

UI

*Firms, Industries
and Cross-subsidies:
Patterns in the Distribution
of UI Benefits and Taxes*

by Miles Corak
and Wendy Pyper



Human Resources
Development Canada

Développement des
ressources humaines Canada

UI Impacts
on Employer
Behaviour

Canada



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Unemployment Insurance Evaluation Series

Human Resources Development Canada (HRDC), in its policies and programs, is committed to assisting all Canadians in their efforts to live contributing and rewarding lives and to promote a fair and safe workplace, a competitive labour market with equitable access to work, and a strong learning culture.

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I.H. Midgley
Director General
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Abstract

Our objective in this paper is to document the extent and nature of the cross-subsidies occurring through unemployment insurance (UI), and to explain them in an accounting sense. The analysis is conducted at the industry and firm levels in order to highlight patterns of cross-subsidization both between and within industries.

We find that the Canadian UI program redistributes significant monies between firms, industries and provinces, and that these transfers have been long-standing. The primary and construction sectors are the major net recipients, while the service industries are the major contributors. There are also significant transfers to the provinces east of the Ottawa river from Ontario. Certain industries receive a net positive transfer through UI because of higher than average layoff rates, and lower than average wages (and hence contributions). In addition, we find that not only do these same industries receive a transfer year-in and year-out, but so do the same firms. The transfers imposed through UI are heavily concentrated at the firm level. Only 12 per cent of firms consistently receive a net positive transfer in each year. While they account for only 14 per cent of all jobs, they are responsible for more than 38 per cent of all UI benefits paid. Over 40 per cent of firms never receive a positive transfer. These firms represent 56 per cent of all jobs but account for only 31 per cent of UI benefits. While “always subsidized” firms tend to be concentrated in “always subsidized” industries (particularly in the construction industry), a significant fraction of the firms in most industries are of this sort. That is, in addition to considerable between-industry cross-subsidization, the UI program also entails considerable within-industry cross-subsidization.

These results are relevant to the debate concerning the reform of UI premium rates, but they may be particularly pertinent to any discussion of experience rating. They make clear that the introduction of a fully experience rated UI program (with each firm facing a different premium rate) would likely lead to a reduction in UI premiums for the large majority of firms, and raise them for only a small minority. In this sense differentiation of premiums represents a way of lowering the UI payroll tax. Furthermore, if experience rating is entertained as a policy option, it might be more accurately targeted if it were based on firm rating rather than on industry rating. In the context of substantial within-industry cross-subsidization, industry rating would penalize many firms. The results of our analysis also raise the option of combining industry rating and firm rating. This possibility, in which the premium rates of firms vary according to the extent that layoff rates deviate from the industry norm, would at the same time be less disruptive of the significant inter-regional transfers that also take place.



Introduction

The payroll tax used to finance the Canadian Unemployment Insurance (UI) program has repeatedly been referred to as a “tax on jobs.” It is difficult to believe that any tax collecting over \$18 billion will not have some influence on the way the labour market functions, but the nature and magnitude of this influence have not been thoroughly documented. It is certainly true that the interaction between UI and the Canadian labour market has led to a voluminous and detailed literature over the last twenty years, but the focus of most of these studies has been almost exclusively on the supply side of the labour market. In this literature UI is seen, for the most part, as a subsidy that causes individual claimants to spend more time unemployed than they otherwise would. Very little attention has been paid to the way the program alters behaviour on the demand side of the market and, in particular, how the structure of UI premiums influences the layoff, hiring, and human resource practices of firms.

How does UI influence labour demand? Economic theorists have pointed to the extent of “experience rating” in premium rates as the major element. A UI program is said to be experience rated when the premiums firms pay are tied, in an actuarial sense, to the use their workers make of UI. Hamermesh (1990, 1993) outlines the nature of the possible disincentives associated with a lack of experience rating and reviews the considerable U.S. evidence. A premium structure that is not experience rated may influence the kinds of industries and their relative sizes. UI may act as a wage subsidy and permit firms to pay lower wages than they otherwise would in order to compensate their workers for the risk of layoff. In this way, the expansion of high unemployment industries would be subsidized by a surcharge on more stable industries. As a result, the former may grow at the expense of the latter, and the economy could be more prone to higher unemployment. Hamermesh also notes that a lack of experience rating may also influence employment fluctuations within industries. Since the premiums a firm pays bear no relationship to its human resource practices, part of the adjustment costs associated with depressed sales may be shifted to the public purse by greater use of layoffs rather than other mechanisms such as changes in hours, wages, production, or more fundamental changes in the job skills and tasks of workers.

The Canadian UI program is not experience rated at all, yet potential disincentive effects of this sort have received very little attention. Kesselman (1983) offers an overview of the many issues associated with the financing of UI in Canada, but is hard pressed to offer empirical evidence dealing with changes in behaviour on the demand side. Osberg, Apostle and Clairmont (1986) provide some limited evidence on the impact of demand side factors on the incidence and duration of unemployment, while Corak (1994b) examines some possible consequences of the lack of experience-rating: the large number of temporary layoffs in the economy, the tendency of repeat UI users to support their claims with employment from the same small number of firms, and the important influence of recall expectations on the duration of UI benefit receipt.

Our objective in this paper is to document the extent and nature of the cross-subsidies occurring through UI, and to explain them in an accounting sense. As such,

The focus is on the relative benefit-tax ratio (the amount of benefits received per tax dollar paid), and the factors that determine it.

we are not explicitly examining changes in behaviour due to the structure of the payroll tax. Rather, our analysis should be thought of as a documentation of the extent of the transfers that may induce such changes, or perhaps even the outcome of such changes. The analysis is conducted both at the industry and firm levels in order to document patterns of cross-subsidization between and within industries. It should be noted, however, that cross-subsidization between firms and industries will exist even in a perfectly experience rated UI program at any given in time. Certain firms or industries will suffer adverse shocks that necessitate benefit receipt while others will not: that is the nature of insurance. It is the persistence in the pattern of cross-subsidization through time, not its existence at any point in time, that suggests a deviation from insurance principles and illustrates both the incentives for firms to change their behaviour, and the results of such change. We pay particular attention therefore to longitudinal issues.

We detail the patterns of transfers across broad industry categories and provinces. Administrative data that cover the universe of workers, firms, and UI recipients from 1986 to 1990 is used. These years span the recovery and expansionary parts of the business cycle as well as the onset of a recession. The UI account was roughly in balance over the period (on average there was a small annual deficit of \$167 million), suggesting that we are examining the operation of the program over a complete cycle. This part of the analysis is closest to the work of Karagiannis (1986), who documents the pattern of cross-subsidization at a broad industry level for Canada over the 1975-82 period. Thus, by using his results, we are able to compare the existing pattern of cross-subsidies with that occurring 15 to 20 years ago during the run up to the 1981-82 recession. We also examine a finer industrial classification and then go on to explain our observations in an accounting sense. The focus is on the relative benefit-tax ratio (the amount of benefits received per tax dollar paid), and the factors that determine it. Finally, an analysis at the firm level is conducted, with a particular emphasis on the way firms interact with the UI program through time.

We find that the Canadian UI program redistributes significant monies between industries and provinces, and that these transfers have been long-standing. This will come as no surprise to many observers. The major flow of funds is toward the primary sector and construction from the service industries, and toward the provinces east of the Ottawa River from Ontario. Industries receive a net positive transfer through UI because of higher than average layoff rates, and lower than average wages (and hence contributions). Large net positive transfers are also associated with higher than average temporary layoff rates. In addition, we find that not only do the same industries receive a positive transfer year-in – year-out, but so do the same firms. In fact, the transfers imposed through UI are heavily concentrated at the firm level. Only 12 per cent of firms consistently receive a net positive transfer in each year, and while they account for 14 per cent of all jobs, they are responsible for 38 per cent of all UI benefits paid; over 40 per cent of firms never receive a transfer, and they represent 56 per cent of all jobs but account for only 31 per cent of UI benefits. While “always subsidized” firms tend to be concentrated in “always subsidized” industries (particularly in construction), a significant fraction of the firms in most industries are of this sort. That is, in addition to considerable between-industry cross-subsidization, the UI program also entails considerable within-industry cross-subsidization.



