UI

The Distributional Implications of *Unemployment Insurance:* *A Micro-Simulation Analysis*

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Unemployment Insurance Evaluation Series

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

To ensure that public money is well spent in pursuit of this mission, HRDC rigorously evaluates the extent to which its programs are achieving their objectives. To do this, the Department systematically collects information to evaluate the continuing rationale, net impacts and effects, and alternatives for publicly-funded activities. Such knowledge provides a basis for measuring performance and the retrospective lessons learned for strategic policy and planning purposes.

As part of this program of evaluative research, the Department has developed a major series of studies contributing to an overall evaluation of UI Regular Benefits. These studies involved the best available subject-matter experts from seven Canadian universities, the private sector and Departmental evaluation staff. Although each study represented a stand alone analysis examining specific UI topics, they are all rooted in a common analytical framework. The collective wisdom provides the single most important source of evaluation research on unemployment insurance ever undertaken in Canada and constitutes a major reference.

The Unemployment Insurance Evaluation Series makes the findings of these studies available to inform public discussion on an important part of Canada's social security system.

I.H. Midgley
Director General
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Director
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Abstract

The aim of this paper is to examine the importance of behavioral response for the redistributional incidence of unemployment insurance. The first part of the report discusses the microsimulation methodology for analyzing redistributional impacts over the course of a business cycle, the concept of a behavioral microsimulation model, and the data sets used for analysis. The second part presents the estimation results for the behavioral equations of the model, a summary of the assumptions used to calculate the redistributional impact of Unemployment Insurance, and the main results.

Our simulation findings about the distributional impact of changes to the UI system may be summarized as follows:

- Based on various scenarios of the microsimulation environment, UI policy changes do not noticeably affect annual weeks of unemployment or other labour market averages.
- Income inequality would increase if the minimum weeks required to qualify for UI were increased by 5 weeks in each region. We estimate that only a relatively small number of UI claimants would be affected by such a policy change because fewer than 13 percent of UI claimants had 19 or fewer weeks of employment before establishing their claim and others would modify behaviour to retain eligibility. However, inequality would increase overall because disentitlement from all UI benefits would lead to very large income losses for those affected.
- Income inequality would increase if the replacement rate of benefits to wages were reduced from 60 to 50 percent. This change would affect all UI claimants, but the impact on any one individual would not be as great as the potential effects of disentitlement that were discussed above.
- Increasing the insurable earnings ceiling to 150 percent of average weekly earnings would reduce income inequality. Because higher-income individuals are less likely than average to become unemployed and claim UI, their increased premium payments would more than offset the increased UI benefits paid.
- Reducing maximum benefit weeks from 50 to 40 would not have a noticeable impact on income inequality.
- Comparisons of the 1971, 1986, 1990, and 1994 UI systems over the 1981-1989 business cycle indicate that the introduction of more restrictive UI systems increases inequality in Canada. In particular, bottom quintiles appear to lose considerably more than the middle and upper quintiles when the UI system becomes less generous.

Introduction

Canada spends relatively little on social security transfers by international standards. Nevertheless, Unemployment Insurance (UI) payments account for a significant proportion of Canada's total output. By automatically targeting many people who have been adversely affected by rising unemployment, UI may help to maintain the stability of the aggregate income distribution in Canada. It would do this by offsetting the increasing inequality in individual earnings that recessionary downturns would otherwise produce.

By automatically targeting many people who have been adversely affected by rising unemployment, UI may help to maintain the stability of the aggregate income distribution in Canada.

The redistributional impact of unemployment insurance in Canada was studied by Kapsalis in 1978, Cloutier and Smith in 1980, and LeBlanc in 1988. All of these studies examined how much Unemployment Insurance, net of taxes and premiums, was received by people in various original income brackets in a particular calendar year, a somewhat arbitrary accounting framework. They concluded that UI benefits do not particularly favour the poor because many who receive UI benefits originally had relatively high incomes.

In this paper, we examine how the behavioral responses of individuals to potential changes in the UI system might affect the distribution of earnings and UI benefits among men, women and households in Canada. Our work differs from earlier work by studying the distributional consequences of UI over an entire business cycle and by modelling the incentive effects of the UI program.

Organization of this Report

Section 1 discusses the selection of an accounting time frame to measure income distribution. In Section 2, we explain our choice of methodology and how this methodology works. In Section 3, we explain the structure of the model, while in Section 4, we discuss the behavioral features of the model. Section 5 compares how alternative UI programs affect the distribution of income. In Section 6, we present our conclusions. We refer researchers to Technical Appendices A through H for more detailed information on the equations we used in our model and the results of our analyses.

1. Choosing an Accounting Time Frame

An annual time frame can give misleading information about the income distributional effects of UI…

The redistributional impact of welfare state programs is usually measured in discrete annual intervals. However, because spells of unemployment can easily run over the beginning or end of any given year, the choice of an annual time period for the measurement of income distribution can affect our understanding of the income-distributional effects of Unemployment Insurance.

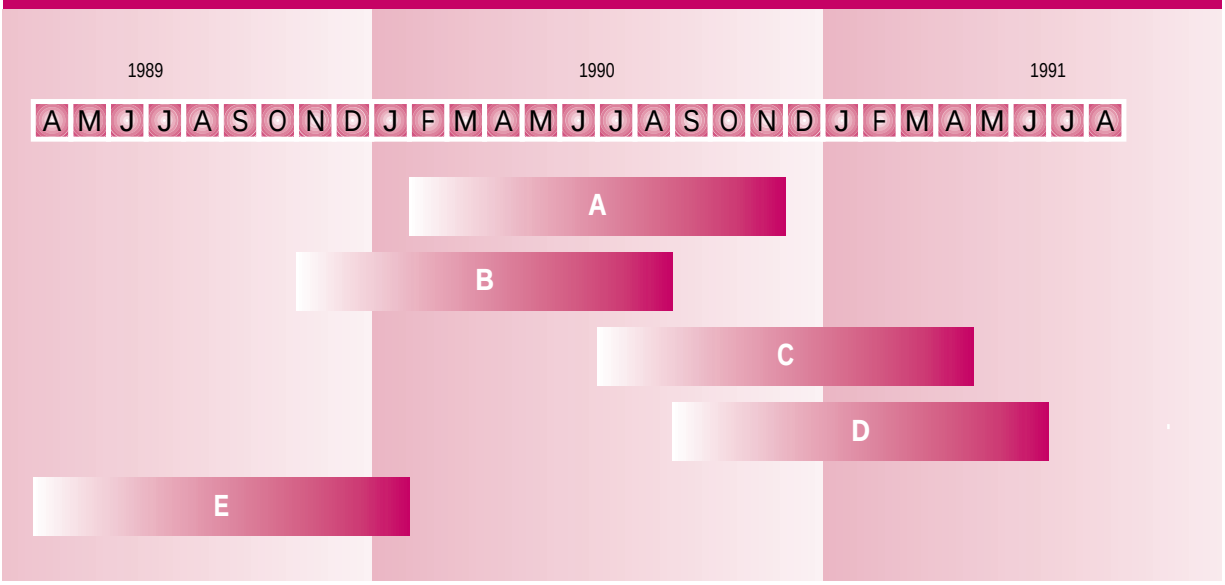
In 1990, the poorest 20 percent of Canadian families and unattached individuals earned less than $16,000 in that year; the second quintile earned between $17,000 and $29,000; the third quintile earned between $30,000 and $44,000; the fourth quintile earned between $45,000 and $64,000; the fifth and richest quintile earned over $65,000.[1]

To illustrate how an annual time frame can give misleading information about the income distributional effects of UI, let us assume that five individuals, each with a monthly rate of pay of $6,000, lost their jobs at different times (Figure 1). They were all unemployed for ten months before finding another job at the same rate of pay.

- **Individual A** had an unemployment spell lasting from February 1st to November 30th, 1990. This meant that she worked for two months that year. Her earnings of $12,000, aside from her UI benefits, placed her in the bottom quintile of the 1990 income distribution.
- **Individual B** started his spell of unemployment on November 1st of 1989 and found a job starting September 1st, 1990. This gave him four months of earnings in 1990—a total of $24,000—placing him in the second quintile of 1990 earnings.
- **Individual C** lost her job on July 1st of 1990. Her earnings for the first six months of 1990—a total of $36,000—placed her in the third quintile of the distribution of original income.
- **Individual D** became unemployed on September 1st but worked for the first eight months of the year. His earnings of $48,000 placed him in the fourth quintile.
- **Individual E** became unemployed in April of the previous year, then found a job starting February 1, 1990. Her earnings of $66,000 for 11 months in 1990 placed her in the top quintile of the income distribution.

1 Statistics Canada, S.C. 13-207 p. 137.

Figure 1
Illustration of Annual Time Frame



Since longer unemployment within a given year means shorter employment and lower earnings, the timing of the onset of unemployment can significantly affect the perceived redistributional incidence of transfer payments. In the example given above, although the individuals all received the same monthly rate of pay, they appear to have had vastly different annual earnings because of when their unemployment spells began.

Similarly, many transfer programs of the modern welfare state are also spell-dependent. Transitions onto and off Social Assistance, into and out of worker's compensation, or between marital statuses, occur in continuous time. The magnitude of the transfer payments that are triggered by these transitions within a given year depends heavily on *when* the transitions occurred within that year.

Another issue is the extent to which these transitions are influenced by the incentives embedded in social transfer programs. There is abundant literature on the potential impacts of Unemployment Insurance on the length of unemployment spells, including surveys by Atkinson and Micklewright in 1991 and by Osberg in 1993. These surveys found considerable ambiguity concerning the effects of UI benefits on unemployment duration. However, it is extreme to assume that UI has *no* influence on individual behaviour.[2]

2 It is emphasized that merely including the UI benefit/wage replacement rate is inadequate for modelling behavioral responses to the UI program; therefore, in this paper we are careful to model many of the institutional characteristics of the Canadian UI system.

The business cycle is an appropriate time period over which to measure the redistributional impact of Unemployment Insurance.

If the real world had steady growth and a constant unemployment rate, there would be a constant degree of error in distributional measurements if we ignored the interrupted nature of unemployment spells and the influence that UI payments might have on the length of those spells. In such a steady-state world, we could ignore this error when making comparisons over time and across countries because the annual accounting framework and the omission of behavioral response would not imply changes in the measurement of inequality.

However, the *real* world exhibits substantial swings in aggregate unemployment over the business cycle, and there is evidence that unemployed individuals change their job search behaviour as aggregate unemployment changes.[3] A macroeconomic business cycle introduces varying degrees of error into inequality measurements if it uses an annual accounting framework and ignores behavioral responses.

If we used a *lifetime perspective* to measure the impact of UI programs on the redistribution of income, we would avoid the measurement problems caused by the truncation of unemployment spells, but we would have serious data and conceptual problems. The standard discounting procedures employed in the calculation of lifetime income involve the assumption of perfect capital markets. This assumption is inappropriate in the case of the unemployed because if capital markets were perfect and individuals could borrow at will, there would be less social justification for any sort of unemployment insurance.

This paper takes the view that the *business cycle* is an appropriate time period over which to measure the redistributional impact of Unemployment Insurance.[4] This would not eliminate the problem of spell truncation, but it would minimize the impact because the accounting period would be longer. Since unemployment spells would only be truncated if they existed before the start of the business cycle and continued past it, the measurement error would be small as a percentage of total income over the entire cycle. Since one of the major rationales for the existence of unemployment insurance is to protect individual incomes from the fluctuations of the business cycle, this also suggests that the business cycle is an appropriate time frame.

For the purpose of this study, we measured the distributional impact of Unemployment Insurance over the eight-year business cycle from 1981 to 1989. At the beginning of that cycle, Canada's national unemployment rate was 7.5 percent; by 1983 it had risen to 11.8 percent, then gradually declined again to 7.5 percent by 1989. In this case, unemployment spells would only be truncated if they existed before January 1981 or continued past December 1989.

3 Osberg, 1993b.

4 Using monthly longitudinal data from the U.S. Survey of Income and Program Participation (SIPP), Ruggles and Robertson (1989) find much more short-run variation in the experience of poverty *within* a year than is indicated by annual incomes. Their research explores the implications of choosing a time interval that is less than a year, while ours extends the time horizon beyond the year.

2. Selecting a Methodology

With microsimulation, we can explore how UI affects the distribution of income by using estimates of the impact of UI on the aggregate unemployment rate available in the macro literature.

In this paper, we use a microsimulation methodology to address jointly the issues of behavioral response and accounting framework. This methodology helps us understand how the economy would have functioned under different external circumstances or different internal incentives because it takes full account of the heterogeneity of individual characteristics, the interdependence of economic processes and the endogeneity of individual characteristics over time.

Microsimulation also enables us to explore how changes in micro behaviour affect the macro economy. Would changes in incentives, such as cutting UI benefits, change the relative incidence of unemployment or the absolute level of unemployment? If individual *A*, who used to have a relatively high benefit-to-wage ratio, drastically cuts her reservation wage—the minimum wage she will accept in new employment—because of a cut in benefits, would this simply mean that the job she now accepts can no longer be offered to individual *B*? If the number of available jobs is set from the demand side of labour markets, then changes in UI incentives can only affect the relative positions of individuals in the queue of the unemployed. It would not affect the aggregate rate of employment. We refer to this as the 'queue' scenario as distinguished from the 'new classical' scenario, where unemployment comes entirely from the supply side of the labour market.

If an increase in the speed with which each individual finds a job has no impact on the chances of all other individuals to find a job, we can determine the impact of changes in UI incentives on total unemployment by looking at the total changes in unemployment duration following changes in UI incentives. With microsimulation, we can explore how UI affects the distribution of income in both the queue and new classical scenarios by using estimates of the impact of UI on the aggregate unemployment rate available in the macro literature.

How Microsimulation Works

The origins of microsimulation lie in the work of Orcutt and his colleagues (1986). The basic idea is to collect microdata on a representative panel sample of individual households, then simulate the impact of alternative policy or environmental scenarios on each individual member of the panel.

In microsimulation, it is important to model accurately the correlation over time in the behaviour of individuals. For example, does unemployment this year increase the future probability of unemployment, or the future probability of longer periods of unemployment?

Incidence models, like the SPSD/M of Statistics Canada, contain complicated algorithms to calculate the impact of tax provisions and social security legislation on the particular circumstances of each individual.[5] However, such models omit equations that show how individual behaviour may change in response to the incentives in social programs.

5 (See Bordt et al, 1990).

Steady-state behavioral microsimulation models, such as the one used by Harding in 1992, do allow labour supply behaviour and other individual characteristics to change over time in response to changes in the legislative environment. However, in marching a cohort of individuals forward in time, the maintained hypothesis is that the macroeconomic environment remains constant.

This paper builds on the models developed by Erksoy in 1992 and by Osberg, Erksoy and Phipps in 1993, which embed a behavioral microsimulation model in a time-varying macroeconomic environment. Since the time path of aggregate labour force totals, such as the unemployment rate, can be specified from predetermined data, the microeconomic behaviour of individuals can be made to mimic, in aggregate, the actual historical evolution of the economy. This enables us to use historical data to calibrate model performance. We can also examine the microeconomic implications of actual historical macroeconomic events and compare them with the implications of hypothetical scenarios, such as steady macroeconomic growth.

3. Structure of the Model

The 1986/87 UI system is used as a base case for the simulation model. Thus, for simulations that investigate the behavioral and distributional consequences of changes in UI, we make the change from the 1986/87 UI system.

