



*Employer Responses to UI  
Experience Rating:  
Evidence from  
Canadian and American  
Establishments*

by Gordon Betcherman  
and Norm Leckie



Human Resources  
Development Canada

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UI Impacts  
on Employer  
Behaviour

Canada



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**\*\*This version has been reformatted for electronic presentation. For the purpose of reference, the page numbers have been maintained identical to the published report.**

## **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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## *Abstract*

### **Purpose**

This abstract summarizes the results of a study of differences in Canadian and American employer responses to unemployment insurance. The primary concern of the research involves the relationship between UI financing, on the one hand, and layoffs and employer-sponsored training, on the other. The principal issue under investigation centres on the impacts of experience rating on these two aspects of employer behaviour. Specifically, the objective of the analysis is to test two hypotheses: (1) *all things being equal*, an establishment is more likely to adjust to a fall in labour demand through layoffs the less accurately experience rated its UI premiums are, and (2) *all things being equal*, an establishment is less likely to invest in training the less accurately rated its UI premiums are. A secondary issue addressed by the research concerns the relationship between the availability of UI short-term compensation (or worksharing) and layoffs.

### **Background**

Policy-makers and economists are familiar with the extensive literature on the effects of unemployment insurance on the behaviour of workers. The general conclusion of this analysis is that the availability of UI benefits does extend the duration of joblessness, though the degree to which it does is the subject of some controversy. In comparison, far less attention has been paid to how UI influences the behaviour of firms. There are theoretical reasons, however, to expect that features of an unemployment insurance system, especially its financing, would have impacts on employer decisions, most particularly regarding layoffs.

Indeed, in recent years, a series of American studies has offered empirical support for the hypothesis that the way UI is financed on the employer side does affect layoff behaviour. In the U.S., the contributions made by firms are partially “experience rated” in that they are affected to some extent by their layoff history. The degree of experience rating — i.e., the marginal tax increase of an additional layoff — varies by state and American researchers have used this variation to measure the impact of experience rating on layoffs. The major conclusion of these studies is that “incomplete” experience rating creates an incentive to employers to engage in layoffs, specifically temporary and seasonal layoffs. The research further indicates that more closely tying employer UI taxes to past layoffs, while reducing future layoffs, could constrain employment levels by discouraging hiring in anticipation of higher layoff costs down the road.

In Canada, employer premiums are unaffected by layoff history. In light of the U.S. research, this raises the question of whether the absence of experience rating leads to more use of layoffs by Canadian firms compared to their American counterparts. Moreover, this issue has a logical extension to employer-based training: if the expected effect of “zero” experience rating on layoffs indeed exists, then this would be anticipated to have a negative impact on training. The reason for this is that high layoff rates will be associated with low tenure and it has been well established that the incidence of training is positively correlated with employee tenure.

## Methodology and Data

Designing a research methodology to examine the impacts of the Canadian UI system on employer behaviour is inherently problematic since there is no variation in financing arrangements or in other program features of interest. To get the necessary variation, the study included firms in Canada and the U.S. By restricting the analysis to two manufacturing industries (machinery and fabricated metal products) and four “border” jurisdictions (Ontario, Pennsylvania, Minnesota, and Wisconsin), the research strategy involved observing the layoff and training patterns of employers producing common products within the same market but operating under different UI regimes.

In each industry, establishments were surveyed in Ontario (with no experience rating), a state with a “liberal” UI regime (low, but some, experience rating), and a state with a “tight” UI system (a high degree of experience rating). In machinery, the jurisdictions sampled were Ontario, Wisconsin (liberal), and Minnesota (tight) while, in metals, Ontario, New York (liberal), and Pennsylvania (tight) were included. The analysis is based on a final sample of 300 establishments in five “sector-jurisdictions” (New York was dropped because of poor response). In each case, establishment data were gathered on turnover (layoffs and hiring) and training, and a range of other variables that could be expected to influence these. The operating hypotheses were that, *ceteris paribus*, Ontario firms would report more layoffs (specifically temporary layoffs), and less training than their counterparts in the liberal-UI states and, especially, the tight-UI ones.

## Results

The descriptive evidence on 1993 layoffs generally conformed with expectations. In both sectors, Ontario establishments reported the highest layoff rates, both in terms of temporary and total layoffs. Clearly, the observed differences across jurisdictions could be due to numerous factors, including differences in the various UI systems. To consider the impact of the range of possible explanatory factors, establishment turnover models were specified and tested. These models incorporated a number of establishment variables including sales growth, employment, recent technological change, innovation in human resource practices, collective bargaining status, the female and youth shares of the workforce, an industry dummy variable, as well as a jurisdiction dummy variable, the local unemployment rate, and a measure of the degree of experience rating in the jurisdiction. This last variable — the key variable in the analysis — was proxied by the UI “marginal tax cost” (MTC), calculated in earlier published research (with a value of 0 for Ontario respondents).

The estimated models explained between 25 and 30 per cent of the variation in establishment layoff and hiring rates. According to the analysis, the observed differences in these rates between jurisdictions were primarily due to the higher unemployment rates in Ontario than in the American localities. The MTC variable coefficient was statistically insignificant in each of the estimations, offering no support for the hypothesis that experience rating (at least differences in average rates across jurisdictions) acts as a significant deterrent to layoffs.

This result is consistent with qualitative evidence gathered from survey respondents on the role of experience rating in their layoff decisions. U.S. establish-

ments, even those in “tight” UI jurisdictions, attributed relatively little importance to experience rating in deciding whether or not to lay off workers. In each of the states included, fewer than five per cent of the respondents felt that experience rating had a significant effect; over one-half believed it had little or no impact. In contrast, Ontario employers, faced with the theoretical notion of experience rating, evaluated it as a potentially much more important factor.

The survey also collected data on respondents’ use of various layoff avoidance measures, including hiring freezes, wage freezes/cuts, reduced hours, retraining, and early retirement. The expectation was that use of these measures would increase with the degree of experience rating. However, the econometric results do not support this hypothesis: in most cases, there were no significant differences across jurisdictions and where differences were significant, they indicated that Ontario respondents were more likely to use the layoff avoidance strategies.

An analysis of the relationship between short-time compensation (STC), or UI worksharing, and layoff rates was undertaken using the Ontario subsample. (UI-sponsored STC does not exist in any of the U.S. jurisdictions included in the survey.) The results indicate a positive and significant relationship between use of STC and the establishment temporary layoff rate. While this might seem to be a perverse result given the objective of STC to reduce temporary layoffs, it almost certainly reflects the fact that employers instituting a worksharing plan are likely to be operating in a high-layoff environment. The results do suggest, however, that worksharing may have had a muted effect on layoffs (where high rates would have been even higher).

The final stage of the research considered the hypothesis that UI parameter differences would affect the extent of workplace training reported in the various jurisdictions. Since this was based on prior expectations regarding the effect of UI on layoffs, which were not supported by the analysis, it is not surprising that no evidence was found to link the UI regime with training activity.

## **Conclusions**

The analysis does not support the hypotheses regarding the impacts of UI on firm behaviour. That is, greater degrees of experience rating in a UI system do not, *ceteris paribus*, deter employers from using layoffs to adjust to declines in labour demand, or encourage them to engage in greater training. This does not mean that the unemployment insurance system has no influence on decisions employers make regarding layoffs or training. However, this study finds no evidence that differences in the degree of experience rating affect their behaviour in these areas.

The conclusions, specifically on the layoff impacts of UI, run counter to some other studies. There are a number of candidate reasons to explain this. Some of these relate to potential limitations stemming from the exploratory nature of this study. For example, the analysis is restricted to two sectors which may not be representative of the broader economy. The measure of experience rating is not firm-specific but is based on a jurisdiction average for a group of industries. There may be data quality problems, something any researcher using employer survey data should acknowledge.



It is also possible, however, that the aspects of UI examined here really do not have significant impacts on employer behaviour. Relatively few studies have looked at this relationship and, among those that have, only a very small number have used firm-level data covering a wide range of control variables. Perhaps experience rating, especially in its incomplete form, is not a significant enough force to substantially influence employers in their layoff decisions. As well, firms in jurisdictions with experience rating may become adept at minimizing its impact by concentrating layoffs on exempt employees and by defining layoffs as quits where possible.

To conclude, the research, while exploratory, draws attention to a set of issues that has largely been ignored in the literature. More exhaustive establishment-level data collection and analysis in a range of industries is important for understanding how UI affects employer behaviour.



## *Introduction*

Policy-makers and economists are familiar with the extensive literature on the effects of unemployment insurance on the behaviour of workers. Far less attention has been paid to how UI influences the behaviour of employers. Nevertheless, the limited research that does exist suggests that features of an unemployment insurance system may well have important impacts on employer decisions, especially those relating to layoffs.

This paper reports the results of research we have undertaken on the relationship between unemployment insurance and employer behaviour. We have focused on employer financing of the UI system — in particular, the experience rating of their contributions — and more generally, how this affects layoffs and employer-initiated turnover. Given the well-established links between turnover, tenure, and training, we then go on to test the hypothesis that the UI system influences employer training decisions as well.

Designing a research methodology to examine the impacts of employer financing of the Canadian UI system is inherently problematic since there is no variation in how business contributions are assessed. To overcome this constraint, we have developed an approach designed to yield comparisons of turnover and training between employers in Ontario and three U.S. border states (Pennsylvania, Minnesota, and Wisconsin) with very different UI financing parameters.

Our empirical analysis is based on a survey of establishments in these jurisdictions.<sup>1</sup> By restricting the sample to two manufacturing industries with integrated North American markets — fabricated metals and machinery — our research strategy has been to control as much as possible for business conditions and other industry-specific factors that are important determinants of turnover and training. With this sample design, we then develop and test a set of establishment-level turnover and training models which are intended to isolate the impact of the different jurisdictions and, specifically, the employer-financing parameters of their UI systems.

It is important to emphasize the exploratory nature of our study. On the positive side, most of the limited analysis of the impacts of UI on employer behaviour is based on employee-level data; there are few examples of studies along the lines presented in this paper where analysis is based on data gathered from establishments or firms.<sup>2</sup> Also, the use of Canadian and American data represents a unique way to establish the variation in UI features necessary to observe behavioral impacts on employers. However, while the methodology has been designed to isolate the impacts of the unemployment insurance systems to the extent possible, turnover and training patterns are determined by a complex set of factors that are difficult to completely account for in a quantitative study such as this one. Finally, as will be evident when our results are reported, the usable sample sizes are relatively small, particularly when observations with missing data are removed.

*The use of Canadian and American data represents a unique way to establish the variation in UI features necessary to observe behavioral impacts on employers.*

1 The survey population also included establishments from New York but because of a shortage of usable responses, that state has been excluded from the analysis reported in this paper.

2 Exceptions are Osberg, Apostle, and Clairmont (1986), and Anderson and Meyer (1993b).

This paper is organized in five sections. The first reviews the existing literature on the impacts of UI on turnover and training. In section 2, we detail the methodological approach and data used in the analysis. Our results on the effects of UI financing on turnover are reported in section 3. Following this, in section 4, we review the analysis pertaining to training. Finally, a summary and implications are presented in section 5.



## 1. Literature Review

We begin this section by summarizing past research on the relationship between unemployment insurance and layoffs, with a particular emphasis on the impacts of UI employer financing arrangements. Following this, the extension to training is considered.

### UI and Layoffs

The impact of unemployment insurance on the labour market has been the subject of a great deal of analysis. The lion's share of this research has been concerned with the supply side and, especially with how UI influences the worker's decision to exit unemployment.<sup>3</sup> There is general consensus that the availability of UI benefits does extend the duration of joblessness and, thus, measured unemployment; however, the magnitude of this effect is the subject of some controversy.<sup>4</sup>

While the focus of the UI literature has been on the supply side, an increasing body of evidence has accumulated over the past two decades indicating that employers' decisions may also be influenced by the unemployment insurance system. A number of studies, using a range of methodologies and data sets, have concluded that the level of temporary, seasonal, and, to a lesser extent, permanent layoffs is influenced by the UI system (Becker 1972, Feldstein 1978, Saffer 1982, Burdett and Wright 1989a, Anderson and Meyer 1993a).<sup>5</sup>

Indeed, some evidence suggests that *most* of the impact of UI on unemployment originates on the demand side (by increasing the chances of entry into unemployment), rather than on the supply side (by increasing the probability of exit from unemployment). Topel (1983), for example, attributed considerably more of the growth in layoff-initiated unemployment to (employer-driven) layoff entry than to (employee-driven) layoff duration.

Research on the impacts of UI on layoffs has been concerned with three aspects of the UI system: financing, benefits, and worksharing, or short-time compensation. After reviewing each of these, we will discuss those factors that have been shown to condition the layoff impacts of unemployment insurance.

### Financing

The major financing issue considered in the literature has been experience rating. This reflects both the dominance of American research and the fact that experience rating is characteristic of unemployment insurance systems in the U.S. Since experience rating is not part of the Canadian UI regime, we will briefly describe how it works.

3 In Canada, until recently, another relevant supply-side question concerned the effects of UI on the employee's decision to quit. Amendments in 1992 eliminated benefits eligibility for this class of claimants.

4 See, for example, Osberg, Apostle, and Clairmont (1986), Atkinson and Micklewright (1991), and Phipps (1993).

5 With the exception of the Anderson and Meyer study, the research cited is all based on employee surveys with employer information included either through questions about the employer or linking with existing employer data. For a review of the studies through the first half of the 1980s, see Hammermesh (1990).

*An increasing body of evidence has accumulated over the past two decades indicating that employers' decisions may also be influenced by the unemployment insurance system.*

In the U.S., unlike Canada, employers alone finance the UI system. Their contributions or taxes are partially “experience rated”, or affected by their past layoff activity. A firm’s tax rate is determined by individual states based on the UI benefits paid to employees it has recently laid off.

All states generally hold to these guidelines, but there is considerable variation in terms of how tax rates are precisely assessed. The vast majority of states follow one of two approaches, either a “benefit ratio” or a “reserve ratio” method.<sup>6</sup> Each approach yields a measure of how much a firm’s laid off employees have drawn on the UI system over the previous three years. As this amount increases, tax rates rise, although the actual extent varies from state to state.