1. An Overview

Our analysis is based entirely on administrative data sets that together offer universal coverage of firms, their workers, and UI beneficiaries. We calculate firm level totals of UI taxes paid from the tax records of employees, and firm level totals of UI benefits received by employees from UI administrative data, and link them together by using a longitudinally consistent catalogue of firms. The information on taxes is derived from the T4 records of workers.¹ Total employee UI contributions for each Revenue Canada Payroll Deduction (PD) account are calculated.² Since the contribution rates of employers are a fixed mark-up of employee contributions, they are readily derived from the latter, and an employer-employee total obtained.³ UI Benefits are obtained from Human Resources Development Canada's Benefits and Overpayments (BNOP) file, which contains the universe of claims. These are also totaled at the PD level. These totals represent all UI benefits for claims that were initiated in a particular year from a particular PD.⁴ The Longitudinal Employment Analysis Program (LEAP), developed by the Business and Labour Market Analysis group of Statistics Canada, is used to assign all PDs to a firm and to link taxes paid with benefits received. The data extend from 1986 to 1990 inclusive, and are measured in constant 1991 dollars. Details of the data development are described in Corak, Nagrodski, and Pyper (1993).

Over this period, the UI program collected a total of about \$11.3 billion annually in contributions from firms and workers, and paid out an average of about \$ 11.5 billion in benefits each year. Table 1 presents the redistribution of these funds by industry and province. The entries in the table can be interpreted as the absolute annual net transfer (+) or surcharge (–) to each industry/province: total UI benefits received by the workers in that industry and province less total UI taxes paid.⁵ Canada-wide, the pattern is a transfer of funds from the Service sectors and Manufacturing to the Primary sectors and most notably Construction. On average, Construction received \$1.2 billion annually (a total of more than \$6 billion over these five years), while Forestry and Agriculture received lesser but still substantial annual amounts of \$265 and \$222 million. The most notable contributors are the Community, Business, and Personal Services (CBPS) sector which was surcharged more than \$710 million annually and Public Administration

- 1 For paid employees, information from the T4S is used; for self-employed fishermen the information is derived from the T4F.
- 2 The terms “contributions,” “taxes,” and “premiums” are used interchangeably throughout.
- 3 Employer contributions are 1.4 times those of employees. We do not make any adjustments for premium reductions due to wage loss replacement plans. The error introduced by this decision is likely to be very small.
- 4 This is in contrast with premiums, which correspond to the calendar year. Therefore we are comparing premiums collected during a given year with benefits collected as a result of a job separation initiated in that year (rather than benefits collected in that year). This is the correct approach to adopt because it mimics the manner in which an insurance program would function: premiums must be collected in order to meet future contingencies.
- 5 In actual fact, the taxes paid are adjusted by the country-wide benefit–tax ratio in order to account for the fact that the UI account was not exactly in balance over the period. The table entries are $B_i - T_i$ (B/T), where B represents benefits, and T taxes (a subscript indicates an industry/province, and the absence of one indicates a Canada wide total). Thus, the table entries represent the distribution of subsidies and surcharges as they would appear during a year in which the aggregate UI fund was in balance. The aggregate benefit tax ratio was only 1.01 so these adjusted figures are not much different from the raw differences between benefits and taxes.

which was surcharged more than \$660 million, but Transportation as well as Finance also paid substantial surcharges. The general pattern at the provincial level is of a transfer of monies from Ontario to points eastward. Almost \$2.3 billion was taken out of the Ontario economy each year by the UI program, while about the same amount was put into the economies east of the Ottawa River. Quebec is the largest recipient. The prairie provinces, most notably Alberta, are surcharged, but British Columbia received a subsidy.

Table 1
UI Income Transfers Across Industries and Provinces, Annual Average (1986-1990)
(UI Benefits less UI Taxes expressed in millions of 1991 dollars)

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	N.W.T.	Y.T.	Canada
Agriculture	7.7	12.1	10.0	19.4	74.0	16.9	7.4	11.8	4.7	58.1	0.0	0.1	222.3
Forestry	21.4	1.3	15.4	44.1	101.2	7.4	1.5	3.3	3.1	66.0	0.2	0.2	265.1
Fishing and Trapping	13.1	15.7	20.5	28.7	13.7	3.2	0.7	-0.5	0.6	1.6	0.0	0.0	97.0
Mining	2.9	0.6	2.8	4.7	15.5	-28.9	-1.4	3.2	-21.0	5.2	-1.7	1.7	-16.7
Manufacturing	209.6	26.1	59.2	88.9	106.6	-625.4	-10.0	-6.1	-15.7	34.3	-0.6	0.5	-132.9
Construction	98.3	14.5	74.9	97.4	416.5	195.0	44.4	40.0	103.1	139.5	0.6	3.2	1 227.6
Transportation	22.4	2.7	-3.8	3.0	-92.1	-266.1	-30.4	-17.5	-47.8	-41.8	-1.2	-0.4	-473.2
Trade	77.3	12.5	31.9	37.7	108.2	-336.0	-19.9	-13.6	-40.9	14.3	-1.2	0.5	-129.2
Finance	3.2	0.0	-5.3	0.6	-59.6	-283.3	-15.8	-11.5	-27.3	-28.2	-0.3	0.0	-427.7
Comm. Bus. & Per. Serv.	85.3	11.2	19.4	29.3	40.4	-753.6	-42.5	-41.7	-88.4	26.8	-0.9	2.3	-712.8
Public Administration	46.0	9.0	-34.2	13.4	-100.2	-372.5	-30.9	-12.5	-89.7	-67.4	-6.2	-0.1	-665.7
Other (unclassified)	78.7	8.0	36.4	28.0	242.1	137.7	18.8	14.7	53.8	104.6	1.7	1.4	726.0
All Industries	666.2	113.7	227.8	395.7	871.2	-2 297.3	-77.4	-29.4	-164.2	315.5	-9.5	9.5	0.0

(+) denotes a net transfer; (-) denotes a surcharge.

The Primary sectors (with the exception of Mining) in all of the provinces received a positive transfer. This is also the case for Construction, with the Construction industry in Quebec (at \$417 million) receiving the largest transfer of all industry/provinces. CBPS in Ontario pays the largest surcharge (\$754 million), followed by the Ontario Manufacturing sector (\$625 million). Almost every industry in the Atlantic provinces receives a positive transfer through UI, with the Manufacturing sector in Newfoundland being the largest recipient. (The only important exception is Public Administration in Nova Scotia). The \$210 million annual transfer to Manufacturing reflects the dominance of fish processing. Most industries in Quebec also receive a positive transfer: Public Administration, Transportation, and to a lesser extent Finance are the only surcharged sectors. In western Canada, the pattern of transfers to the Primary and Construction sectors that are paid for by surcharges on Manufacturing and Services holds up (with some exceptions in B.C.).

Table 2 presents these data on a per-job basis.⁶ The general pattern is the same, but there are some differences in the relative standing of the sectors. Canada wide, the per-job-transfer (at over \$2,000 per job) is greatest in Forestry, while Construction is second (at \$960 per job). The surcharge on CBPS does not appear as large on a per job basis as in absolute terms, amounting to \$98 per job. This is not the case, however, for the other Service sectors: a surcharge of \$360 to \$380 per job is paid in Transportation, Finance, and Public Administration. Ontario remains the single largest contributor to UI in spite of the size of its workforce. For every job in Ontario, a net contribution of \$277 is made to UI. On a per-job basis, Quebec receives a transfer, but the most notable recipients are those in the Atlantic provinces and particularly Newfoundland. The net transfer to this province through UI amounts to about \$1,750 per job, with New Brunswick receiving the second largest transfer of about \$800 per job. The single largest per-job transfer (subject to the caveat described in the previous footnote) is \$5,360 paid to the forestry sector in Newfoundland, but all the jobs in this sector in the eastern provinces receive substantial sums. Quebec is no exception in this regard. Public Administration jobs in Ontario pay the largest surcharge: over \$650 is paid per job into the UI program. However, Transportation, Finance, Mining, and

Ontario remains the single largest contributor to UI in spite of the size of its workforce.

Table 2
UI Income Transfers Per T4 by Industry and Province, Annual Average (1986-1990)
(UI Benefits less UI Taxes divided by number of T4s issued, expressed in 1991 dollars)

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	N.W.T	Y.T.	Canada
Agriculture	3,471	1,818	870	2,127	1,350	142	532	494	151	1,277	685	2,614	700
Forestry	5,362	3,701	1,995	3,403	3,031	524	1,523	1,513	679	1,334	1,189	1,756	2,038
Fishing and Trapping	334	2,026	689	2,049	1,902	1,471	193	-103	219	50	150	849	711
Mining	603	4,621	401	705	439	-486	-177	209	-184	190	-505	725	-59
Manufacturing	4,213	2,627	762	1,313	117	-403	-110	-151	-94	115	-334	918	-41
Construction	4,280	2,402	1,785	2,594	1,518	384	1,187	1,014	663	932	96	1,424	958
Transportation	1,047	539	-109	93	-315	-576	-535	-406	-388	-249	-282	-161	-380
Trade	1,287	889	294	449	117	-227	-141	-122	-114	36	-163	124	-35
Finance	309	-9	-193	36	-248	-514	-369	-346	-274	-213	-127	-14	-368
Comm. Bus. & Per. Serv.	922	394	100	208	22	-265	-158	-179	-116	32	-59	306	-98
Public Administration	699	78	-343	197	-267	-656	-348	-212	-491	-390	-297	-11	-361
Other (unclassified)	9,777	4,783	4,250	3,797	2,563	1,034	1,973	1,461	1,684	1,985	1,505	1,969	2,019
All Industries	1,748	573	351	796	173	-277	-102	-48	-81	133	-154	326	0

(+) denotes a net transfer; (-) denotes a surcharge.