From 1981 to 1989, approximately 90.1 percent of the Canadian labour force was covered by Unemployment Insurance. To be eligible for UI benefits in Canada, workers needed a minimum number of insurable weeks of employment, depending upon the regional unemployment rate. Fewer minimum weeks were required in areas with a higher unemployment rate. After a job ended, there was a mandatory two-week waiting period before a UI claim could take effect.

Eligible individuals received UI benefits equal to 60 percent of their insurable earnings. Those who worked less than 15 hours a week or who earned less than $99 (1986 Canadian) per week had no insurable earnings. Maximum insurable earnings were reset each year as the average weekly earnings of the previous year. In 1987, maximum insurable earnings were $530 per week.

The maximum duration of UI benefits depended upon an individual's employment history and the local unemployment rate. Individuals received benefits over a longer period if they worked more than the minimum number of weeks before becoming unemployed, or if they lived in areas with higher unemployment rates. However, the maximum benefit period for all unemployed workers in a 52-week period was 50 weeks, over and above the mandatory two-week waiting period.

UI was financed from premiums collected from employees and employers, and from general tax revenues. Since UI benefits are taxable income in Canada, higher-income recipients had to repay a sizable portion of any benefits they received.[6]

We examined distributions of earnings for all men and women aged 16 to 64, regardless of whether or not they ever actually participated in the work force.[7] In this, our study differs from many others on the subject. However, we feel that a discussion of earnings inequality should include individuals who are no longer earning an income because they are discouraged workers who have withdrawn from the labour force or because they were unemployed for an entire year. These individuals are the most affected by unemployment and should not be excluded from our analysis.

Canada does not have a representative longitudinal panel of microdata that could be used to estimate the correlation of labour market behaviour for every year from 1981 to 1989. Therefore, this study uses the Labour Market Activity Survey (LMAS)[8] of 1986/87 to estimate participation in the labour force, the incidence

We feel that a discussion of earnings inequality should include individuals who are no longer earning an income because they are discouraged workers who have withdrawn from the labour force or because they were unemployed for an entire year.

6 There have been several changes in the Canadian UI program since the time period under study in this paper. See Phipps (1990) for a discussion of the changes implemented in 1990. More recently, a change has been made to finance UI entirely from premiums. These are not relevant for the purposes of a study of the 1981/89 period.

7 In Canada, people over the age of 65 are ineligible to claim UI benefits.

8 The 1986/87 LMAS is a longitudinal survey that uses stratified samples of civilian, non-institutionalised individuals. Full-time members of the Canadian Armed Forces are excluded. This survey provides continuous histories of employment and unemployment in 1986 and 1987.

In the simulation model, as in real life, there is a probability that an individual will not participate in the labour force in any given year, and a probability that an individual will not find any work, even if he or she participates in the labour force for some or all of that year.

of unemployment, and the duration of unemployment. The previous year's labour market experience is, in each case, included as a determinant of the current year's labour market outcomes.

Equations estimated using the LMAS are used together with data from Statistics Canada's 1984 Assets and Debts Survey (ADS) to run simulations and perform calculations. The major advantage of simulating using the ADS is that this data source contains information on households, information not available in the LMAS.[9]

Since the ADS was administered in 1983, we had to cast the data back to a 1981 base, the starting year of the cycle we were studying. In doing so, we adjusted employment earnings and asset values for inflation. We also adjusted observed unemployment durations to correspond with observed 1981 data.

To ensure that our results were not overly influenced by the idiosyncrasies of a few outlying cases, we excluded individuals who earned less than $50 or more than $3,000 per week. Subject to these exclusions, we used the observed weekly wages in 1983 as a measure of potential earnings. We imputed an expected wage to all individuals without observed wages. Using the Consumer Price Index, we deflated all nominal dollar amounts to a 1981 constant.

In scenarios simulating the historical unemployment rate, the real weekly earnings of each individual were adjusted each year by the average change in real weekly earnings that was actually observed during the 1981 to 1989 period. In the hypothetical scenario of steady-state growth, real weekly earnings were adjusted by 0.56 percent each year. This was the average rate of productivity growth from 1977 to 1981.

In the simulation model, as in real life, there is a probability that an individual will not participate in the labour force in any given year, and a probability that an individual will not find any work, even if he or she participates in the labour force for some or all of that year. Each year, therefore, the model generates a fraction of the population with zero earnings. To generate 1981 estimates, the model was 'run in' for the two previous years.

Individuals may move into or out of the labour force. Some may earn zero income in one year but have a positive income in subsequent years. Therefore, the distributional statistics in this paper were calculated for the sample as a whole, that is, for all persons between the ages of 16 and 64, with the exception of the wage outliers.

The simulation model first asked whether an individual was entirely outside the labour force. It then assigned each labour force participant a particular number of weeks outside the labour force based on demographic characteristics, labour market history, the regional unemployment rate and the number of weeks required to qualify for Unemployment Insurance in the participant's local area. The number of weeks an individual spent outside the labour force was effectively aggregated

9 Future research will use the 1988-90 LMAS to take into account household influences on individual behavioral response.

into a single spell.[10] Individuals were assigned a probability of not being in the labour force at all during the year, up to the frequency actually observed in the data. Those individuals with the highest probability of non-participation were counted as being non-participants.[11] Separate equations were estimated for men and for women and for individuals in three age groups: 16 to 24, 25 to 54 and 55 to 64.

To preserve the underlying random element in labour force participation, we added random-error terms to the conditional expectation that an individual would participate in the labour force, and to the number of weeks out of the labour force. These terms were drawn from a distribution that had a variance consistent with the unexplained variance observed in Equations 1 and 2, presented in Appendix A.

We assumed that in the real world, the underlying random element consists of permanent and temporary features. We considered the permanent features to be an individual's unobserved characteristics that remain constant each year. In the model, we assumed this to be 30 percent of the individual random-error term that was generated for each behaviourial equation. This component was generated once and kept constant in each simulation year.

The temporary component corresponds to the remaining 70 percent of the error term, and was generated separately in each year. The sum of the permanent and temporary components gives the total value of the random element.[12]

Note that random-error terms were initially generated for each individual in all behavioral equations and in all simulation years. These random-error terms were then retained and used in simulations of alternative UI policies. By using the same individual random-error terms in all simulations, we were able to compare alternative policy scenarios directly because the same distribution of permanent and temporary 'luck' was present in all simulations.

We used a logit model to predict the probability that an individual will experience unemployment in a given year. This is summarized in Equation 3 in Appendix A. An accelerated failure time model of annual unemployment experience was then estimated for individuals who experience unemployment.[13] Since we do not observe the entire duration of unemployment spells that continue beyond the end of the year, we corrected the model for any bias this would cause.

We estimate these equations to enable us to predict how individuals may want to change their behaviour in response to changes in the UI system. But will they be able to do so? For example, a cut in UI benefits may prompt some individuals to reduce their salary expectations and accept jobs they might otherwise refuse. However, there is no guarantee that a job will be offered.

10 In Section 3, we summarize the logit model of the probability of an individual being outside the labour-force for 52 weeks. This estimate uses the full sample. We also summarize the Tobit model of weeks of labour force participation, which we estimated using the sample of individuals with some labour-force attachment during the year.

11 Within a year, nobody can be outside the labour market for more than fifty-two or for less than zero weeks. We use the SAS LIFEREG procedure.

12 $e_{it} = e_{pit} + e_{vit}$.

13 All weeks of unemployment were aggregated into a single "spell" that we call "annual unemployment experience."

The microsimulation model allowed the macroeconomic unemployment rate to change over time and calculated the associated aggregate weeks of unemployment.

In our model, we presumed that individuals can easily get additional weeks of *unemployment* by simply quitting their jobs. However, they may have difficulty getting additional weeks of employment. The LMAS asked respondents whether or not they were satisfied with their weeks of *employment*. If they were not satisfied, they were asked whether they wanted additional weeks of work.[14] We interpreted the fact that they were looking for extra work as evidence that additional weeks of work might not have been available. Those who wanted to increase their labour supply might be able to get one more week of work, and given that they had been successful in obtaining one additional week of employment, they faced a certain probability of being able to get a second additional week of employment, etc. We computed, for all individuals with an expected decrease in unemployment, the probability that they would encounter constraints in getting one more week of work. Those who were not constrained from getting an additional week of work, were assigned a one week reduction in unemployment and we then asked, was this individual constrained in getting a second week of additional work? We proceeded in this way until the individual either reached his/her expected additional employment or encountered a constraint on obtaining an additional week of work.

The microsimulation model allowed the macroeconomic unemployment rate to change over time and calculated the associated aggregate weeks of unemployment. It ranked individuals in descending order, based on the probability that they would be unemployed in a given year. The model then calculated the cumulative total of unemployment weeks for all individuals. Unemployment was assigned to individuals with the highest probability of experiencing unemployment, up to the point where the total number of unemployment weeks equalled the aggregate unemployment experience for the year.

Because each equation maintained a random element with permanent and temporary components, the simulation model retained some of the dynamic change of actual labour markets. The inclusion of lagged labour market experience as a determinant of current labour market outcomes also helped the simulation model to reflect the real world because it introduced the period-to-period correlation of outcomes.

We also accounted for changes in the aggregate unemployment rates under alternative UI systems. The impact of Unemployment Insurance on aggregate unemployment is a hotly contested empirical issue in Canada. In 1993, Myatt presented a summary of 14 published studies on the impact of a 1971 amendment to the Unemployment Insurance Act. Although this amendment increased the waiting period from one week to two weeks, it liberalized the UI system by:

- reducing the minimum number of qualifying weeks from 30 weeks of employment in the previous 104-week period to 8 weeks of employment in the previous 52-week period; and,
- increasing the replacement rate from 50 percent to 66 percent.

14 In practice, the LMAS coding is more complex than this, since search behaviour after the termination of employment in any given year is taken as a behaviourial indicator of desire for additional employment.

Myatt noted, 'Of these studies, seven found a significant positive effect [of Unemployment Insurance on aggregate unemployment], five found no significant effect and two found no significant effect in seven out of ten provinces (it is worth noting that these latter studies disagree on which three provinces have the significant positive effect...). A more evenly divided result could not be imagined.' (1993:12)

The 'queuing model' which we have emphasized thus far in the discussion is consistent with those macroeconomic studies which find no statistically significant impact of unemployment insurance variables on aggregate unemployment — its interest lies in its indication that changes in the relative incidence of unemployment *do* have distributional implications, even though the aggregate rate of unemployment is constrained to be unaffected by changes in micro-behaviour.

In this report, we assume that a less generous UI system coincides with reductions in aggregate unemployment. This is based on the presumption that the more generous UI provisions that were introduced in 1971 led to a 0.6 percent increase in the unemployment rate.

To project the effects of changes in the UI system on the aggregate unemployment rates, we looked at how alternative UI systems might affect the behaviour of a hypothetical individual who follows a repeated cycle of working the minimum required weeks in order to collect the maximum benefits. Such an individual could obtain 2.4 [(51-15)÷15] weeks of benefits per week of employment in the pre-1971 period (assuming 30-week entrance requirement was satisfied in the qualifying period.) In the post-1971 period, that individual could obtain 5.25 [(50-8)÷8] weeks of benefits per week of employment. This implies that one week of employment could generate $1.20 (2.4 x 0.5) of benefits per dollar of insurable earnings in the pre-1971 period, and $3.50 (5.25 x 0.66) of benefits in the post-1971 period. Therefore, the UI system was about 192 percent [(3.5-1.2)÷1.2] more generous in the post-1971 period compared to the pre-1971 period.

Assuming that a 192 percent increase in UI benefits leads to a 0.6 percent increase in the unemployment rate, one can calculate the effects of UI policy changes on the unemployment rate as follows:

Percentage change in $U = (a/b) \times 0.6\%$, where:

U = the unemployment rate;

a = dollar change in UI benefits for a given change in the regulations;

and,

b = the 192 percent dollar increase in the UI benefits in the post-1971 period.

For example, in the UI system that existed in 1986, an individual could work 10 weeks to collect 50 weeks of benefits. That individual would receive 5 weeks of benefits for every week of employment. If there were a 5-week increase in the minimum weeks of employment needed to qualify for UI benefits, our hypothetical individual would then receive 3.33 (i.e., 50/15) weeks of benefits per week of employment. This implies a 33.4 percent reduction in benefits. Therefore, where

b=192 and *a*=-33.4, the impact on the unemployment rate is -0.1 percent. Table 1 shows the details of the calculations of changes in unemployment rates under alternative UI systems.

Table 1
Changes in Unemployment Rates Under Alternative UI Systems

UI System	Change in UI Income [a] (%)	Change in Unemployment[a] (%)
Maximum Benefit Period Reduced to 40 weeks	-20.0[b]	-0.06
UI Entrance Requirement Increased by 5 weeks	-33.4[c]	-0.10
Insurable Ceiling Increased to 150% of Average Weekly Earnings	0.0	0.0
Benefit/Wage Ratio Reduced to 50%	-16.6[d]	-0.05
Maximum Benefit Period Reduced to 40 weeks, UI Entrance Requirement Increased by 5 weeks	-46.7[e]	-0.15
Combination of All Policy Changes	-55.7[f]	-0.17

(a) $\Delta U = \frac{a}{b^*}\ 0.6\%$

where a = dollar change in UI income for a given change in the regulations and b = change in UI Income in the post-1971 period relative to the pre-1971 period = 192%

(b) UI 1986: Weeks of benefits per week of employment = 5 (or 50/10).
Experiment: Weeks of benefits per week of employment = 4 (or 40/10).
Δ UI ($) = [4(0.6) - 5(0.6)]/5(0.6) = -0.2

(c) UI 1986: Weeks of benefits per week of employment = 5 (or 50/10).
Experiment: Weeks of benefits per week of employment = 3.33 (or 50/15).
Δ UI ($) = [3.33(0.6) - 5(0.6)]/5(0.6) = -0.334

(d) UI 1986: Benefit/Wage = 0.6
Experiment: Benefit/Wage = 0.5
Δ UI ($) = (0.5 - 0.6) / (0.6) = -0.166

(e) UI 1986: Weeks of benefits per week of employment = 5 (or 50/10).
Experiment: Weeks of benefits per week of employment = 2.66 (or 40/15).
Δ UI ($) = [2.66(0.6) - 5(0.6)]/5(0.6) = -0.467

(f) UI 1986: Weeks of benefits per week of employment = 5 (or 50/10).
Benefit/Wage = 0.6
Experiment: Weeks of benefits per week of employment = 2.66 (or 40/15).
Benefit/Wage = 0.5
Δ UI ($) = [2.66(0.5) - 5(0.6)]/5(0.6) = -0.557

4. Behavioral Features of the Model

The tables in Appendix B present the empirical estimation results. In each table, the underlying data required us to enter occupation, education, age group, marital status and region of residence as categorical variables. In all tables, the base case is a married, blue-collar, high school graduate, aged 25 to 44, living in Ontario.

In all age groups, the probability of being out of the labour force for the entire year is considerably greater for those who were unemployed at any point in the previous year.

Labour Force Participation

Tables B.1 to B.5 present the empirical estimation results of the behavioral equations for each age group of males and females. These correspond to equation 1 in Appendix A. We discuss these results below.

In all age groups, the probability of being out of the labour force for the entire year is considerably greater for those who were unemployed at any point in the previous year. Overall, previous weeks of unemployment appear to have a negative impact on work force participation for those aged 16 to 19, but a positive impact for those aged 55 to 64. However, it does not appear to have a statistically significant effect on the 25-54 age group.

It appears that males in all age groups are less likely to be entirely out of the labour force if they live in an area with a high unemployment rate or if they need more minimum weeks of employment to qualify for UI benefits. A higher regional unemployment rate appears to *increase* the probability that young and older women will be entirely out of the labour force, but *decrease* the probability for women in the middle age group.