In all states, experience rating is only partial in that taxes assessed to a firm do not rise on a dollar-for-dollar basis with benefits drawn by that firm’s laid off workers. The lack of complete experience rating occurs for three reasons. First, tax rate increases due to a change in the reserve/benefit ratio (that is, the elasticity of the tax rate to increased layoffs) are typically insufficient to meet the full cost of the benefits resulting from layoffs. Second, a firm’s decision to lay off employees has no impact on its tax payments when it is already at the maximum tax rate or when it is below the minimum rate. Third, in certain states, some UI benefits are not charged to the firm: for example, those paid to short-tenure employees, to students who have returned to school, or to dependents as allowances.

The major finding from studies of experience-rating effects is that less-than-total experience rating creates an incentive to employers to lay off employees.<sup>7</sup> Card and Levine (1994) show that this effect is manifested mainly in temporary and seasonal layoffs. They find that permanent layoffs are typically due to “idiosyncratic” reasons such as a bad job match or because of plant closings. Their research suggests that more complete experience rating would lead to reduced layoffs. However, Card and Levine also conclude that it would result in lower employment levels by encouraging greater average hours and discouraging hiring during upturns because of higher anticipated layoff costs down the road.<sup>8</sup>

To summarize, the degree of experience rating can be viewed along a continuum:

- At one end is the (unobserved) perfectly experience-rated system, under which all employers would be accountable for the full cost (UI benefits) of the unemployment created by their layoffs.
- In between the two extremes are incompletely rated systems such as those in the U.S. which, for a variety of reasons, charge employers for only a partial

6 Fifteen states have a “benefit ratio” system, whereby a firm pays taxes in proportion to the ratio of (1) benefits charged to its account (paid to its laid off employees) to (2) taxable wages, both averaged over the preceding three years. Thirty-two states have a “reserve ratio” system, where by firms pay taxes that are a function of the ratio of (1) their reserves, which are past taxes less benefit payments summed over the previous three years, to (2) their taxable payroll averaged over the preceding three years.

7 See Hammermesh (1990) for examples.

8 Another financial factor to consider in understanding the less-than-complete nature of American experience rating is the fact that maximum insurable earnings are typically set well below state average earnings. This has the effect of limiting the range over which experience rating can act as a disincentive to layoffs (Anderson and Meyer 1993a). A low maximum insurable earnings limit has also been shown to encourage job cuts as opposed to cuts in hours (Fitzroy and Hart 1985) and to discourage hiring low-wage workers (Wright and Loberg 1987, Burdett and Wright 1989a).

share of the UI benefits paid to their laid off workers. Research suggests that partial experience rating creates some incentives for employers to adjust through layoffs.

- At the other end, is the completely unrated system, such as Canada's, where firms pay a flat tax rate unaffected by the level of layoffs they initiate. If partial experience rating creates some incentives for layoffs, it can be assumed that the incentives are even stronger in an unrated system.

### **Benefits**

We will deal with this subject briefly because the effects of benefit levels are not explicitly addressed in our empirical analysis. Nonetheless, benefit levels do represent one aspect of UI that could influence employer behaviour. *Ex ante* expectations are that UI benefits would have a positive impact on layoffs: that is, the higher the benefits, the lower the attrition of laid off workers to other jobs, which would reduce the employers' expected rehiring costs in the recovery period and thereby create incentives to adjust through temporary layoffs. However, the American empirical literature suggests that the impact of UI benefits on layoffs is, at most, modestly positive and certainly less than the impact of UI financing/experience-rating.

For example, Topel (1983) showed that the impact of the UI "subsidy" (experience rating) on total layoff unemployment was double the impact of the UI benefit replacement rate.<sup>9</sup> Similarly, Kaiser (1987) found that the impact of the maximum benefit amount on monthly average layoffs in a state was, in most industries, considerably less than the impact of UI experience rating. Indeed, in industries (states) where the number of low-wage employers (whose expected re-hiring costs are low) exceeds the number of high-wage employers (whose expected re-hiring costs are high), UI benefits have a *negative* impact on layoffs.

It is of interest that the weak impact of UI benefits on employer layoff behaviour in the U.S. is likely due in part to the presence of experience rating. With experience rating, raising UI benefits would increase firms' expected future UI tax costs and thus discourage layoffs, since their laid off employees would be receiving higher (and perhaps longer-lasting) UI benefits that would be charged back to the firm. One would expect, then, that in non-experience rated systems such as Canada's, the impact of UI benefits on layoffs would be stronger. However, Osberg, Apostle, and Clairmont (1986) found that the impact of UI benefits on employers' layoff behaviour in Canada was modest.

### **Short-time compensation**

In this paper, we examine another feature of the UI system which potentially affects employer layoff behaviour: short-time compensation (STC), or UI-financed work sharing. In theory, STC encourages employers to respond to downturns by cutting hours rather jobs, with workers on reduced time receiving

<sup>9</sup> The impact on total layoff unemployment includes the impact on both layoff entry and layoff exit. Interestingly, UI benefits had a slightly greater positive effect on the probability of entering layoffs (that is, of being laid off) than UI financing. On the other hand, UI benefits had a positive effect on layoff exit whereas UI financing had a highly negative effect. The net impact on total layoff unemployment, therefore, was a small measured impact for UI benefits and a large measured impact for UI financing.

*A number of factors have been shown to condition the impact of UI on layoffs. Most important is the state of the economy.*

partial compensation through UI. Grais (1983) suggests that the lack of STC in the U.S. has contributed to the higher layoff rates in that country compared to Europe. In Canada, STC has been shown to reduce layoffs, although at the possible cost of discouraging retraining and delaying necessary adjustment (Ekos Research Associates 1994).<sup>10</sup>

### **Factors Mediating UI Impacts**

A number of factors have been shown to condition the impact of UI on layoffs. Most important is the state of the economy. Card and Levine (1994) demonstrated that the layoff-reducing potential of greater experience rating is larger during downturns. Similarly, Topel (1983) showed that introducing a state's growth rate in a model explaining layoff unemployment in terms of UI benefits and experience rating tempered the measured impacts of both parameters.

The impact of UI on layoffs has also been shown to be affected by firm-level characteristics, identified by researchers examining UI cross-subsidies (for example, Karagiannis 1993 in Canada, and Adams 1986, Deere 1991, Anderson and Meyer 1993a in the U.S.) These subsidies occur in imperfectly experience-rated systems where certain groups making frequent use of layoffs are charged more in benefits than in taxes, while the reverse is true of other groups. Studies have found that low-wage, low-layoff industries (for example, services) subsidize high-wage, high-layoff, and seasonal industries (for example, construction), and that small firms subsidize large ones.

Research suggests that the effect of UI on layoffs will vary depending on the nature of the workforce. Demographic attributes are particularly important. For example, other things being equal, being female, uneducated, young and old (as opposed to prime age), ill, or attached to a working spouse increases one's chances of being laid off. Union membership has an ambiguous effect on layoffs. While the relatively high costs of union labour act as an incentive for firms to adjust through layoffs, where unions have negotiated job security protection, the employer's ability to lay off workers will be constrained.

### **Layoffs and Training**

In our research, we are also interested in the effect of unemployment insurance on the incidence of employer-based training. If there is an impact, it will operate through any influence UI may have on layoffs. This reasoning is based on the strong relationship that has been shown to exist between training, on the one hand, and tenure or turnover, on the other. This relationship, of course, reflects the fact that employers will make investments in training where they expect a high rate of return, that is, where expected tenure is long.<sup>11</sup>

One line of evidence emerges from studies at the industry and country levels. To cite one example, a recent analysis by the Organisation for Economic Co-operation and Development (1993), comparing tenure and enterprise training in U.S. and French industries, found a positive correlation between industry average

<sup>10</sup> Another side effect of STC is that it can lead to inefficient hours utilization (underemployment) of the employed (Burdett and Wright 1989b, Hammermesh 1990).

<sup>11</sup> The same principle of expected return and, hence, expectations concerning tenure also apply to workers' training decisions.

tenure and training incidence. At the national level, the OECD also found a strong relationship, with countries with longer average tenure undertaking more enterprise training.

Other evidence of the relationship between tenure and training comes from worker and firm studies. A common finding has been that employer investments in the human capital of their workers — particularly in firm-specific skills — increase with employee tenure (e.g., Lynch 1992, Bishop 1990, Mincer 1988, Brown 1989). And, using firm-level data, Bishop (1989) and Osberg, Apostle and Clairmont (1986) found statistically significant negative impacts of training on involuntary separations (that is, layoffs and dismissals).

Counter to most of the research, Simpson's (1984) analysis of training in a sample of Canadian establishments indicated that high turnover rates contributed to training in the sense of longer durations of general (if not specific) training. His explanation: firms with high turnover need to train more as new employees are hired to replace separated workers.

One final point to note about employer-based training is its relationship to the overall business and human resource strategy of the firm. A recent body of establishment-level research indicates a high correlation among such "high-performance" workplace practices as training, internal job ladders, incentive pay, and employee participation. Moreover, firms that do adopt such practices are more likely to report declines in the levels of quits and layoffs than firms that report traditional human resource practices (Betcherman, McMullen, Leckie, and Caron 1994). While the direction of causality is not clear, this research does indicate a strong link between employee-focused human resources systems and lower layoffs.





*We developed a methodology that involves comparing the layoff and training experiences of a group of Canadian establishments with a matched group of American firms. With this design, we can observe otherwise similar employers located in different jurisdictions with distinct UI regimes.*

## 2. Methodology and Data

This section outlines the methodology employed in the empirical stage of our research. We begin by setting out the hypotheses to be tested and go on to describe the research design, conceptual framework and model, and data.<sup>12</sup>

### Research Hypotheses

The following hypothesis concerning the impacts of employer financing of UI on layoff behaviour represents our starting point:

1. Other things being equal, when an establishment's demand for labour falls, it will be less likely to adjust through layoffs than other means the more accurately experience-rated employer UI premiums.

This hypothesis follows from the existing research reviewed in the preceding section. From this expected relationship between UI and layoffs, we hypothesize the following consequence for training:

2. Other things being equal, an establishment will be more likely to invest in the formation of human capital (through workforce training) the more accurately experienced-rated the UI regime is, given the expected positive association between experience rating and the incidence of layoffs.<sup>13</sup>

To clarify the rationale for this hypothesis, if a UI system without experience rating does encourage layoffs, this will have a downward effect on employee tenure and, it then follows, on training investments. This hypothesis applies particularly to permanent layoffs; if the UI system creates incentives for temporary layoffs alone, the effect on training may not necessarily be negative. One final qualification: as Simpson's (1984) analysis suggests, high layoff rates (again, especially permanent layoffs) could stimulate training where employers need to orient replacement workers.

### Research Design

An appropriate research design to test these hypotheses would involve (i) identifying similar establishments operating in different UI regimes (that is, with significant variations in the parameters of interest); (ii) observing their layoff and training patterns; and (iii) analyzing whether these patterns differ across the UI regimes, while controlling for other possible explanatory factors.

This design poses inherent problems in the Canadian context because of the homogeneity of our UI system in terms of financing, benefits, and short-time compensation.<sup>14</sup> To get the necessary variation, we developed a methodology that involves comparing the layoff and training experiences of a group of

<sup>12</sup> For additional details on the methodology and data, see Leckie and Betcherman (1994).

<sup>13</sup> To clarify the rationale for this hypothesis, if a UI system without experience rating does encourage layoffs, expected employee tenure will be low and, it then follows, training investments can also be expected to be low. This hypothesis applies particularly to permanent layoffs; if the UI system creates incentives for temporary layoffs alone, the effect on training may not necessarily be negative. One final qualification: as Simpson's (1984) analysis suggests, high layoff rates (again, especially permanent layoffs) can stimulate training where employers need to orient replacement workers.

<sup>14</sup> While benefits, duration and premia do differ across Canadian jurisdictions, these differences are due to regional labour market conditions, which themselves affect layoff and training behaviour.

Canadian establishments with a matched group of American firms. With this design, we can observe otherwise similar employers located in different jurisdictions with distinct UI regimes.<sup>15</sup>

The required “matching” involved surveying employers in border jurisdictions operating within the same product market and sector. The assumption underlying this approach is that, with continental economic integration, Canadian and American establishments producing common products in the same sector will typically face uniform demand conditions, use comparable production technologies, and generally be similar in other respects that might affect layoff and training patterns. Confining the U.S. component to border states was intended to minimize potential differences between the two countries in terms of factors such as management culture and labour climate.<sup>16</sup>

### **Selection of States and Sectors**

A critical aspect of the design involved the selection of the U.S. border states and the sectors to be included in the analysis. States had to be chosen on the basis of the relative “tightness” of their UI regime and on their industry mix (that is, with a significant presence in the manufacturing industries under consideration). A “tight” UI system is characterized by a relatively high degree of experience rating and low benefits.

Starting with a group of 20 states in close proximity to the Canadian border, we examined various features of the state UI system to assess its relative generosity/tightness. This survey included calculating wage replacement rates on the basis of the (assumed) average weekly benefit amount taken as a percentage of the state average weekly annual wage.<sup>17</sup> It also included whether or not short-time compensation was available.

For our purposes, the most important indicator of the state UI system was the extent to which employer contributions were experience rated. Determining this is not a straightforward task since the degree of experience rating *per se* does not appear in public documents. Initial attempts to compare states using recent information on UI tax rates and the ratio of maximum insurable earnings limits to average earnings were unsuccessful, mainly because there are several cases of states with “tight” UI tax rates (high and wide) but “generous” MIE limits.<sup>18</sup> Moreover, the tax rates themselves do not capture how responsive taxes are to past layoffs (that is, the degree to which they are experience rated).

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15 For more details on the choice of sectors and jurisdictions, see Leckie and Betcherman (1994).

16 As an example, detailed analysis of state and provincial unionization levels shows that, national differences notwithstanding, many U.S. border states have union density rates (particularly in the private sector) that are quite similar to those in Canadian provinces. See Meltz (1989).