6 More correctly, the normalization is per T4. While there are a small number of cases in which employers issue more than one T4 per job to their paid employees, equating a T4 with a job does not entail too much of an error. The exception to this is the Fishing and Trapping industry which is dominated by self-employed fishermen. It is not uncommon for these individuals to receive 2 or 3 T4Fs in a single calendar year. The results for the fishing sector will therefore have a large downward bias. Further, industries with high turnover rates tend to have more T4s per Full-Time Equivalent job, which implies that in these cases the results will be downwardly biased. Full-Time Equivalency is the only comparable way of defining jobs. The results in this table should be taken as indicative only.

Manufacturing in this province all make substantial contributions on a per-job basis.

The information in these tables provides a sense of the magnitude and distribution of the cross-subsidies embodied in the operation of the UI program, but does not necessarily capture the economic incentives in place and would not be an actuarial definition of cross-subsidization. An alternative indicator that fulfills these roles is the benefit-tax ratio, the amount of benefits received for every dollar of contributions. In what follows, we employ the relative benefit-tax ratio, which is defined as $RBT_i = (B_i/T_i)/(B/T)$ for sector i . Using this rather than simply the benefit-tax ratio corrects the possibility that the overall program account may not be in balance. Since the denominator of this expression happens to be very close to 1 (1.01), the results are similar to what they would be if only the benefit-tax ratio were calculated. Thus an RBT greater than 1 indicates a positive net transfer, while a value below 1 indicates a surcharge.

Table 3
Relative Benefit – Tax Ratios by Industry and Province (1986-1990)

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	N.W.T.	Y.T.	Canada
Agriculture	15.72	9.32	4.60	9.75	5.80	1.52	2.88	3.33	1.48	5.55	3.65	10.48	3.58
Forestry	18.15	18.13	8.05	8.79	9.87	2.01	5.40	5.41	2.98	4.20	6.13	7.37	6.17
Fishing and Trapping	3.31	11.70	3.91	11.00	8.79	4.17	2.01	0.46	2.19	1.29	4.82	2.02	4.70
Mining	1.49	13.31	1.36	1.66	1.43	0.57	0.84	1.23	0.80	1.19	0.43	2.06	0.94
Manufacturing	8.85	6.57	2.03	2.85	1.15	0.57	0.86	0.82	0.89	1.13	0.61	2.60	0.95
Construction	11.81	6.38	4.71	7.40	3.91	1.69	3.37	3.38	2.47	3.13	1.27	4.72	2.90
Transportation	2.20	1.76	0.88	1.11	0.67	0.39	0.49	0.57	0.56	0.72	0.59	0.81	0.59
Trade	4.01	3.11	1.63	1.98	1.24	0.55	0.74	0.76	0.77	1.07	0.63	1.27	0.93
Finance	1.46	0.99	0.73	1.05	0.69	0.33	0.48	0.52	0.60	0.71	0.80	0.98	0.51
Comm. Bus. & Per. Serv.	2.90	1.88	1.20	1.40	1.04	0.49	0.69	0.67	0.76	1.06	0.86	2.00	0.81
Public Administration	1.86	1.73	0.62	1.24	0.70	0.33	0.61	0.76	0.50	0.62	0.55	0.99	0.59
Other (unclassified)	43.46	21.68	16.51	15.03	9.97	4.02	7.14	6.01	6.76	7.58	5.78	8.20	7.54
All Industries	4.32	3.42	1.59	2.36	1.28	0.58	0.84	0.92	0.87	1.22	0.72	1.57	1.00

Table 3 presents the value of RBT by industry and province. The general patterns described above are evident: the Primary sector and Construction are subsidized at the expense of Services. At the extremes, for every dollar of UI contributions from Forestry, \$6.17 in UI benefits are received, while in Finance only 51 cents of benefits are received for each dollar of contributions. Newfoundlanders receive \$4.32 in benefits for every dollar contributed, while Ontarians receive only 58 cents per dollar of contributions.

Furthermore, these patterns have persisted through time. Table 4, which is drawn from Karagiannis (1986), presents relative benefit-tax ratios by industry and region for the period 1975 to 1982. Those industries that have been identified as receiving a positive transfer during the 1986-90 period were also receiving a transfer during 1975-82; while those being surcharged during the recent period

Table 4
Relative Benefit – Tax Ratios by Industry and Region (1975-1982)

	Atlantic	Quebec	Ontario	Prairies	British Columbia	Canada
Agriculture	4.89	6.14	2.42	1.45	3.01	2.99
Forestry	7.65	8.62	2.91	2.66	3.29	4.93
Fishing and Trapping	6.76	16.74	2.69	11.42	4.28	6.90
Mining	2.14	1.47	0.80	0.44	1.03	0.88
Manufacturing	2.46	1.50	0.85	0.70	1.22	1.12
Construction	5.66	4.55	2.50	1.74	2.92	3.03
Transportation	1.67	1.06	0.60	0.51	0.79	0.80
Trade	1.49	1.36	0.67	0.47	0.97	0.90
Finance	1.50	0.96	0.48	0.45	0.81	0.70
Comm. Bus. & Per. Serv.	1.61	1.10	0.55	0.42	0.86	0.78
Public Administration	0.82	0.78	0.37	0.38	0.61	0.54
Other (unclassified)	13.02	18.40	4.57	4.22	9.98	8.43
All Industries	1.87	1.38	0.74	0.59	1.08	1.00

Source: Karagiannis (1986, Table 4)

Table 5
Persistence in the UI Status of Industry-Regions

	Status During 1975-1982	Status During 1986-1990
	Net Recipient, RBT>1	Net Contributor, RBT<1
Net Recipient, RBT>1	31	1
Net Contributor, RBT<1	3	20

Source: Tables 3 and 4

were also being surcharged then. This comparison is offered in Table 5.⁷ Only four of the 57 industry-regions changed status between these periods. Of the 32 industries receiving a net positive transfer in Karagiannis's study, 31 were still receiving a transfer in more recent times. Of the 23 being surcharged then, 20 were still being surcharged. The only sector to move from being subsidized to being surcharged in this interval of time was the Quebec Transportation industry, which experienced a decline in its *RBT* from 1.06 to 0.88. Public Administration in the Atlantic moved in the opposite direction, as did Trade and CBPS in British

⁷ Karagiannis's calculations differ from ours in two ways. First, only the first two phases of UI benefit receipt that existed at the time of his study (the Initial Benefit Phase and the Labour Force Extended Phase) are used in deriving total benefits. He claims that the exclusion of Regionally Extended Benefits (justified by the fact that the Public sector paid the cost of these benefits) does not alter the results. Our derivations include all benefits regardless of the phase. Second, he does not use T4F information in calculating total premiums paid. This implies that the *RBT* value for the Fishing industry (and overall for some of the Atlantic provinces) is overstated. For example, when our derivations are made in a similar manner we obtain a value of 20.29 for the Fishing industry, about four to five times greater than the value offered in Table 3. Thus, in comparing Tables 3 and 4 the conclusion should not be drawn that the Fishing industry is less subsidized now than it was during the 1970s and early 1980s, indeed just the opposite is likely the case. These differences in method, however, have no bearing on information provided in Table 5, and the conclusions drawn from it.

Columbia. Also, over the last 20 years it appears that the primary sector has been receiving larger transfers. At the same time, those surcharged during the 1970s were even more strongly surcharged during the 1980s. This is the case particularly for Transportation and Finance. Other sectors remained stable in their status, but Manufacturing did move from receiving a mild subsidy to being mildly surcharged.

