
Other employees	0.00	0.29	0.01	0.89
2006 to 2009 versus 1998 to 2000				
Newly hired employees	-0.04*	-2.74	-0.03*	-2.31
Other employees	0.02*	2.27	0.02*	2.58
Natural and applied sciences and related				
2001 to 2005 versus 1998 to 2000				
Newly hired employees	0.10*	4.67	0.09*	4.17
Other employees	-0.01	-0.43	-0.01	-0.58
2006 to 2009 versus 1998 to 2000				
Newly hired employees	0.10*	4.66	0.09*	4.13
Other employees	0.01	0.47	0.01	0.41
Social science, education, government service and religion				
2001 to 2005 versus 1998 to 2000				
Newly hired employees	0.02	0.45	0.00	-0.05
Other employees	0.01	0.29	0.02	0.54
2006 to 2009 versus 1998 to 2000				
Newly hired employees	-0.04	-0.84	-0.04	-0.98
Other employees	-0.03	-1.03	-0.03	-0.81
Art, culture, recreation and sport				
2001 to 2005 versus 1998 to 2000				
Newly hired employees	-0.01	-0.22	-0.01	-0.26
Other employees	-0.01	-0.32	-0.01	-0.37
2006 to 2009 versus 1998 to 2000				
Newly hired employees	0.05	1.04	0.01	0.25
Other employees	0.00	0.03	0.03	0.73

* statistically significant at the 5% level

Notes: Private-sector employees age 15 to 64, employed outside manufacturing, primary industries and construction, and holding a job in one of the five occupational groups shown above. Full-time students are excluded. Data from 1998 to 2009 are pooled. Separate regressions are run for each occupation-seniority cell. See Multivariate models for details.

Newly hired employees are those with less than 2 years of seniority in the company.

Source: Statistics Canada, Labour Force Survey, March and September, 1998 to 2009.

employment patterns could affect wages and wage growth in offshorable jobs.

This article examined whether offshorable service-sector occupations have displayed similar wage growth to comparable occupations since the late 1990s. It found no evidence that wages in offshorable service-producing occupations grew systematically less than those in other occupations. Some offshorable occupations, namely those involving clerical work, exhibited weaker wage growth while those in natural and applied sciences occupations displayed stronger wage growth than broadly comparable non-offshorable occupations.

These results suggest that if service offshoring has affected wages of Canadian workers so far, the impact is unlikely to have been uniform across occupations. To test this hypothesis, subsequent research should link Canadian trade data on imports and exports of services and commodities to worker-level wage data from the Labour Force Survey. Such a link would enable an empirical evaluation of the assumed offshorability of jobs, as well as the associated wage effects of offshoring or inshoring.

Perspectives

Notes

1. Evidence that Canadian firms started contracting out some service-producing jobs to non-OECD countries like China and India can be found in data produced by Statistics Canada's Balance of Payments Division. These data consist of a series of business surveys that measure the imports and exports of commercial services and contain

information about 48 types of commercial services (e.g., telecommunications, accounting, architectural and engineering services, and information-related services). Statistics can be broken down by industry and by country of origin or destination, thereby allowing analysts to distinguish imports from OECD countries from those originating from non-OECD countries like China and India. Morissette and Johnson (2007) use these data and find that, in 2004, imports of computer, information and other business services (such as management services, advertising and related services, research and development, architectural, engineering, and other technical services) from non-OECD countries amounted to roughly $1 billion, compared to $17 billion for those from OECD countries.

2. The net effect of offshoring on employment need not be negative. One reason is that domestic firms might reduce their production costs by offshoring low-skilled tasks, which in turn might increase their profit-maximizing output and increase the demand for (and employment of) some types of workers (Cheung et al. 2008). Morissette and Johnson (2007) use several data sets to examine the relationship between service offshoring and employment. They find little evidence of a correlation between service offshoring and the evolution of employment and layoff rates.

3. So far, the discussion has been framed solely in terms of imports of services. However, exports of services (termed inshoring by Liu and Trefler [2008]) are another factor that may stimulate demand for some types of workers and thus increase wages.

4. The private sector includes all self-employed workers and business owners and all employees except those in public administration at the federal, provincial, territorial, municipal, First Nations and other Aboriginal levels as well as in Crown corporations, liquor control boards, and other government institutions such as schools (including universities), hospitals and public libraries.

5. For instance, the "computer operators" category, used by van Welsum and Reif (2005), is replaced by "computer and network operators and web technicians."

6. About 1.4 million and 1.7 million service-sector jobs were subject to offshoring in 1999 and 2009, respectively. In both years, they accounted for about 21% of all paid jobs in the economy. Although they refer to offshorable jobs in the service sector only, these estimates are in line with those of Blinder (2009) who, when combining the goods sector and the service sector, estimates that between 22% and 29% of all paid jobs in the United States were potentially offshorable in 2004.

7. Since the sample used in tables 1 and 2 consists of private-sector employees (15 to 64, who are not full-time students, and who are employed outside manufacturing, primary industries and construction), readers might wonder why numbers for public services are shown in these tables. The reason is that some workers, e.g., nurses in privately owned residences for seniors, are private-sector employees operating in sub-sectors (e.g., health) of public services.