Weeks of Participation

Tables B.6 to B.11 present the tobit estimation results of the number of weeks out of the labour force for males and females in all age groups. As one would expect, the number is considerably higher in all age groups for individuals who were out of the labour force at some point in the previous year. Each additional week of unemployment in the previous year increases the expected number of weeks out of the labour force in the current year by about one-fifth of a week for males and females in the 16-24 age group, and by slightly more than half a week for males in the 25-54 and 55-64 age groups.

A high local unemployment rate also increases the expected number of weeks out of the labour force for all except the 55-64 age group. A one-percent increase in local unemployment increases the expected number of weeks out of the labour force by about 1.3 weeks for males in the 16-24 age group, and by about 0.89 weeks for males in the 25-54 age group. For the oldest age group, this effect is *reversed* by about half a week.

In 1993, Riddell and Card argued that the ease with which individuals can qualify for UI benefits in some regions may attract some individuals into the labour market. Tables B.2 and B.9, which relate to males aged 16-24 and females aged 25 to 54, support this hypothesis to some extent because a higher regional entrance requirement for Unemployment Insurance is associated with more weeks out of the labour force. However, the relationship is negative or insignificant for other cohorts.

Periods of annual unemployment are significantly longer for those in the Atlantic Provinces and Quebec, for those over 45 years of age, and for those with relatively little education.

Incidence of Unemployment

Tables B.12 and B.13 present a logit model of the probability of unemployment for individuals who participated in the labour force for at least part of the year. This probability is driven by:

- demographic, educational and occupational characteristics,
- weeks of unemployment in the previous year,
- the benefit/wage ratio, and
- the maximum duration of the UI benefit period.

The benefit/wage ratio is equal to zero if weekly wages are less than the minimum insurable earnings, 0.6 if wages are insurable but less than the maximum insurable earnings, and 0.6 of the maximum insurable weekly wage otherwise. When the maximum benefit period has ended, the ratio becomes zero.

Duration of Unemployment

Tables B.14 and B.15 present estimates of an accelerated failure time model of annual unemployment experience. This model uses a Weibull specification, which allows explicitly for the possibility that unemployment spells might continue past the time frame being studied.[15]

Periods of annual unemployment are significantly longer for those in the Atlantic Provinces and Quebec, for those over 45 years of age, and for those with relatively little education. Young people, those with a university education, and single workers have significantly shorter periods of unemployment than average. The duration of unemployment in the previous year is positively correlated with the duration of unemployment in the current year, but the effect is not large.

As theory would lead us to expect, the maximum weeks of benefit entitlement available to an individual (which is calculated for each individual on the basis of their weeks of qualifying employment and the weeks of entitlement under regionally extended benefits for their region of residence) enters with a positive coefficient. It is less easy to explain the negative coefficient on the benefit/wage ratio because the 'incentives' argument would predict that more generous UI benefits would lengthen the duration of unemployment. However, although we have experimented with a variety of alternative specifications, we have been unsuccessful in dislodging this effect.[16]

We would emphasize that in the model as a whole, the effects of each variable feed back through a variety of channels. The net influence of a marginal change in one variable cannot easily be assessed from a single equation.

Employment Constraints

Tables B.16 and B.17 present the logit estimation of the probability that an individual will have problems obtaining additional weeks of employment. These estimations are based on the 1986/87 LMAS. An individual's weeks of unem-

15 In 1992, Erksoy explicitly tested the Weibull specification against competing alternatives.

16 Much of our previous research emphasized the importance of demand constraints in limiting worker options. See, for example, Osberg and Phipps, 1993.

ployment are a significant variable in the estimations. Those who are unemployed for only a short time are less likely to have difficulty in finding extra weeks of work than those who are unemployed for a longer period.

In simulation, the probability of someone encountering employment constraints was calculated as a function of weeks of unemployment and eligibility for receipt of Unemployment Insurance. An additional week of employment can affect that probability both directly, through its impact as calculated in Tables B.16 and B.17, and indirectly, through its impact on whether or not an individual qualifies for Unemployment Insurance. Therefore, the constrained behavioral response module helps to build in year-to-year 'state dependence' in labour market experience.

Calculating the Benefit Period

In the simulation, an annual benefit period was assigned to those with the minimum weeks of employment needed to qualify for UI benefits in a given region. The calculation of the annual benefit period was based on:

- one week of benefits for each week of insurable employment, up to a maximum of 25 weeks in a year,
- one week of benefits for every two insurable weeks, up to a maximum of 13 weeks in a year,
- two weeks of benefits for every 0.5 percent that the regional unemployment rate exceeds 4.0 percent, up to a maximum of 32 weeks,
- up to a total maximum of 50 weeks.

If an unemployed individual finds work before the entire assigned benefit period has elapsed, he or she can carry the remaining weeks forward from one year to the next. These would be added to the individual's assigned benefit period in the second year, in the event of another spell of unemployment. Therefore, if that individual does not work long enough in the second year to qualify for UI benefits, or if that individual only works long enough to qualify for a short benefit period, he or she could use up the remaining weeks of entitlement from the previous year. For example, suppose an individual was assigned a 50-week benefit period in one year, but was unemployed for only 30 of those weeks. If that person became unemployed again in the following year, he or she would receive benefits for 20 weeks even if he or she had not worked long enough that year to qualify for benefits.

Consequences of Income Tax on the Distribution of Income

To assess the redistributional consequences of UI after income taxes have been paid, we estimated 'income tax functions' that is, we estimated the amount of taxes an individual would pay given his or her total income, the composition of income and personal characteristics. To do so, we used microdata from the 1987 Survey of Consumer Finance.[17] Income tax functions were estimated separately for men and women in each region.

17 Since income taxes vary across provinces, it was necessary to estimate separate functions. However, since the simulation model only distinguishes regions, we aggregated the tax functions to the regional level.

UI income is taxed at a much higher rate than investment income.

We had two reasons for estimating income tax functions rather than attributing the amount of taxes on the basis of the rules of the Income Tax Act. First, we wanted to simulate changes in the distribution of labour market earnings and UI benefits. Since we did not know the full details of any individual's total income and deductions, we would not have been able to determine accurately how much income tax an individual would pay if we used only the rules of the Income Tax Act. Secondly, if we simply assumed that individuals paid taxes according to the rules of the Income Tax Act, we would also be assuming that there is little tax avoidance or evasion.

The estimation of taxes depended on:

- total income and its square, provided total income was positive. If total income was negative, we assigned a zero value.
- UI income and its square,[18]
- investment income and its square, assuming that investment income was positive,
- marital status, and,
- number of dependent children.

The results are reported in the tables in Appendix C.

Table 2 provides a better understanding of the results; we calculate the marginal tax rates on different forms of income, at different levels of total income, for males living in Ontario. This table shows that the marginal tax rate on the first dollar of UI income increases from 38 percent at a total income of $25,000 to 49 percent at a total income of $100,000. At the same levels of total income, the marginal tax rate is slightly lower on UI income over $5,000. For example, on a UI income of $5,001, the marginal tax rates are 33 percent and 45 percent when total incomes are $25,000 and $100,000 respectively.

Table 2
Marginal Tax Rates
Males — Ontario

Income	$25,000	$50,000	$75,000	$100,000
	Percent	Percent	Percent	Percent
Tax Rate for each Additional Dollar of UI Income	38.04	41.82	45.60	49.37
Tax Rate for each Additional Dollar of UI Income over $5,000	33.47	33.47	41.03	44.80
Tax Rate for each Additional Dollar of Labour Income	31.16	34.93	38.71	42.49
Tax Rate for each Additional Dollar of Investement Income	20.56	24.33	28.11	31.89
Tax Rate for each Dollar of Investement Income over $10,000	15.61	19.39	23.16	26.94

18 Including the quadratic in UI income allowed us, indirectly, to model the distributional effects of the high-income repayment provision of the UI program.

It is interesting to compare the marginal tax rates on UI income with those on investment income. The marginal tax rate on the first dollar of investment income is 21 percent when total income is $25,000, compared to 38 percent for UI income, and 32 percent when total income is $100,000, compared to 49 percent for UI income. Therefore, UI income is taxed at a much higher rate than investment income.

By choosing a particular year—1987—for estimating tax functions, we held constant the consequences of the income tax system on the distribution of income for all of our simulations of the redistributional consequences of UI. We felt that it would not be appropriate to model the historic pattern of changes in income tax regulations because this would confuse our efforts to sort out the distributional consequences of UI.

In the simulation model, we imputed to each individual an amount of tax payable. This imputed amount includes the expected value of income tax, plus an amount obtained from the unexplained variable of the regressions reported in Table C.5. The latter can be thought of as the idiosyncratic elements in tax collection, including the legal and not-so-legal factors.

Calculating Weekly Wages

Because there was no direct measurement of individuals' wages in the ADS, we calculated weekly wages for each individual as the ratio of total annual earnings to weeks of employment. We imputed an expected wage to those individuals who did not appear to have any weeks of employment. Taking data from the 1986 and 1987 LMAS, we estimated wage equations for men and women, using a two-stage estimation procedure developed by Heckman in 1979, to correct for sample selectivity bias.

In the first stage, we used the full sample to estimate a probit model of positive wage probabilities. From the probit estimation results, we constructed an inverse Mill's ratio to correct any sample selectivity bias.

In the second stage, we included the inverse Mill's ratio in a wage equation, which was estimated using the OLS for the sample with positive wages. Estimated wage equations are presented in Appendix D.

5. Distributional Implications of Alternative UI Systems

We now examine how various UI systems would affect the distribution of earnings and UI income among men, women and households, given the conditions that existed in the 1981-1989 business cycle. We focus primarily on how earnings and UI income would be redistributed if the following changes were made to the 1986/87 UI system:

- the maximum duration of benefits is reduced from 50 weeks to 40 weeks;
- the benefits are reduced from 60 percent to 50 percent of insurable earnings;
- the ceiling on maximum insurable earnings is increased from 100 percent to 150 percent of average weekly earnings;
- the variable entrance requirement is increased by 5 weeks in each region;
- the maximum benefit duration is reduced and the variable entrance requirement is increased simultaneously; and,
- all of the above policy changes occur simultaneously.

We also compare the distributional consequences of the simulated 'new' UI systems with the systems that were in effect in 1971, 1986, 1990 and 1994 for the 1981-1989 business cycle.

We remind the reader that our study includes all individuals between the ages of 16 and 64, even if they have never participated in the labour force. By including these non-participants, our model was able to predict that some people would receive zero earnings in some years, that this proportion of the population would vary with the rate of unemployment, and that the likelihood of no income would increase with age.

When calculating the distributional statistics in this paper, we assumed that UI incentives affect the micro behaviour of individuals. In all cases, we calculated the distribution of income, including income from UI, on the presumption that the UI variables in the estimated behavioral equations capture the influence of UI on individual behaviour. The UI variables include the benefit/wage replacement rate, the maximum benefit period, and various entrance requirements.[19] In general, these behavioral changes should limit any increase in income inequality caused by a reduction in UI benefits.

Changes in UI parameters have both direct and indirect effects on simulated labour-market behaviour. For example, reducing the benefit/wage replacement rate from 60 percent to 50 percent has direct effects on the incidence and duration of unemployment. Such a cut discourages some individuals from quitting their jobs, and prompts unemployed individuals to seek another job as quickly as possible. A shorter unemployment spell in the first year reduces the probability of

19 At this stage no wage effects have been built into the model. The reduction in UI benefits in this simulation is assumed to affect the relative ordering of individuals in terms of the probability and duration of unemployment. Any weeks of employment assigned to an individual are assumed to be paid at that individual's wage rate. We have not yet modelled a process of 'under-bidding' another worker by offering to take a job at a lower wage.

an individual being unemployed in the second year, and may reduce the duration of the unemployment spell if it does occur. This effect cumulates throughout the simulation period. In essence, it is a reversal of the 'scarring' effects of unemployment.

As mentioned earlier, in alternative simulations we allowed the aggregate unemployment rate to change as a result of individual behavioral responses under different UI systems. However, these changes are very small, ranging between 0.06 percent and 0.17 percent. This is largely because the simulated changes to the UI system are small compared to actual changes, such as the 1971 revision, that were made in the past.

Table 3 below presents the average duration of unemployment spells for women and men under the various simulated UI systems, for the years 1981 and 1983. Notice that on average, men and women are unemployed longer in 1983, when the unemployment rate peaked. In the base UI system—namely, the 1986/87 UI system—the average duration of unemployment increased from 23.6 weeks to 30.8 weeks for men, and from 30.5 weeks to 34.5 weeks for women in that year.

Table 3
Annual Behavioral Outcomes
Females & Males — Full Sample

	Mean Weeks of Unemployment			
	Females		Males	
Policy Experiment	1981	1983	1981	1983
1986/87 UI System	30.52	34.53	23.61	30.81
Max. Benefit = 40 weeks	30.64	34.45	23.61	30.47
UI Entrance wks = +5	30.14	33.74	22.33	28.51
Increase Insurable Ceiling to 150% of Average Weekly Earnings	30.50	34.58	22.77	29.76
Benefit/Wage Ratio = 0.5	30.63	34.70	24.34	32.25
Max. Benefit = 40 weeks UI Entrance weeks = +5	30.40	33.75	22.48	28.41
Combination of All Policy Changes	30.67	33.45	23.71	28.75

Alternative UI systems seem to have little effect on the average durations of unemployment for men and women. We should point out, however, that while average values do not appear to change very much, there may be large changes in individual experiences. For example, one individual might experience an increase in employment from 0 to 52 weeks while another might experience a decrease in employment from 52 to 0 weeks. Despite the dramatic change for each individual, however, the average would remain the same.

We describe below the distribution of earnings plus any applicable UI income among men, women and households in Canada from 1981 to 1989. To do so, we present two types of summary statistics, namely the coefficient of variation and the Gini coefficient. We also present the share of earnings and UI income received by the top decile, the top quintile, and the bottom quintile of Canadian

It is reasonable to expect changes in aggregate measures of income inequality to be small. A large majority of individuals in our sample do not experience unemployment, and therefore, will not be affected by changes in the UI program.

men, women and households.[20] We discounted incomes by 5.5 percent per year in line with the average real cost of home mortgage debts faced by Canadians over that period. This seemed to be a reasonable way to represent the trade-off between present and future consumption faced by Canadians. For our calculations, we used earnings before taxes, and earnings after just enough income tax was deducted to cover the portion of UI financed from general revenue.[21]

To understand the policy implications of the results reported below, it is necessary to know what magnitude of change in a Gini index is 'big enough' to be concerned about. It is reasonable to expect changes in aggregate measures of income inequality to be small. A large majority of individuals in our sample do not experience unemployment, and therefore, will not be affected by changes in the UI program. Because a large number of people are relatively unaffected, we do not expect large changes in the values of the calculated inequality statistics.

Nonetheless, even seemingly small numeric changes in aggregate inequality measures can indicate important changes in inequality. To put this in perspective, in 1992 Fritzell reported that the difference between Canada and Germany in the Gini index of adjusted disposable income was about 0.04 in both 1981 and 1987. In 1981, the Gini index showed a 0.1 difference between Canada and Sweden, while 1987 data showed a difference of 0.08. In international comparative data from the Luxembourg Income Study, the difference in Gini index between the USA, which had the most inequality and Sweden, which had the least inequality, was 0.12 in 1979/81 and 0.13 in 1986/87.

Given this evidence, we feel that changes at the second decimal level are important. For example, we think that the increase of 0.011 in the Gini index for men as a result of increasing weeks required to qualify for UI is significant. On the other hand, we do not believe that changes at the third decimal level are statistically large enough to warrant much attention.