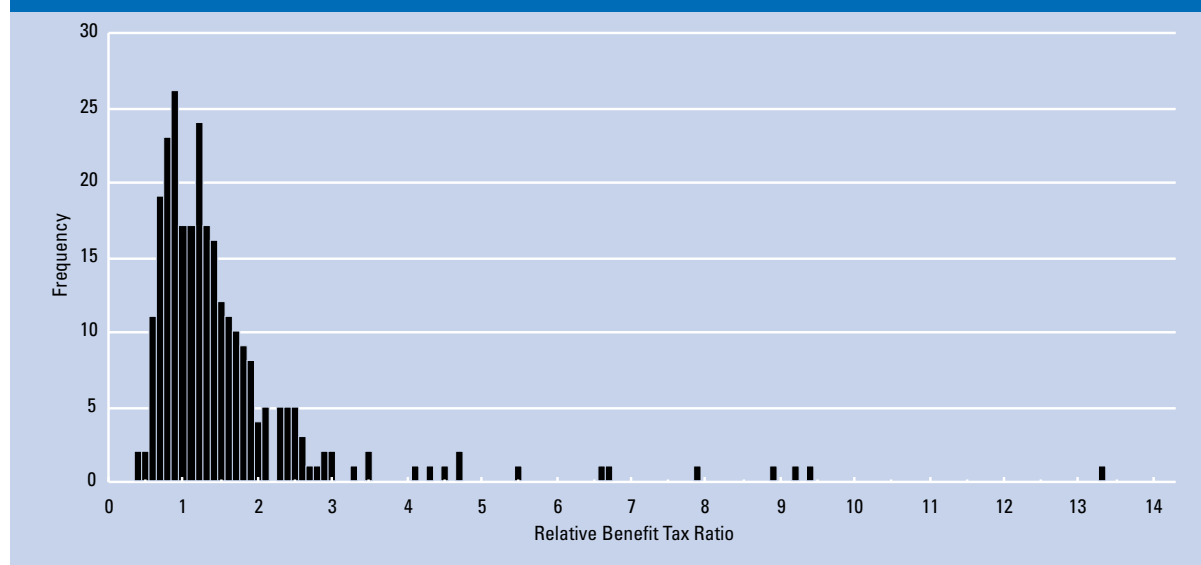


2. A Closer Look

More insight into these aggregate patterns can be obtained by using a finer industrial breakdown, and by decomposing *RBT* into a series of constituent components. To keep the analysis manageable, we focus on Canada-wide information.

Figure 1 displays the frequency distribution of industries defined at the three-digit level (using the 1970 SIC) by the value of *RBT*. The analysis, which excludes the fishing industries, is restricted to the 1986-88 period because of a change in the classification of LEAP to the SIC 1980.⁸ A separate analysis was conducted for 1989-90 using the three-digit 1980 SIC. The two distributions resemble each other, and we therefore focus only on the former. The distribution of industries by *RBT* is highly skewed. The majority of industries (152 of 275) have an *RBT* of less than 1. Of the 123 industries with a value greater than 1, 38 have a value greater than 2, and 16 a value greater than 3.⁹ Table 6 lists all industries with an *RBT* greater than 2. The Primary sector dominates this very heavily subsidized group: ten of the 16 industries with an *RBT* greater than 3 are from this sector. All four of the three-digit construction industries are ranked high in this table. The remaining industries, however, are drawn from Manufacturing and CBPS, sectors that in the aggregate are surcharged. This suggests that in addition to the between-industry cross-subsidization observed in Tables 1 through 4, there is also substantial within-industry variation in the value of *RBT*.

Figure 1
Frequency Distribution of Relative Benefit Tax Ratio by Three-Digit SIC-70, 1986-1988



⁸ The fishing industry is excluded because this is the only sector in which self-employed individuals are eligible for UI, and because the focus of this study is on regular claims.

⁹ The mean value of *RBT* is 1.29, but the median is only 0.93 and the coefficient of skewness is 4.41.

What is it about an industry that causes it to have a high or low *RBT*? Following Anderson and Meyer (1992) we can, in an accounting sense, determine the causes of a particular pattern of cross-subsidization by recognizing that the amount of

Table 6
Relative Benefit Tax Ratios and Components for Highly Subsidized Industries 1986-1988

SIC-70 Industry	Relative Benefit Tax Ratio	Relative Number of Claims	Relative Duration of Benefit Receipts	Relative Benefit Rate	Relative Taxes Paid	Contribution of Temporary Layoffs	Contribution of Permanent Layoffs
102 Fish Product Industries	13.04	5.45	1.27	1.09	1.73	3.22	2.24
047 Hunting & Trapping	9.08	4.38	1.18	1.08	1.63	1.62	2.76
045 Fishery Services	8.88	3.19	1.30	1.21	1.77	1.34	1.85
039 Forestry Services	8.56	1.77	1.31	1.28	2.87	0.98	0.79
072 Peat Extraction	7.58	3.65	1.27	1.22	1.34	2.96	0.69
031 Logging	6.43	2.76	1.14	1.32	1.55	1.57	1.19
884 Camping Grounds & Trailer Parks	6.32	1.49	1.24	0.97	3.52	0.86	0.63
606 Wholesalers of Coal & Coke	5.23	1.94	1.28	1.01	2.09	0.77	1.17
010 Farms (Excl. Experimental and Instit.)	4.41	1.52	1.17	0.90	2.75	0.79	0.73
406 Highway, Bridge & Street Construct.	4.37	2.81	0.96	1.39	1.16	1.81	1.00
015 Fruit & Vegetable Farms	4.22	3.00	1.08	0.93	1.40	2.52	0.48
096 Contract Drilling for Petroleum	3.97	1.99	1.05	1.34	1.41	1.00	0.99
151 Leaf Tobacco Processors	3.81	2.88	0.91	0.94	1.56	1.81	1.07
098 Other Contract Drilling	3.23	1.93	1.07	1.41	1.11	1.07	0.86
409 Other Construction	3.20	2.14	0.92	1.40	1.16	1.05	1.09
404 Building Construction	2.98	1.74	1.00	1.23	1.39	0.76	0.98
844 Golf Clubs & Country Clubs	2.71	1.56	0.98	0.90	1.96	1.03	0.53
246 Fur Goods Industries	2.69	1.95	1.16	1.08	1.11	0.96	0.99
017 Other Crop & Livestock Combo Farms	2.61	1.68	1.15	0.90	1.50	1.10	0.58
421 Special-trade Contractors	2.55	1.74	0.91	1.25	1.29	0.89	0.85
873 Private Households	2.53	1.69	1.36	0.50	2.22	0.55	1.14
087 Sand Pits or Quarries	2.37	2.21	0.84	1.31	0.97	1.49	0.72
020 Services Incidental to Agriculture	2.29	1.22	1.12	0.98	1.71	0.57	0.65
899 Miscellaneous Services, N.E.S.	2.29	1.04	1.27	0.89	1.95	0.30	0.74
013 Field Crop & Field Crop Combo Farms	2.26	1.41	0.92	0.93	1.87	0.97	0.44
845 Theatrical & Other Staged Ent. Serv.	2.21	1.04	1.05	1.03	1.98	0.52	0.52
328 Boatbuilding & Repair	2.21	1.94	0.98	1.06	1.10	0.90	1.04
883 Lodging Houses & Residential Clubs	2.19	1.01	1.25	0.77	2.24	0.39	0.62
902 Defence Services	2.18	0.39	1.07	0.97	5.35	0.31	0.08
896 Blacksmithing & Welding Shops	2.16	1.32	0.96	1.15	1.49	0.53	0.80
871 Shoe Repair Shops	2.15	1.37	1.20	0.79	1.65	0.50	0.87
843 Bowling Alleys & Billiard Parlours	2.12	1.22	0.97	0.70	2.54	0.66	0.56
083 Stone Quarries	2.08	2.44	0.83	1.33	0.77	1.80	0.64
369 Misc. Petroleum & Coal Products Ind.	2.08	2.00	0.90	1.35	0.85	1.38	0.62
244 Women's Clothing Industries	2.07	1.97	0.98	0.79	1.36	1.08	0.89
327 Shipbuilding & Repair	2.03	1.92	1.01	1.41	0.74	1.38	0.53
849 Misc. Amusement & Recreation Services	2.01	0.91	1.041.04	0.87	2.42	0.47	0.44

benefits received in a given industry (i) is the product of the number of UI recipients (n_i), the average duration of benefit receipt (d_i) of these individuals, their average weekly benefit rate (b_i), and by recognizing that the amount of UI premiums paid is the product of the marginal UI tax rate (t_i), and the average insurable weekly earnings (w_i). Thus, the benefit-tax ratio is given as $(n_i d_i b_i)/(t_i w_i)$, and the relative benefit-tax ratio can be expressed as:

$$(B_i/T_i)/(B/T) = (n_i/n)(d_i/d)(b_i/b)(t/t_i)(w/w_i)$$

When a term in this product is found to be greater than one, the implication is that it is contributing to the cross-subsidization of that industry; when a term is less than 1, the opposite is the case. In this way, the extent to which an observed pattern of cross-subsidization is due to excessive number of claimants,¹⁰ longer than average benefit duration, higher than average benefit rates, or lower than average insured wages can then be determined. Since there is no experience rating in the Canadian UI program the term t/t_i is, by definition, equal to one. This obviates the need to calculate w_i separately. We need only derive the average total premiums paid by industry so that the last two terms of the above equation can be expressed simply as tw/tw_i .¹¹ Any variations in this term between industries will be the result of differences in wages paid. If this term is greater than 1, it is contributing to the cross-subsidization of sector i by virtue of the fact that earnings, and hence UI contributions, are lower than average. It should also be noted that the benefit rate is a fixed fraction of insurable earnings and is the same for all individuals (60 per cent) during this period. This might suggest that b_i/b will be perfectly correlated with tw/tw_i . However, these terms will vary independently because the earnings while employed of those laid off need not be the same as those escaping layoff. If UI beneficiaries were randomly chosen from the pool of employed, then these terms would tend to move together. A value of b_i/b greater than 1 implies that the industry in question tends to lay off more highly paid workers than average. This is not the same thing as suggesting that its workforce is more highly paid than average. A sector could have a lower wage structure, so that tw/tw_i is greater than 1, but it could also tend to lay off more highly paid workers, so that b_i/b is also greater than 1.