8. Multivariate analyses indicate that close to one-half of the increase (from 29% to 38%) observed between 1999 and 2009 is due to the growing proportion of offshorable jobs held by older and highly educated workers.

9. Although the wage data used in this article start in 1997, information on firm size is available only starting in 1998. Since firm size is subsequently used as a control variable in multivariate analyses of wage growth, the focus in this section is on wage growth between 1998 and 2009.

10. Since they account for less than 2% of jobs in sales and service occupations (group G), offshorable jobs held by insurance agents and brokers are not considered in the remainder of the article.

11 Chart A also shows relatively high wage volatility among offshorable jobs in social science and art, culture, recreation and sport. Part of it might be related to the relatively small sample sizes for these jobs.

12. Calendar years are grouped into three periods to increase the precision of the estimates. The initial period starts with the year 1998 since subsequent multivariate analyses require controlling for firm size, a variable for which data are not available in the LFS prior to 1998. Workers' characteristics also include control for gender and province (see *Multivariate models*).

13. The same conclusion is obtained when wage growth is measured between the periods from 1998 to 2000 and from 2006 to 2008.

14. Differences in wage growth, measured in percentage points, are obtained by taking the antilog of the coefficients shown in tables 3 to 7, minus one.

15. The difference is statistically significant at the 1% level (two-tailed test).

16. Conversely, if movements of offshorable jobs across industries or companies of different sizes actually result from factors related to offshoring, controls for industry and firm size are best avoided.

17. For each year, occupational group and value of the offshorability indicator (1 for offshorable jobs, 0 otherwise), jobs in the bottom (top) third of the (cell-specific) wage distribution are selected. Data for the years from 1998 to 2009 are pooled. For each occupational group and each tier, separate regression models are estimated as described in *Multivariate models*.

18. For instance, if labour-saving technological changes were more prominent among offshorable jobs held by non-unionized low-educated workers than other jobs held by their counterparts, wages could grow less among the former group than the latter, thereby potentially accounting for the slower wage growth observed among the former group between 1998 and 2000 and 2001 and 2005.

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Unionization 2010

Sharanjit Uppal

Unionization rates in the first half of 2009 and 2010

Average paid employment (employees) during the first half of 2010 was 14.3 million, an increase of 171,000 over the same period one year earlier (Table 1). The number of unionized employees also increased by 64,000 (to 4.2 million). However, since union membership rose slightly more rapidly than employment, the unionization rate edged up from 29.5% in 2009 to 29.6% in 2010.

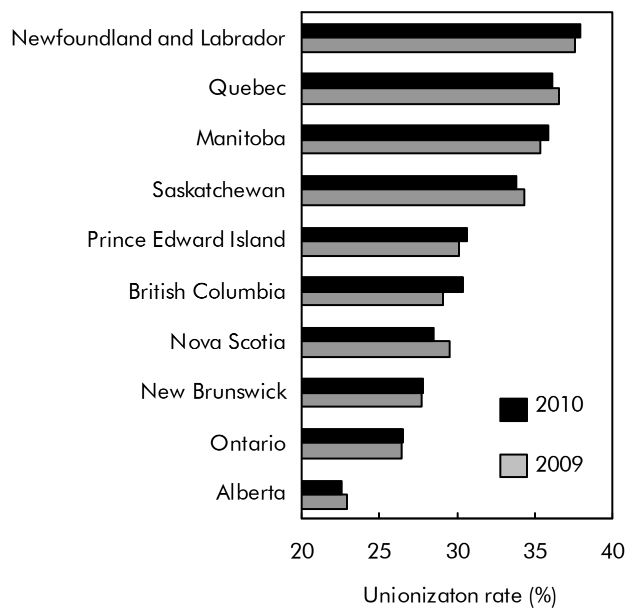
As women experienced disproportionately more gains in unionized jobs, their unionization rate rose to 30.9%. The unionization rate for men remained constant at 28.2%. As a result, the gap in the rates between men and women widened further in 2010.

As with overall job gains, gains in unionized jobs were spread over full-time and part-time jobs. Unionization among full-time workers increased to 31.1%. The unionization rate of part-time workers rose to 23.5% in 2010.

Data sources

Information on union membership, density and coverage by various sociodemographic characteristics, including earnings, are from the Labour Force Survey. Further details can be obtained from Marc Lévesque, Labour Statistics Division, Statistics Canada, 613-951-4090. Data on strikes, lockouts and workdays lost, and those on major wage settlements were supplied by Human Resources and Skills Development Canada (HRSDC). Further information on these statistics may be obtained from Client Services, Workplace Information Directorate, HRSDC, 1-800-567-6866.

Chart A Newfoundland and Labrador, the most unionized province; Alberta, the least



Source: Statistics Canada, Labour Force Survey, January-to-June averages.

The unionization rate for permanent employees increased to 30.0%. However, it decreased to 27.3% for those in non-permanent jobs. Between 2009 and 2010, the unionization rate rose in larger firms (100 employees or more), decreased for those with 20 to 99 employees, and remained constant for firms with fewer than 20 employees.