17 State benefit levels were taken from the National Foundation for Unemployment Compensation and Workers’ Compensation (1990) and state wages from the United States Department of Commerce (1993).

18 It appears, in fact, that some states compensate for low tax rates by setting their taxable wage base at a high level relative to their annual earnings in order to maintain fund solvency. Note that there appears to be a certain amount of convergence among states within regions with regard to the taxable wage base: for example, most states in the northwest have high bases, most in the north central region are in the middle range, and most in the northeast are low.

In the literature, researchers have used a variety of measures to represent experience rating across states.<sup>19</sup> However, for the most part, these measures were also unsatisfactory for our purposes, being out of date, unpublished, insufficient (too few states), or imprecise.

Ultimately, we adopted an approach used by Card and Levine (1992) and Topel (1985). Card and Levine have published estimates of marginal UI tax costs (MTCs) for five major sectors (construction, durable manufacturing, nondurable manufacturing, services and trade) in 36 states covering the 1978-1987 period. Modelled on Topel's "experience factors", the MTCs are based on five elements: (i) the proportion of UI claims originating from former employees that were actually charged to the establishment (proxied with the industry average insured unemployment rate of the state); (ii) the proportionality factor that indicates how the tax rate varies with the benefit- or reserve-ratio; (iii) the real interest rate, because taxes are based on the current dollar amount of benefits paid; (iv) the growth rate of the maximum insurable earnings limit; and (v) the growth rate of employment to capture cyclical impacts on UI parameters. As such, the MTC estimates embrace many of the concepts involved in the notion of experience rating.<sup>20</sup>

In the states where Card and Levine had calculated MTCs, we used those estimates as indicators of the degree of experience rating. This decision was due to the sectoral breakdown and the more recent data used for their estimates. In the other cases, Topel's EF measure was used. Note that where both the MTC and the EF were available, we found a high correlation in the ranking of the states. This indicates that the measures are closely comparable and, also, that the rules dictating the degree of experience rating have not changed much over time.

We had originally proposed to sample employers in three distinct continental regions (eastern, central, and western). However, after examining detailed industry employment data for states for which we have a measure of the marginal UI tax cost, it became apparent that we had to confine our analysis to the central North American region.<sup>21</sup> In the eastern and western markets, a sample could not be formed among a Canadian province and identifiably "liberal" and "tight" states where each jurisdiction had sufficient employment in any particular industry to form the basis for adequate sampling.

The two industries selected for our analysis were machinery manufacturing and metal products manufacturing. In each industry, we surveyed establishments in Ontario and in two U.S. states, one with a "tight" UI system (that is, characterized by a relatively high degree of experience rating and low benefits) and one with a "liberal" UI regime (though still tighter than the Canadian system). In

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19 For example, Saffer used the gap between the maximum and minimum tax rates (1982) and a measure of the extent to which an industry's tax rate deviates from the midpoint of the tax schedule (1983). Kaiser (1987) used a variety of tax variables including the maximum tax rate and the estimated slope of the tax schedule. Anderson and Meyer (1993a,b) computed ratios of benefits received to taxes paid for eight industry sectors as a measure of the UI subsidy received by each industry, due to incomplete experience rating.

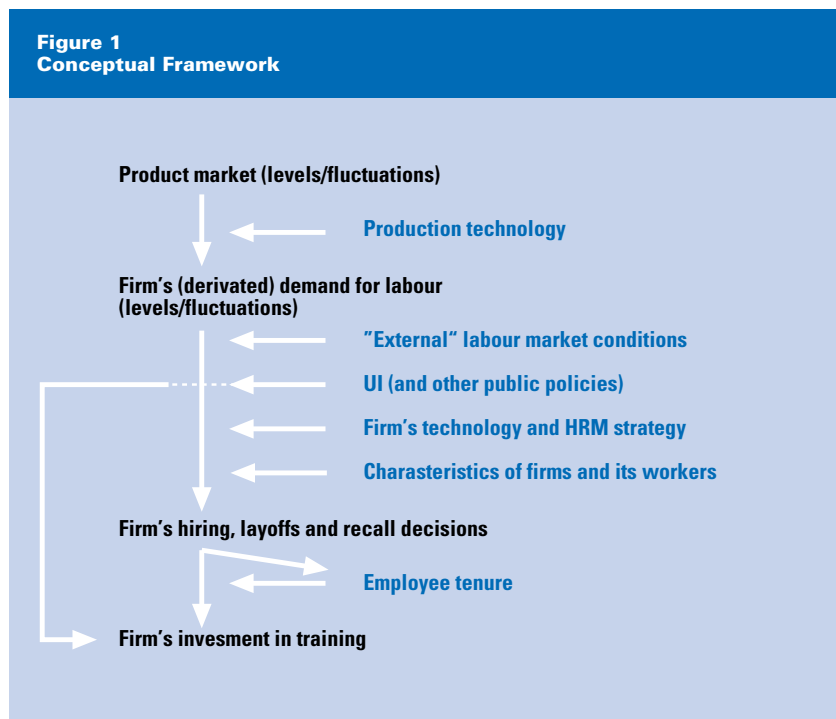
20 See Leckie and Betcherman (1994, Table 1) for a listing of Topel's (1985) experience factors (based on the 1979-81 period) and Card and Levine's (1992) sector-level MTCs (based on the 1978-87 period) for those states among the original 20 border states where these measures have been computed.

21 We wish to thank Paul Chester at the Bureau of Labor Statistics in the U.S. Department of Labor for providing data on employment by 2-digit industry for each of the 20 border states.

machinery, the jurisdictions sampled include Ontario, Wisconsin (liberal U.S.), and Minnesota (tight U.S.). In metals, the survey covered Ontario, New York (liberal U.S.), and Pennsylvania (tight U.S.). Appendix A, Table A.1 summarizes sector and jurisdiction selections, and provides summaries of the major parameters of the respective UI systems.

## The Conceptual Framework and Model

The conceptual framework underlying our approach is outlined in Figure 1. A firm’s demand for labour is derived from the product market, given its production technology. The way in which it chooses to meet that labour demand, or changes in that demand, is conditioned essentially by labour supply, the firm’s human resource management strategy, the characteristics of the firm itself, local labour market conditions, and UI provisions (as well as other relevant public policies). Finally, the firm will make human capital investment (training) decisions based on a number of factors, including the expected tenure of its employees.



To begin, we separately regressed three turnover measures (scaled by establishment employment) — total layoff rate, temporary layoff rate (measured by recalls), and the hiring rate — on a number of establishment and jurisdiction explanatory variables derived from the conceptual framework. The dependent and explanatory variables are identified and described below in Box 1.

We expect establishment total and temporary layoff rates to decrease with sales growth, employment size, hours spent recruiting, and innovation in human resource practices, and to increase with higher female and youth work force

*The principal data source used is the Labour Adjustment Survey designed by the authors and undertaken by Ekos Research Associates.*

shares, and higher local unemployment rates. In the case of technological change and collective bargaining status, layoff effects are not clear, *a priori*. In the case of technological change, the impact will depend on whether the technology displaces labour or increases productivity. With respect to collective bargaining status, unions may contribute to higher layoffs because of their higher labour costs or they may constrain layoffs where they have negotiated protective provisions. Finally, as our principle hypothesis suggests, we expect that layoffs will be negatively associated with the UI marginal tax cost. Accordingly, Ontario should have the highest layoff rates, followed by New York and Wisconsin and, then, Pennsylvania and Minnesota.<sup>22</sup>

With respect to the hiring rate, sales growth, technological change, and the local unemployment rate should have positive impacts. On the other hand, we expect hours spent recruiting to have a negative effect. We also anticipate that high UI marginal tax costs will have a negative impact because of the future costs employers would incur if new hires are eventually laid off.

Following the turnover analysis, we modelled training as a function of the turnover measures and other variables. Three measures of training were employed: training duration (the average number of hours of formal vocational training provided per employee); training incidence (the percentage of employees receiving vocational training; and non-vocational training (the percentage of employees receiving training for such skills as communications and problem-solving). The explanatory variables include turnover, plus the other variables identified in Box 1.<sup>23</sup>

## **Data**

The principal data source used is the Labour Adjustment Survey (See Appendix B), designed by the authors and undertaken by Ekos Research Associates.<sup>24</sup> This was complemented by Statistics Canada and U.S. Bureau of Labor Statistics unemployment rates for census divisions. Information on UI parameters came from sources identified in Appendix A, Table A.1.

In designing the survey and, especially, the sampling strategy, several experts were consulted.<sup>25</sup> The consensus opinion was that, given the rather small expected sample size (around 300 establishments) and the complexity of the problem, internal rather than external validity should be a priority. That is, that the survey design should lead to the elimination of as many sources of variation as possible in order to isolate the influence of the key variable — the UI parameters of interest. The trade-off for this priority, though, is bound to be less generalizability, or external validity. Thus, while the survey strategy involved building in controls for factors “contaminating” the UI-layoff link, the study does not purport to represent employer responses everywhere.

22 However, short-term compensation, which exists only in Ontario, should reduce layoffs.

23 Instead of using the UPROTECT and UNOPROT variables, a simple dummy variable (COLLECT) was included to distinguish whether there was collective bargaining or not.

24 Details on the field work are provided in Ekos Research Associates (1994).

25 Discussions were conducted with expert methodologist, Jim Cameron, Director of Industrial Relations for General Motors of Canada, Frank Graves of Ekos Research Associates, and four researchers who have studied UI impacts on employers on either side of the border (Miles Corak, Statistics Canada; David Card, Princeton University; Philip Levine, Wellesley College; and Bruce Meyer, Northwestern University).

**Box 1**  
**Variables Included in the Turnover Models**

| Variable                        | Description  |
|---------------------------------|--|
| <b>A. INDEPENDENT VARIABLES</b> |  |
| SALE9293                        | Real sales growth, 1992-93   |
| EMP93                           | Total employment in December 1993  |
| HITECH                          | Dummy variable indicated whether major technological change reported over the past 3 years (reference = "moderate" or "no" change)   |
| HRCOUNT                         | Count of whether programs exist in each of employee participation, variable pay, and job design  |
| UPROTECT                        | Dummy variable indicating collective bargaining representation and contract provisions for at least one of advance layoff notice, severance pay, or adjustment committees (reference = no collective bargaining) |
| UNOPROT                         | Dummy variable indicating collective bargaining representation but no contract provisions (reference = no collective bargaining)   |
| YOUTH                           | Percentage of workforce under 25 years of age  |
| FEMALE                          | Female percentage of workforce   |
| MACH                            | Dummy variable indicating establishment in machinery industry (reference = metal)  |
| HRSREC                          | Average hours spent per recruiting, screening, interviewing, and orienting a new hire  |
| URATE                           | Local 1993 unemployment rate   |
| MTC                             | Jurisdiction marginal UI tax cost  |
| STC93                           | Percentage of employment in 1993 involved in UI short time compensation (Ontario only)   |
| MINN.                           | Dummy variable indicating Minnesota location (reference = Ontario)   |
| PENN.                           | Dummy variable indicating Pennsylvania location (reference = Ontario)  |
| WIS.                            | Dummy variable indicating Wisconsin location (reference = Ontario)   |
| <b>B. DEPENDENT VARIABLES</b>   |  |
| LAY93                           | 1993 layoff rate (layoffs as a % of total employment)  |
| TEMP93                          | 1993 temporary layoff rate (recalls as a % of total employment)  |
| HIRE93                          | 1993 hiring rate (hires as a % of total employment)  |

**Questionnaire**

After an initial telephone contact, potential respondents were mailed a self-administered questionnaire under the letterhead of Human Resources Development Canada. The questionnaire asked establishments about market conditions, business strategy, technology, sales, employment, and turnover, labour adjustment strategy, recruitment, training, workplace human resource practices, unions and collective bargaining, and a number of background variables. The survey instrument is included in Appendix B.

### Survey sample

The initial survey sample frame was purchased from Dunn and Bradstreet establishment (single site) lists in Canada and the U.S. The frame was restricted to establishments with at least 30 employees on location. Initially, a random selection of 1,882 organizations was contacted by telephone to seek cooperation and to establish the best person to send the detailed questionnaire to. From this group, 1,530 agreed to receive the questionnaire. Ultimately, we received 331 completed questionnaires, representing a response rate of 21.6 per cent.

Questions related to response bias are obviously relevant in any study based on voluntarily collected data. This can be a particularly important issue where only a minority of potential respondents actually reply. Even where the initial probability sample drawn has not been biased,<sup>26</sup> researchers must be attuned to the possibility that those actually choosing to participate might be systematically different from those not participating in ways that might themselves affect the behaviours of interest.

As one check on response bias, all establishments contacted in the initial phone interview were asked about two factors that could be potentially important sources of bias: recent employment growth and union status. Appendix A Table A.2 compares the complete initial sample with the final respondents on these dimensions as well as on other characteristics (sales, employment level, sector, and jurisdiction) available on the original Dunn and Bradstreet data file. On average, respondents had lower sales and employment than the original sample, but were similar in terms of employment growth, union status, and sector. Note that both Pennsylvania and New York were underrepresented in the final sample. As pointed out earlier, the response from New York was not adequate to include that jurisdiction in the analysis.

Table 1 — “Sample Characteristics, Labour Adjustment Survey” — compares the five jurisdiction-sector samples used in the analysis along a number of dimensions. Several points deserve mention here. First, the subsample for machinery was considerably larger (n=192) than the subsample for fabricated metals (n=104). Within machinery, Ontario respondents were somewhat smaller, had lower sales growth, were more likely to be unionized, and were more likely to be part of a larger enterprise than their American counterparts. In the metal sector, Ontario establishments tended to be considerably larger, were more often unionized, had introduced more technological change in recent years, and were more likely to be part of a larger enterprise than the Pennsylvania respondents.