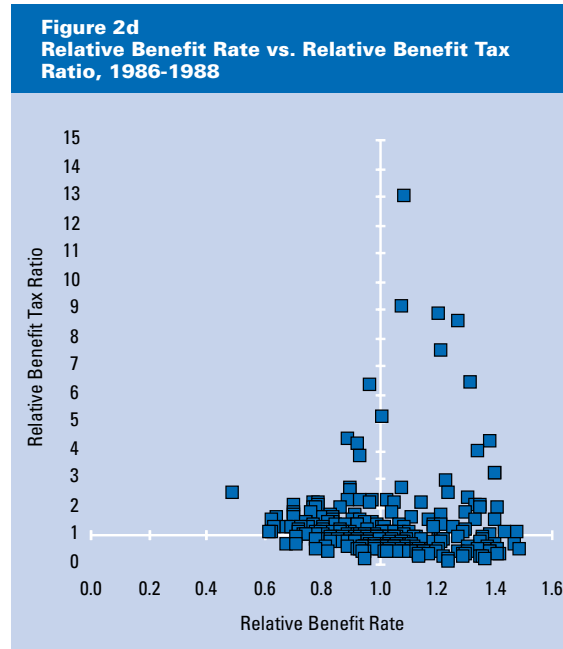
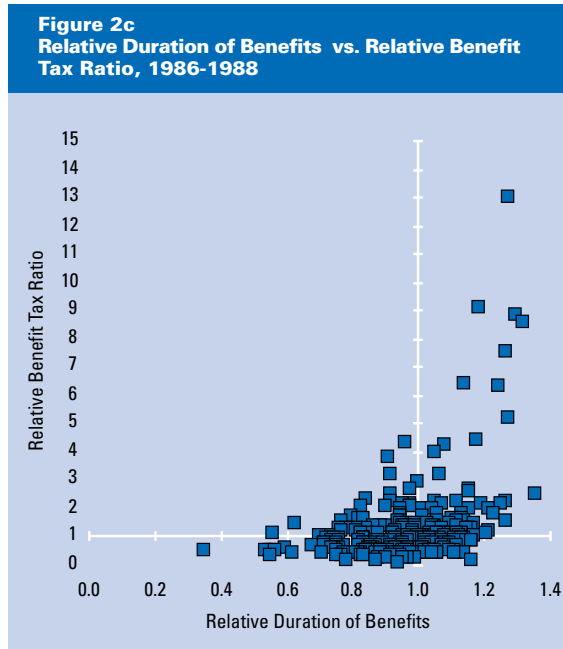
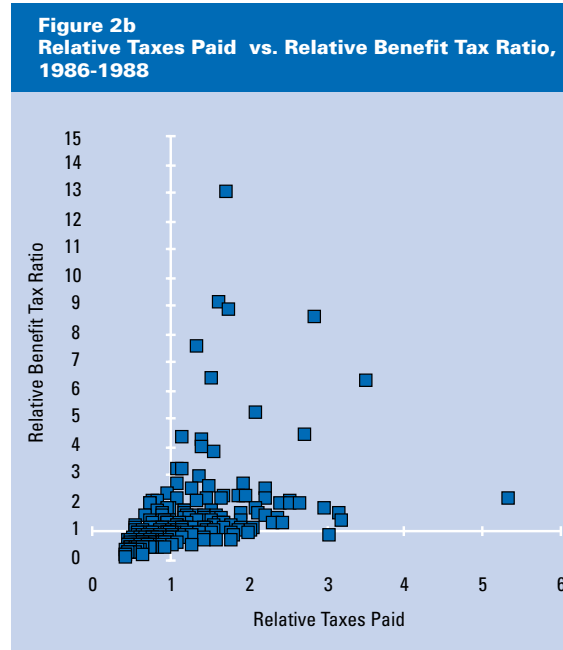
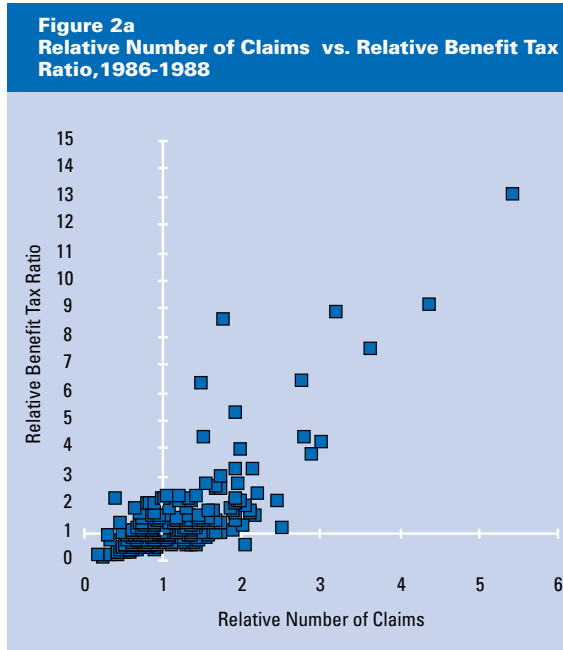
The firm has greatest discretion over wages and layoff decisions. If the lack of experience rating has an impact on firm behaviour, we should observe that these terms are the strongest influence on the *RBT*. The duration term is traditionally thought to be determined by the decisions of UI claimants, but it could also be influenced by the firm especially when temporary layoffs are important. Corak (1994b), for example, has found that the recall decisions of some firms are timed to correspond with the benefit exhaustion of their laid-off workers.

A series of scatter plots of *RBT* against each of its components is presented in Figure 2. The axes of the plots are drawn through an origin of 1 in order to divide the data into four quadrants, according to whether the industry is cross-subsidized or not, and whether the factor in question is contributing to cross-subsidiza-

¹⁰ That is, separations, or for the most part, simply layoffs.

¹¹ The first element (n_i/n) is defined as the relative layoff rate: the number of UI claims generated per T4 issued by the industry relative to the number of claims Canada-wide per T4 issued. The last term is defined in terms of total UI contributions per T4. The use of these rates ensures that the elements have the properties claimed in the text.

tion or not. The general pattern appears to be that the layoff and contribution rates are most strongly related to the industry *RBT*. The partial correlation coefficient between *RBT* and n_i/n is a highly significant 0.777, and that between it and the contribution rate is 0.445. The correlation between *RBT* and the relative duration is similar in magnitude (0.406), but that between it and the benefit rate



(at 0.011) is not significantly different from zero. Some of these results, however, are not robust to the exclusion of a few outlying industries (those with $RBT > 3$). When these industries are omitted from the calculation, the correlation coefficients associated with n_i/n and tw/tw_i are comparable in magnitude (0.587 and 0.591 respectively), but the association with relative duration rate falls to 0.321. The correlation between b_i/b and RBT is negative (-0.287).

Generally, if an industry receives a net positive transfer through UI, it is because of higher than average layoff rates *and* lower than average weekly earnings. This is clearly the case for the most highly cross-subsidized industries listed in Table 6.¹² Fully 32 of the 37 industries fall into this category. Four of the remaining six pay higher wages than average, but this is more than compensated for by higher layoff rates. Table 7 summarizes the characteristics of all cross-subsidized industries along these two dimensions. The largest number (60 of 123, or 49 per cent) have both a higher than average layoff rate and lower than average earnings. Only 27 are high wage-high layoff industries, and 35 are low wage-low layoff industries. There is only one high wage-low layoff industry that receives a positive transfer: Placer Gold Mines has an RBT of 1.12 in spite of having lower layoff rates and wages higher than the Canadian average. The reason for its cross-subsidy is that UI claimants tend to collect higher benefits than average: about 44 per cent higher. Those laid off that collect benefits are much more highly paid than the average UI recipient. In a similar vein, it is rare that an industry is surcharged if its layoff rates are above average and its earnings below average. Table 7 also offers similar data for the surcharged industries. Only four of the 152 such industries fall into this category and, in all of these cases, the two rates are only very slightly greater than 1. The majority of surcharged industries (81, or about 53 per cent) are low layoff-high wage industries.