It should also be emphasized that a small net change in an inequality index such as the Gini or the coefficient of variation hides the re-ranking of individuals as some gain and others lose as a result of policy reforms. The unequal impacts of policy on aggregate inequality are largely offset by the negative covariance of policy impacts and original income, as discussed in our November report.

For the present value of before-tax earnings, Tables E.1, E.2, and E.3 (Appendix E) report the mean, the coefficient of variation, the Gini coefficient, and the shares of earnings distributed among the top 10 percent, the top 20 percent, and the bottom 20 percent of men, women and households. The same types of data are reported in Tables E.4, E.5, and E.6 for men, women and households with some unemployment experience.

Tables E.7, E.8 and E.9 report the summary statistics for the after-tax earnings of all men, women and households, respectively. Tables E.10, E.11 and E.12

20 Distributional statistics such as the Atkinson indices or the Theil index require income to be strictly positive. However, non-participants in the labour force can easily have zero earnings.

21 Since we used estimated tax functions to predict taxes paid for each individual, we could accurately predict taxes even though we did not have information on income that might have been derived from other sources, such as transfer income other than UI, child-support payments or royalties.

(Appendix E) report the summary statistics for all men, women and households with some unemployment experience.

Most UI recipients would not be affected by a 10-week reduction in the benefit period.

The low share of income reported for the bottom quintile largely reflects the fact that many people in that portion of the population do not participate in the labour market. The people in this group typically receive social assistance, but such income is not captured in this study.

It is important to note that in all of the UI systems we tested, the distribution of income among women is less equal than the distribution of income among men.

Effects of the Simulated Changes to the 1986/1987 UI System

Reducing the benefit period from 50 to 40 weeks

Relative to the UI system that existed in 1986, reducing the maximum benefit period from 50 to 40 weeks had almost no impact on inequality among Canadian men, women, and households. Using before-tax incomes, the Gini coefficient displays a very small change from 0.448 to 0.447 for men, from 0.628 to 0.627 for women, and from 0.474 to 0.473 for households. Meanwhile, the shares of the top decile and the top quintile indicate a slight decline while the share of the bottom quintile shows a slight increase for men, women, and households when compared to the 1986 UI system.

The reason for this result, we believe, is that only a small fraction of the total population is affected by this policy change. First, over the 1981-1989 cycle, the number of UI recipients was always lower than the number of unemployed people. Second, as shown in Table 4 below, the number of unemployed people who collected UI benefits for more than 40 weeks is only about 22.5 percent of the total number of claimants registered in the Social Policy Simulation Database (SPSD) of Statistics Canada. This means that most UI recipients would not be affected by a 10-week reduction in the benefit period. Of those who would be affected, the changes in their UI income would be quite small in many cases, depending on the number of benefit weeks they would have had over the 40-week maximum. For example, a person with an initial benefit period of 42 weeks would lose only 5 percent of his or her UI income, while a person who had a 50-week benefit period would suffer a 20 percent loss of UI income if the benefit period were reduced to 40 weeks.

Part of that loss would be balanced by behavioral changes people would make in response to changes in UI regulations. Also, since only a small fraction of UI recipients collect benefits for more than 40 weeks, and since UI income is only 60 percent of insurable earnings, this reduction in the number of benefit weeks would have only a negligible aggregate impact on income inequality for the population, although losses may be more noticeable in some micro-markets.

Increasing the minimum number of qualifying weeks

If the minimum qualifying period is increased by five weeks, the share of income increases for the top decile and the top quintile of men, women and households, but decreases for the bottom decile. The Gini index reveals that this change increases income inequality from 0.448 to 0.459 for men, and from 0.474 to 0.481 for households. The effect is minimal for women.

Table 4
Percentage of Those Collecting UI By Employment Weeks, Canada, 1986
Aged 16 to 64

Weeks	Weeks Employed Before Claim							
of Benefits	10-14	15-19	20-34	35-39	40-44	45-50	50+	Total
1	0.00	0.00	0.41	0.17	0.00	0.27	0.30	1.16%
2 to 5	0.14	0.19	1.43	0.48	1.08	0.82	1.88	6.02%
6 to 10	0.01	0.34	1.76	0.49	1.90	1.03	2.38	7.89%
11 to 15	0.10	0.21	3.97	1.72	1.12	1.73	6.18	15.03%
16 to 20	0.39	0.56	3.68	1.01	0.21	0.63	2.27	8.74%
21 to 35	2.64	2.85	13.86	1.45	1.34	2.48	5.08	29.71%
36 to 39	1.14	1.10	1.95	0.31	0.62	0.47	1.01	6.60%
40	0.59	0.29	0.65	0.38	0.18	0.14	0.15	2.38%
41 to 45	1.36	0.29	2.86	0.72	0.65	1.20	2.33	9.42%
46 +	0.01	0.42	3.77	1.07	1.26	1.85	4.67	13.05%
Total	6.37%	6.24%	34.33%	7.80%	8.37%	10.62%	26.27%	100.00%

Only 12.61 percent of UI claimants in the SPSD database had 19 or fewer weeks of employment before establishing their claim. Therefore, the number of individuals potentially affected by this policy change is only a small fraction of the unemployed population, and an even smaller fraction of the total population. However, many who were affected suffered very large income losses because they lost all access to UI benefits. This, we believe, explains the increase in aggregate income inequality.

Raising the ceiling

If the ceiling on insurable earnings increases from 100 percent to 150 percent of average weekly earnings, the potential UI benefits of high-income earners increase, but so do their premiums. The overall result of this policy change is an increase in mean income and a slight decrease in income inequality however, because higher income earners are less likely than average to become unemployed and, therefore, less likely to claim UI benefits. Since they would be paying larger premiums, this change would raise revenue for the government because their increased premiums would more than offset the increased UI benefits they would receive.

Again, the change in income inequality is relatively more pronounced for men and households than it is for women. The Gini index decreases from 0.448 to 0.445 for men, from 0.474 to 0.472 for households, and from 0.628 to 0.627 for women. The income shares decline slightly for the top decile and the top quintile of men, women, and households while they increase a little for the bottom quintile of men. The share of income does not change for the bottom quintile of women or households.

Reducing the benefit/wage replacement ratio

Reducing the benefit/wage replacement ratio from 60 to 50 percent affects many more people than do some of the other changes.

Reducing the benefit/wage replacement ratio from 60 to 50 percent affects anyone collecting UI benefits. Therefore, it affects many more people than do some of the other changes. However, while more people are affected, there is only a relatively small change in each individual's total UI income, and the change will be experienced equally by UI recipients at all income levels.

The overall effect is to increase income inequality slightly among men and households. For men, the Gini index rises from 0.448 to 0.451, while it rises from 0.474 to 0.476 for households. Income inequality remains unchanged among women. Again the income share of the top decile and the top quintile increases slightly, while it decreases slightly for the bottom quintile of these groups.

What are the combined effects?

The Gini index rises from 0.448 to 0.459 for men, and from 0.474 to 0.481 for households when the maximum benefit period is reduced from 50 to 40 weeks and the minimum qualifying period is increased by 5 weeks. Inequality among women appears to be unaffected.

If *all* of the above changes are made to the UI system at the same time, the effects are similar to the effects of the individual changes. In other words, men and households experience slight changes in income inequality, but women do not.

Inequality Statistics: after Tax Concept

When we examined what happens to income inequality after enough tax has been deducted to cover the general revenue component of UI, results are similar to those shown in Tables E.13, E.14, and E.15.

Inequality statistics: individuals experiencing unemployment

The Gini index shows that there is more income inequality among men who have been unemployed than there is among the total population of men. However, under alternative UI systems, the changes are in the same direction as the full sample results and only slightly larger in magnitude.

According to the statistics, there is less income inequality among women and households with some unemployment experience than among all women and households. These results are plausible because the full sample in our model includes those who have remained out of the labour force and thus have zero earnings. The rate of participation in the labour force is much lower for women than it is for men.

The simulation results of various changes to the UI system look slightly different for the sample of women with some unemployment experience than for the full sample of women. For example, an increase in the ceiling on maximum insurable earnings appears to increase income inequality—from 0.596 to 0.598 in the Gini index—for women with some unemployment experience (see Table E.10).

When the benefit/wage replacement rate is reduced to 50 percent, the Gini index shows a slight decline, from 0.596 to 0.595, for those women who have experienced unemployment.

As one climbs up the ladder of income distribution, policy changes affect relatively smaller number of individuals in each quintile.

Women who have been unemployed experience a slight increase in income inequality when a 10-week decrease in the maximum benefit duration is combined with a 5-week increase in the entrance requirement. They also experience somewhat more income inequality when all changes in the UI system occur simultaneously. However, the total effect is too small to be statistically reliable.

Households with some experience of unemployment display results that are similar to the results for the full sample.

Comparing with Other UI Systems

Here we compare how the UI systems of 1971, 1986, 1990 and 1994 would have affected the distribution of income if they had been in place during the 1981-1989 business cycle.

As in the above analysis, income flows were discounted to 1981 at 5.5 percent per annum, the average real cost of home mortgage debt faced by Canadians over that period. Again we looked at earnings before taxes, and earnings after just enough income tax has been deducted to cover the portion of UI that was financed by the general revenue.

For both the pre-tax and after-tax earnings, we report the mean, the coefficient of variation and the Gini index, as well as the income shares of the top decile, the top quintile and the bottom quintile for men and households. The pre-tax information is shown in Tables E.16 and E.17 for men and households respectively. The summary statistics relating to after-tax earnings are reported in Tables E.18 and E.19. We also report the percentage of men in each quintile who won or lost financial ground under the various UI systems. Tables F.1 to F.4 show gains and losses as a percentage of changes in the present value of earnings under alternative UI systems, relative to earnings under the 1986 and 1971 UI systems.

The distribution of earnings changed significantly for Canadian men under alternative UI systems. The Gini index for the 1971 system, which was the most generous of the systems we studied, is 0.439. This value steadily rises as new and more restrictive UI systems are introduced over time. As shown in Table E.16, the Gini index increases to 0.448 for the 1986 UI system, to 0.460 for the 1990 system, and to 0.463 for the simulated 1994 system. Therefore, there is a 0.015 difference in the Gini measures of income inequality between the 1971 and 1994 systems. This is a rather significant difference.

Furthermore, the income shares of the top decile and the top quintile of men consistently increased under 1986, 1990, and 1994 systems, while the bottom quintile suffered losses.

Characteristics of Winners and Losers

In the tables in Appendix F, we explore the characteristics of winners and losers in each quintile of the male income distribution under the 1971, 1986, 1990 and 1994 UI systems. As an example, Table F.4 of this appendix compares the 1994 UI system, in terms of the percentage changes in present value of before-tax earnings, to the UI system that existed in 1971. The first thing to notice is that as one climbs up the ladder of income distribution, policy changes affect relatively smaller number of individuals in each quintile. For example, as reported in column (d), those whose changes in income are negligible make up about 32 percent

of the bottom quintile, 46 percent of the second quintile, 63 percent of the third quintile, 76 percent of the fourth quintile, and the 86 percent of the top quintile. On the other hand, columns (a) and (b) show about 52 percent of the bottom quintile lose more than 25 percent of their income, while only about 2.4 percent of the top quintile suffer the same loss. Those who lose 6 to 25 percent appear to be concentrated among the middle quintiles, ranging between about 24 percent in the second quintile to about 19 percent in the fourth quintile. The apparent concentration of those whose losses are relatively small in the middle and upper quintiles also helps to explain the small changes in Gini index since the Gini is more sensitive to changes that occur among the middle ranges of the income distribution.

6. Conclusion

…the introduction of more restrictive UI systems increases inequality in Canada.

Our conclusions about the distributional impact of changes to the Unemployment Insurance system may be summarized as follows:

Labour market averages would not be noticeably affected

The simulated policy changes do not noticeably affect annual weeks of unemployment or other labour market averages.

Increasing the qualifying period increases inequality

Income inequality would increase if the minimum weeks required to qualify for UI were increased by 5 weeks in each region. We estimate that only a relatively small number of UI claimants would be affected by such a policy change because fewer than 13 percent of UI claimants had 19 or fewer weeks of employment before establishing their claim and others would modify behaviour to retain eligibility. However, inequality would increase overall because disentitlement from all UI benefits would lead to very large income losses for those affected.

Reducing the replacement rate increases inequality

Income inequality would increase if the replacement rate of benefits to wages were reduced from 60 to 50 percent. This change would affect all UI claimants, but the impact on any one individual would not be as great as the potential effects of disentitlement that were discussed above.

Increasing insurable earnings reduces inequality

Increasing the insurable earnings ceiling to 150 percent of average weekly earnings would reduce income inequality. Because higher-income individuals are less likely than average to become unemployed and claim UI, their increased premium payments would more than offset the increased UI benefits paid.

Reducing benefit weeks has little impact on inequality

Reducing maximum benefit weeks from 50 to 40 would not have a noticeable impact on income inequality.

Lower income earners are most affected by greater UI restrictions

Comparisons of the 1971, 1986, 1990, and 1994 UI systems over the 1981-1989 business cycle indicate that the introduction of more restrictive UI systems increases inequality in Canada. In particular, bottom quintiles appear to lose considerably more than the middle and upper quintiles when the UI system becomes less generous.