Observable differences between jurisdiction subsamples, such as those identified in Table 1, can be handled through multivariate statistical techniques. A more vexing problem involves possible differences in unobserved characteristics that may account for variations in behaviour. The classic example in program evaluation involves selection biases stemming from unobserved differences between

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<sup>26</sup> The Dunn and Bradstreet sample frame is really the only potential source for drawing the type of sample required for this survey. However, as those familiar with the frame will be aware, the Dunn and Bradstreet list of establishments is not complete. For example, because the list is maintained as a source of credit information, firms without significant credit needs are less likely to be included. Also, since records are updated only periodically, some important sampling variables (for the present survey) such as location and employment may be out of date.

program participants and non-participants. In these situations, researchers typically use techniques such as a Heckman correction to adjust for this problem.

**Table 1**  
**Sample Characteristics, Labour Adjustment Survey**

|   | Metal Sector |       | Machinery Sector |      |       |
|---|--------------|-------|------------------|------|-------|
|   | Ontario      | Penn. | Ontario          | Wis. | Minn. |
| Number of establishments  | 68           | 36    | 72               | 70   | 50    |
| Mean employment   | 122          | 69    | 79               | 95   | 103   |
| Mean percentage sales <sup>1</sup> growth 1992-1993                             | 28.3         | 20.7  | 12.0             | 20.6 | 24.3  |
| Mean age of establishment (years)   | 38.9         | 32.2  | 27.0             | 29.7 | 36.9  |
| Percentage of establishments with a collective agreement                        | 34.9         | 25.0  | 28.2             | 18.6 | 12.7  |
| Mean percentage of employees covered by a collective agreement                  | 25.6         | 14.9  | 12.5             | 12.4 | 7.6   |
| Percentage of establishments with significant tech change over last three years | 44.1         | 16.7  | 45.5             | 42.9 | 41.7  |
| Mean percentage of employees using technology                                   | 34.2         | 32.2  | 41.8             | 45.9 | 52.5  |
| Percentage part of larger enterprise  | 53.9         | 16.7  | 40.9             | 21.4 | 27.8  |
| Mean female percentage of employment  | 22.0         | 14.0  | 14.3             | 15.4 | 19.4  |
| Mean youth percentage of employment   | 20.8         | 17.7  | 17.6             | 19.0 | 19.4  |
| Mean nonstandard percentage of employment                                       | 3.4          | 2.8   | 2.1              | 3.4  | 3.9   |

<sup>1</sup> Sales are in 1993 Canadian dollars.

We have considered the possibility of analogous selection biases in our research design. The most likely bias of this type would appear to be that establishments may make locational choices based on corporate strategies or practices that are important determinants in themselves of the behaviours we wish to explain. For example, it is possible that companies with low levels of commitment to their employees and, thus, high layoff rates will choose to locate in a “liberal” UI jurisdiction rather than in a “tight” one where they will be taxed for this form of behaviour. While this sort of selection bias is possible, we do not believe that it is likely to be prevalent enough to have a significant influence on our results. As a consequence, we have not made any technical corrections to adjust for this potential source of bias.





### 3. Employer Financing of UI and Turnover

*The observed variations across jurisdictions in layoffs, hires, and turnover obviously could be due to numerous factors, including differences in the various UI systems.*

This section reports our results on the relationship between employer financing of unemployment insurance and various measures of turnover. The major part of the analysis involved developing and testing a set of turnover models where the ultimate focus concerned the effects of experience rating employer premiums (as proxied by the marginal tax cost) on layoffs and hiring.

As outlined in the preceding section, the Labour Adjustment Survey collected data from establishments in jurisdictions varying in terms of UI parameters including employer financing. We begin by comparing the observed turnover differences across the jurisdictions in each of the industries included. Following this, establishment turnover is modelled as a function of firm-specific and jurisdiction-related variables (including the MTC). We then go on to consider the relationship between short-time compensation and layoffs.

#### Turnover Measures and Jurisdiction Means

Survey respondents provided annual data on total layoffs, recalls, and new hires. In our analysis, these were converted to rates by dividing by total establishment employment. Although respondents were asked for data over the 1991-93 period, the results reported in this paper pertain only to 1993.

Figure 2 presents mean establishment rates by jurisdiction for each sector for total layoffs, temporary layoffs (using recalls as a proxy measure), hires, and total turnover (the sum of the other three). Recall our hypothesis that layoff rates, particularly temporary layoff rates, will be highest in Ontario (with no experience rating) in both industries, and that in machinery, they will be lower in Minnesota (with more experience rating) than in Wisconsin. The data presented in Figure 2 generally conform to these expectations. In both sectors, Ontario establishments report the highest average layoff rates, both in terms of total and temporary layoffs. Wisconsin had a higher mean layoff rate than Minnesota, although this was not the case with respect to temporary layoffs alone.<sup>27</sup>

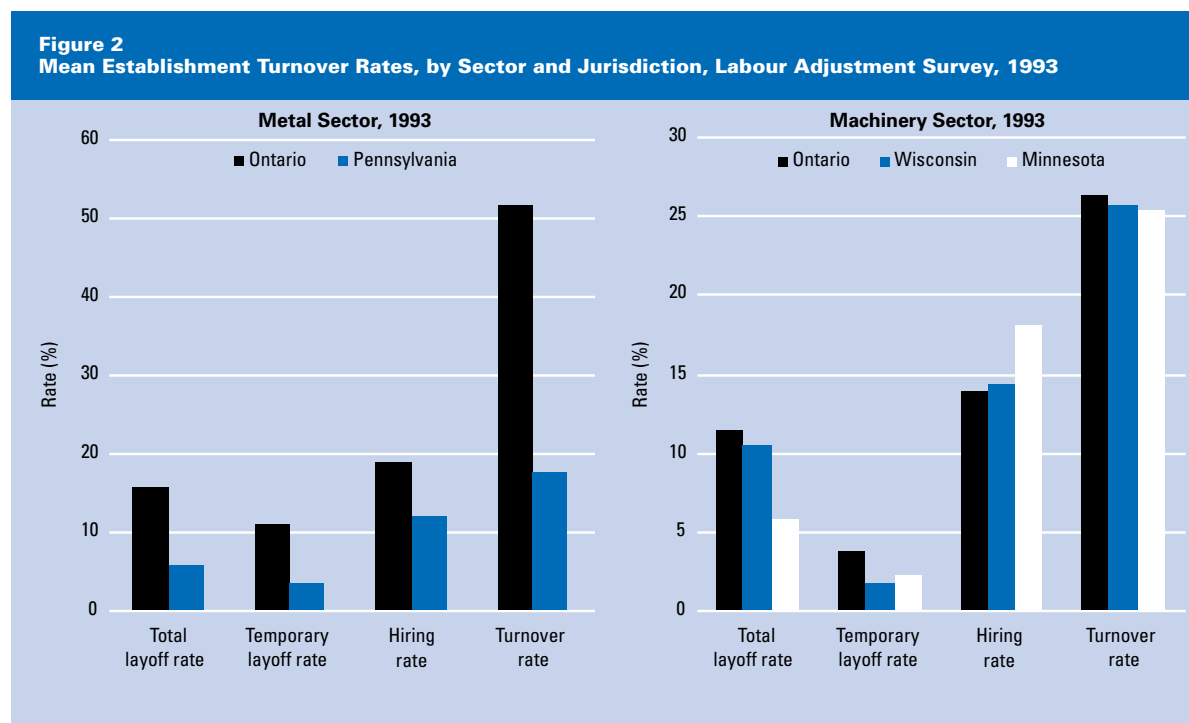
#### Modelling Turnover

The observed variations across jurisdictions in layoffs, hires, and turnover obviously could be due to numerous factors, including differences in the various UI systems. To consider the impact of the range of possible explanatory factors, we have specified and estimated different establishment turnover models. These models include two classes of variables: those which we identify as establishment-level variables and jurisdiction-related variables. The latter set includes the UI marginal tax cost which proxies the jurisdiction's degree of experience rating.

Because of small sample sizes, particularly in the fabricated metals sector, we have chosen to report our results here for the pooled survey sample which includes both industries covered. Since the original analytical plan was to model

<sup>27</sup> In the metal industry, the differences in the means between Ontario and Pennsylvania establishments were significant at the .01 level for overall turnover and around the .10 level for the other three measures. In machinery, the only difference statistically significant at the .10 level or better was between Ontario and Wisconsin in the case of temporary layoffs.

each sector separately, we have also estimated industry-specific regressions and these results are shown in Appendix A, Tables A.3 and A.4. Because of the small sample sizes, especially in fabricated metals, these sector-specific results should be interpreted with caution.



### Multicollinearity

Before turning to the results of these estimations, the issue of multicollinearity deserves mention. To identify potential multicollinearity problems, we have made two sets of calculations. The first involves simple pair-wise correlations between the explanatory variables. These are reported in Appendix Table A.5. As this matrix indicates, there are some statistically significant correlations. The strongest — and most serious from the point of view of our analysis — involves the jurisdiction MTC and the local unemployment rate ( $r = -.68, p > .01$ ).

This multicollinearity problem was reinforced by the second calculation (not shown), which involved regressing MTC (the critical variable in the analysis) onto the other explanatory variables. In this estimation, the strongest association involved the unemployment rate which had a negative coefficient, statistically significant at the .01 level.

Obviously, the collinearity between the unemployment rate and the MTC represents an important issue in the analysis: the former variable would be anticipated to be a major determinant of turnover patterns and the latter is the key variable in our research. *A priori*, this association would not necessarily have been anticipated; while the MTC is a jurisdiction-level variable, the unemployment rate is specified at the local level. However, to understand the correlation, it is important

to note that Ontario unemployment rates are typically much higher than the American rates (Table 2); that, coupled with the zero MTC in the Canadian UI system and the positive MTCs in the U.S. states, underlies the collinearity.

**Table 2**  
**Unemployment Rates, by Jurisdiction, 1993**

| Jurisdiction | Official rate | Local rates |         |         |
|--------------|---------------|-------------|---------|---------|
|              |               | Mean        | Minimum | Maximum |
| Minnesota    | 5.1           | 4.6         | 3.5     | 5.3     |
| Pennsylvania | 7.0           | 6.8         | 4.9     | 8.2     |
| Wisconsin    | 4.7           | 4.3         | 2.2     | 6.0     |
| Ontario      | 10.6          | 10.7        | 8.4     | 13.9    |

Source : Labour Annual Averages 1993, *Statistics Canada cat. no. 71-220* and data obtained in mimeo form from the Local Area Unemployment Statistics Division of the Bureau of Labor Statistics, U.S. Department of Labor, Washington, D.C.

As a consequence of the collinearity between these variables, it is difficult to disentangle the effects of the MTC and the local unemployment rate on the turnover measures. Accordingly, as we will see below, alternate specifications of the model were estimated which excluded the unemployment rate, using the hours recruiting variable to proxy labour market conditions.

### Model Results

Table 3 summarizes the results of the turnover model estimations to explain establishment total layoff, temporary layoff (recall), and hiring rate patterns.<sup>28</sup> For each measure, two specifications have been estimated: (a) one model including establishment variables plus a set of jurisdiction dummy variables, the jurisdiction MTC, and the local unemployment rate; and (b) a second model where the local unemployment rate has been replaced by the hours recruiting variable. Recall that, in the methodology section, the variables were described (Box 1), along with our expected signs for the independent variable coefficients.

The models explain between 23 and 30 per cent of the variation in establishment layoff and hiring rates.<sup>29</sup> Looking first at total layoffs (Table 3, columns 1(a) and (b)), a number of establishment-level variables have statistically significant coefficients in both estimations. These include employment (a negative effect), the youth and female share of the workforce (each with a positive effect), and the presence of a union but no contract protection regulating layoffs (a highly significant and substantial positive effect). The direction of each of these coefficients conforms to prior expectations as set out in the preceding section.

In the specification where the unemployment rate has been included (column 1(a)), this variable has the expected positive coefficient, statistically significant at the .05 level. The MTC variable coefficient is insignificant. Given the difficulty in separating the effects of these two collinear variables, the estimation of MTC

<sup>28</sup> These models have been estimated using the ordinary least squares technique in the SAS GLM procedure.

<sup>29</sup> These R-squares are not atypical of cross-sectional models of establishment turnover.

**Table 3**  
**Summary of OLS Regression Results on the Determinants of Establishment**  
**Total Layoff, Temporary Layoff, and Hiring Rates, 1993,**  
**Labour Adjustment Survey<sup>1</sup>**