The layoff rate can be broken into two parts: that due to permanent layoffs and that due to temporary layoffs so that $n_i/n = (nt_i + np_i)/n$. We define these terms in the manner of Statistics Canada (1992); a layoff is considered temporary in an *ex post* sense. If the worker had employment earnings from the same firm in the

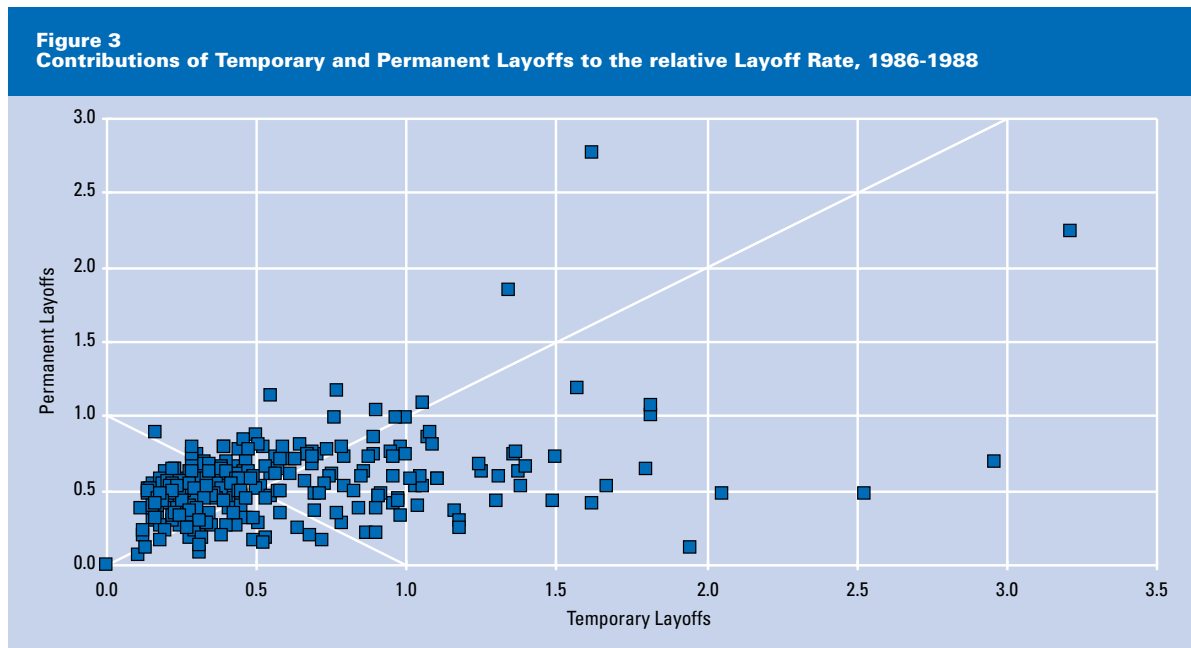
Table 7
Distribution of Subsidized and Surcharged Three-Digit Industries by Relative Layoff Rates and Relative Weekly Earnings

Cross-subsidized Industries	High Layoff	Low Layoff
	$(n_i/n > 1)$	$(n_i/n < 1)$
High Wage ($tw/tw_i < 1$)	27	1
Low Wage ($tw/tw_i > 1$)	59	35
Surcharged Industries	High Layoff	Low Layoff
	$(n_i/n > 1)$	$(n_i/n < 1)$
High Wage ($tw/tw_i < 1$)	41	81
Low Wage ($tw/tw_i > 1$)	4	26

12 A listing of all industries in the format of Table 6 is available from the authors upon request.

A very high degree of cross-subsidization is associated with a high temporary layoff rate.

year following the layoff, he or she is considered to have been temporarily laid-off; otherwise, the separation is classified as permanent. A scatter plot of nt_i against np_i is presented in Figure 3. In this diagram, the line connecting the ordinate value of 1 to the abscissa of 1 (and thereby linking those points that sum to one) indicates whether n_i/n is contributing to a net positive transfer or not: the area below this line indicates it is not, while the area above indicates that it is. The 45° line indicates which rate (nt_i or np_i) is greater: nt_i is greater than np_i in the area below the line, and the opposite is the case in the area above. The general observation from this scatter plot is that when the layoff rate is not contributing to the subsidization of the industry, the permanent layoff rate tends to be slightly greater than the temporary layoff rate; but when the layoff rate does contribute to subsidization, the opposite is the case. A very high degree of cross-subsidization is associated with a high temporary layoff rate. This is substantiated further by the information in the last two columns of Table 6, which offer the temporary and permanent layoff rates for the highly cross-subsidized industries. Of the 38 industries with $RBT > 2$, only two have a relative layoff rate less than 1. Of the remaining, 36 nt_i is greater than np_i in 21 cases.



Longitudinally, the same patterns observed at the broad industry level hold up at the three-digit level. Each and every year, it is the same industries that are either net recipients or net contributors. The patterns observed above do not result from an industry experiencing a particularly bad year requiring extensive reliance on UI, and determining its status over the entire period. Rather, it is the result of receiving a net positive transfer in each and every year. This, at least, is the case for the four-year period from 1986 through 1989. Table 8 offers the distribution of the 275 three-digit industries according to the number of years a positive net transfer is received. The distribution is bipolar: industries are either cross-subsidized or surcharged. Of the 275 industries, 123 (or 45 per cent) never received a

transfer, while 101 (37 per cent) received one in each year. Only 22 received a positive transfer in only one year and only 16 in two of the four years. Every heavily cross-subsidized industry, those listed in Table 6, is among the 123 industries that are always cross-subsidized. In fact, only 22 of the 122 industries with $RBT > 1$ over the 1986-88 period do not fall into this group.¹³ Generally, if an industry receives a net positive transfer in one year it receives one in all years.

Table 8
Longitudinal UI Status of Industries, 1986-1989

Number of Years Cross-subsidized ($RBT > 1$)	Number of 3 digit Industries	Per cent of all Industries	Per cent of Jobs	Per cent of UI Benefits
0	123	44.7	51.8	39.2
1	22	8.0	3.1	3.1
2	16	5.8	5.0	3.8
3	13	4.7	1.3	1.5
4	101	36.7	38.9	52.4

¹³ A complete list of industries that are never subsidized and always subsidized is available from the authors.



3. An Analysis of Firms

Cross-subsidization through the UI program is heavily concentrated among the small minority of firms that receive a positive transfer year-in and year-out.

This conclusion applies not only to industries, but also to firms. We calculated an *RBT* for each firm and for each year from 1986 to 1989 inclusive. Table 9 summarizes the distribution of firms by the number of years that they received a net positive transfer during this period. Panel A of the table refers to firms that were in operation in all four years, while Panel B refers to those that operated for at least one year during the period. We focus on the former set of relatively more stable firms. Of these about 12 per cent had a *RBT* greater than one in each of the four years. These “always subsidized” firms represent only 14 per cent of total employment, but 38 per cent of all UI benefits paid. On the other hand, almost 42 per cent of firms never receive a transfer, and while these “never subsidized” firms represent more than 56 per cent of all jobs, they account for only 31 per cent of UI benefits. Cross-subsidization through the UI program is heavily concentrated among the small minority of firms that receive a positive transfer year-in, year-out.

Table 9
Longitudinal UI Status of Firms: 1986-1990

Number of Years Cross-Subsidized (<i>RBT</i> >1)	Number of Firms	Per cent of Firms	Per cent of Jobs	Per cent of UI Benefits Paid
A. Firms in Operation During All Four Years				
0	235,176	41.5	56.3	31.3
1	118,612	20.9	12.6	9.7
2	82,840	14.6	8.8	9.4
3	61,604	10.9	8.2	11.6
4	68,731	12.1	14.1	38.1
Total	566,963	100	100	100
B. Firms in Operation for At Least One Year				
0	697,788	53.1	54.2	31.3
1	319,869	24.3	14.9	9.7
2	147,558	11.2	10.2	9.4
3	80,802	6.1	8.4	11.6
4	68,731	5.2	12.3	38.1
Total	1,314,748	100	100	100

Table 10 documents the distribution of these firms by three-digit SIC. Just 22 industries account for about 70 per cent of these firms. A significant fraction are found in the Construction industries: fully 16 per cent of always subsidized firms belong to SIC 421 (special-trade contractors), and another 6 per cent to SIC 404 (Building Construction). The remaining two Construction industries also appear in this table. Certain industries in the CBPS sector also have an important pres-

ence: 6.3 per cent of always subsidized firms belong to SIC 886 (Restaurants, Caterers and Taverns), 2.9 per cent to SIC 881 (Hotels and Motels), and a further 8.1 per cent to other “800” industries. There are no Manufacturing industries in this table, nor any from the financial sector. Table 11 offers a similar tabulation of the never subsidized firms. These are spread a little more evenly with 28 industries accounting for almost 70 per cent of the total number of firms. There are also no Manufacturing industries in this table, and only one industry from the Primary sector. In fact, ten of the industries that appear in Table 10 (that is, almost one-half) also appear in this table.