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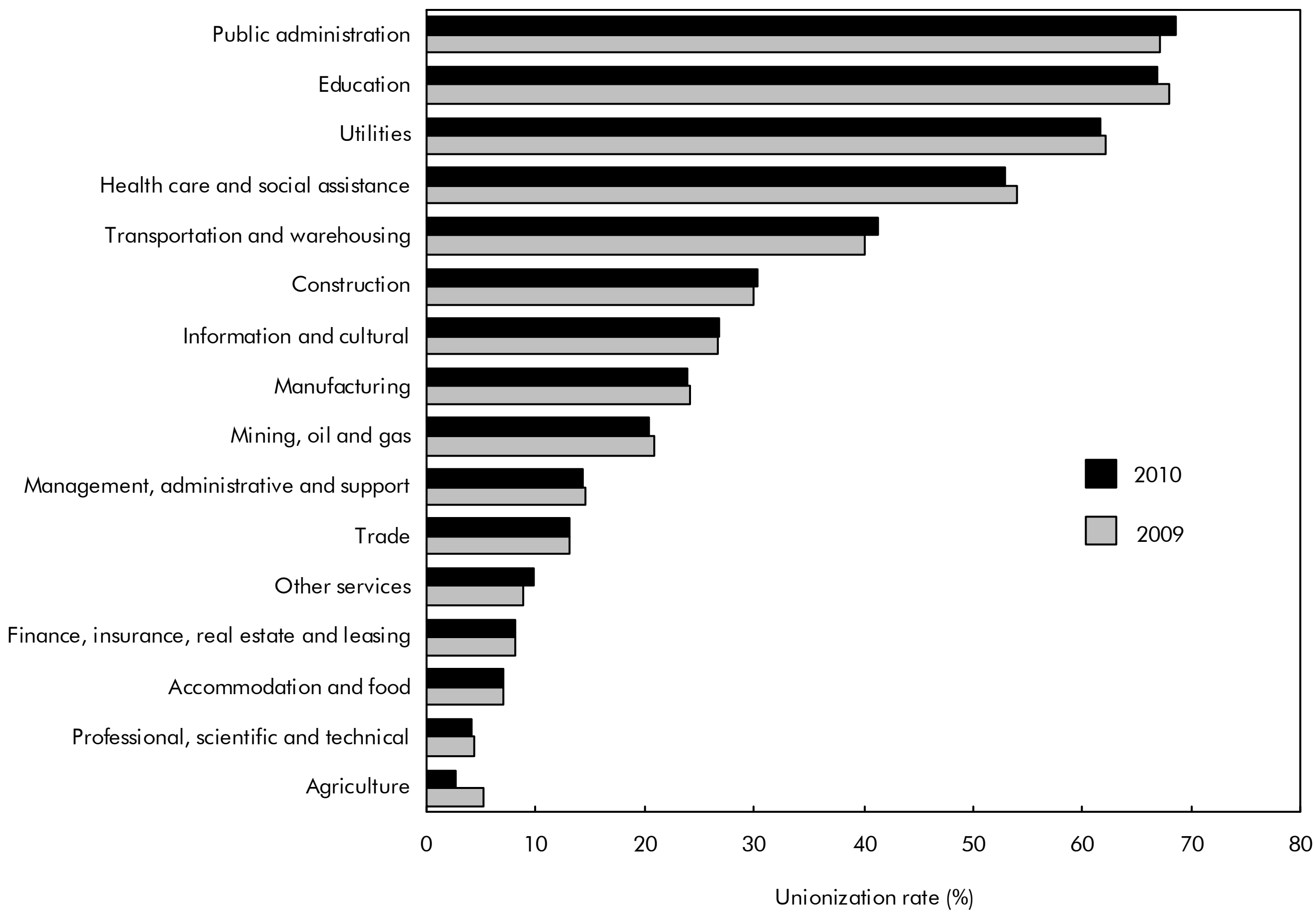
The provincial picture was more mixed (Chart A). Six provinces recorded increases in their unionization rates, British Columbia being the one with the largest increase. In contrast, unionization decreased in Nova Scotia, Quebec, Saskatchewan and Alberta.

Changes in unionization rates varied across industries. Notable declines were observed in agriculture, health care and social assistance, and education. Notable increases occurred in transportation and warehousing, and public administration. (Chart B).