|                | Dependent variable: |                    |                    |                     |                   |                     |
|----------------|---------------------|--------------------|--------------------|---------------------|-------------------|---------------------|
|                | LAY93<br>(1a)       | LAY93<br>(1b)      | TEMP93<br>(2a)     | TEMP93<br>(2b)      | HIRE93<br>(3a)    | HIRE93<br>(3b)      |
| Intercept      | -31.99<br>(-1.63)   | 10.60*<br>(1.86)   | -13.53*<br>(-1.69) | 7.43***<br>(3.22)   | 24.74<br>(1.62)   | 14.30***<br>(3.49)  |
| SALE9293       | -0.12*<br>(-1.80)   | -0.12<br>(-1.35)   | -0.07**<br>(-2.62) | -0.09**<br>(-2.56)  | 0.19***<br>(5.15) | 0.19***<br>(4.76)   |
| EMP93          | -0.04**<br>(-2.30)  | -0.04**<br>(-2.17) | -0.02**<br>(-2.09) | -0.02**<br>(-2.02)  | 0.01<br>(0.67)    | -0.00<br>(-0.22)    |
| HITECH         | -1.91<br>(-0.56)    | -0.30<br>(-0.08)   | 0.97<br>(0.67)     | 2.47<br>(1.54)      | 1.17<br>(0.49)    | -0.31<br>(-0.12)    |
| HRCOUNT        | -1.25<br>(-0.74)    | -1.30<br>(-0.65)   | -0.35<br>(-0.48)   | 0.22<br>(0.27)      | -0.43<br>(-0.37)  | -1.14<br>(-0.88)    |
| UPROTECT       | 7.06<br>(1.27)      | 7.86<br>(1.19)     | 2.76<br>(1.16)     | 3.32<br>(1.25)      | -6.31<br>(-1.56)  | -3.82<br>(-0.84)    |
| UNOPROT        | 16.90***<br>(2.64)  | 22.21***<br>(3.08) | -1.74<br>(-0.70)   | -1.60<br>(-0.56)    | -4.89<br>(-1.13)  | -6.47<br>(-1.33)    |
| YOUTH          | 0.21***<br>(2.79)   | 0.18**<br>(2.05)   | 0.02<br>(0.73)     | -0.02<br>(-0.44)    | 0.02<br>(0.31)    | 0.01<br>(0.10)      |
| FEMALE         | 0.25*<br>(1.93)     | 0.27*<br>(1.71)    | 0.03<br>(0.55)     | -0.01<br>(-0.12)    | 0.06<br>(0.73)    | -0.04<br>(-0.42)    |
| MACH           | 0.32<br>(0.06)      | 2.37<br>(0.34)     | -6.15**<br>(-2.59) | -7.89***<br>(-2.87) | -3.56<br>(-0.95)  | -11.66**<br>(-2.58) |
| MINN.          | 21.72<br>(1.54)     | -2.27<br>(-0.23)   | 6.87<br>(1.04)     | -4.23<br>(-0.85)    | -11.05<br>(-1.00) | -2.90<br>(-0.37)    |
| PENN.          | 12.17<br>(0.83)     | 0.57<br>(0.04)     | -5.75<br>(-0.71)   | -14.79*<br>(-1.87)  | -13.99<br>(-1.13) | -15.23<br>(-1.24)   |
| WIS.           | 25.81*<br>(1.91)    | 1.25<br>(0.16)     | 7.72<br>(1.27)     | -3.94<br>(-0.99)    | -11.20<br>(-1.09) | -2.20<br>(-0.38)    |
| URATE          | 3.88**<br>(2.12)    |                    | 1.91**<br>(2.61)   |                     | -1.30<br>(-0.95)  |                     |
| MTC            | -5.92<br>(-0.77)    | -6.31<br>(-0.76)   | 2.70<br>(0.60)     | 2.98<br>(0.65)      | 4.03<br>(0.62)    | 4.06<br>(0.59)      |
| HRSREC         |                     | -0.00<br>(-0.22)   |                    | -0.00<br>(-0.12)    |                   | -0.01<br>(-1.15)    |
| n              | 118                 | 101                | 108                | 92                  | 147               | 122                 |
| R <sup>2</sup> | 0.29                | 0.27               | 0.30               | 0.29                | 0.23              | 0.27                |
| F              | 2.96***             | 2.28**             | 2.82***            | 2.30**              | 2.77***           | 2.78***             |

<sup>1</sup> For variable descriptions, see Box 1.

\*\*\*, \*\*, \* indicate that the estimated variable coefficient (or F-value) is significant at the .01, .05, and .10 level, respectively. T-statistics are in parentheses.

in model 1(b), where hours recruiting replaces the unemployment rate, is of particular interest. However, as Table 3 indicates, the MTC coefficient retains its insignificant negative sign in this specification as well.

The temporary layoff models (columns 2(a) and (b)) are especially germane given previous findings that where UI parameters — specifically experience rating — affect employer layoff behaviour, that effect will be greatest on temporary

*In the final analysis, then, the modelling exercise offers no support for the hypothesis that greater experience rating acts as a deterrent to total layoffs, temporary layoffs, or new hires.*

(including seasonal) layoffs in particular (Card and Levine 1992). In both estimations, 1992-93 sales growth and employment size had statistically significant negative impacts on the temporary layoff rate. Relative to the metal sector, the machinery sample reported lower temporary layoff rates, and a statistically significant negative coefficient was estimated for Pennsylvania.

As was the case with total layoffs, the unemployment rate variable was a positive and statistically significant determinant of temporary layoffs, while the MTC variable was insignificant (Table 3, column 2(a)). In the alternate specification (column 2(b)), the MTC coefficient remained insignificant.

The only statistically significant establishment variable emerging from the hiring rate models (Table 3, columns 3(a) and (b)) was 1992-93 sales growth which was positively associated with hiring activity. Note that the MTC variable had a statistically insignificant coefficient in both specifications.

To sum up our findings with respect to modelling turnover, some establishment-level variables exerted significant effects especially on layoffs. These include employment size, sales growth, and, in the case of total layoffs, union status and the characteristics of the establishment workforce. All had the expected directional impacts. The local unemployment rate was also estimated to be a significant determinant (in the anticipated direction) of layoff rates.

The MTC variable is of particular interest, of course. In all of the models reported in Table 3, the calculated coefficient for this variable was far from being statistically significant.<sup>30</sup> In the final analysis, then, the modelling exercise offers no support for the hypothesis that greater experience rating acts as a deterrent to total layoffs, temporary layoffs, or new hires.

### **Establishment-specific UI Tax Measures**

This conclusion must be interpreted in light of the measure of experience rating employed in our analysis. It could be argued that the preferred measure is not a jurisdiction standard such as the MTC but, rather, the establishment's actual marginal UI tax rate, in other words, its real cost in UI premiums of an additional layoff. We have not had access to such rates for the survey respondents, nor was it feasible for us to collect the data necessary to calculate them.

Even if establishment-specific marginal tax rates could be obtained or estimated, however, it is not obvious that they would be preferable measures to the jurisdiction MTCs. In the first place, they present endogeneity problems in that the behaviour we are trying to explain — the establishment's propensity to lay off workers — will, at the same time, be the major determinant of its UI marginal tax cost.

We can illustrate this point with survey data on employer UI taxes paid. Respondents were asked to report their annual UI taxes and, where these have

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<sup>30</sup> This variable had a statistically insignificant coefficient in all of the sector-specific estimations as well, with one exception. In the metal sector, the MTC had a significant negative coefficient in the temporary layoff model where the unemployment rate was included (Table A.3, column 2(a)). However, the very small sample size (n=28), the multicollinearity problem discussed in the text, and the fact that the MTC coefficient had an insignificant (positive) sign in the other temporary layoff specification (column 2(b)) all raise questions about the robustness of this finding.

been reported for 1993, we have calculated the establishment’s average UI tax with contributions as a percentage of 1993 sales. The layoff models reported in Table 3 were then reestimated, substituting this new variable (UITAX) for the jurisdiction MTC variable. Unfortunately, the sample sizes for these estimations are very small: in the first place, there were a lot of missing observations for the UI tax question and, second, in Ontario where UI funding includes both employer and employee contributions, many respondents appear to have reported the combined premiums and, as a consequence, that jurisdiction’s sample was eliminated from this part of the analysis.

The results of modelling layoffs using the UITAX variable are summarized in Table 4.<sup>31</sup> The sample sizes obviously constrain the robustness of the estimations but, nonetheless, this remains a useful exercise for considering the endogeneity issue associated with establishment-specific tax measures. In the total layoff model (column (a)), the UITAX variable has a positive and statistically significant coefficient. In the temporary layoff model (column (b)), it is also positive although outside the conventional threshold of statistical significance. These results highlight the point that establishment-specific measures of experience rating, above all, will reflect the employer’s overall propensity to rely on layoffs — hence the positive coefficients for UITAX in Table 4. It should be noted that the UITAX variable is an *average*, not the preferred *marginal*, tax rate; however, it seems likely that the same endogeneity problem would also exist with marginal rates.

**Table 4**  
**Summary of OLS Regression Results on the Determinants of Establishment Layoff Rates Using the Establishment-specific Average UI Tax Rate, U.S. Jurisdictions Only, Labour Adjustment Survey<sup>1</sup>**

|                     | Dependent variable |                |
|---------------------|--------------------|----------------|
|                     | LAY93<br>(a)       | TEMP93<br>(b)  |
| UNITAX <sup>2</sup> | 5.49*<br>(2.00)    | 3.57<br>(1.46) |
| n                   | 31                 | 29             |
| R <sup>2</sup>      | 0.43               | 0.47           |
| F                   | 1.49               | 1.59           |

1 \* indicates that the estimated coefficient is significant at the .10 level. T-statistics are in parentheses.

2 UITAX is calculated as the establishment’s self-reported UI taxes paid in 1993 as a percentage of 1993 sales.

One final point on the choice of measure: if the real *policy* variable we want to test is the impact of the degree of experience rating in a given UI regime, then the jurisdiction MTC — and not the firm’s tax rate — may, in fact, be the more theoretically correct choice anyway.

31 Given the small sample sizes and our particular interest in the UITAX variable, Table 4 reports only the estimated coefficient for that variable, plus the summary statistics. Complete results are available from the authors.

*U.S. establishments attribute relatively little importance to experience rating in deciding how to deal with a decline in their demand for labour... In contrast, Ontario employers... evaluated it as a potentially much more important factor...*

## Employer Assessments of Experience Rating

Our conclusion of no significant experience rating effect on turnover is consistent with qualitative evidence gathered from survey respondents on the role of experience rating in layoff decisions. American companies were asked the following question: “Under current UI rules, employers’ UI taxes increase with the number of layoffs they are responsible for, up to a maximum. To what extent does the prospect of increasing your UI taxes affect your decision to lay off workers or not?” Given that Ontario employers do not face experience rating, the question posed to them was a modified version: “...If a system [whereby UI premiums rose with layoffs employers were responsible for] were introduced in Canada, to what extent would that affect the decisions you make with respect to layoffs.”

The results of the responses are summarized in Table 5.<sup>32</sup> What is most striking is that the U.S. establishments attribute relatively little importance to experience rating in deciding how to deal with a decline in their demand for labour and, particularly whether to respond by layoffs. In each of the states covered, fewer than five per cent of the respondents felt experience rating had a significant effect on their layoff decision; over one-half believed it had little or no impact.

**Table 5  
Employer Assessments of the Impact of Experience Rating on the Layoff Decision, Labour Adjustment Survey<sup>1</sup>**

|                           | Significant Impact | Moderate Impact | Little Impact | Total |
|---------------------------|--------------------|-----------------|---------------|-------|
| (percentage distribution) |                    |                 |               |       |
| <b>Metal sector*</b>      |                    |                 |               |       |
| Pennsylvania              | 2.9                | 45.7            | 51.4          | 100.0 |
| Ontario                   | 18.2               | 39.4            | 42.4          | 100.0 |
| <b>Machinery sector**</b> |                    |                 |               |       |
| Minnesota                 | 4.0                | 42.0            | 54.0          | 100.0 |
| Wisconsin                 | 0.0                | 40.0            | 60.0          | 100.0 |
| Ontario                   | 13.0               | 46.4            | 40.6          | 100.0 |

<sup>1</sup> Based on response to a 7-point scale with “significant impact” and “little impact” representing the two points at either end, and “moderate impact”, the three central points.

\*\* and \* indicate that the distributions are significantly different by jurisdiction, according to a chi-square test, at the .10 and .05 levels, respectively.

In contrast, Ontario employers, faced with the theoretical notion of experience rating, evaluated it as a potentially much more important factor than did the U.S. employers who actually face some degree of experience rating. While we have not tested competing explanations for this, it is an interesting finding to reflect on. On the one hand, it is possible that American establishments, used to operating with experience rating, no longer recognize — and therefore underestimate — its real impacts on their behaviour.

<sup>32</sup> One relevant issue concerns how assessments of the impact of experience rating vary by actual firm layoff rates; in other words, do high layoff firms respond differently than others? The answer is no: the simple correlation between establishment assessment score and 1993 layoff rate was only .02 in metals and .11 in machinery.

Alternatively, however, employers in the U.S. may be accurately identifying that experience rating does not typically play a major role in their decisions — that the after-(corporate) tax effect in dollar terms is small and that, at any rate, its impact can be minimized by concentrating layoffs among employees in exempt categories, or perhaps redefining at least some layoffs as quits for administrative purposes. This is the interpretation that is consistent with our modelling results showing no significant experience rating effects on establishment layoff rates. If this is indeed the case, then Ontario establishments, responding to a new and abstract concept, may simply be overestimating the impact that experience rating would actually have on their behaviour.

### **Short-time Compensation (STC)**

To this point, we have only discussed our results pertaining to the impacts of UI financing, specifically experience rating, on employer turnover behaviour. In this subsection, we turn to the other UI parameter considered in our analysis — work-sharing, or short-time compensation (STC). Of the jurisdictions included in this paper, only Ontario has provisions for STC in its UI system; accordingly, our analysis is restricted to the establishments in that jurisdiction.

To assess the impact of STC on layoff patterns, we have estimated the layoff models reported in Table 3 (of course, minus MTC and the jurisdictional dummies) for the pooled Ontario sample, adding an explanatory variable STC93, which represents the percentage of an establishment's total employment involved in a UI worksharing program in 1993. The expected sign for this variable is uncertain: on the one hand, employers operating in a high-layoff environment would be most likely to arrange a worksharing plan (a positive coefficient argument) while, on the other hand, the institution of a worksharing plan, by definition, can be expected to reduce layoffs (a negative coefficient argument). In any event, these effects should be stronger in the case of temporary layoffs since the STC program is intended to avert business condition-related temporary layoffs but not more structurally driven permanent layoffs.<sup>33</sup>

The results of these estimations are presented in Table 6. While noting that the performance of the individual variables is similar to the overall results reported earlier, our particular interest is in the estimation of the effect of short-time compensation. In the total layoff specification (column 1), this variable has a positive and statistically significant coefficient. In the temporary layoff model (column 2), the STC coefficient again has a positive sign, but its statistical significance is beyond the conventional threshold levels.

To sum up, the survey results show, if anything, a positive association between work-sharing and (especially temporary) layoffs. This indicates that the effect of STC typically being instituted into a high-layoff situation outweighs the layoff-reducing effects of the program itself. From the small coefficients and modest degree of statistical significance describing the STC93 variable, however, it seems plausible that UI worksharing has had a muted effect on layoffs (where high rates would even have been higher). Our data, however, are not able to distinguish between the two phenomena intertwined in the STC variable.

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<sup>33</sup> However, note that the evaluation of the STC program in Canada found that it was also being used to avoid necessary restructuring and, therefore, permanent layoffs (Ekos Research Associates 1993).