Appendix A: Equations

(1) $(PROB(WKSNLF_{it} < 52) = F_1(X_{it}, WKSUN_{i,t-1}, LM_t) + \varepsilon_{2i}$

(2) $WKSNLF_{it} = F_2(X_{it}, WKSUN_{i,t-1}, LM_t, UI_t) + \varepsilon_{2i}$

(3) $PROB(P_{it} \mid 0 \leq WKSNLF \leq 52) = F_3(X_{it}, WKSUN_{i,t-1}, LM_t) + \varepsilon_{3i}$

(4) $(WKSUN_{it} \mid P_{it} = 1) = F_4(X_{it}, WKSUN_{i,t-1}, LM_t, UI_t) + \varepsilon_{4i}$

(5) $WKSEMP_{it} = 52 - WKSNLF_{it} - WKSUN_{it}$

(6) $DESIRED_{it}\ [WKSUNEMP_i \mid UI'_t]$

(7) $IF\ DESIRED_{it} < WKSUN_{it}\ ALORS\ PROB[WKSU'_{it} = WKSUNit\text{-}1] = 1\text{-}PROB(CONS)$

$PROB(CONS) = F_5(X_{it}, WKSUN'_{it}, LM_t, UI'_t) + \varepsilon_{5i}$ *model iterates*

F_1, F_2, F_3, F_4, F_5 – estimated structural relationships (logit, tobit, logit, Weibull and logit)

$\varepsilon_{1i}, \varepsilon_{2i}, \varepsilon_{3i}, \varepsilon_{4i}, \varepsilon_{5i}$ – random error term from corresponding structural equation
i = individual
t,t-1 = period

X_{it} – personal characteristics

$WKSUN_{it}$ – weeks unemployed

$WKSNLF_{it}$ – weeks not in labour force

P_{it} – probability of unemployment

CONS – probability of constraint in additional weeks

UI_t – parameters of UI system

LM_t – local labour market condition

$WKSEMP_{it}$ – weeks employed

Appendix B: Behavioral Equations

Table B.1
Logit Model of the Probability of No Labour-Force Attachment During 1987
Females Aged 16 to 24 Years
Dependent Variable = 1 if No Labour Force Participation in 1987 and = 0 otherwise.
Number of Observations: 6,414

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-4.933	0.022	0.0001
Dummy = 1 if no Education or Only Elementary	0.497	0.012	0.0001
Dummy = 1 if Some Post Secondary Education	-0.149	0.008	0.0001
Dummy = 1 if Certificate or Diploma	-0.826	0.012	0.0001
Dummy = 1 University Degree	-0.910	0.019	0.0001
Dummy = 1 if Single	-0.407	0.008	0.0001
Weeks of Unemployment in 1986	0.047	0.0005	0.0001
Not In The Labour Force Weeks in 1986	0.071	0.0004	0.0001
Dummy = 1 if not in The Labour Force For 53 Weeks In 1986	1.283	0.009	0.0001
Regional Unemployment Rate in 1986	0.027	0.001	0.0001
Maximum Duration	0.011	0.0003	0.0001
Number of Children in 1986	0.417	0.011	0.0001
Dummy = 1 if Children Aged 0-2	0.197	0.012	0.0001
Dummy = 1 if Children Aged 3-5	0.222	0.012	0.0001
Dummy = 1 if Children Aged 6-15	-0.457	0.012	0.0001
Number of Children in 1986, Squared	-0.073	0.002	0.0001

Table B.2
Logit Model of the Probability of No Labour-Force Attachment During 1987
Females Aged 25 to 54 Years
Dependent Variable = 1 if No Labour Force Participation in 1987 and = 0 otherwise.
Number of Observations: 19,631

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-4.615	0.014	0.0001
Dummy = 1 if no Education or Only Elementary	0.400	0.005	0.0001
Dummy = 1 if Some Post Secondary Education	-0.255	0.007	0.0001
Dummy = 1 if Certificate of Diploma	-0.368	0.006	0.0001
Dummy = 1 University Degree	-0.662	0.007	0.0001
Dummy = 1 if Single	-0.459	0.007	0.0001
Weeks of Unemployment in 1986	0.073	0.0003	0.0001
Not In The Labour Force Weeks	0.086	0.0003	0.0001
Dummy = 1 if not in The Labour Force For 53 Weeks In 1986	1.968	0.006	0.0001
Regional Unemployment Rate in 1986	-0.010	0.001	0.0001
Maximum Duration	0.009	0.0002	0.0001
Number of Children in 1986	-0.248	0.006	0.0001
Dummy = 1 if Children Aged 0-2	0.211	0.006	0.0001
Dummy = 1 if Children Aged 3-5	-0.031	0.005	0.0001
Dummy = 1 if Children Aged 6-15	-0.088	0.007	0.0001
Number of Children in 1986, Squared	0.036	0.001	0.0001

Table B.3
Logit Model of the Probability of No Labour-Force Attachment During 1987
Females Aged 55 to 64 Years
Dependent Variable = 1 if No Labour Force Participation in 1987 and = 0 otherwise.
Number of Observations: 4,272

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-4.290	0.029	0.0001
Dummy = 1 if no Education or Only Elementary	-0.204	0.010	0.0001
Dummy = 1 if Some Post Secondary Education	-0.089	0.019	0.0001
Dummy = 1 if Certificate or Diploma	0.141	0.015	0.0001
Dummy = 1 University Degree	0.150	0.018	0.0001
Dummy = 1 if Single	0.474	0.016	0.0001
Weeks of Unemployment in 1986	0.072	0.0006	0.0001
Not In The Labour Force Weeks	0.102	0.0005	0.0001
Dummy = 1 if not in The Labour Force For 53 Weeks In 1986	2.329	0.016	0.0001
Regional Unemployment Rate in 1986	0.007	0.002	0.0001
Maximum Duration	0.014	0.0005	0.0001
Number of Children in 1986	-0.197	0.026	0.0001
Number of Children in 1986, Squared	0.078	0.010	0.0001

Table B.4
Logit Model of the Probability of No Labour-Force Attachment During 1987
Males Aged 16 to 24 Years
Observations: 6,061

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	3.291	0.112	0.0001
Dummy = 1 if Managerial/Administrative			
Dummy = 1 if Professional			
Dummy = 1 if Sales/Services			
Dummy = 1 if Clerical			
Dummy = 1 if Farm			
Dummy = 1 if no Education or Only Elementary	1.325	0.014	0.0001
Dummy = 1 if Some Post Secondary Education	-0.133	0.009	0.0001
Dummy = 1 if Certificate or Diploma	-0.255	0.013	0.0001
Dummy = 1 University Degree	-0.297	0.022	0.0001
Dummy = 1 if Single	1.329	0.020	0.0001
Weeks of Unemployment in 1986	-0.040	0.0004	0.0001
Dummy = 1 if not in The Labour Force in 1986	1.375	0.015	0.0001
Regional Unemployment Rate in 1986	-0.117	0.003	0.0001
Unemployment Weeks To Qualify	-0.516	0.008	0.0001
Maximum Duration	-0.049	0.0001	0.0001
Number of Children in 1986	-0.062	0.016	0.0001
Dummy = 1 if Children Aged 0-2	0.090	0.027	0.0008
Dummy = 1 if Children Aged 3-5	-0.262	0.024	0.0001
Dummy = 1 if Children Aged 6-15	-0.145	0.017	0.0001
Number of Children in 1986, Squared	-0.002	0.003	0.5371

Table B.5
Logit Model of the Probability of No Labour-Force Attachment During 1987
Males Aged 25 to 54 Years
Observations: 19,057

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-3.488	0.090	0.0001
Dummy = 1 if Managerial/Administrative			
Dummy = 1 if Professional			
Dummy = 1 if Sales/Services			
Dummy = 1 if Clerical			
Dummy = 1 if Farm			
Dummy = 1 if no Education or Only Elementary	1.224	0.007	0.0001
Dummy = 1 if Some Post Secondary Education	0.362	0.010	0.0001
Dummy = 1 if Certificate or Diploma	-0.579	0.012	0.0001
Dummy = 1 University Degree	-0.563	0.011	0.0001
Dummy = 1 if Single	0.417	0.007	0.0001
Weeks of Unemployment in 1986	0.005	0.0002	0.0001
Dummy = 1 if not in The Labour Force in 1986	3.367	0.007	0.0001
Regional Unemployment Rate in 1986	-0.038	0.002	0.0001
Unemployment Weeks To Qualify	-0.130	0.007	0.0001
Maximum Duration			
Number of Children in 1986	-0.594	0.011	0.0001
Dummy = 1 if Children Aged 0-2	-0.127	0.014	0.0001
Dummy = 1 if Children Aged 3-5	-0.120	0.012	0.0001
Dummy = 1 if Children Aged 6-15	0.358	0.014	0.0001
Number of Children in 1986, Squared	0.113	0.002	0.0001

Table B.6
Logit Model of the Probability of No Labour-Force Attachment During 1987
Males Aged 55 to 64 Years
Observations: 4,025

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-1.322	0.117	0.0001
Dummy = 1 if Managerial/Administrative			
Dummy = 1 if Professional			
Dummy = 1 if Sales/Services			
Dummy = 1 if Clerical			
Dummy = 1 if Farm			
Dummy = 1 if no Education or Only Elementary	-0.094	0.008	0.0001
Dummy = 1 if Some Post Secondary Education	-0.173	0.017	0.0001
Dummy = 1 if Certificate or Diploma	0.07	0.014	0.0001
Dummy = 1 University Degree	-0.048	0.012	0.0001
Dummy = 1 if Single	-0.104	0.012	0.0001
Weeks of Unemployment in 1986	0.007	0.0004	0.0001
Dummy = 1 if not in The Labour Force in 1986	5.000	0.009	0.0001
Regional Unemployment Rate in 1986	-0.052	0.003	0.0001
Unemployment Weeks To Qualify	-0.176	0.008	0.0001
Maximum Duration			
Number of Children in 1986	-0.354	0.019	0.0001
Number of Children in 1986, Squared	0.120	0.008	0.0001

Table B.7
Tobit Model of Annual Weeks Out of the Labour Force
1987 Females Aged 16 to 24 Years
Dependent Variable = 52* less Total Labour Force Weeks.
Observations: 5,568
Non-Censored Values: 2,776 Left Censored Values: 2,792

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-10.160	0.824	0.0001
Dummy = 1 if Managerial/Administrative	-8.986	0.139	0.0001
Dummy = 1 if Professional	-6.954	0.096	0.0001
Dummy = 1 if Clerical	-9.241	0.079	0.0001
Dummy = 1 if Farm	1.103	0.155	0.0001
Dummy = 1 if Sales/Services	-7.022	0.074	0.0001
Dummy = 1 if no Education or Only Elementary	-4.130	0.147	0.0001
Dummy = 1 if Some Post Secondary Education	3.708	0.056	0.0001
Dummy = 1 if Certificate or Diploma	-7.985	0.072	0.0001
Dummy = 1 University Degree	-8.919	0.103	0.0001
Dummy = 1 if Single	2.234	0.056	0.0001
Weeks of Unemployment in 1986	0.257	0.002	0.0001
Dummy = 1 if not in The Labour Force in 1986	22.071	0.048	0.0001
Regional Unemployment Rate in 1986	0.166	0.020	0.0001
UI Weeks to Qualify	-0.019	0.058	0.7416
Number of Children in 1986	5.950	0.110	0.0001
Number of Children in 1986, Squared	-1.073	0.022	0.0001
Dummy = 1 if Children Aged 0-2	-2.154	0.118	0.0001
Dummy = 1 if Children Aged 3-5	-2.379	0.122	0.0001
Dummy = 1 if Children Aged 6-15	-4.535	0.114	0.0001
Scale	23.612	0.022	—

Table B.8
Tobit Model of Annual Weeks Out of the Labour Force
1987 Females Aged 25 to 54 Years
Dependent Variable = 52* less Total Labour Force Weeks.
Observations: 15,107
Non-Censored Values: 4,358 Left Censored Values: 10,749

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-30.404	0.677	0.0001
Dummy=1 if Managerial/Administrative	-10.249	0.081	0.0001
Dummy=1 if Professional	-10.506	0.069	0.0001
Dummy=1 if Clerical	-10.027	0.059	0.0001
Dummy=1 if Farm	-8.512	0.126	0.0001
Dummy=1 if Sales/Services	-4.473	0.058	0.0001
Dummy=1 if no Education or Only Elementary	-1.487	0.066	0.0001
Dummy=1 if Some Post Secondary Education	2.254	0.062	0.0001
Dummy=1 if Certificate or Diploma	0.600	0.053	0.0001
Dummy=1 University Degree	-1.576	0.061	0.0001
Dummy=1 if Single	-6.194	0.063	0.0001
Weeks of Unemployment in 1986	0.523	0.002	0.0001
Dummy=1 if not in The Labour Force in 1986	26.809	0.040	0.0001
Regional Unemployment Rate in 1986	0.509	0.017	0.0001
Unemployment Weeks To Qualify	0.428	0.048	0.0001
Number of Children in 1986	0.502	0.069	0.0001
Number of Children in 1986, Squared	0.016	0.014	0.2689
Dummy=1 if Children Aged 0-2	4.367	0.068	0.0001
Dummy=1 if Children Aged 3-5	3.004	0.059	0.0001
Dummy=1 if Children Aged 6-15	-2.819	0.074	0.0001
Scale	26.772	0.021	—

Table B.9
Tobit Model of Annual Weeks Out of the Labour Force
1987 Females Aged 55 to 64 Years
Dependent Variable = 52* less Total Labour Force Weeks.
Observations: 1,577
Non-Censored Values: 415 Left Censored Values: 1,162

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-4.517	2.600	0.0823
Dummy=1 if Managerial/Administrative	-2.432	0.304	0.0001
Dummy=1 if Professional	3.372	0.272	0.0001
Dummy=1 if Clerical	3.497	0.237	0.0001
Dummy=1 if Farm	-10.423	0.373	0.0001
Dummy=1 if Sales/Services	2.612	0.213	0.0001
Dummy=1 if no Education or Only Elementary	5.712	0.168	0.0001
Dummy=1 if Some Post Secondary Education	-5.195	0.288	0.0001
Dummy=1 if Certificate or Diploma	0.049	0.215	0.8187
Dummy=1 University Degree	-0.922	0.262	0.0004
Dummy=1 if Single	0.709	0.241	0.0032
Weeks of Unemployment in 1986	0.613	0.006	0.0001
Dummy=1 if not in The Labour Force in 1986	32.169	0.155	0.0001
Regional Unemployment Rate in 1986	-0.379	0.065	0.0001
Unemployment Weeks To Qualify	-2.236	0.181	0.0001
Number of Children in 1986	-2.551	0.531	0.0001
Number of Children in 1986, Squared	-0.834	0.234	0.0004
Scale	32.624	0.078	—

Table B.10
Tobit Model of Annual Weeks Out of the Labour Force
1987 Males Aged 16 to 24 Years
Observations: 5,314
Non-Censored: 2,557 Left-Censored: 2,757

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-65.368	0.488	0.0001
Dummy=1 if Managerial/Administrative	-1.446	0.128	0.0001
Dummy=1 if Professional	1.668	0.082	0.0001
Dummy=1 if Clerical	-1.727	0.079	0.0001
Dummy=1 if Farm	4.482	0.077	0.0001
Dummy=1 if Sales/Services	0.135	0.049	0.0065
Dummy=1 if no Education or Only Elementary	-1.183	0.119	0.0001
Dummy=1 if Some Post Secondary Education	5.159	0.052	0.0001
Dummy=1 if Certificate or Diploma	0.128	0.070	0.0654
Dummy=1 University Degree	-1.120	0.108	0.0001
Dummy=1 if Single	11.114	0.062	0.0001
Weeks of Unemployment in 1986	0.182	0.002	0.0001
Dummy=1 if not in The Labour Force in 1986	24.766	0.046	0.0001
Regional Unemployment Rate in 1986	1.338	0.016	0.0001
UI Weeks to Qualify	2.247	0.031	0.0001
Number of Children in 1986			
Number of Children in 1986, Squared			
Dummy=1 if Children Aged 0-2			
Dummy=1 if Children Aged 3-5			
Dummy=1 if Children Aged 6-15			
Scale	22.040	0.020	—

Table B.11
Tobit Model of Annual Weeks Out of the Labour Force
1987 Males Aged 25 to 54 Years
Observations: 18,232 Non-Censored: 2,693 Left-Censored: 15,539

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-56.013	0.409	0.0001
Dummy=1 if Managerial/Administrative	-6.346	0.064	0.0001
Dummy=1 if Professional	-5.660	0.068	0.0001
Dummy=1 if Clerical	-3.486	0.084	0.0001
Dummy=1 if Farm	-7.387	0.095	0.0001
Dummy=1 if Sales/Services	-2.446	0.051	0.0001
Dummy=1 if no Education or Only Elementary	2.993	0.053	0.0001
Dummy=1 if Some Post Secondary Education	2.006	0.063	0.0001
Dummy=1 if Certificate or Diploma	0.404	0.054	0.0001
Dummy=1 University Degree	-3.547	0.065	0.0001
Dummy=1 if Single	4.800	0.046	0.0001
Weeks of Unemployment in 1986	0.536	0.001	0.0001
Dummy=1 if not in The Labour Force in 1986	22.171	0.044	0.0001
Regional Unemployment Rate in 1986	0.893	0.013	0.0001
Unemployment Weeks To Qualify	1.266	0.026	0.0001
Number of Children in 1986			
Number of Children in 1986, Squared			
Dummy=1 if Children Aged 0-2			
Dummy=1 if Children Aged 3-5			
Dummy=1 if Children Aged 6-15			
Scale	23.152	0.024	—

Table B.12
Tobit Model of Annual Weeks Out of the Labour Force
1987 Males Aged 55 to 64 Years
Observations: 2,705
Non-Censored: 556 Left-Censored: 2,149

