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What do we know about the relationship between regionalized aspects of the unemployment insurance system and internal migration in Canada?

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What do we Know about the Relationship
between Regionalized Aspects of the
Unemployment Insurance System and
Internal Migration in Canada?

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Abstract

The purpose of this paper is to critically review the past four decades of empirical research on the relationship between internal migration and regional variation in the generosity of Canada's unemployment insurance system. It has long been argued that because the Canadian insurance system is more generous towards people who live in relatively disadvantaged regions, it retards the out-migration that is part of the market process, thereby slowing economic development and contributing to the persistence of regional inequality in earned incomes. The survey shows, however, that there is no evidence in the empirical literature that regional variation in the generosity of the insurance system has altered internal migration patterns in Canada in a substantial manner.

JEL-Code: R230, J610, J680, H770.

Keywords: regional variation in unemployment insurance generosity, internal migration, interprovincial migration, earned income, comprehensive income differentials, index of insurance generosity, labour market attachment, conditional logit model.

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1. Introduction

Over the past four decades, empirical researchers have repeatedly tried to find evidence that regionalized aspects of public policy in Canada blunt the tendency for people to move from economically disadvantaged to relatively more advantaged places. The seminal academic impetus for these endeavours was Thomas Courchene's (1970) study, which suggested that public support of various kinds for more disadvantaged regions retards economic development and regional convergence by reducing the migration of labour out of the less prosperous provinces.

The regionalized nature of the generosity of the unemployment insurance system is one of the policies that is often pointed to in this respect, and it is easy to see why.¹ Consider, for example, the stylized facts presented in Table 1. Panel A of the table, for 1978-1996, shows how the generosity of the Unemployment Insurance (UI) program, as it was then called, varied regionally, as measured by minimum weeks required to qualify for insurance payments (MIN) and weeks of benefits to which a person with MIN weeks of employment would be entitled (MINWKS).² MIN tends to vary directly and MINWKS inversely (though not perfectly so in either case) with average weekly wages.

¹ This is so despite the regional economic convergence that has occurred since 1945. On the nature of regional convergence in Canada, see for example Coulombe and Tremblay (2001).

² A regional dimension was added to the conditions for qualifying for insurance benefits in 1978.

**Table 1: Some Stylized Facts Concerning Earnings
and Unemployment Insurance in the Canadian Federation**

Panel A: 1978-1996			
Province	Average Weekly Earnings (AWE) (Current dollars)	MIN (weeks)	MINWKS (weeks)
NFLD	418	10	39
PEI	363	10	38
NS	391	11	35
NB	397	11	36
QUE	429	11	34
ONT	453	13	26
MAN	401	14	25
SASK	396	15	22
ALTA	446	14	25
BC	458	13	31
Average	415	12.2	31.1
CV	0.07	0.15	0.20
CORR with AWE		0.36	-0.35

Panel B: 1997-2008				
Province	Average Weekly Earnings (AWE) (Current dollars)	MINH (hours)	MINH (weeks)	MINWKS (weeks)
NFLD	640	420	11	32
PEI	570	426	12	29
NS	613	475	13	24
NB	620	461	12	24
QUE	659	496	13	23
ONT	735	610	16	18
MAN	631	621	17	17
SASK	642	650	18	16
ALTA	733	624	17	17
BC	695	560	15	20
Average	654	534	14.4	21.8
CV	0.08	0.17	0.17	0.25
CORR with AWE			0.53	-0.58

Notes: Average weekly earnings data are rounded to the nearest integer. MIN is minimum weeks required to qualify for benefits under Unemployment Insurance, MINWKS is weeks of insurance benefits for a person with MIN or MINH weeks of employment, MINH is minimum hours required to qualify for benefits under Employment Insurance (converted to its equivalent in weeks assuming a work week of 37 hours in the fourth column of the table), CV is the coefficient of variation, and CORR is the correlation coefficient of correlation.