**Table 6**  
**Summary of OLS Regression Results Testing Impact of UI Worksharing (STC)**  
**on Total Layoff and Temporary Layoff Rates, Ontario, 1993,**  
**Labour Adjustment Survey<sup>1</sup>**

| Dependent variable | (1)<br>LAY93      | (2)<br>TEMP93     |
|--------------------|-------------------|-------------------|
| Intercept          | -57.40<br>(-1.67) | 36.60<br>(1.38)   |
| SALE9293           | -0.27*<br>(-1.82) | 0.28***<br>(3.20) |
| EMP93              | -0.05*<br>(-1.85) | 0.02<br>(1.00)    |
| HITECH             | 1.12<br>(0.15)    | -5.47<br>(-1.02)  |
| HRCOUNT            | -5.43<br>(-1.35)  | 1.32<br>(0.42)    |
| UPROTECT           | 15.52<br>(1.48)   | -11.67<br>(-1.48) |
| UNOPROT            | 15.16<br>(1.65)   | -8.02<br>(-1.26)  |
| YOUTH              | 0.45***<br>(3.21) | -0.04<br>(-0.39)  |
| FEMALE             | 0.22<br>(1.00)    | -0.00<br>(-0.02)  |
| MACH               | -1.13<br>(-0.14)  | -2.00<br>(-0.36)  |
| URATE              | 6.42**<br>(2.06)  | -2.42<br>(-1.07)  |
| STC93              | 0.22<br>(1.08)    | -0.22<br>(1.45)   |
| N                  | 44                | 43                |
| R <sup>2</sup>     | .51               | .46               |
| F                  | 3.02***           | 2.36**            |

<sup>1</sup> For notes, see Table 2.

\*\*\*, \*\*, \* indicate that the estimated variable coefficient (or F-value) is significant at the .01, .05, and .10 level, respectively. T-statistics are in parentheses.

## Layoff Avoidance Measures

The survey also collected data on whether establishments have used any of the following measures to avoid layoffs over the previous three years: hiring freeze, wage freeze/cut, reduced hours, retraining for redeployment, and early retirement. Our expectation is that the use of these measures would increase with the degree of UI experience rating. Accordingly, we would anticipate that, *all things being equal*, Ontario respondents would report using these measures less than their U.S. counterparts.<sup>34</sup>

Our analysis of layoff avoidance measures took the form of logistic regressions of whether the establishment has used a given measure. Explanatory variables in these models include jurisdiction and three basic control variables: employment, union status, and industry.

<sup>34</sup> The one exception could be reduced hours, because of the incentives created by the Canadian short-term compensation UI program.

The results, summarized in Table 7, do not support the hypothesis that the use of layoff avoidance measures is greatest in the American states. In most cases, the jurisdiction variables (which have been estimated relative to Ontario) have statistically insignificant coefficients. Where these are significant, they are negative, indicating that Ontario firms have been more likely to use layoff avoidance measures. This is the case with respect to using hiring freezes (compared to Pennsylvania and Wisconsin) and wage freezes/cuts and early retirement (compared to Wisconsin).

*The results do not support the hypothesis that the use of layoff avoidance measures is greatest in the American states.*

**Table 7**  
**Logistic Regression Results on Establishment Use of Layoff Avoidance Measures, 1991-93, Labour Adjustment Survey<sup>1</sup>**

|                       | (1)              | (2)                | (3)              | (4)               | (5)                |
|-----------------------|------------------|--------------------|------------------|-------------------|--------------------|
| Dependent variable    | Hiring freeze    | Wage freeze/cut    | Reduced hours    | Retrained         | Early retirement   |
| Incidence rate        | .532             | .404               | .565             | .450              | .117               |
| Independent variables |                  |                    |                  |                   |                    |
| Intercept             | .059*<br>(0.31)  | 0.09<br>(0.29)     | 0.06<br>(0.30)   | -0.22<br>(0.30)   | -2.62***<br>(0.46) |
| EMP93                 | 0.00<br>(0.00)   | 0.00<br>(0.00)     | -0.00<br>(0.00)  | 0.002*<br>(0.001) | 0.003**<br>(0.001) |
| COLLECT               | -0.01<br>(0.32)  | -0.09<br>(0.32)    | 0.26<br>(0.32)   | 0.13<br>(0.31)    | 1.46***<br>(0.43)  |
| MACH                  | -0.34<br>(0.37)  | -0.10<br>(0.35)    | (0.32)<br>(0.36) | -0.31<br>(0.36)   | 0.22<br>(0.51)     |
| MINN.                 | -0.44<br>(0.38)  | -0.54<br>(0.38)    | 0.03<br>(0.38)   | -0.18<br>(0.38)   | -0.59<br>(0.63)    |
| PENN.                 | -0.78*<br>(0.44) | -0.67<br>(0.44)    | -0.18<br>(0.44)  | -0.59<br>(0.45)   | -1.70<br>(1.09)    |
| WIS.                  | -0.67*<br>(0.36) | -1.02***<br>(0.38) | 0.17<br>(0.36)   | 0.31<br>(0.36)    | -1.24*<br>(0.85)   |
| n                     | 278              | 280                | 276              | 280               | 273                |
| Prediction rate (%)   | 60.5             | 56.6               | 54.5             | 61.4              | 80.0               |
| -2 Log L              | 10.716*          | 11.886*            | 4.131            | 9.766             | 32.556***          |

<sup>1</sup> For variable definitions, see Box 1, except COLLECT, which indicates whether or not the establishment has any employees covered by a collective agreement.  
 \*\*\*, \*\*, and \* indicate that coefficients (or -2 Log L) are statistically significant at the .01, .05 and .10 levels. Standard errors in parentheses.



## 4. Training

Recall that our initial hypothesis regarding training was that, *all things being equal*, UI parameter differences would result in Ontario establishments being less likely to make human capital investments than their American counterparts. Two presumptions underlie this expectation: (i) that the Canadian UI system would contribute to higher turnover (and lower tenure) in Ontario establishments than in U.S. establishments; and (ii) that training and tenure/turnover are significantly related.<sup>35</sup>

As we saw in the preceding section, the analysis does not support the first of these: while Ontario establishments did report higher turnover (layoffs and hires) in both sectors, this was attributable to factors other than UI. This finding, in itself, would lead us, then, to reject the hypothesis that unemployment insurance systems affect employer training, at least through their impact on turnover.

Having drawn this conclusion, we will be brief in reporting our training analysis. From the perspective of UI system design, understanding the relationship between turnover and training is nonetheless relevant (even if our research does not find that the former is significantly influenced by unemployment insurance) and our focus will be on this relationship.

We begin with simple establishment-level correlations between 1993 turnover (total layoff and hiring rates) and three measures of training; in that year (PERVOC, per cent of workforce receiving vocational training; HRSVOC, average hours of vocational training per trainee; and PERNONV, per cent of employees receiving non-vocational training).<sup>36</sup> The correlations between layoff rates and each of these training measures are all negative but statistically insignificant. Hiring rates, as expected, are positively correlated with training and, in the case of the proportion of the workforce receiving vocational training, the coefficient (.15) is significant at the .05 level.

The establishment means across the jurisdictions for these three training measures are shown in Table 8. In the metal industry, more training was reported by Ontario employers than by those in Pennsylvania; however, none of the differences are statistically significant. In machinery, the only point of note concerns mean establishment vocational training hours, which are substantially lower in Minnesota than in the other two jurisdictions.

The results of modelling the determinants of establishment training are reported in Table 9. For each training measure, we show the estimations for two regressions, one including the total layoff rate as an explanatory variable and the other with the hiring rate.<sup>37</sup> Note that these models, with either of these turnover measures, explain only a small part of the variation in reported training.

35 Given that we have collected turnover, and not tenure, data, we are also assuming that turnover — specifically layoffs and hiring — is an (inverse) indicator of tenure.

36 This latter type of training includes subjects like interpersonal skills, problem-solving, health and safety, and communication and leadership skills. Recent evidence suggests that this non-vocational, or “cultural” training, has become an important part of the overall training effort (Betcherman *et al* 1994).

37 We have also estimated the training model using permanent layoffs as an explanatory variable. The performance of the model remains unchanged and the permanent layoff coefficient is statistically insignificant.

**Table 8**  
**Training Measures by Sector and Jurisdiction, Labour Adjustment Survey**

|   | Metal |       | Machinery |      |       |
|---|-------|-------|-----------|------|-------|
|   | Ont.  | Penn. | Ont.      | Wis. | Minn. |
| Mean % of employees receiving vocational training (PERVOC)      | 27.3  | 22.8  | 29.9      | 23.0 | 29.7  |
| Mean vocational training hours per trainee (HRSVOC)             | 75.0  | 65.3  | 88.5      | 99.9 | 46.9  |
| Mean % of employees receiving non-vocational training (PERNONV) | 43.4  | 34.0  | 29.2      | 27.6 | 37.2  |

The layoff rate has a negative but insignificant coefficient in each of the three estimations. This indeterminate effect could reflect the opposing impacts layoffs can have on training: on the one hand, the “low tenure” effect (the effect that forms the basis of our hypothesis about training) which should constrain training and, on the other hand, the “replacement effect” that more training will be required because of the need for orienting replacement workers hired for (at least some) laid-off employees.

The expected relationship between hiring and training — specifically, the incidence of both vocational and non-vocational training — is unambiguously positive. However, in the estimations included in Table 9, the coefficient for the hiring rate variable, while positive in two of the three cases, does not reach standard levels of statistical significance. In alternate specifications not reported here, though, a positive and significant coefficient was estimated in the PERVOC equation.

One final point concerns the jurisdiction variables in the training equations. If UI parameters had any effect on training, other than the turnover effect driving our initial hypothesis, one would expect that this would be captured by the jurisdiction dummy variables. However, none of these had a statistically significant coefficient in any of the training model estimations.

*The expected relationship between hiring and training — specifically, the incidence of both vocational and non-vocational training — is unambiguously positive. However, the coefficient for the hiring rate variable does not reach standard levels of statistical significance.*

**Table 9**  
**Summary of OLS Regression Results on the Determinants of Establishment Training, 1993, Labour Adjustment Survey<sup>1</sup>**

| Dependent variable | PERVOC (1a)       | PERVOC (1b)       | HRSVOC (2a)       | HRSVOC (2b)       | PERNONV (3a)      | PERNONV (3b)      |
|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Intercept          | -23.19<br>(-0.77) | -0.44<br>(-0.02)  | 131.02<br>(0.83)  | -50.50<br>(-0.31) | 49.53<br>(1.17)   | 60.32<br>(1.50)   |
| SALE9293           | -0.02<br>(-0.21)  | 0.08<br>(1.10)    | -0.06<br>(-0.09)  | 0.17<br>(0.41)    | -0.03<br>(-0.23)  | -0.08<br>(-0.58)  |
| EMP93              | 0.05*<br>(1.93)   | 0.02<br>(0.89)    | -0.29*<br>(-1.65) | -0.17<br>(-1.03)  | 0.10***<br>(2.73) | 0.08**<br>(2.18)  |
| HITECH             | 10.39**<br>(2.04) | 10.27**<br>(2.30) | -3.25<br>(-0.11)  | 9.63<br>(0.35)    | 12.12*<br>(1.70)  | 9.48<br>(1.45)    |
| HRCOUNT            | 4.42*<br>(1.84)   | 3.34<br>(1.57)    | -1.58<br>(-0.11)  | 9.23<br>(0.74)    | 2.85<br>(0.84)    | 1.58<br>(0.50)    |
| COLLECT            | 2.83<br>(0.42)    | 2.65<br>(0.44)    | -5.87<br>(-0.17)  | -13.18<br>(-0.39) | 1.94<br>(0.20)    | 7.32<br>(0.83)    |
| YOUTH              | 0.03<br>(0.23)    | 0.08<br>(0.82)    | 0.88<br>(1.39)    | 0.82<br>(1.36)    | 0.25<br>(1.50)    | 0.15<br>(1.01)    |
| FEMALE             | 0.31*<br>(1.67)   | 0.22<br>(1.35)    | -1.70*<br>(-1.72) | -1.41<br>(-1.46)  | 0.04<br>(0.15)    | 0.25<br>(1.08)    |
| MACH               | 9.23<br>(1.12)    | 8.56<br>(1.17)    | -15.01<br>(-0.35) | -26.19<br>(-0.62) | -2.50<br>(-0.22)  | -10.00<br>(-0.95) |
| MINN.              | 9.65<br>(0.52)    | -3.03<br>(-0.18)  | -12.11<br>(-0.13) | 81.38<br>(0.84)   | -17.65<br>(-0.69) | -13.30<br>(-0.54) |
| PENN.              | 12.50<br>(0.89)   | 2.72<br>(0.21)    | -27.63<br>(-0.39) | 34.54<br>(0.47)   | -8.42<br>(-0.43)  | -10.40<br>(-0.54) |
| WIS.               | 7.18<br>(0.38)    | -6.63<br>(-0.39)  | 46.26<br>(0.46)   | 147.60<br>(1.47)  | -28.76<br>(-1.10) | -33.91<br>(-1.38) |
| URATE              | 1.97<br>(0.72)    | 0.14<br>(0.06)    | -0.02<br>(-0.00)  | 14.17<br>(0.98)   | -4.01<br>(-1.04)  | -4.61<br>(-1.30)  |
| LAY93              | -0.03<br>(-0.25)  |                   | -0.85<br>(-1.16)  |                   | -0.04<br>(-0.20)  |                   |
| HIRE93             |                   | 0.14<br>(0.39)    |                   | -0.37<br>(-0.37)  |                   | 0.34<br>(1.39)    |
| n                  | 111               | 132               | 93                | 114               | 109               | 129               |
| R <sup>2</sup>     | .16               | .14               | .13               | .10               | .18               | .18               |
| F                  | 1.42              | 1.43              | 0.94              | 0.88              | 1.55              | 1.94**            |

<sup>1</sup> \*\*\*, \*\*, and \* indicate that the estimated variable coefficient (or F-value) is significant at the .01, .05, and .10 level, respectively. T-statistics are in parentheses. For variable definitions, see Box 1. COLLECT distinguishes establishments with a collective agreement.