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	5.757	1.356	0.0001
Dummy=1 if Managerial/Administrative	-9.040	0.191	0.0001
Dummy=1 if Professional	-3.493	0.238	0.0001
Dummy=1 if Clerical	-1.220	0.257	0.0001
Dummy=1 if Farm	-20.401	0.249	0.0001
Dummy=1 if Sales/Services	-1.919	0.152	0.0001
Dummy=1 if no Education or Only Elementary	7.784	0.131	0.0001
Dummy=1 if Some Post Secondary Education	4.115	0.254	0.0001
Dummy=1 if Certificate or Diploma	2.071	0.231	0.0001
Dummy=1 University Degree	-11.818	0.253	0.0001
Dummy=1 if Single	-4.991	0.244	0.0001
Weeks of Unemployment in 1986	0.570	0.004	0.0001
Dummy=1 if not in The Labour Force in 1986	24.308	0.148	0.0001
Regional Unemployment Rate in 1986	-0.534	0.045	0.0001
Unemployment Weeks To Qualify	-3.051	0.085	0.0001
Number of Children in 1986			
Number of Children in 1986, Squared			
Scale	33.296	0.073	—

Table B.13
Logit Model of the Probability of Having At Least One Week of Unemployment 1987 Females
Dependent Variable = 1 if there are positive weeks of unemployment in 1987
Observations: 18,164

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-1.378	0.007	0.0001
Dummy=1 if Atlantic	0.441	0.005	0.0001
Dummy=1 if Quebec	0.212	0.003	0.0001
Dummy=1 if Prairie	0.057	0.004	0.0001
Dummy=1 if British Columbia	0.284	0.004	0.0001
Dummy=1 if Managerial/Administrative	-0.353	0.006	0.0001
Dummy=1 if Professional	-0.732	0.006	0.0001
Dummy=1 if Sales/Services	-0.069	0.005	0.0001
Dummy=1 if Clerical	-0.381	0.005	0.0001
Dummy=1 if Farm	-0.160	0.010	0.0001
Dummy=1 if Aged 16 to 19 Years	0.652	0.005	0.0001
Dummy=1 if Aged 20 to 24 Years	0.462	0.004	0.0001
Dummy=1 if Aged 45 to 54 Years	-0.309	0.005	0.0001
Dummy=1 if Aged 55 to 64 Years	-0.173	0.006	0.0001
Dummy=1 if no Education or Only Elementary	-0.171	0.006	0.0001
Dummy=1 if Some Post Secondary Education	0.125	0.004	0.0001
Dummy=1 if Certificate or Diploma	-0.107	0.004	0.0001
Dummy=1 University Degree	-0.136	0.005	0.0001
Dummy=1 if Single	-0.046	0.004	0.0001
Weeks of Unemployment in 1986	0.079	0.0001	0.0001
Maximum Duration	-0.011	0.0001	0.0001
Benefit Replacement Ratio	0.092	0.005	0.0001
Number of Children in 1986	0.049	0.006	0.0001
Dummy=1 if Children Aged 0-2	-0.030	0.006	0.0001
Dummy=1 if Children Aged 3-5	-0.030	0.005	0.0001
Dummy=1 if Children Aged 6-15	-0.230	0.006	0.0001
Number of Children in 1986, Squared	0.040	0.001	0.0001

Table B.14
Logit Model of the Probability of Having At Least One Week of Unemployment
1987 Males
Observations: 21,743

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-1.838	0.007	0.0001
Dummy=1 if Atlantic	0.560	0.004	0.0001
Dummy=1 if Quebec	0.297	0.003	0.0001
Dummy=1 if Prairie	0.275	0.004	0.0001
Dummy=1 if British Columbia	0.331	0.004	0.0001
Dummy=1 if Managerial/Administrative	-0.728	0.005	0.0001
Dummy=1 if Professional	-0.542	0.005	0.0001
Dummy=1 if Sales/Services	-0.303	0.003	0.0001
Dummy=1 if Clerical	-0.333	0.005	0.0001
Dummy=1 if Farm	-0.164	0.006	0.0001
Dummy=1 if Age Group=1	0.712	0.005	0.0001
Dummy=1 if Age Group=2	0.538	0.004	0.0001
Dummy=1 if Age Group=4	-0.218	0.004	0.0001
Dummy=1 if Age Group=5	-0.162	0.005	0.0001
Dummy=1 if No Education or Only Elementary	0.197	0.004	0.0001
Dummy=1 if Some Post Secondary Education	-0.102	0.004	0.0001
Dummy=1 if Certificate or Diploma	-0.184	0.004	0.0001
Dummy=1 University Degree	-0.285	0.005	0.0001
Dummy=1 if Single	0.276	0.004	0.0001
Weeks of Unemployment in 1986	0.095	0.0001	0.0001
Maximum Duration	-0.010	0.000	0.0001
Benefit Replacement Ratio	0.414	0.004	0.0001
Number of Children in 1986	-0.046	0.005	0.0001
Dummy=1 if Children Aged 0-2	0.036	0.006	0.0001
Dummy=1 if Children Aged 3-5	-0.197	0.005	0.0001
Dummy=1 if Children Aged 6-15	-0.066	0.006	0.0001
Number of Children in 1986, Squared	0.029	0.001	0.0001

Table B.15
Accelerated Failure Time Model of Annual Unemployment Experience
1987 Females
Dependent Variable = 1 if there are positive weeks of unemployment in 1987
Observations: 3,569
Non-Censored Values = 1,421 Right Censored Values = 2,148

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	3.583	0.008	0.0001
Dummy=1 if Managerial/Administrative	-0.138	0.008	0.0001
Dummy=1 if Professional	-0.344	0.007	0.0001
Dummy=1 if Clerical	-0.019	0.006	0.0014
Dummy=1 if Farm	0.529	0.015	0.0001
Dummy=1 if Aged 16 to 19 Years	-0.576	0.006	0.0001
Dummy=1 if Aged 20 to 24 Years	-0.288	0.005	0.0001
Dummy=1 if Aged 45 to 64 Years	-0.053	0.006	0.0001
Dummy=1 if Aged 55 to 64 Years	0.727	0.011	0.0001
Dummy=1 if Sales/Services	-0.043	0.006	0.0001
Dummy=1 if No Education or Only Elementary	0.522	0.009	0.0001
Dummy=1 if Some Post Secondary Education	-0.195	0.005	0.0001
Dummy=1 if Certificate or Diploma	-0.115	0.005	0.0001
Dummy=1 University Degree	-0.207	0.006	0.0001
Dummy=1 if Single	-0.086	0.004	0.0001
Weeks of Unemployment in 1986	0.009	0.0001	0.0001
Benefit Ratio	-0.002	0.006	0.7271
Maximum Duration	0.003	0.000	0.0001
Number of Children in 1986	-0.350	0.007	0.0001
Dummy=1 if Children Aged 0-2	0.851	0.008	0.0001
Dummy=1 if Children Aged 3-5	0.236	0.007	0.0001
Dummy=1 if Children Aged 6-15	0.285	0.007	0.0001
Number of Children in 1986, Squared	0.074	0.002	0.0001
Scale	1.022	0.001	—

Table B.16
Accelerated Failure Time Model of Annual Unemployment Experience
1987 Males
Observations: 4,392 Non-Censored: 1,722 Right-Censored: 2,670

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	3.101	0.003	0.0001
Dummy=1 if Atlantic	0.547	0.004	0.0001
Dummy=1 if Quebec	0.457	0.003	0.0001
Dummy=1 if Prairie	0.309	0.003	0.0001
Dummy=1 if British Columbia	0.265	0.004	0.0001
Dummy=1 if Managerial/Administrative	0.119	0.005	0.0001
Dummy=1 if Professional	0.166	0.004	0.0001
Dummy=1 if Clerical	-0.109	0.004	0.0001
Dummy=1 if Farm	0.097	0.005	0.0001
Dummy=1 if Sales/Services	-0.005	0.003	0.0001
Dummy=1 if Age Group=1	-0.389	0.004	0.0001
Dummy=1 if Age Group=2	-0.287	0.003	0.0001
Dummy=1 if Age Group=4	-0.025	0.004	0.0001
Dummy=1 if Age Group=5	0.162	0.005	0.0001
Dummy=1 if no Education or Only Elementary	0.028	0.004	0.0001
Dummy=1 if Some Post Secondary Education	-0.155	0.003	0.0001
Dummy=1 if Certificate or Diploma	-0.082	0.004	0.0001
Dummy=1 University Degree	-0.236	0.005	0.0001
Dummy=1 if Single	-0.056	0.003	0.0001
Weeks of Unemployment in 1986	0.011	0.000	0.0001
Benefit Ratio	-0.577	0.006	0.0001
Maximum Duration	0.004	0.001	0.0001
Number of Children in 1986			
Dummy=1 if Children Aged 0-2			
Dummy=1 if Children Aged 3-5			
Dummy=1 if Children Aged 6-15			
Number of Children in 1986, Squared			
Scale	0.965	0.001	0.0001

Table B.17
Logit Model of the Probability of Underemployment, 1987 Females
Dependent Variable = 1 if there are positive weeks of unemployment in 1987 and = 0 otherwise
Observations: 4,991

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	0.562	0.009	0.0001
Dummy=1 if Managerial/Administrative	-0.464	0.012	0.0001
Dummy=1 if Professional	-1.037	0.009	0.0001
Dummy=1 if Sales/Services	-0.808	0.007	0.0001
Dummy=1 if Clerical	-0.831	0.007	0.0001
Dummy=1 if Farm	-0.520	0.017	0.0001
Dummy=1 if Aged 16 to 19 Years	-0.477	0.008	0.0001
Dummy=1 if Aged 20 to 24 Years	-0.399	0.007	0.0001
Dummy=1 if Aged 45 to 54 Years	0.084	0.009	0.0001
Dummy=1 if Aged 55 to 64 Years	0.081	0.013	0.0001
Dummy=1 if no Education or Only Elementary	-0.165	0.010	0.0001
Dummy=1 if Some Post Secondary Education	0.135	0.007	0.0001
Dummy=1 if Certificate or Diploma	0.165	0.007	0.0001
Dummy=1 University Degree	0.329	0.009	0.0001
Dummy=1 if Single	0.331	0.007	0.0001
Weeks of Unemployment in 1986	0.0004	0.0002	0.0061
Weeks of Unemployment in 1987	0.088	0.0003	0.0001
Dummy=1 If UI	0.474	0.005	0.0001
Wage in 1987	-0.003	0.00002	0.0001
Number of Children in 1986	0.147	0.009	0.0001
Dummy=1 if Children Aged 0-2	0.101	0.009	0.0001
Dummy=1 if Children Aged 3-5	-0.237	0.008	0.0001
Dummy=1 if Children Aged 6-15	-0.084	0.010	0.0001
Number of Children in 1986, Squared	-0.024	0.002	0.0001

Table B.18
Logit Model of the Probability of Underemployment, 1987 Males
Observations: 5,500

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-0.099	0.008	0.0001
Dummy=1 if Atlantic			
Dummy=1 if Quebec			
Dummy=1 if Prairie			
Dummy=1 if British Columbia			
Dummy=1 if Managerial/Administrative	0.090	0.011	0.0001
Dummy=1 if Professional	-0.502	0.009	0.0001
Dummy=1 if Sales/Services	-0.380	0.006	0.0001
Dummy=1 if Clerical	-0.452	0.009	0.0001
Dummy=1 if Farm	-0.453	0.009	0.0001
Dummy=1 if Age Group=1	0.017	0.009	0.0443
Dummy=1 if Age Group=2	-0.127	0.007	0.0001
Dummy=1 if Age Group=4	0.330	0.009	0.0001
Dummy=1 if Age Group=5	0.408	0.011	0.0001
Dummy=1 if no Education or Only Elementary	-0.019	0.008	0.0144
Dummy=1 if Some Post Secondary Education	0.240	0.007	0.0001
Dummy=1 if Certificate or Diploma	0.255	0.008	0.0001
Dummy=1 University Degree	0.052	0.010	0.0001
Dummy=1 if Single	0.123	0.007	0.0001
Dummy=1 if Under-employed in 1986			
Weeks of Unemployment in 1986	0.005	0.0001	0.0001
Weeks of Unemployment in 1987	0.092	0.0002	0.0001
Dummy=1 If UI	0.212	0.005	0.0001
Wage in 1987	-0.001	9.37E-6	0.0001
Number of Children in 1986	-0.068	0.010	0.0001
Dummy=1 if Children Aged 0-2	0.394	0.011	0.0001
Dummy=1 if Children Aged 3-5	0.111	0.011	0.0001
Dummy=1 if Children Aged 6-15	-0.029	0.011	0.0076
Number of Children in 1986, Squared	0.028	0.002	0.0001

Appendix C: Tax Function

Table C.1
Tobit Model of Annual Taxes Paid
Atlantic Region
1987 Females
Observations: 4,979
Non-Censored Values = 2,916 Left Censored Values = 2,063

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-1,868.130	17.118	0.0001
Dummy=1 if Single	-292.850	10.506	0.0001
UI Benefits	0.076	0.006	0.0001
UI Benefits Squared	-9.49E-6	8.17E-7	0.0001
Total Positive Income	0.254	0.002	0.0001
Total Positive Income Squared	6.11E-7	3.85E-8	0.0001
Positive Investment Income	-0.146	0.005	0.0001
Positive Investment Income Squared	2.36E-6	2.29E-7	0.0001
Dependent Children	-210.943	5.068	0.0001
Scale	870.883	2.089	—

Table C.2
Tobit Model of Annual Taxes Paid
Quebec
1987 Females
Observations: 3,407
Non-Censored Values = 2,195 Left Censored Values = 1,212

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-2,068.620	9.505	0.0001
Dummy=1 if Single	-442.007	6.242	0.0001
UI Benefits	0.040	0.004	0.0001
UI Benefits Squared	-1.52E-6	5.93E-7	0.0103
Total Positive Income	0.265	0.001	0.0001
Total Positive Income Squared	1.39E-6	1.15E-8	0.0001
Positive Investment Income	-0.065	0.002	0.0001
Positive Investment Income Squared	-2.36E-6	8.24E-8	0.0001
Dependent Children	-295.459	3.198	0.0001
Scale	1,055.462	1.013	—

Table C.3
Tobit Model of Annual Taxes Paid
Ontario
1987 Females
Observations: 4,801
Non-Censored Values = 2,861 Left Censored Values = 1,940

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-1,925.136	6.701	0.0001
Dummy=1 if Single	-419.815	5.094	0.0001
UI Benefits	0.042	0.004	0.0001
UI Benefits Squared	-3.14E-6	6.27E-7	0.0001
Total Positive Income	0.243	0.0004	0.0001
Total Positive Income Squared	9.97E-7	5.34E-9	0.0001
Positive Investment Income	-0.175	0.002	0.0001
Positive Investment Income Squared	8.65E-7	9.50E-8	0.0001
Dependent Children	-199.493	2.440	0.0001
Scale	1,021.168	1.014	—

Table C.4
Tobit Model of Annual Taxes Paid
Prairie Region
1987 Females
Observations: 7,244
Non-Censored Values = 4,272 Left Censored Values = 2,972

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-2,069.394	11.453	0.0001
Dummy=1 if Single	-363.038	7.458	0.0001
UI Benefits	0.019	0.007	0.0046
UI Benefits Squared	-1.38E-6	9.35E-7	0.1409
Total Positive Income	0.247	0.001	0.0001
Total Positive Income Squared	7.91E-7	1.57E-8	0.0001
Positive Investment Income	-0.144	0.002	0.0001
Positive Investment Income Squared	3.40E-6	7.20E-8	0.0001
Dependent Children	-203.907	3.244	0.0001
Scale	968.706	1.207	—