Chart B The highest unionization rates were in public sector industries

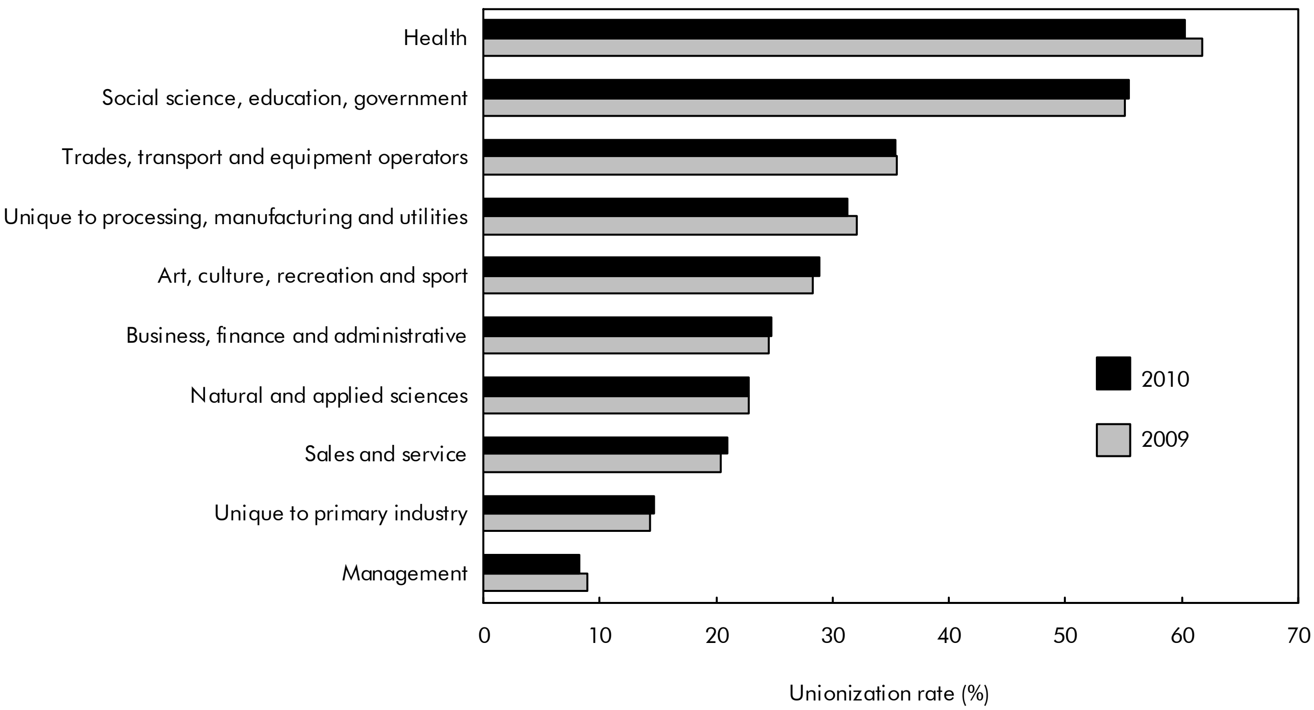


Source: Statistics Canada, Labour Force Survey, January-to-June averages.

Changes in the unionization rate also varied across 10 major occupational groups (Chart C). Unionization declined most in health and management, and among occupations unique to processing, manufacturing and utilities. The unionization rate also declined in trades, transport and equipment operator occupations. Conversely, it rose in art, culture, recreation and sport occupations, and sales and service. Changes in the unionization rate were more modest among other major occupational categories.

Finally, the number of employees who were not union members but were covered by a collective agreement averaged 288,000 in the first half of 2010, a decrease from last year's total of 300,000.

Chart C Unionization in community service occupations far outpaced that in others



Source: Statistics Canada, Labour Force Survey, January-to-June averages.

Table 1 Union membership and coverage by selected characteristics

	2009			2010		
	Total employees	Union density		Total employees	Union density	
		Members	Coverage[1]		Members	Coverage[1]
	'000	%	%	'000	%	%
Both sexes	**14,087**	**29.5**	**31.6**	**14,258**	**29.6**	**31.6**
Men	6,963	28.2	30.4	7,049	28.2	30.4
Women	7,123	30.8	32.9	7,209	30.9	32.8
Sector[2]						
Public	3,423	71.3	75.1	3,509	71.2	74.8
Private	10,664	16.1	17.7	10,749	16.0	17.5
Age						
15 to 24	2,321	14.7	16.5	2,281	14.9	16.5
25 to 54	9,800	31.9	34.1	9,920	32.0	34.1
25 to 44	6,415	29.4	31.6	6,475	30.0	32.2
45 to 54	3,385	36.6	38.8	3,445	35.8	37.8
55 and over	1,966	35.2	37.3	2,057	34.4	36.3
Education						
Less than Grade 9	289	24.4	26.4	277	24.0	25.3
Some high school	1,344	20.1	21.6	1,295	20.4	22.0
High school graduation	2,788	25.3	26.9	2,858	25.7	27.0
Some postsecondary	1,229	21.6	23.3	1,205	22.6	24.6
Postsecondary certificate or diploma	5,003	33.2	35.6	5,032	33.3	35.4
University degree	3,434	34.5	37.1	3,591	33.6	36.3
Province						
Atlantic	954	30.5	32.0	954	30.3	31.7
Newfoundland and Labrador	189	37.5	39.3	193	37.9	39.7
Prince Edward Island	58	30.1	32.6	58	30.7	33.0
Nova Scotia	388	29.5	30.8	388	28.4	29.6
New Brunswick	319	27.7	29.1	314	27.8	29.2
Quebec	3,257	36.5	40.0	3,327	36.1	39.3
Ontario	5,480	26.4	28.1	5,553	26.5	27.9
Prairies	2,585	27.3	29.2	2,587	27.1	29.6
Manitoba	520	35.4	37.4	524	35.9	38.1
Saskatchewan	422	34.3	36.3	422	33.8	35.9
Alberta	1,643	22.9	24.8	1,641	22.6	25.2
British Columbia	1,811	29.1	30.6	1,838	30.4	31.8
Work status						
Full-time	11,398	31.0	33.2	11,530	31.1	33.2
Part-time	2,689	23.3	25.1	2,728	23.5	25.0
Industry						
Goods-producing	2,970	26.5	28.5	2,962	26.5	28.6
Agriculture	114	5.3	6.3	100	2.7	3.2
Natural resources	271	20.9	22.3	277	20.3	23.1
Utilities	147	62.2	67.0	146	61.6	65.5
Construction	744	30.0	31.8	801	30.3	32.0
Manufacturing	1,694	24.2	26.2	1,638	24.0	26.2
Service-producing	11,117	30.3	32.5	11,296	30.4	32.4
Trade	2,319	13.1	14.7	2,378	13.1	14.4
Transportation and warehousing	690	40.0	41.7	645	41.3	42.8
Finance, insurance, real estate and leasing	902	8.2	9.6	909	8.2	9.2
Professional, scientific and technical	786	4.3	5.2	821	4.2	5.3
Business, building and other support	490	14.6	16.2	495	14.3	16.2
Education	1,163	68.0	71.9	1,207	67.0	70.9
Health care and social assistance	1,704	54.0	56.4	1,778	52.9	55.3
Information, culture and recreation	626	26.6	28.6	625	26.9	28.3
Accommodation and food	972	7.0	7.8	978	7.0	7.8
Other	546	8.8	10.1	524	9.8	11.0
Public administration	920	67.2	72.8	935	68.5	73.4