## 5. Conclusion

The analysis does not support the research hypotheses that UI financing arrangements and, specifically, the degree of experience rating will influence employer behaviour in the areas of turnover (layoffs and hiring) and training. This does not mean that unemployment insurance has no influence on business decisions. Indeed, there is evidence from other studies demonstrating that various aspects of the UI system can affect employer behaviour. However, the hypothesized links specifically addressed in our research were not established with the data and methodology we employed.

Regarding turnover, we observed some differences across jurisdictions but these were not attributable to variations in unemployment insurance parameters, specifically the degree of experience rating. Additional qualitative data support this conclusion. American employers responding to our survey do not attach much importance to the influence of experience rating in layoff decisions. Nor do they use layoff avoidance measures more frequently than their Canadian counterparts who face a flat UI tax rate. Finally, we have found no relationship between UI—and employer-based training. In retrospect, this is not unexpected since the hypothesized link was based on the UI influence operating through the layoff effect.

Our conclusion on the layoff impacts of UI runs counter to some earlier studies. There are a number of candidate reasons to explain this, ranging from possible problems with our data and methodology, to limitations in the scope of the existing body of knowledge on how unemployment insurance affects employer behaviour.

First, our analysis has been based on the experiences of two particular industries that may not be representative of the broader economy. For example, previous findings of a UI layoff effect have identified the importance of seasonal layoffs in that effect; the sectors studied here, however, are not characterized by strong seasonal patterns.

Secondly, the principal measures used — the marginal tax cost and the experience factor may not accurately reflect the true elasticity of the UI tax rate on layoffs for firms in the different states.<sup>38</sup> These indicators have been calculated for a wider group of industries (durable manufacturing in the case of MTC and economy-wide for EF) than the two specific ones included here. As well, they are based on data for an earlier period than the one we have tried to explain.

Thirdly, our methodological approach may not have been successful in isolating layoff impacts of UI so that they could be identified. We have tried to introduce variations in system parameters by comparing firms with different UI regimes,

<sup>38</sup> In the paper, we have discussed the issue of whether firm-specific marginal UI tax costs would be preferable to the jurisdiction-wide measures used. Even if access to these firm rates were possible, it is not clear from a program evaluation point-of-view that these are the desired measures. That is, the UI regime's tax standards — reflected in jurisdiction estimates of the marginal tax costs — may actually be more appropriate for the concerns of the policy-maker. Then the issue becomes one of identifying the optimal system-wide measure, which brings us to the points raised in the remainder of the paragraph in the main text.

but similar in terms of their industry, product, and markets. While we also collected and included data on establishment-specific variables that could affect turnover, at least two-thirds of the variation in layoffs remains unexplained. In this situation, the true effect of UI (or any of the explanatory variables) could be disguised in the residual.

Fourthly, there may be data quality problems, something that any researcher using employer survey data must acknowledge. It may be that measures of key variables, such as layoffs and hires, have been incorrectly reported by some respondents to the Labour Adjustment Survey questionnaire. While we expected that establishments would have these statistics on hand, the relatively low response rates may indicate that these are difficult data for at least some firms to provide.

Having identified a number of potential pitfalls associated with our analysis, however, it is also possible that the aspects of UI examined here really do not have significant impacts on employer behaviour. Relatively few studies have looked at this relationship and among those that have, only a very small number have used firm-level data. As our research design incorporates a wide range of establishment control variables, it may be that effects attributed to UI in less completely specified previous models are, in fact, correctly attributed here to other organizational characteristics that we have been able to capture.

Certainly, the various lines of evidence brought into our analysis — not only the modelling of the UI tax effects, but also the employer assessments and the use of layoff avoidance measures — are consistent in pointing to no strong layoff impacts. Perhaps experience rating, especially in its incomplete form, is not a significant enough force to influence employers in their layoff decisions. The incremental after-tax costs of additional layoffs may be perceived as small, particularly in comparison to the costs associated with retaining, retraining, and redeploying at-risk workers. This seems plausible in industries such as those analyzed here, where “continuous (productivity) improvement” and “lean production” are seen as essential for long-run competitiveness. As well, all employers in jurisdictions with experience rating may become adept at minimizing its impact by concentrating layoffs on exempt employees and by defining layoffs as quits where possible.

To conclude, the research presented here has been exploratory. However, it draws attention to a set of issues that has major relevance to the policy debate concerning the design of unemployment insurance. Most obviously, this study has dealt with the important, but not fully understood, question of how UI arrangements affect the behaviour of employers. Moreover, by basing the analysis on a data set where the employer is the unit of observation, it has been able to consider a range of establishment-level variables not incorporated into earlier research efforts.

If the body of knowledge on how UI influences employers is to be advanced, it is essential that analyses of UI arrangements be based on comprehensive establishment-level data. The experience of this paper suggests a number of considerations for future research along these lines.

First, larger samples are necessary to generate the number of observations required to undertake a reliable, detailed analysis. Secondly, the range of indus-

tries needs to be extended; there are reasons to believe that employer effects of UI may vary by sector. Thirdly, close attention must be paid to the question of developing the most appropriate measures for the UI parameters of interest. For example, a major issue emerging from this study is whether measures should be firm-specific or jurisdiction-wide. Finally, potential links to administrative data should be explored. Researchers must be sensitive to issues of data reliability and response burden when conducting establishment surveys. Both of these potential problems could be alleviated by tying into administrative records. With respect to the issues considered in this paper, these records could be especially relevant as a source for establishment data on layoffs and UI contributions.





## Appendix A: Additional Tables

**Table A.1**  
**Sector and Jurisdiction Selections, Labour Adjustment Survey**

| Jurisdiction              | Target Industry<br>and Employment<br>1992 | Marginal UI<br>Tax Cost <sup>1</sup><br>1978–1987 | UI Wage<br>Replacement<br>Rate <sup>2</sup><br>1990 | Short-time<br>Compensation <sup>3</sup><br>1990 |
|---------------------------|---|---|---|---|
| Machinery manufacturing   |   |   |   |   |
| Minnesota                 | 72,600                                    | 1.065   | 50.0  | No  |
| Wisconsin                 | 102,400                                   | 0.753   | 52.0  | No  |
| Ontario                   | 71,500                                    | 0.000   | 60.0  | Yes   |
| Fabricated metal products |   |   |   |   |
| Pennsylvania              | 82,900                                    | 1.590   | 56.5  | No  |
| New York                  | 55,200                                    | 0.781   | 50.0  | Yes   |
| Ontario                   | 32,400                                    | 0.000   | 60.0  | Yes   |

- 1 Marginal cost in UI taxes of layoffs by employers in the durable manufacturing industry, as contained in Card and Levine (1992), except for Pennsylvania, where it is the “experience factor” for the entire state, as contained in Topel (1985).
- 2 As legislated by state, calculated as weekly benefit amount as a percentage of client’s wages, assuming client has worked 13 weeks in his/her previous highest quarter or 50 weeks in previous year, as contained in National Foundation for Unemployment Compensation and Workers’ Compensation (1990).
- 3 UI-financed; known as Work Sharing in Canada.

Sources: Card and Levine (1992); Topel (1985); National Foundation for Unemployment Compensation and Workers’ Compensation (1990); Statistics Canada (1991, 1993); US Department of Labor (unpublished).

**Table A.2**  
**Non-response Bias, Labour Adjustment Survey**

|  | Initial sample<br>of<br>establishments | Establishments<br>completing<br>questionnaire |
|--|--|---|
| Mean establishment sales <sup>1</sup>                        | 30,983                                 | 18,521  |
| Mean establishment employment <sup>1</sup>                   | 108                                    | 91  |
| Employment change over last<br>3 years (% distribution)      |  |   |
| Increase   | 44.1                                   | 51.5  |
| Decrease   | 18.1                                   | 15.8  |
| Same   | 37.9                                   | 32.7  |
| Per cent with employees covered by<br>a collective agreement | 32.2                                   | 30.0  |
| Sector (% distribution)                                      |  |   |
| Metal  | 33.9                                   | 31.4  |
| Machinery  | 66.1                                   | 68.6  |
| Jurisdiction and sector (% distribution)                     |  |   |
| Metal  |  |   |
| - Pennsylvania   | 18.5                                   | 10.9  |
| - New York   | 17.8                                   | 8.8   |
| - Ontario  | 15.4                                   | 20.5  |
| Machinery  |  |   |
| - Minnesota  | 14.8                                   | 16.6  |
| - Wisconsin  | 18.6                                   | 21.5  |
| - Ontario  | 14.8                                   | 21.8  |

<sup>1</sup> Sales are converted to Canadian dollars; employment and sales figures are as supplied by Dunn and Bradstreet (which may or may not agree with the corresponding figure supplied by the survey respondent and may or may not represent levels for the year indicated).

**Table A.3**  
**Metal Sector: Summary of OLS Regression Results on the Determinants of**  
**Establishment Total Layoff, Temporary Layoff, and Hiring Rates, 1993,**  
**Labour Adjustment Survey<sup>1</sup>**

|                | Dependent variable: |                  |                   |                   |                    |                    |
|----------------|---------------------|------------------|-------------------|-------------------|--------------------|--------------------|
|                | LAY93<br>(1a)       | LAY93<br>(1b)    | TEMP93<br>(2a)    | TEMP93<br>(2b)    | HIRE93<br>(3a)     | HIRE93<br>(3b)     |
| Intercept      | -28.71<br>(-1.37)   | 10.96<br>(1.02)  | 29.99*<br>(1.24)  | 33.92**<br>(2.58) | -14.16<br>(-0.93)  | 11.65<br>(1.38)    |
| SALE9293       | -0.15<br>(-1.11)    | -0.16<br>(-1.03) | 0.30***<br>(4.00) | 0.30***<br>(3.70) | -0.06<br>(-0.81)   | -0.12<br>(-1.26)   |
| EMP93          | -0.04*<br>(-1.93)   | -0.04<br>(-1.70) | 0.03<br>(0.97)    | -0.00<br>(-0.15)  | -0.03**<br>(-2.14) | -0.03*<br>(-1.90)  |
| HITECH         | 1.43<br>(0.25)      | 5.24<br>(0.71)   | 2.71<br>(0.44)    | -2.81<br>(-0.36)  | 1.15<br>(0.26)     | 6.40<br>(1.17)     |
| HRCOUNT        | -0.02<br>(-0.01)    | 1.81<br>(0.51)   | -0.21<br>(-0.07)  | -5.09<br>(-1.23)  | -0.41<br>(-1.06)   | 0.80<br>(0.29)     |
| UPROTECT       | 8.50<br>(0.97)      | 20.40*<br>(1.82) | -10.24<br>(-0.92) | -4.92<br>(-0.33)  | 10.98<br>(1.63)    | 17.30*<br>(2.04)   |
| UNOPROT        | -2.44<br>(-0.30)    | 0.38<br>(0.04)   | -2.35<br>(-0.29)  | -12.63<br>(-1.24) | -0.85<br>(-0.15)   | -4.16<br>(-0.55)   |
| YOUTH          | 0.11<br>(1.03)      | 0.09<br>(0.75)   | 0.02<br>(0.17)    | -0.04<br>(-0.30)  | 0.05<br>(0.59)     | 0.01<br>(0.13)     |
| FEMALE         | 0.12<br>(0.74)      | 0.08<br>(0.37)   | 0.07<br>(0.39)    | -0.10<br>(-0.45)  | 0.08<br>(0.62)     | -0.04<br>(-0.25)   |
| PENN.          | 27.24<br>(1.56)     | 3.39<br>(0.18)   | -9.41<br>(-0.86)  | -10.45<br>(-1.32) | 0.29<br>(0.04)     | -11.24*<br>(-2.02) |
| URATE          | 4.10**<br>(20.4)    |                  | -2.17<br>(-0.96)  |                   | 2.37<br>(1.60)     |                    |
| MTC            | -16.25<br>(-1.60)   | 11.38<br>(-0.96) |                   |                   |                    |                    |
| HRSREC         |                     | 0.00<br>(0.25)   |                   | 0.00<br>(0.14)    |                    | 0.01<br>0.38       |
| n              | 36                  | 30               | 44                | 34                | 33                 | 28                 |
| R <sup>2</sup> | .47                 | .49              | .40               | .45               | .40                | .47                |
| F              | 1.95                | 1.56             | 2.24              | 1.86              | 1.47               | 1.52               |

<sup>1</sup> For variable descriptions, see Box 1.

\*\*\*, \*\*, \* indicate that the estimated variable coefficient (or F-value) is significant at the .01, .05, and .10 level, respectively. T-statistics are in parentheses.

- indicates that the Pennsylvania dummy was dropped, because a unique coefficient could not be estimated.