Table C.5
Tobit Model of Annual Taxes Paid
British Columbia
1987 Females
Observations: 2,286
Non-Censored Values = 1,393 Left Censored Values = 893

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-1,897.389	15.147	0.0001
Dummy=1 if Single	-272.292	10.026	0.0001
UI Benefits	0.010	0.007	0.1219
UI Benefits Squared	2.52E-6	8.40E-7	0.0027
Total Positive Income	0.229	0.001	0.0001
Total Positive Income Squared	8.317E-7	2.61E-8	0.0001
Positive Investment Income	-0.024	0.003	0.0001
Positive Investment Income Squared	-4.84E-6	1.10E-7	0.0001
Dependent Children	-184.540	5.172	0.0001
Scale	1,025.845	3.485	—

Table C.6
Tobit Model of Annual Taxes Paid
Atlantic Region
1987 Males
Observations: 6,558
Non-Censored Values = 5,030 Left Censored Values = 1,528

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-2,570.649	25.228	0.0001
Dummy=1 if Single	286.463	18.751	0.0001
UI Benefits	0.043	0.008	0.0001
UI Benefits Squared	-2.21E-6	9.73E-7	0.0232
Total Positive Income	0.252	0.001	0.0001
Total Positive Income Squared	9.63E-7	1.82E-8	0.0001
Positive Investment Income	-0.149	0.004	0.0001
Positive Investment Income Squared	-6.48E-7	8.70E-8	0.0001
Dependent Children	-260.786	6.973	0.0001
Scale	1,597.734	3.857	—

Table C.7
Tobit Model of Annual Taxes Paid
Quebec
1987 Males
Observations: 4,492
Non-Censored Values = 3,477 Left Censored Values = 1,015

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-3,655.047	18.775	0.0001
Dummy=1 if Single	-302.613	13.822	0.0001
UI Benefits	0.128	0.006	0.0001
UI Benefits Squared	-8.68E-6	6.45E-7	0.0001
Total Positive Income	0.326	0.001	0.0001
Total Positive Income Squared	6.36E-7	1.13E-8	0.0001
Positive Investment Income	-0.127	0.004	0.0001
Positive Investment Income Squared	-2.54E-7	1.35E-7	0.0597
Dependent Children	-371.957	5.634	0.0001
Scale	2,172.286	2.618	—

Table C.8
Tobit Model of Annual Taxes Paid
Ontario
1987 Males
Observations: 5,699
Non-Censored Values = 4,375 Left Censored Values = 1,324

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-3,089.844	12.443	0.0001
Dummy=1 if Single	205.158	10.083	0.0001
UI Benefits	0.069	0.006	0.0001
UI Benefits Squared	-4.57E-6	6.50E-7	0.0001
Total Positive Income	0.274	0.001	0.0001
Total Positive Income Squared	7.55E-7	4.19E-9	0.0001
Positive Investment Income	-0.106	0.002	0.0001
Positive Investment Income Squared	-1.72E-6	2.83E-8	0.0001
Dependent Children	-258.797	3.716	0.0001
Scale	1,960.085	1.550	—

Table C.9
Tobit Model of Annual Taxes Paid
Prairie Region
1987 Males
Observations: 8,982
Non-Censored Values = 6,832 Left Censored Values = 2,150

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-3,403.927	17.542	0.0001
Dummy=1 if Single	159.284	13.929	0.0001
UI Benefits	0.176	0.010	0.0001
UI Benefits Squared	-0.00001	1.23E-6	0.0001
Total Positive Income	0.292	0.001	0.0001
Total Positive Income Squared	3.05E-7	6.34E-9	0.0001
Positive Investment Income	-0.085	0.003	0.0001
Positive Investment Income Squared	1.09E-6	5.53E-8	0.0001
Dependent Children	-269.354	4.916	0.0001
Scale	2,079.877	2.673	—

Table C.10
Tobit Model of Annual Taxes Paid
British Columbia
1987 Males
Observations: 2,922
Non-Censored Values = 2,248 Left Censored Values = 674

Variable Name	Parameter Estimate	Standard Error	Pr > Chi-Square
Intercept	-2,852.760	22.008	0.0001
Dummy=1 if Single	369.466	16.731	0.0001
UI Benefits	0.101	0.006	0.0001
UI Benefits Squared	-5.96E-6	6.41E-7	0.0001
Total Positive Income	0.243	0.001	0.0001
Total Positive Income Squared	1.13E-6	1.34E-8	0.0001
Positive Investment Income	-0.142	0.003	0.0001
Positive Investment Income Squared	-1.31E-6	6.24E-8	0.0001
Dependent Children	-256.888	6.940	0.0001
Scale	1,764.595	2.840	—

Appendix D: Wage Equations

Table D.1
Males & Females, 16 to 64 Years

Variable Name	Probit on Positive Wages in 1987		OLS on Log of Wages in 1987 Using IMR From Probit	
	Males	Females	Males	Females
Intercept	1.083 0.265E-1	0.900 0.255E-1	5.412 0.372E-1	4.738 0.394E-1
Dummy=1 if Atlantic	-0.167 0.261E1	-0.210 0.238E-1	-0.120 0.128E-1	-0.931E-1 0.163E-1
Dummy=1 if Quebec	-0.200 0.289E-1	-0.322 0.266E-1	-0.455E-1 0.142E-1	-0.306E-1 0.186E-1
Dummy=1 if Prairie	-0.320 0.249E-1	-0.791E-1 0.232E-1	-0.706E-1 0.122E-1	-0.111 0.153E-1
Dummy=1 if British Columbia	-0.175 0.337E-1	-0.209 0.305E-1	0.370E-1 0.166E-1	-0.633E-1 0.211E-1
Dummy=1 if 16 to 19 years	-0.370E-1 0.312E-1	0.494E-1 0.298E-1	-0.991 0.161E-1	-0.729 0.194E-1
Dummy=1 if 20 to 24 years	0.388 0.339E-1	0.236 0.286E-1	-0.357 0.138E-1	-0.234 0.166E-1
Dummy=1 if 45 to 54 years	-0.310 0.248E-1	-0.578 0.246E-1	0.137 0.133E-1	-0.109 0.179E-1
Dummy=1 if 55 to 64 years	-0.928 0.267E-1	-1.287 0.277E-1	0.271E-1 0.173E-1	-0.235 0.248E-1
Dummy=1 if no Education or Only Elementary Education	-0.265 0.234E-1	-0.438 0.244E-1	-0.131 0.140E-1	-0.195 0.223E-1
Dummy=1 if Some Post Secondary Education	0.612E-1 0.308E-1	0.240 0.277E-1	0.948E-2 0.145E-1	0.107 0.175E-1
Dummy=1 if Certificate or Diploma	0.181 0.292E-1	0.420 0.247E-1	0.106 0.135E-1	0.275 0.155E-1
Dummy=1 if University Degree	0.137 0.284E-1	0.506 0.306E-1	0.317 0.138E-1	0.521 0.181E-1
Log of weeks in 1987			0.170 0.912E-2	0.230 0.958E-2
IMR From Probit			0.131 0.979E-2	0.111 0.102E-1
Number of Children in 1986	0.659E-1 0.323E-1	-0.166 0.298E-1	0.611E-1 0.167E-1	-0.784E-1 0.232E-1
Dummy=1 if Children aged 0 to 2	0.704E-1 0.364E-1	-0.367 0.311E-1	0.225E-1 0.177E-1	-0.295E-1 0.235E-1
Dummy=1 if Children aged 3 to 5	-0.352E-1 0.330E-1	-0.158 0.284E-1	0.314E-1 0.163E-1	-0.784E-1 0.211E-1
Dummy=1 if Children aged 6 to 15	-0.408E-1 0.374E-1	0.569E-2 0.330E-1	0.306E-1 0.187E-1	-0.711E-1 0.245E-1
Number of Children in 1986 Squared	-0.289E-1 0.595E-2	0.271E-2 0.584E-2	-0.145E-1 0.325E-2	0.352E-2 0.494E-2
Adj. R^2	0.147	0.23803	0.3064	0.2161
Sample Size	29337	30541	22176	19290

Appendix E: Inequality Statistics

Table E.1
Inequality Statistics — Females
Present Value Of Income Before Tax
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	40,953	1.318	0.628	0.409	0.637	0.000
Max. Benefit = 40 wks	41,021	1.315	0.627	0.408	0.635	0.001
UI Entrance wks = +5	40,508	1.321	0.628	0.410	0.638	0.000
Increase Insurable Ceiling 150% Of Average Weekly Earnings	40,920	1.316	0.627	0.407	0.636	0.000
Benefit/Wage=0.5	40,944	1.318	0.628	0.408	0.637	0.001
Max. Benefit = 40 wks UI Entrance wks = +5	40,522	1.318	0.628	0.409	0.636	0.000
Combination of All Policy Changes	40,494	1.321	0.628	0.408	0.636	0.001

Table E.2
Inequality Statistics — Males
Present Value Of Income Before Tax
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	118,891	0.842	0.448	0.272	0.452	0.012
Max. Benefit = 40 wks	119,140	0.840	0.447	0.271	0.451	0.013
UI Entrance wks = +5	115,459	0.865	0.459	0.277	0.460	0.009
Increase Insurable Ceiling 150% Of Average Weekly Earnings	119,363	0.835	0.445	0.270	0.450	0.125
Benefit/Wage=0.5	118,763	0.848	0.451	0.273	0.453	0.013
Max. Benefit = 40 wks UI Entrance wks = +5	115,616	0.864	0.459	0.277	0.459	0.010
Combination of All Policy Changes	115,700	0.861	0.458	0.275	0.456	0.011

Table E.3
Inequality Statistics — Households
Present Value Of Income Before Tax
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	131,870	0.890	0.474	0.287	0.476	0.012
Max. Benefit = 40 wks	132,131	0.888	0.473	0.286	0.475	0.013
UI Entrance wks = +5	128,707	0.905	0.481	0.291	0.481	0.010
Increase Insurable Ceiling 150% Of Average Weekly Earnings	132,222	0.886	0.472	0.286	0.474	0.012
Benefit/Wage=0.5	131,759	0.894	0.476	0.288	0.476	0.012
Max. Benefit = 40 wks UI Entrance wks = +5	128,846	0.904	0.481	0.290	0.480	0.011
Combination of All Policy Changes	128,888	0.903	0.480	0.289	0.478	0.012

Table E.4
Inequality Statistics — Females
Present Value Of Income Before Tax
Sample Of Those With Some Unemployment Experience

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	25,587	1.486	0.596	0.422	0.621	0.009
Max. Benefit = 40 wks	26,551	1.471	0.591	0.420	0.616	0.011
UI Entrance wks = +5	24,864	1.510	0.598	0.426	0.623	0.010
Increase Insurable Ceiling 150% Of Average Weekly Earnings	25,832	1.490	0.598	0.425	0.624	0.009
Benefit/Wage=0.5	24,929	1.510	0.595	0.427	0.624	0.010
Max. Benefit = 40 wks UI Entrance wks = +5	25,774	1.500	0.599	0.427	0.625	0.010
Combination of All Policy Changes	25,185	1.529	0.600	0.430	0.626	0.010

Table E.5
Inequality Statistics — Males
Present Value Of Income Before Tax
Sample Of Those With Some Unemployment Experience

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	68,469	0.921	0.485	0.298	0.487	0.012
Max. Benefit = 40 wks	70,473	0.904	0.477	0.293	0.481	0.013
UI Entrance wks = +5	63,022	0.961	0.501	0.306	0.502	0.008
Increase Insurable Ceiling 150% Of Average Weekly Earnings	73,680	0.901	0.481	0.291	0.482	0.012
Benefit/Wage=0.5	65,284	0.976	0.503	0.313	0.508	0.012
Max. Benefit = 40 wks UI Entrance wks = +5	65,220	0.943	0.495	0.301	0.495	0.009
Combination of All Policy Changes	66,762	0.955	0.502	0.304	0.501	0.009

Table E.6
Inequality Statistics — Households
Present Value Of Income Before Tax
Sample Of Those With Some Unemployment Experience

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	108,335	0.884	0.467	0.289	0.479	0.018
Max. Benefit = 40 wks	110,352	0.872	0.462	0.286	0.474	0.019
UI Entrance wks = +5	102,662	0.921	0.483	0.300	0.491	0.015
Increase Insurable Ceiling 150% UI Entrance wks = +5	104,368	0.910	0.478	0.296	0.486	0.016
Benefit/Wage = 0.5	106,127	0.903	0.474	0.294	0.485	0.018
Max. Benefit = 40 wks UI Entrance wks = +5	104,368	0.910	0.478	0.296	0.486	0.016
Combination of All Policy Changes	105,703	0.905	0.478	0.293	0.484	0.016

Table E.7
Inequality Statistics — Females
Present Value Of Income After Tax
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	40,827	1.317	0.628	0.408	0.637	0.000
Max. Benefit = 40 wks	40,895	1.314	0.627	0.407	0.635	0.001
UI Entrance wks = +5	40,384	1.320	0.628	0.409	0.638	0.000
Increase Insurable Ceiling 150% Of Average Weekly Earnings	40,795	1.315	0.627	0.407	0.636	0.000
Benefit/Wage=0.5	40,819	1.317	0.628	0.408	0.636	0.001
Max. Benefit = 40 wks UI Entrance wks = +5	40,398	1.317	0.628	0.409	0.636	0.000
Combination of All Policy Changes	40,371	1.320	0.628	0.408	0.636	0.001

Table E.8
Inequality Statistics — Males
Present Value Of Income After Tax
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	118,630	0.840	0.447	0.272	0.452	0.012
Max. Benefit = 40 wks	118,879	0.838	0.446	0.271	0.451	0.013
UI Entrance wks = +5	115,207	0.863	0.459	0.277	0.459	0.009
Increase Insurable Ceiling 150% Of Average Weekly Earnings	119,104	0.833	0.444	0.270	0.449	0.013
Benefit/Wage=0.5	118,501	0.846	0.451	0.272	0.452	0.013
Max. Benefit = 40 wks UI Entrance wks = +5	115,364	0.862	0.458	0.276	0.458	0.010
Combination of All Policy Changes	115,452	0.859	0.457	0.274	0.456	0.011

Table E.9
Inequality Statistics — Households
Present Value Of Income After Tax
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	131,551	0.889	0.473	0.286	0.475	0.012
Max. Benefit = 40 wks	131,811	0.887	0.473	0.286	0.474	0.013
UI Entrance wks = +5	128,396	0.904	0.481	0.290	0.481	0.010
Increase Insurable Ceiling 150% Of Average Weekly Earnings	131,905	0.884	0.471	0.285	0.473	0.012
Benefit/Wage=0.5	131,440	0.893	0.475	0.287	0.476	0.012
Max. Benefit = 40 wks UI Entrance wks = +5	128,536	0.903	0.480	0.290	0.480	0.011
Combination of All Policy Changes	128,581	0.902	0.480	0.289	0.478	0.012

Table E.10
Inequality Statistics — Females
Present Value Of Income After Tax
Sample Of Those With Some Unemployment Experience

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	25,484	1.482	0.596	0.422	0.621	0.009
Max. Benefit = 40 wks	26,445	1.466	0.592	0.419	0.616	0.010
UI Entrance wks = +5	24,763	1.506	0.599	0.427	0.624	0.009
Increase Insurable Ceiling 150% Of Average Weekly Earnings	25,728	1.486	0.598	0.425	0.624	0.009
Benefit/Wage=0.5	24,829	1.505	0.596	0.427	0.623	0.010
Max. Benefit = 40 wks UI Entrance wks = +5	25,669	1.496	0.600	0.426	0.625	0.010
Combination of All Policy Changes	25,083	1.525	0.600	0.431	0.627	0.010