Table 1 Union membership and coverage by selected characteristics (concluded)

	2009			2010		
		Union density			Union density	
	Total employees	Members	Coverage[1]	Total employees	Members	Coverage[1]
	'000	%	%	'000	%	%
Occupation						
Management	1,019	8.9	11.2	1,019	8.3	10.9
Business, finance and administrative	2,787	24.6	26.7	2,751	24.7	26.5
Professional	420	18.0	19.5	407	16.1	17.9
Financial and administrative	733	24.2	26.5	734	25.3	27.4
Clerical	1,634	26.5	28.7	1,610	26.6	28.3
Natural and applied sciences	1,036	22.8	24.9	1,098	22.8	24.9
Health	912	61.7	64.2	951	60.2	62.4
Professional	105	40.2	46.1	107	38.2	44.7
Nursing	273	81.5	83.1	278	78.5	80.5
Technical	216	57.5	60.0	223	59.8	61.0
Support staff	319	54.8	56.7	342	52.5	54.2
Social science, education, government	1,387	55.1	58.2	1,437	55.4	58.7
Legal, social and religious workers	683	35.9	38.4	714	37.1	40.0
Teachers and professors	704	73.7	77.4	724	73.5	77.2
Secondary and elementary	485	85.5	88.2	492	85.9	88.0
Other	219	47.5	53.7	232	47.1	54.3
Art, culture, recreation and sport	322	28.3	30.9	341	28.9	30.8
Sales and service	3,658	20.5	22.3	3,716	21.0	22.5
Wholesale	383	4.9	6.1	386	5.5	6.8
Retail	1,025	11.7	12.9	1,080	13.2	14.3
Food and beverage	531	9.9	10.8	527	10.1	10.8
Protective services	250	54.0	61.4	251	57.6	62.4
Child care and home support	195	49.6	51.2	200	45.4	48.4
Travel and accommodation	1,274	25.7	27.3	1,272	25.6	27.0
Trades, transport and equipment operators	1,968	35.6	37.6	1,968	35.4	37.4
Contractors and supervisors	140	27.2	29.6	138	29.0	30.9
Construction trades	271	38.1	39.7	283	35.7	37.2
Other trades	768	38.1	40.3	760	37.7	40.0
Transportation equipment operators	490	34.7	36.0	484	37.0	38.7
Helpers and labourers	300	32.1	34.8	303	29.5	32.2
Unique to primary industry	253	14.3	15.9	241	14.6	15.9
Unique to processing, manufacturing and utilities	745	32.1	34.3	736	31.3	33.2
Machine operators and assemblers	603	31.7	33.7	590	30.7	32.6
Labourers	143	34.0	36.9	146	33.6	35.3
Workplace size						
Under 20 employees	4,697	13.4	14.9	4,806	13.4	14.7
20 to 99 employees	4,732	30.2	32.4	4,707	29.8	32.0
100 to 500 employees	2,883	40.4	43.1	2,949	41.1	43.5
Over 500 employees	1,775	52.7	55.4	1,797	53.7	56.5
Job tenure						
1 to 12 months	3,053	16.4	18.6	2,855	16.0	18.0
Over 1 year to 5 years	4,753	23.4	25.3	4,936	24.3	26.1
Over 5 years to 9 years	2,051	32.2	34.4	2,012	31.6	33.6
Over 9 years to 14 years	1,464	34.9	36.8	1,657	36.5	38.2
Over 14 years	2,766	49.6	52.1	2,798	47.4	49.9
Job status						
Permanent	12,449	29.8	31.8	12,434	30.0	31.9
Non-permanent	1,638	27.7	30.4	1,824	27.3	29.7

1. Union members and persons who are not union members but covered by collective agreements (for example, some religious group members).
2. Public sector employees are those working for government departments or agencies; Crown corporations; or publicly funded schools, hospitals or other institutions. Private sector employees are all other wage and salary earners.