Table 10
Distribution of Always Subsidized Firms by Industry

SIC	Industry	Number of Firms	Per cent of All Always Subsidized Firms
421	Special-trade Contractors	10,888	15.96
010	Farms (Excl. Experimental and Instit.)	6,631	9.72
886	Restaurants, Caterers & Taverns	4,294	6.30
404	Building Construction	3,995	5.86
031	Logging	2,097	3.07
631	Food Stores	2,030	2.98
881	Hotels & Motels	1,996	2.93
507	Other Truck Transport	1,974	2.89
041	Fishing	1,727	2.53
699	Retail Stores, N.E.S.	1,394	2.04
406	Highway, Bridge & Street Construct	1,251	1.83
849	Misc. Amusement & Recreation Services	1,187	1.74
951	Local Administration	1,105	1.62
873	Private Households	1,074	1.57
658	Motor Vehicle Repair Shops	1,010	1.48
899	Miscellaneous Services, N.E.S.	948	1.39
828	Welfare Organizations	925	1.36
654	Gasoline Service Stations	761	1.12
884	Camping Grounds & Trailer Parks	733	1.07
409	Other Construction	680	1.00
898	Services to Buildings and Dwellings	671	0.98
519	Other Transportation	644	0.94
	Total	48,015	70.38

This fact suggests that, in addition to factors between industries, factors within an industry are important in determining chronic cross-subsidization. The data in Table 12 clearly illustrates this finding. This table offers the distribution of firms within each (broadly defined) industry according to whether they were never subsidized ($RBT < 1$ in all years), sometimes subsidized ($RBT > 1$ for one, two, or three years), or always subsidized ($RBT > 1$ in all years) over the 1986-89 period.

Table 11
Distribution of Never Subsidized Firms by Industry

SIC	Industry	Number of Firms	Per cent of All Never Subsidized Firms
010	Farms (Excl. Experimental and Instit.)	20,359	8.75
823	Offices of Physicians & Surgeons	12,408	5.33
831	Religious Organizations	10,953	4.71
421	Special-trade Contractors	10,159	4.37
737	Real Estate Operators	8,939	3.84
707	Investment & Holding Companies	7,796	3.35
735	Insurance & Real Estate Agencies	7,576	3.26
873	Private Households	6,890	2.96
886	Restaurants, Caterers & Taverns	5,469	2.35
867	Offices of Mgmt & Bus. Consultants	5,315	2.28
631	Food Stores	4,930	2.12
699	Retail Stores, N.E.S.	4,848	2.08
507	Other Truck Transport	4,555	1.96
404	Building Construction	4,512	1.94
866	Offices of Lawyers & Notaries	4,491	1.93
658	Motor Vehicle Repair Shops	4,034	1.73
864	Engineering & Scientific Services	3,814	1.64
869	Misc. Services to Business Management	3,470	1.49
623	Wholesalers Mach. & Equipment, N.E.S.	3,344	1.44
676	Household Furniture & Appliance Strs.	3,323	1.43
872	Barber & Beauty Shops	3,190	1.37
825	Offices of Dentists	3,026	1.30
861	Offices of Accountants	2,866	1.23
654	Gasoline Service Stations	2,708	1.16
629	Wholesalers, N.E.S.	2,687	1.15
891	Labour Organizations & Trade Assoc.	2,621	1.13
899	Miscellaneous Services, N.E.S.	2,603	1.12
828	Welfare Organizations	2,196	0.94
	Total	159,082	68.36

At this level of aggregation, there are clear differences in the distribution of always-and never-subsidized firms between industries. For example, as many as 45 per cent of firms in the Forestry sector are always subsidized, but only 2 per cent in the Financial sector. At the same time, however, there is a substantial fraction of both always-subsidized firms and never-subsidized firms in many of the industries. In Construction, fully 26 per cent of firms always receive a subsidy, but almost as large a fraction, 23 per cent, are never subsidized. In Mining (a sector that is surcharged), 23 per cent of firms are always subsidized, but 35 per cent are never subsidized. Similarly, while as many as 14 to 15 per cent of firms are always subsidized in Manufacturing and Transportation, more than twice as many, 33 to 38 per cent, are never subsidized. Even in Public Administration, the

Table 12
Within Industry Distribution of Firms by UI Status
 (For Firms in Operation in Each Year From 1986 Through 1989)

	Never Subsidized	Sometimes Subsidized	Always Subsidized	Total
(Number of Firms, Row Per Cent)				
Agriculture	21,514 50.0	14,462 33.6	7,024 16.3	43,000
Forestry	690 13.7	2,066 41.1	2,274 45.2	5,030
Fishing and Trapping	489 15.4	935 29.4	1,761 55.3	3,185
Mining	1,304 35.1	1,573 42.4	836 22.5	3,713
Manufacturing	13,096 32.6	21,635 53.9	5,440 13.5	40,171
Construction	15,148 23.2	33,270 51.0	16,814 25.8	65,232
Transportation	9,188 37.6	11,516 47.1	3,742 15.3	24,446
Trade	50,424 38.8	69,134 53.2	10,420 8.0	129,978
Finance	27,002 67.9	11,927 30.0	863 2.2	39,792
Community Bus. & Per. Serv.	92,066 45.44	92,604 16.5	17,920 8.9	202,590
Public Administration	1,770 34.8	2,195 43.2	1,116 22.0	5,081
Total	232,691	261,317	68,210	562,218

Never Subsidized – $RBT > 1$ for 0 years
 Sometimes Subsidized – $RBT > 1$ for 1, 2 or 3 years
 Always Subsidized – $RBT > 1$ for 4 years.

proportion of always subsidized firms is 22 per cent, a level comparable to that of the Construction sector.¹⁴

This type of information is illustrated using three-digit industries in Figures 4 and 5 which display, respectively, the percentage of never-subsidized firms and percentage of always-subsidized firms in three-digit industries against the industry *RBT*. There is, as one would expect, a clear negative relationship in the former case and a clear positive one in the latter: the more heavily cross-subsidized an industry, the lower the fraction of never-subsidized firms and the higher the fraction of always-subsidized firms in that industry. However, the figures, particularly Figure 4, reveal a wide variation. An industry, even defined at a level as fine as the three-digit SIC, may be heavily cross-subsidized and yet contain a significant fraction of never-subsidized firms. Likewise for the percentage of always subsidized firms, which seems to display much more variance as the *RBT* value of an industry increases. The fraction of always-subsidized firms in surcharged industries only occasionally is greater than 20 per cent, while it varies from less than 10 to over 60 per cent in subsidized industries.

¹⁴ Recall from Table 3 that the aggregate *RBT* for public administration is only 0.59, while in construction it is almost five times as large, 2.90.

An industry, even defined at a level as fine as the three-digit SIC, may be heavily cross-subsidized and yet contain a significant fraction of never subsidized firms.

Figure 4
Variation in the Percentage of never Subsidized Firms in Three-Digit Industries
by Industry Relative Benefit Tax Ratio



Figure 5
Variation in the Percentage of Always Subsidized Firms in Three-Digit Industries
by Industry Relative Benefit Tax Ratio





4. Discussion

The salience of experience rating UI premiums is particularly important in the context of the Social Security Review, which might in the broadest sense be thought of as a discussion of the terms of a new social contract. For example, proposals have been put forward to change the nature of benefits that a claimant can receive according to the number of times that he or she has received benefits in the past. UI-funded training (or more generally “active” support) might be directed in the first instance to UI repeaters. The definition of a repeater is of course open to discussion. (It could mean a former claimant who begins another claim within two years, or one who has a given number of claims or even weeks of UI receipt within a given span of time, such as three claims in five years). But the question remains: what would the claimant’s right to UI be should he or she attempt to establish another claim after having received active support? One possible scenario is to suggest that the State has fulfilled its obligation to such individuals and they should no longer be eligible for UI. Another less extreme option is to accord the individual a right to further income support through the program, but at lower benefit levels or under strict insurance rules: that is, that the UI program should revert to a fully experience rated program at the individual level.¹⁵

Scenarios of this sort do not recognize the fact that firms are also responsible for the way UI is used. As Corak (1994b) has suggested, they have a role in determining not only the duration of benefits but the extent to which temporary layoffs are used, and hence the degree of repeat UI use. The terms of a new social contract with respect to UI might also quite reasonably include employers. If this is the case, then this dimension could be embodied in a differentiation of premium rates.