**Table A.4**  
**Machinery Sector: Summary of OLS Regression Results on the Determinants**  
**of Establishment Total Layoff, Temporary Layoff, and Hiring Rates, 1993,**  
**Labour Adjustment Survey<sup>1</sup>**

|                | Dependent variable: |                     |                   |                    |                     |                     |
|----------------|---------------------|---------------------|-------------------|--------------------|---------------------|---------------------|
|                | LAY93<br>(1a)       | LAY93<br>(1b)       | TEMP93<br>(2a)    | TEMP93<br>(2b)     | HIRE93<br>(3a)      | HIRE93<br>(3b)      |
| Intercept      | -13.66<br>(-0.38)   | 12.96**<br>(2.06)   | 5.67<br>(0.24)    | 14.86***<br>(3.69) | -0.02<br>(-0.00)    | 6.71***<br>(4.09)   |
| SALE9293       | -0.13<br>(-1.62)    | -0.15<br>(-1.54)    | 0.09**<br>(2.30)  | 0.09*<br>(1.91)    | -0.07***<br>(-2.87) | -0.09***<br>(-3.16) |
| EMP93          | -0.07**<br>(-2.22)  | -0.10***<br>(-3.17) | 0.00<br>(0.19)    | -0.01<br>(-0.32)   | -0.00<br>(-0.13)    | -0.01<br>(-0.97)    |
| HITECH         | -1.47<br>(-0.34)    | 3.48<br>(0.74)      | 0.84<br>(0.34)    | 1.23<br>(0.48)     | -0.35<br>(-0.25)    | 1.23<br>(0.98)      |
| HRCOUNT        | -1.04<br>(-0.49)    | -1.84<br>(-0.76)    | -0.72<br>(-0.62)  | -0.50<br>(-0.39)   | -0.64<br>(-0.96)    | -0.15<br>(-0.24)    |
| UPROTECT       | 1.34<br>(0.18)      | -0.02<br>(-0.00)    | -5.29<br>(-1.29)  | -4.46<br>(-1.02)   | -1.82<br>(-0.77)    | -1.79<br>(-0.91)    |
| UNOPROT        | 33.26***<br>(3.33)  | 50.71***<br>(4.43)  | -9.07*<br>(-1.65) | -6.22<br>(-0.95)   | -2.69<br>(-0.93)    | 0.77<br>(0.26)      |
| YOUTH          | 0.22**<br>(2.20)    | 0.11<br>(1.01)      | 0.03<br>(0.51)    | 0.07<br>(1.07)     | 0.02<br>(0.75)      | -0.04<br>(-1.37)    |
| FEMALE         | 0.18<br>(0.85)      | 0.19<br>(0.77)      | 0.04<br>(0.44)    | -0.05<br>(-0.36)   | -0.02<br>(-0.29)    | -0.05<br>(-0.73)    |
| MINN.          | 3.47<br>(0.15)      | -11.29<br>(-0.97)   | -0.10<br>(-0.01)  | -3.61<br>(-0.54)   | -1.00<br>(-0.13)    | -4.58<br>(-1.48)    |
| WIS.           | 10.90<br>(0.48)     | -3.93<br>(-0.44)    | 0.75<br>(0.05)    | -2.86<br>(-0.58)   | 0.12<br>(0.02)      | -3.50<br>(-1.40)    |
| URATE          | 2.31<br>(0.71)      |                     | 0.60<br>(0.27)    |                    | 0.65<br>(0.64)      |                     |
| MTC            | 5.84<br>0.54        | 8.38<br>(0.79)      | 5.67<br>(1.01)    | 5.02<br>(0.86)     | 2.33<br>(0.67)      | 3.07<br>(1.06)      |
| HRSREC         |                     | -0.00<br>(-0.30)    |                   | -0.01<br>(-1.53)   |                     | -0.00<br>(-0.69)    |
| n              | 82                  | 71                  | 103               | 88                 | 75                  | 64                  |
| R <sup>2</sup> | .35                 | .43                 | .15               | .15                | .26                 | .31                 |
| F              | 3.07                | 3.60                | 1.30              | 1.09               | 1.81                | 1.91                |

<sup>1</sup> For variable descriptions, see Box 1.

\*\*\*, \*\*, \* indicate that the estimated variable coefficient (or F-value) is significant at the .01, .05, and .10 level, respectively. T-statistics are in parentheses.

**Table A.5**  
**Correlation Matrix for Explanatory Variables<sup>1</sup>, Labour Adjustment Survey**

|            | SALE9292 | EMP93   | HITECH | HR-COUNT | U-PROTECT | UNO-PROTECT | YOUTH | FEMALE | MACH     | URATE    | HRSREC |
|------------|----------|---------|--------|----------|-----------|-------------|-------|--------|----------|----------|--------|
| SALE9293   |          |         |        |          |           |             |       |        |          |          |        |
| EMP93      | 0.04     |         |        |          |           |             |       |        |          |          |        |
| HITECH     | 0.14**   | 0.00    |        |          |           |             |       |        |          |          |        |
| HRCOUNT    | 0.16**   | 0.13**  | 0.07   |          |           |             |       |        |          |          |        |
| UPROTECT   | -0.07    | 0.30*** | -0.11* | -0.03    |           |             |       |        |          |          |        |
| UNOPROTECT | -0.04    | 0.17*** | 0.01   | -0.15*** | -0.11*    |             |       |        |          |          |        |
| YOUTH      | 0.05     | 0.00    | 0.03   | 0.02     | -0.09     | -0.00       |       |        |          |          |        |
| FEMALE     | 0.01     | 0.13**  | 0.04   | 0.10*    | 0.02      | 0.08        | -0.00 |        |          |          |        |
| MACH       | -0.10    | -0.06   | 0.08   | 0.02     | -0.06     | -0.12**     | 0.08  | -0.08  |          |          |        |
| URATE      | -0.03    | 0.01    | -0.00  | -0.08    | 0.08      | 0.12**      | 0.05  | 0.00   | -0.41*** |          |        |
| HRSREC     | 0.12     | 0.04    | 0.06   | 0.10     | -0.02     | 0.06        | 0.13* | 0.05   | -0.07    | 0.11*    |        |
| MIC        | 0.07     | -0.09   | -0.10* | 0.04     | -0.14**   | -0.03       | 0.05  | -0.08  | 0.03     | -0.68*** | -0.06  |

<sup>1</sup> For variable descriptions, see Box 1.

\*\*\*, \*\*, \* indicate that the estimated correlation coefficient is significant at the .01, .05, and .10 level, respectively. T-statistics are in parentheses.

# Appendix B Questionnaire for the Labour Adjustment Survey



June 1994

The Department of Human Resources Development Canada is currently undertaking a major evaluation of its labour market programs. As part of this project, the Department is sponsoring a survey of employers, looking at how they adjust their workforce to changing business conditions and technological change.

Recently, a representative of Ekos Research Associates, the firm conducting the survey, was in touch with you. Human Resources Development Canada thanks you for agreeing to participate.

As you will see, the enclosed questionnaire was designed to gather information on adjustment, training, and other workplace practices. It is being administered to a random selection of establishments in the machinery and metal products industries in Canada and selected American states. We are using this design because, in an increasingly integrated North American economy, it is important to learn how businesses on both sides of the border are dealing with competitive pressures.

Please be assured that the data you provide will be treated as *strictly confidential*. In the final report, results will be presented in aggregate form only and your establishment will in no way be identifiable.

Your cooperation will help this important project meet its objectives. As you will see in the questionnaire, we invite you to fax or mail your responses. Your prompt attention would be greatly appreciated.

Sincerely,

Ian Midgley  
Director General  
Program Evaluation Branch  
Human Resources Development Canada



# *The Labour Adjustment Survey Canadian Employer Questionnaire*

## **I. Business Setting**

*The first series of questions deals with your establishment's business setting. The questions in this section have been included because factors like business strategy and technology can affect an establishment's labour adjustment response.*

### **Market**

1 a What is the principal product of your establishment?

---



---

b How would you rate the market for this product over the last three years?

|                   |   |         |   |           |   |   |
|-------------------|---|---------|---|-----------|---|---|
| Extremely<br>Poor |   | Average |   | Excellent |   |   |
| 1                 | 2 | 3       | 4 | 5         | 6 | 7 |

### **Business Strategy**

2 In meeting competitive pressures, companies can include a variety of elements in their business strategy. Please indicate the extent to which each of the following elements are an important part of your business strategy.

|  |                         |   |                         |   |                        |   |   |
|--|-------------------------|---|-------------------------|---|------------------------|---|---|
|  | Not at all<br>Important |   | Moderately<br>Important |   | Extremely<br>Important |   |   |
|  | 1                       | 2 | 3                       | 4 | 5                      | 6 | 7 |

a Reducing costs

b Introducing new technologies and developing new products

c Making strategic use of human resources



**Technology**

3 Please indicate the extent to which your establishment has introduced production or office technologies over the last three years.



4 Please estimate the percentage of your employees currently working with computer-based technologies as a regular part of their job.

\_\_\_\_\_ %

**Sales and Employment**

5 Please provide for each of the years 1991, 1992 and 1993 the estimated levels in each of the following categories for your establishment: [IF ZERO, CLEARLY INDICATE ZERO; IF UNKNOWN, INDICATE BY “?”]

| Indicator   | 1991 | 1992 | 1993 |
|---|------|------|------|
| Sales (thousands of dollars)  |      |      |      |
| Total number of employees as of December (please include <i>all</i> employees, managers, non-managers, full-time and other) |      |      |      |
| Total number of permanent and temporary layoffs   |      |      |      |
| Total number of recalls   |      |      |      |
| Total number of laid off employees in 1993 expected to be recalled in 1994  |      |      |      |
| Total number of new hires   |      |      |      |
| Number of employees who participated in UI short-time compensation or UI work sharing                                       |      |      |      |
| UI premiums or UI taxes paid (thousands of dollars)   |      |      |      |

## II. Labour Adjustment Strategy

*This section requests information on how your establishment has responded to changing business conditions or technological change.*

- 6 In the past three years, have you used any of the following measures to avoid layoffs or reduce the number of layoffs?

|     |   | Yes | No |
|-----|---|-----|----|
| i   | Wage freeze/cut .....   | 1   | 2  |
| ii  | Hiring freeze .....   | 1   | 2  |
| iii | Hours reduction or work sharing or reduced over-time .....    | 1   | 2  |
| iv  | Retraining or redeployment within establishment/company ..... | 1   | 2  |
| v   | Early retirement .....  | 1   | 2  |
| vi  | Other measures (specify) .....                                | 1   | 2  |

### Canadian Employers

- 7 Recently, there have been proposals made whereby an employer's premiums would rise with the number of layoffs they are responsible for, up to a maximum. If such a system were introduced in Canada, to what extent would that affect the decisions you make with respect to layoffs?

| No<br>Impact | Moderate<br>Impact | Significant<br>Impact |   |   |   |   |
|--------------|--------------------|-----------------------|---|---|---|---|
|              |                    |                       |   |   |   |   |
| 1            | 2                  | 3                     | 4 | 5 | 6 | 7 |

### American Employers

- 7 a Under current UI rules, employers' UI taxes increase with the number of layoffs they are responsible for, up to a specified maximum. To what extent does the prospect of increasing your UI taxes affect your decision to lay off workers or not?

| No<br>Impact | Moderate<br>Impact | Significant<br>Impact |   |   |   |   |
|--------------|--------------------|-----------------------|---|---|---|---|
|              |                    |                       |   |   |   |   |
| 1            | 2                  | 3                     | 4 | 5 | 6 | 7 |

- b Is your establishment currently at the maximum level of UI taxes?

Yes ..... 1  
No ..... 2

### III. Recruitment, Training and Other Workplace Practices

The following questions deal with training and other activities of your establishment.

#### Recruitment

- 8 Thinking about your recruiting experiences over the past year, about how many hours did your organization typically spend recruiting, screening, interviewing, and orienting a new hire?

\_\_\_\_\_ OR   
 Hours No New Recruits

#### Training

- 9 For our purposes, training is defined as *formal*, structured training activity on or off the job provided and/or paid for by the employer. Thinking about your establishment’s training experiences over the past year, *approximately* what percentage of employees participated in the following activities? [IF NO EMPLOYEES, PUT ZERO; IF SOME BUT UNKNOWN, PUT “?”]

| Training Activity   | Per Cent of Employees (%) |
|---|---------------------------|
| “Non-vocational” training with respect to inter-personal skills, problem-solving, health and safety, communication, leadership skills, etc. |                           |
| “Vocational”, job-oriented skills training, on or off the job   |                           |

- 10 If any of your establishment’s employees participated in vocational skills training over the last year, estimate the average number of hours of training received per trainee.

\_\_\_\_\_ Hours

- 11 a Some employers institute a system of multi-functional training (also known as cross-skills or multi-tasking training) whereby employees are trained in skills beyond those required for their immediate job. Do you have such a system?

Yes.....1  
 No.....2 **SKIP TO QUESTION 12**

- b Approximately how many employees have been given such training over the past year?

\_\_\_\_\_ Employees

**Workplace Practices**

12 Please indicate whether or not your establishment has *formally* implemented the following programs *for non-managerial employees*.

|  | <b>Yes</b> | <b>No</b> |
|--|------------|-----------|
| a Employee participation (e.g., employee involvement, employee empowerment, joint-labour-management problem-solving teams, quality circles, autonomous work teams, quality of working life (QWL), team work) ..... | 1          | 2         |
| b Variable pay (e.g., employee share ownership plans, profit-sharing, gain-sharing, pay-for-skill or pay-for-knowledge .....   | 1          | 2         |
| c Job design (e.g., job rotation, enlargement, and enrichment) .....   | 1          | 2         |

#### IV. Workforce Characteristics

*This section includes questions on the composition of your establishment's workforce.*

##### Employment

- 13 Please provide information on the number of employees and average wage levels in each of the following occupational categories, *as of May 1994*. Please indicate whether your response refers to hourly, weekly or annual wages. [IF NO EMPLOYEES IN THE CATEGORY PUT ZERO; PUT “?” IF UNKNOWN.]

| Occupation                       | Number of Employees | Average Wages | Hourly or Weekly or Annual Basis |
|----------------------------------|---------------------|---------------|----------------------------------|
| Managerial/executive/supervisory |                     |               |                                  |
| Professional/technical           |                     |               |                                  |
| Administrative/clerical/office   |                     |               |                                  |
| Sales/marketing                  |                     |               |                                  |
| Skilled production/trades        |                     |               |                                  |
| Unskilled labour                 |                     |               |                                  |
| Total                            |                     |               |                                  |

- 14 Please estimate the percentage of employees in each of the following categories, *as of May 1994*: [IF NONE, CLEARLY INDICATE ZERO; IF UNKNOWN, INDICATE BY “?”]

| Category  | Percentage of Employees (%) |
|---|-----------------------------|
| Under 25 years  |                             |
| Female  |                             |
| Working in such “nonstandard” jobs as short-term, temporary agency, contract, part-time |                             |

**Union**

15 a Are any employees in your establishment covered by a collective agreement?

Yes.....1

No.....2      **SKIP TO QUESTION 16**

b Approximately how many employees are covered?

— — — —

Employees

c Do(es) your collective agreement(s) contain(s) language providing for lay-off protection *over and above legislative requirements* in the following areas?

|     |                             | <b>Yes</b> | <b>No</b> |
|-----|-----------------------------|------------|-----------|
| i   | Advance notice .....        | 1          | 2         |
| ii  | Seniority rules .....       | 1          | 2         |
| iii | Severance pay .....         | 1          | 2         |
| iv  | Adjustment committees ..... | 1          | 2         |





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