Source: Statistics Canada, Labour Force Survey, January-to-June averages.

2009 annual averages

Approximately 4.2 million employees (29.3%) belonged to a union in 2009 and another 296,000 (2.1%) were covered by a collective agreement (Table 2).

In the public sector, which consisted of government, Crown corporations, and publicly funded schools and hospitals, 70.9% of employees belonged to a union. This was more than four times the rate for the private sector (16.1%).

Approximately one-third of full-time employees belonged to a union, compared with about one-fourth of part-time employees. Also, almost 30% of permanent employees were union members, compared with about 27% of non-permanent employees.

Unionization rates also varied by age group, with 36.4% of those age 45 to 54 belonging to a union compared to 14.6% of those age 15 to 24. High unionization rates were also found among those with a university degree (34.0%) or a postsecondary certificate or diploma (33.2%); in Newfoundland and Labrador (37.4%) and in Quebec (36.3%); in educational services (67.6%), public administration (66.9%) and utilities (61.8%); and in health care occupations (61.5%). Low unionization rates were recorded in Alberta (22.9%); in agriculture (4.5%) and professional, scientific and technical services (4.2%); and in management occupations (9.1%).

Table 2 Union membership, 2009

	Total employees	Union member[1]	
		Total	Density
	'000	'000	%
Both sexes	**14,147**	**4,152**	**29.3**
Men	7,030	1,977	28.1
Women	7,117	2,175	30.6
Sector[2]			
Public	3,412	2,418	70.9
Private	10,735	1,734	16.1
Age			
15 to 24	2,345	343	14.6
25 to 54	9,823	3,125	31.8
25 to 44	6,430	1,889	29.4
45 to 54	3,394	1,235	36.4
55 and over	1,979	685	34.6
Education			
Less than Grade 9	285	70	24.4
Some high school	1,331	269	20.2
High school graduation	2,848	711	25.0
Some postsecondary	1,213	262	21.6
Postsecondary certificate or diploma	5,032	1,670	33.2
University degree	3,438	1,170	34.0
Province			
Atlantic	969	294	30.3
Newfoundland and Labrador	194	73	37.4
Prince Edward Island	59	18	29.9
Nova Scotia	392	115	29.4
New Brunswick	324	89	27.4
Quebec	3,280	1,192	36.3
Ontario	5,504	1,430	26.0
Prairies	2,581	700	27.1
Manitoba	523	183	34.9
Saskatchewan	421	143	33.9
Alberta	1,636	375	22.9
British Columbia	1,813	536	29.6
Work status			
Full-time	11,537	3,542	30.7
Part-time	2,610	609	23.3
Industry			
Goods-producing	3,023	807	26.7
Agriculture	118	5	4.5
Natural resources	272	59	21.7
Utilities	147	91	61.8
Construction	795	236	29.6
Manufacturing	1,690	416	24.6
Service-producing	11,125	3,345	30.1
Trade	2,338	312	13.3
Transportation and warehousing	677	271	40.1
Finance, insurance, real estate and leasing	902	74	8.2
Professional, scientific and technical	781	32	4.2
Business, building and other support	492	70	14.2
Education	1,135	767	67.6
Health care and social assistance	1,718	921	53.6
Information, culture and recreation	646	163	25.2
Accommodation and food	966	67	6.9
Other	545	48	8.8
Public administration	927	620	66.9

Differences between the sexes

For the sixth year in a row, the unionization rate for women in 2009 surpassed the rate for men (30.6% vs. 28.1%). The gap widened by 1.2 percentage points compared with 2008.

Among men, part-time employees had a much lower rate than full-time employees (19.3% versus 29.2%). Among women, the gap was narrower (25.1% versus 32.4%) (data not shown). The unionization rate for women in the public sector (73.0%) exceeded the rate for men (67.5%), reflecting women's presence in public administration, and in teaching and health positions. However, in the private sector, only 12.7% of women were unionized, compared with 19.2% of men. The lower rate among women reflected their predominance in sales and several service occupations.

A higher-than-average rate was recorded among men with a postsecondary certificate or diploma (33.0%). For women, the highest rate was among those with a university degree (40.8%), reflecting unionization in occupations like health care and teaching.

Among those in permanent positions, the rate for men (28.6%) was lower than the rate for women (30.8%). The gap was even more predominant among those in non-permanent positions (28.9% for women versus 24.5% for men).