There would appear to be at least four such options.¹⁶ They are: (1) full experience rating, that is, a differentiation of premiums at the firm level across all industries; (2) industry rating, a differentiation of premiums between industries but the same for all firms within each industry; (3) firm rating within industries, a differentiation of firm premiums but relative to an industry rather than economy wide norm; (4) a tax on long-term unemployment, that is, an increase in firm premiums when laid-off employees collect benefits longer than some length of time, say six months. The last is the mildest form of experience rating and can be implemented regardless of which, if any, of the other options are chosen. Its rationale is discussed in Corak (1994b), and is based upon the fact that some employers time their recall decisions to coincide with the benefit entitlement of their workers. Gross (1994, p.183, n.17), for example, points out that Sweden has such a structure in place for temporary layoffs. Firms receive a subsidy to offset their UI taxes while their ex-employees are in the early stages of an unemploy-

¹⁵ See, for example, Green (1994).

¹⁶ Kesselman (1983:50–51,149–63) reviews the proposals that have been put forward for experience rating of UI premiums in Canada, and notes that the legislation embodying the 1971 reform included enabling provisions for a differentiated premium structure. This was never done, and the issue of experience rating has since that time not been given serious consideration.

ment spell. The subsidy is withdrawn and the tax burden carried entirely by the firm once the employees have been laid off for longer than thirty days.

The first three options, on the other hand, are mutually exclusive and the major results of this paper may help inform the choice between them. If an experience rated UI program were to be put into place, the findings suggest that rating at the industry level might not be tightly targeted. The major reason for this is that even the industries with a high *RBT* contain a substantial fraction of firms that never receive a positive net transfer, while those that are surcharged may contain a large fraction of firms that always do. An industry rated premium structure would, even in the most cross-subsidized of industries, penalize the majority of firms that never or only occasionally receive a net positive transfer. Experience rating of individual firms would be more sensitive to within-industry variations of this sort. Full experience rating, however, would imply significant changes in the inter-regional flows of monies. Whether this is desirable or not will depend greatly on one's point of view, but it certainly would be controversial. Within-industry rating of firms need not alter the net transfers between industries, but it would reduce the transfers within them. In this way it would probably be more respectful of interregional flows of monies.

It should be stressed that the results do not document the extent to which the lay-off and human resource practices of firms are responsive to the UI premium structure. They reveal rather the extent of the incentives in place to alter such behaviour and influence (over the longer period) the relative size and growth of industries. Alternatively, they might be viewed as illustrating the results or outcomes of any changes in behaviour that may have resulted. It is difficult to estimate the extent of changes that may result were some sort of experience rating introduced. There is no experimental or quasi-experimental evidence on this, but it is fair to say that many micro-econometric studies of claimant behaviour should not be interpreted as offering exclusively supply side evidence. A careful reading of some of these studies suggest that they are not often able to untangle the influence of the two sides of the market.¹⁷ Experimental evidence is currently being garnered on the supply side of the market, but there are no proposals to examine how firms might alter their behaviour were they faced with a different tax structure. More study is needed on how the structure of UI premiums influences the behaviour of firms.

The major criticism that is often levied against proposals for experience rating concerns the impact that it may have on hiring decisions. Firms may be more cautious in hiring new employees if there is a risk of layoff at some point in the future, and that would in turn imply an increase in their tax burden. Our results suggest that the strong majority of firms would receive a reduction in their UI taxes in a fully experience rated program, and the boost to employment that this may entail would have to be taken into account when assessing the importance of this criticism.¹⁸

¹⁷ See, for example, the survey by Corak (1994a).

¹⁸ The other major criticism against experience rating is that it entails a considerable administrative burden. This may or may not be so. The U.S. experience would certainly have to be taken into account as well as recent moves to experience rating in the Workers' Compensation schemes of some provinces. Our results, of course, do not shed any light on this issue.



5. Conclusion

This paper has documented the extent and nature of the cross-subsidies embodied in the tax and benefit structure of the Canadian UI program. There are substantial and long lasting flows of monies between industries, regions, and firms that economic theory suggests may cause more layoffs than there otherwise would be, promote the growth of less stable sectors at the expense of more stable ones, and ultimately make the economy prone to higher unemployment. The transfers to the Primary and Construction industries are particularly large. These are financed by a surcharge on many of the service industries. Large flows of monies move from Ontario and some of the western provinces to regions east of the Ottawa River. Furthermore, these transfers have been ongoing for at least the last twenty years, if not longer. While there are important between-industry transfers occurring through UI, it is also notable that only a small minority of firms are persistently cross-subsidized. The broad majority firms are surcharged year-in, year-out to the benefit of the few. A significant fraction of these always subsidized firms are located in the construction industries. The within-industry differences are also important. A significant fraction of the firms in most industries are always subsidized. Cross-subsidies through UI exist both between industries and within industries. The major reasons that industries receive a net transfer are higher than average layoff rates and lower than average earnings (and hence contributions).

Our finding that a rather small fraction of firms are “always subsidized” suggests that experience rating of UI premiums, if implemented, could result in a lower payroll tax for the majority of firms, and possibly a substantially higher tax for a minority. If such a redesign of the payroll tax is being considered as part of the new social contract involving the UI program, then the information provided in this paper may be particularly pertinent.



Bibliography

ANDERSON, Patricia M. and Bruce D. Meyer (1992). "The Unemployment Insurance Payroll Tax and Interindustry and Interfirm Subsidies." Unpublished mimeo, November, 50 pp.

————— (1993). "Unemployment Insurance in the United States: Layoff Incentives and Cross Subsidies." *Journal of Labor Economics*. Vol. 11 No. 1, Part 2, (January), pp. S70-S95.

CORAK, Miles (1994a). "Unemployment Insurance, Work Disincentives, and the Canadian Labour Market: An Overview." In Christopher Green *et al.*, *Unemployment Insurance: How to Make it Work*. The Social Policy Challenge Vol. 2. Toronto: C.D. Howe Institute.

————— (1994b). "Unemployment Insurance, Temporary Layoffs, and Recall Expectations," Business and Labour Market Analysis, Statistics Canada, unpublished mimeo, 71 pp. Abridged version published under the same title in *Canadian Economic Observer*. Statistics Canada Catalogue No. 11-010 (May), pp. 3.1-3.15.

————— (1993). "Unemployment Insurance Once Again: The Incidence of Repeat Participation in the Canadian UI Program." *Canadian Public Policy*. Vol. 29 No. 2, (June), pp. 162-167.

CORAK, Miles, Michael Nagrodski, and Wendy Pyper (1993). "Unemployment Insurance Project: A Feasibility Report." Business and Labour Market Analysis, Statistics Canada, unpublished mimeo, 18 pp.

GREEN, Christopher (1994). "What Should We Do with the UI System?" In Christopher Green *et al.*, *Unemployment Insurance: How to Make it Work*. The Social Policy Challenge Vol. 2. Toronto: C.D. Howe Institute.

GROSS, Dominique M. (1994). "Unemployment and UI Schemes in Europe." In Christopher Green *et al.*, *Unemployment Insurance: How to Make it Work*. The Social Policy Challenge Vol. 2. Toronto: C.D. Howe Institute.

HAMERMESH, Daniel S. (1990). "Unemployment Insurance, Short-time Compensation and Labor Demand." *Research in Labor Economics*. Vol. 13.

————— (1993). *Labor Demand*. Princeton, New Jersey: Princeton University Press.

KARAGIANNIS, Elias (1986). *Experience Rating UI Premiums: An Assessment*. Employment and Immigration Canada, unpublished mimeo, 120 pp.

KESSELMAN, Jonathan R. (1983). *Financing Canadian Unemployment Insurance*. Canadian Tax Paper No. 73. Toronto: Canadian Tax Foundation.

OSBERG, L., R. Apostle, and D. Clairmont (1986). "The Incidence and Duration of Individual Unemployment: Supply Side or Demand Side?" *Cambridge Journal of Economics*, (March).

STATISTICS CANADA (1992). *Worker Turnover in the Canadian Economy: Separations and Hiring, 1978-1989*. Catalogue No. 71-539. Ottawa.