Table E.11
Inequality Statistics — Males
Present Value Of Income After Tax
Sample Of Those With Some Unemployment Experience

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	68,348	0.919	0.484	0.297	0.487	0.012
Max. Benefit = 40 wks	70,347	0.902	0.477	0.293	0.481	0.013
UI Entrance wks = +5	62,913	0.959	0.501	0.305	0.501	0.008
Increase Insurable Ceiling 150% Of Average Weekly Earnings	73,544	0.899	0.481	0.290	0.482	0.012
Benefit/Wage=0.5	65,162	0.974	0.503	0.312	0.508	0.012
Max. Benefit = 40 wks UI Entrance wks = +5	65,105	0.941	0.494	0.300	0.494	0.009
Combination of All Policy Changes	66,643	0.953	0.502	0.303	0.501	0.009

Table E.12
Inequality Statistics — Households
Present Value Of Income After Tax
Sample Of Those With Some Unemployment Experience

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	108,070	0.883	0.467	0.290	0.478	0.018
Max. Benefit = 40 wks	110,082	0.871	0.462	0.286	0.474	0.019
UI Entrance wks = +5	102,409	0.919	0.482	0.298	0.490	0.016
Increase Insurable Ceiling 150% Of Average Weekly Earnings	111,050	0.867	0.461	0.284	0.470	0.018
Benefit/Wage=0.5	105,869	0.902	0.474	0.294	0.484	0.018
Max. Benefit = 40 wks UI Entrance wks = +5	104,112	0.908	0.478	0.296	0.486	0.016
Combination of All Policy Changes	105,446	0.904	0.478	0.293	0.484	0.016

Table E.13
Inequality Statistics — Females
1983 After Tax UI Income Concept
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	5,343	1.428	0.673	0.437	0.679	0.000
Max. Benefit = 40 wks	5,344	1.426	0.673	0.436	0.677	0.000
UI Entrance wks = +5	5,268	1.436	0.675	0.439	0.682	0.000
Increase Insurable Ceiling 150% Of Average Weekly Earnings	5,337	1.425	0.673	0.436	0.678	0.000
Benefit/Wage=0.5	5,334	1.429	0.673	0.437	0.679	0.000
Max. Benefit = 40 wks UI Entrance wks = +5	5,271	1.435	0.675	0.439	0.681	0.000
Combination of All Policy Changes	5,257	1.438	0.676	0.438	0.680	0.0002

Table E.14
Inequality Statistics — Males
1983 After Tax UI Income Concept
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	16,155	0.878	0.469	0.278	0.462	0.002
Max. Benefit = 40 wks	16,170	0.877	0.468	0.277	0.461	0.002
UI Entrance wks = +5	15,632	0.907	0.483	0.284	0.472	0.002
Increase Insurable Ceiling 150% Of Average Weekly Earnings	15,262	0.868	0.464	0.275	0.458	0.002
Benefit/Wage=0.5	16,101	0.888	0.474	0.279	0.464	0.004
Max. Benefit = 40 wks UI Entrance wks = +5	15,643	0.907	0.483	0.284	0.471	0.003
Combination of All Policy Changes	15,638	0.904	0.482	0.281	0.467	0.003

Table E.15
Inequality Statistics — Households
1983 After Tax UI Income Concept
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	17,723	0.929	0.495	0.295	0.488	0.003
Max. Benefit = 40 wks	17,736	0.928	0.495	0.295	0.487	0.004
UI Entrance wks = +5	17,235	0.949	0.504	0.300	0.495	0.003
Increase Insurable Ceiling 150% Of Average Weekly Earnings	17,804	0.923	0.492	0.294	0.485	0.003
Benefit/Wage=0.5	17,672	0.937	0.499	0.296	0.489	0.004
Max. Benefit = 40 wks UI Entrance wks = +5	17,245	0.949	0.504	0.299	0.494	0.003
Combination of All Policy Changes	17,230	0.948	0.504	0.297	0.491	0.004

Table E.16
Inequality Statistics — Males
Present Value Of Income Before Tax
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	118,891	0.842	0.448	0.272	0.452	0.012
1971 UI Policy	121,576	0.826	0.439	0.268	0.447	0.015
1990 UI Policy	115,616	0.861	0.456	0.274	0.455	0.014
1994 UI Policy	115,214	0.865	0.458	0.276	0.457	0.013

Table E.17
Inequality Statistics — Households
Present Value Of Income Before Tax
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	131,870	0.890	0.474	0.287	0.476	0.012
1971 UI Policy	134,618	0.878	0.468	0.284	0.471	0.013
1990 UI Policy	128,313	0.907	0.482	0.290	0.479	0.013
1994 UI Policy	127,066	0.911	0.484	0.291	0.481	0.013

Table E.18
Inequality Statistics — Males
Present Value Of Income After UI Tax Concept
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	118,630	0.840	0.447	0.272	0.452	0.012
1971 UI Policy	121,303	0.824	0.439	0.268	0.447	0.015
1990 UI Policy	115,370	0.859	0.456	0.274	0.454	0.014
1994 UI Policy	114,970	0.863	0.458	0.275	0.457	0.013

Table E.19
Inequality Statistics — Households
Present Value Of Income After UI Tax Concept
Full Sample

Policy Experiment	Mean	Coefficient of Variation	Gini Coefficient	Share of the top 10%	Share of the top 20%	Share of the bottom 20%
Policy 1986	131,551	0.889	0.473	0.286	0.475	0.012
1971 UI Policy	134,286	0.877	0.467	0.284	0.471	0.013
1990 UI Policy	128,007	0.906	0.482	0.290	0.479	0.013
1994 UI Policy	126,768	0.910	0.483	0.290	0.480	0.013

Appendix F: Income Distribution

Table F.1
Males 1971 System Relative to 1986

	Loss			Nil	Gain		
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
	More than 50% Loss	26% to 50% Loss	6% to 25% Loss	No Change ± 5%	6% to 25% Gain	26% to 50% Gain	More Than 50% Gain
QUINTILE							
1	7.77	2.09	3.13	30.36	12.63	15.34	28.72
2	1.74	1.75	3.17	63.09	16.17	7.20	6.91
3	1.30	1.02	1.43	83.48	9.34	1.97	1.47
4	0.47	0.68	0.63	92.98	4.16	0.75	0.35
5	0.71	0.52	0.42	95.54	2.41	0.38	0.03

Table F.2
Males 1990 System Relative to 1986

	Loss			Nil	Gain		
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
	More than 50% Loss	26% to 50% Loss	6% to 25% Loss	No Change ± 5%	6% to 25% Gain	26% to 50% Gain	More Than 50% Gain
QUINTILE							
1	26.79	17.98	9.51	31.19	3.13	2.88	8.53
2	7.22	7.80	18.35	55.43	4.18	3.05	3.99
3	3.10	3.71	14.22	75.75	1.45	0.97	0.83
4	1.68	1.73	9.38	86.15	0.48	0.44	0.16
5	1.19	1.42	6.93	89.56	0.67	0.22	0.03

Table F.3
Males 1990 System Relative to 1971

	Loss			Nil	Gain		
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
	More than 50% Loss	26% to 50% Loss	6% to 25% Loss	No Change ± 5%	6% to 25% Gain	26% to 50% Gain	More Than 50% Gain
QUINTILE							
1	39.06	10.74	6.74	33.41	1.49	1.35	7.22
2	11.69	10.04	21.81	50.25	2.66	1.02	2.55
3	3.94	5.34	20.31	68.81	0.78	0.46	0.38
4	2.28	2.15	15.96	79.26	0.21	0.05	0.11
5	1.14	1.07	9.82	87.70	0.28	0.00	0.00

Table F.4
Males 1994 System Relative to 1971

	Loss			Nil	Gain		
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
	More than 50% Loss	26% to 50% Loss	6% to 25% Loss	No Change ± 5%	6% to 25% Gain	26% to 50% Gain	More Than 50% Gain
QUINTILE							
1	40.15	11.45	6.54	31.99	1.50	1.19	7.20
2	12.66	12.43	23.74	45.81	1.77	0.98	2.64
3	4.33	6.59	24.59	62.96	0.70	0.44	0.41
4	2.23	1.96	19.18	76.32	0.16	0.05	0.11
5	1.22	1.16	10.94	86.37	0.32	0.00	0.00

Appendix G: Means

Table G.1
Means — Females

Variable Name	Full Sample		Those With Positive Wages in 1986 & Positive Weeks of Unemployment		Those With Positive Wages in 1986 & (WKOU87 + WKE87) > 0		Those Not In The Labour Force In 1987 ≤ 53 Weeks	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Dummy = 1 if Atlantic	0.085	0.280	0.117	0.322	0.079	0.269	0.081	0.273
Dummy = 1 if Quebec	0.269	0.444	0.247	0.431	0.242	0.428	0.245	0.430
Dummy = 1 if Prairie	0.164	0.370	0.163	0.369	0.175	0.380	0.175	0.380
Dummy = 1 if B. C.	0.112	0.315	0.127	0.333	0.108	0.311	0.112	0.315
Dummy = 1 if managerial/administrative	0.064	0.245	0.071	0.257	0.094	0.291	0.085	0.279
Dummy = 1 if professional	0.147	0.354	0.123	0.329	0.211	0.408	0.193	0.395
Dummy = 1 if clerical	0.228	0.420	0.302	0.459	0.322	0.467	0.296	0.456
Dummy = 1 if sales/service	0.225	0.417	0.353	0.478	0.265	0.441	0.287	0.452
Dummy = 1 if farm	0.019	0.136	0.023	0.150	0.015	0.120	0.024	0.154
Dummy = 1 if no education or only elementary education	0.128	0.334	0.066	0.249	0.068	0.252	0.078	0.268
Dummy = 1 if some post-secondary education	0.108	0.311	0.153	0.360	0.128	0.334	0.123	0.328
Dummy = 1 if certificate or diploma	0.145	0.352	0.142	0.349	0.179	0.383	0.169	0.374
Dummy = 1 if university degree	0.109	0.311	0.088	0.283	0.137	0.344	0.130	0.337
Dummy = 1 if Aged 16-19	0.086	0.280	0.154	0.361	0.092	0.289	0.100	0.300
Dummy = 1 if Aged 20-24	0.124	0.330	0.225	0.418	0.163	0.369	0.149	0.356
Dummy = 1 if Aged 45-54	0.152	0.359	0.089	0.284	0.137	0.344	0.140	0.347
Dummy = 1 if Aged 55-64	0.144	0.351	0.050	0.218	0.067	0.249	0.073	0.260
Dummy = 1 if Single	0.226	0.418	0.336	0.472	0.274	0.446	0.267	0.442
Weeks of unemployment in 1986	3.041	9.256	9.872	13.582	3.009	8.359	3.499	9.685
UI benefit/wage ratio	0.036	0.143	0.337	0.298	0.058	0.177	0.049	0.164
UI benefit/ wage ratio 1	0.252	0.296	0.372	0.291	0.392	0.286	0.329	0.299
UI benefit/wage ratio 2	0.255	0.297	0.395	0.284	0.396	0.284	0.333	0.298
Maximum potential duration of UI benefits	32.474	23.170	41.395	16.322	46.271	11.356	42.477	16.756
Number Of Observations	30,317		3,569		18,164		22,252	
Samples Used In Tables	1A 1B 1C 5		4		3		2A 2B 2C	

Table G.2
Means — Males

Variable Name	Full Sample		Those With Positive Wages in 1986 & Positive Weeks of Unemployment		Those With Positive Wages in 1986 & (WKOU87 + WKE87) > 0		Those Not In The Labour Force In 1987 ≤ 53 Weeks	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Dummy = 1 if Atlantic	0.085	0.278	0.132	0.338	0.081	0.273	0.082	0.274
Dummy = 1 if Quebec	0.266	0.442	0.281	0.449	0.259	0.438	0.262	0.440
Dummy = 1 if Prairie	0.169	0.375	0.172	0.377	0.164	0.370	0.172	0.377
Dummy = 1 if B. C.	0.114	0.317	0.117	0.322	0.109	0.312	0.114	0.318
Dummy = 1 if managerial/administrative	0.120	0.325	0.052	0.222	0.130	0.337	0.129	0.336
Dummy = 1 if professional	0.123	0.329	0.073	0.261	0.135	0.342	0.132	0.339
Dummy = 1 if clerical	0.056	0.229	0.062	0.241	0.068	0.252	0.059	0.235
Dummy = 1 if sales/service	0.185	0.389	0.202	0.402	0.193	0.394	0.197	0.397
Dummy = 1 if farm	0.054	0.226	0.059	0.235	0.035	0.183	0.057	0.232
Dummy = 1 if no education or only elementary education	0.135	0.342	0.131	0.337	0.105	0.306	0.117	0.321
Dummy = 1 if some post-secondary education	0.107	0.309	0.118	0.322	0.113	0.317	0.109	0.311
Dummy = 1 if certificate or diploma	0.127	0.333	0.109	0.312	0.136	0.343	0.132	0.338
Dummy = 1 if university degree	0.144	0.351	0.066	0.248	0.151	0.358	0.151	0.358
Dummy = 1 if Aged 16-19	0.092	0.289	0.163	0.370	0.088	0.283	0.088	0.283
Dummy = 1 if Aged 20-24	0.126	0.332	0.247	0.431	0.146	0.353	0.131	0.338
Dummy = 1 if Aged 45-54	0.156	0.363	0.093	0.291	0.149	0.356	0.161	0.367
Dummy = 1 if Aged 55-64	0.137	0.343	0.066	0.248	0.090	0.287	0.103	0.303
Dummy = 1 if Single	0.287	0.452	0.457	0.498	0.294	0.456	0.283	0.451
Weeks of unemployment in 1986	3.599	10.078	11.864	14.141	3.210	8.675	3.620	10.024
UI benefit/wage ratio	0.040	0.150	0.298	0.300	0.052	0.169	0.043	0.156
UI benefit/wage ratio 1	0.221	0.290	0.337	0.298	0.280	0.299	0.235	0.293
UI benefit/wage ratio 2	0.224	0.290	0.356	0.295	0.283	0.300	0.238	0.293
Maximum potential duration of UI benefits	42.945	16.533	42.097	15.550	47.223	9.831	45.807	12.738
Number of Observations	29,143		4,571		21,743		26,772	
Samples Used In Tables	1A 1B 1C 5		4		3		2A 2B 2C	

Appendix H: Unemployment Rates

Table H.1
Unemployment Rates Used in Regressions

Region	Females	Males
Atlantic	14.96	14.80
Quebec	11.5	10.6
Ontario	7.4	6.6
Prairie	8.46	9.17
British Columbia	12.8	12.2

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List of UI Evaluation Technical Reports

Unemployment Insurance Evaluation

In the spring of 1993, a major evaluation of UI Regular Benefits was initiated. This evaluation consists of a number of separate studies, conducted by academics, departmental evaluators, and outside agencies such as Statistics Canada. Many of these studies are now completed and the Department is in the process of preparing a comprehensive evaluation report.

Listed below are the full technical reports. Briefs of the full reports are also available separately. Copies can be obtained from:

Human Resources Development Canada
Enquiries Centre
140 Promenade du Portage
Phase IV, Level 0
Hull, Quebec
K1A 0J9 Fax: (819) 953-7260

UI Impacts on Employer Behaviour

- **Unemployment Insurance, Temporary Layoffs and Recall Expectations**
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