Table 2 Union membership, 2009 (concluded)

	Total employees	Union member[1]	
		Total	Density
	'000	'000	%
Occupation			
Management	1,022	93	9.1
Business, finance and administrative	2,761	676	24.5
Professional	411	72	17.5
Financial and administrative	732	175	23.9
Clerical	1,618	429	26.5
Natural and applied sciences	1,047	243	23.2
Health	924	568	61.5
Professional	109	44	40.5
Nursing	281	227	80.8
Technical	221	127	57.5
Support staff	313	170	54.2
Social science, education, government	1,378	752	54.6
Legal, social and religious workers	687	247	35.9
Teachers and professors	691	506	73.2
Secondary and elementary	466	398	85.5
Other	226	108	47.7
Art, culture, recreation and sport	334	89	26.5
Sales and service	3,654	742	20.3
Wholesale	382	19	4.9
Retail	1,052	130	12.3
Food and beverage	524	50	9.5
Protective services	248	136	54.8
Child care and home support	182	84	45.9
Travel and accommodation	1,267	325	25.6
Trades, transport and equipment operators	2,012	703	34.9
Contractors and supervisors	141	40	28.2
Construction trades	280	103	37.0
Other trades	771	286	37.1
Transportation equipment operators	500	173	34.6
Helpers and labourers	322	101	31.3
Unique to primary industry	267	38	14.3
Unique to processing, manufacturing and utilities	747	248	33.1
Machine operators and assemblers	603	197	32.7
Labourers	144	50	34.9
Workplace size			
Under 20 employees	4,724	627	13.3
20 to 99 employees	4,732	1,404	29.7
100 to 500 employees	2,899	1,186	40.9
Over 500 employees	1,792	935	52.2
Job tenure			
1 to 12 months	2,988	486	16.3
Over 1 year to 5 years	4,849	1,132	23.3
Over 5 years to 9 years	2,053	659	32.1
Over 9 years to 14 years	1,509	529	35.1
Over 14 years	2,749	1,346	49.0
Job status			
Permanent	12,381	3,678	29.7
Non-permanent	1,766	473	26.8

1. Excludes non-members covered by a collective agreement.
2. Public sector employees are those working for government departments or agencies; Crown corporations; or publicly funded schools, hospitals or other institutions. Private sector employees are all other wage and salary earners.

Source: Statistics Canada, Labour Force Survey.

Average earnings and usual hours

Earnings are generally higher in unionized than non-unionized jobs. Factors other than collective bargaining provisions contribute to this. These include varying distributions of unionized employees by age, sex, job tenure, industry, occupation, firm size, and geographical location. The effects of these factors are not examined here. However, unionized workers and jobs clearly have characteristics that are associated with higher earnings. For example, unionization is higher for older workers, those with more education, those with long tenure, and those in larger workplaces. Still, a wage premium exists, which, after controlling for employee and workplace characteristics, has been estimated at 7.7% (Fang and Verma 2002).

Average hourly earnings of unionized workers were higher than those of non-unionized workers in 2009 (Table 3). This held true for both full-time employees ($25.93 versus $22.35) and part-time employees ($21.25 versus $13.71). Unionized part-time employees not only had higher hourly earnings, but they also worked more (19.2 hours versus 16.7 hours). This led to a larger gap in weekly earnings ($414.55 versus $236.19).

Table 3 Average earnings and usual hours by union and job status, 2009

	Hourly earnings			Usual weekly hours, main job		
	All employees	Full-time	Part-time	All employees	Full-time	Part-time
		$			hours	
Both sexes	22.05	23.52	15.57	35.2	39.2	17.3
Union member	25.24	25.93	21.25	35.6	38.4	19.2
Union coverage[1]	25.20	25.90	21.14	35.6	38.5	19.1
Not a union member[2]	20.61	22.35	13.71	35.0	39.6	16.7
Men	23.87	25.05	14.66	37.7	40.4	16.5
Union member	26.00	26.58	19.26	37.9	39.6	18.1
Union coverage[1]	26.00	26.58	19.19	37.9	39.6	17.9
Not a union member[2]	22.95	24.35	13.46	37.6	40.8	16.1
Women	20.25	21.71	15.97	32.7	37.9	17.7
Union member	24.54	25.24	21.92	33.5	37.2	19.6
Union coverage[1]	24.46	25.16	21.81	33.5	37.2	19.5
Not a union member[2]	18.22	19.89	13.83	32.4	38.2	17.0
Atlantic	18.93	19.95	13.46	36.6	40.3	17.3
Union member	23.37	23.66	20.76	37.4	39.4	19.8
Union coverage[1]	23.36	23.65	20.70	37.4	39.4	19.7
Not a union member[2]	16.86	18.05	11.62	36.3	40.7	16.7
Quebec	20.80	22.04	15.23	34.4	38.1	18.1
Union member	23.65	24.09	20.90	35.1	37.5	20.3
Union coverage[1]	23.48	23.93	20.60	35.1	37.5	20.1
Not a union member[2]	19.03	20.67	12.93	34.0	38.5	17.3
Ontario	22.75	24.48	15.25	35.2	39.4	17.0
Union member	26.53	27.58	20.55	35.6	38.6	18.4
Union coverage[1]	26.58	27.64	20.54	35.7	38.7	18.3
Not a union member[2]	21.30	23.20	13.74	35.0	39.6	16.6
Prairies	23.20	24.61	16.58	36.1	40.1	17.3
Union member	25.82	26.49	22.20	36.0	39.1	19.1
Union coverage[1]	25.84	26.49	22.31	36.1	39.2	19.1
Not a union member[2]	22.12	23.81	14.60	36.1	40.5	16.7
British Columbia	22.21	23.69	16.64	34.6	39.3	17.1
Union member	25.60	26.27	22.48	35.1	38.6	18.9
Union coverage[1]	25.63	26.34	22.27	35.2	38.7	18.8
Not a union member[2]	20.68	22.42	14.66	34.4	39.6	16.5

1. Union members and persons who are not union members but covered by collective agreements (for example, some religious group members).
2. Workers who are neither union members nor covered by collective agreements.

Source: Statistics Canada, Labour Force Survey.

On average, full-time unionized women earned 95% of the amount their male counterparts earned per hour. In contrast, those working part time earned 14% more.

Wage settlements, inflation and labour disputes

The wage rate increase for collective agreement negotiated in 2009 was lower than the previous year (2.4% versus 3.2%) (Table 4). This was the fifth consecutive year in which the increase in wages surpassed the rate of inflation. For the fourth year in a row, the wage gain in the public sector exceeded the gain in the private sector (2.5% versus 1.8%). This trend continued in the first four months of 2010 whereby gains stood at 2.2% in the public sector and 1.9% in the private sector.

Table 4 Major wage settlements, inflation and labour disputes

	Average annual increase in base wage rates[1]				Labour disputes and time lost[2]			
Year	Public sector employees[3]	Private sector employees[3]	Total employees	Annual change in consumer price index[1]	Strikes and lockouts[4]	Workers involved	Person-days not worked	Proportion of estimated working time
			%			'000	'000	%
1980	10.9	11.7	11.1	10.0	1,028	452	9,130	0.37
1981	13.1	12.7	13.0	12.5	1,049	342	8,850	0.35
1982	10.4	9.5	10.2	10.9	679	464	5,702	0.23
1983	4.6	5.5	4.8	5.8	645	330	4,441	0.18
1984	3.9	3.2	3.6	4.3	716	187	3,883	0.15
1985	3.8	3.3	3.7	4.0	829	164	3,126	0.12
1986	3.6	3.0	3.4	4.1	748	486	7,151	0.27
1987	4.1	3.8	4.0	4.4	668	582	3,810	0.14
1988	4.0	5.0	4.4	3.9	548	207	4,901	0.17
1989	5.2	5.2	5.2	5.1	627	445	3,701	0.13
1990	5.6	5.7	5.6	4.8	579	271	5,516	0.09
1992	2.0	2.6	2.1	1.4	404	152	2,110	0.07
1993	0.6	0.8	0.7	1.9	381	102	1,517	0.05
1994	0.0	1.2	0.3	0.1	374	81	1,607	0.06
1995	0.6	1.4	0.9	2.2	328	149	1,583	0.05
1996	0.5	1.7	0.9	1.5	330	276	3,269	0.11
1997	1.1	1.8	1.4	1.7	284	258	3,608	0.12
1998	1.6	1.8	1.7	1.0	381	244	2,440	0.08
1999	1.9	2.7	2.2	1.8	413	160	2,441	0.08
2000	2.5	2.4	2.5	2.7	378	143	1,644	0.05
2001	3.4	3.0	3.3	2.5	381	221	2,203	0.07
2002	2.9	2.6	2.8	2.2	294	166	2,986	0.09
2003	2.9	1.2	2.5	2.8	266	79	1,730	0.05
2004	1.4	2.3	1.8	1.8	297	259	3,185	0.09
2005	2.3	2.5	2.3	2.2	260	199	4,148	0.11
2006	2.6	2.2	2.5	2.0	151	42	793	0.02
2007	3.4	3.2	3.3	2.2	206	66	1,771	0.05
2008	3.5	2.5	3.2	2.3	188	41	876	0.02
2009	2.5	1.8	2.4	0.3	157	67	2,179	0.06
2010[5]	2.2	1.9	2.1	1.7	..	..	..	..

1. Involving 500 or more employees.
2. Involving 1 worker or more.
3. Public sector employees are those working for government departments or agencies; Crown corporations; or publicly funded schools, hospitals or other institutions. Private sector employees are all other wage and salary earners.
4. Minimum of ten person-days not worked.
5. 2010 data refer to January to April only.

Sources: Statistics Canada, Prices Division; Human Resources and Social Development Canada, Workplace Information Directorate.

Annual statistics on strikes, lockouts and person–days lost are affected by several factors, including collective bargaining timetables, size of the unions involved, strike or lockout duration, and state of the economy. The number of collective agreements up for renewal in a given year determines the potential for industrial disputes. Union size and strike or lockout duration determine the number of person–days lost. The state of the economy influences the likelihood of an industrial dispute, given that one is legally possible. The proportion of estimated working time lost due to strikes and lockouts increased to 0.06% in 2009 from 0.02% in 2008.

Perspectives

Reference

Fang, Tony and Anil Verma. 2002. "Union wage premium." *Perspectives on Labour and Income*. Vol. 3, no. 9. September. Statistics Canada Catalogue no. 75-001-XIE. p. 13-19. http://www.statcan.ca/english/freepub/75-001-XIE/75-001-XIE2002109.pdf (accessed August 17, 2010).