In 1996 some important adjustments were made to the unemployment insurance system, and its official name was changed to Employment Insurance (EI). As indicated in panel B of table 1, since 1996 qualification for insurance benefits depends upon hours of work instead of weeks of work, a more stringent requirement for many part-time workers than the previous one. However, the table also shows that the pattern of regional variation observed in the post-1996 system remains similar to that of the earlier period, with qualifying requirements tending to be less stringent and weeks of benefits longer in the higher unemployment provinces. And so the same concern that regional variation in program generosity induces inefficiencies in the allocation of labour across the country applies to the reformed insurance system.

The purpose of this paper is to review and critically assess empirical research on the relationship between internal migration and the regional variation that has long characterized the generosity of Canada's unemployment insurance system. Such an empirical relationship is a prerequisite for any claim that the insurance system is responsible for misallocation of labour resources across the country. The extent to which the insurance system 'distorts' the regional allocation of labour is identified by the Mowat Centre's Employment Insurance Task Force (Mowat 2010, 5) as a key issue, along with associated questions about interregional equity in benefit generosity (p. 7).³

The paper proceeds as follows. In the second section, we discuss from a theoretical perspective why we should expect regional variation in insurance generosity to alter interregional migration decisions and to reduce national economic wellbeing. In section three

³ The efficiency issue and the issue of interregional equity in benefit generosity are linked because decisions about equity cannot be properly decided without taking into account their possible consequences for the allocation of resources. Here the possibility arises that reducing the degree of variation in benefit generosity may at the same time enhance efficiency from a national perspective while also enhancing equity in access to the system and in benefits received.

we introduce additional details concerning the regionalized nature of the insurance system in Canada. Section four discusses the way in which empirical researchers have tried to study the consequences for migration of the regional variation in program generosity that we document, and summarizes the key empirical findings of the Canadian literature. Then, in section five, we present our assessment of the “bottom line” of this work.

To anticipate our conclusion, we can say that on balance there is no evidence that regional variation in the unemployment insurance system has altered internal migration patterns in Canada in a substantial manner. Simulations based on empirical estimates suggest that even the complete elimination of the legislated regional variation in the system would not be a large enough shock to have an important effect on regional labour markets. This conclusion implies that if a change in the degree of regional variation in the Employment Insurance system is contemplated, justification for such a change is not to be found in the removal of incentives for people to remain where the generosity of the program is relatively great.

2. Why might regional differences in the generosity of unemployment insurance alter internal migration patterns, and why should we care?

If individual migration decisions depended solely on earned incomes or labour productivities in any region or province, regional differences in the generosity of unemployment insurance benefits would have no direct effect on migration. People would tend to move to places where their earned incomes were greatest, a process that would lead towards equalization of real wages and labour productivities across regions and provinces. Wages will be bid up in places of net in-migration, and down where people are leaving, until

real wages and thus marginal labour productivities are more or less the same (adjusted for migration costs). As a result, 'free' migration, that is, migration that is unaffected by any government policy, would tend to maximize the contribution of labour services to national economic output and, at the same time, to equalize earned incomes across the country.

However, a more complete view of the migration process must allow for economic migration between regions that depends on interregional differences in *expected comprehensive incomes*, where *comprehensive income* in any place includes, in addition to earned income or wages related to productivity, personal taxes paid, transfers received and the imputed value of public services provided by any level of government.⁴ Guesses about the probability of employment in each labour market will also enter into the calculation of expected income.

Differences across regions in comprehensive incomes may arise from an unemployment insurance system that is more generous in some places than in others, or from differences in tax burdens or in valued public services. Such differentials will lead people to migrate for reasons that are not directly related to real wages or labour productivity alone. Migration will then lead to the equalization of expected comprehensive incomes rather than of earned incomes, as wages adjust upwards or downwards with in- and out-migration to compensate for differences across the country in the relationship between individuals and the public sector. As a result, total and average output and income in the country as a whole will be reduced because the tendency of unrestricted migration to equalize real wages and marginal productivities across locations is short-circuited. And since earned incomes are not equalized,

⁴ Comprehensive income will also include, in principle, the expected discounted value of taxes required to service and retire any public debt.

interregional disparity in earned incomes must also be increased.

In his seminal work on policy-induced migration, Courchene (1970, 1978) pointed to the regionalized structure of the unemployment insurance system, which provides greater support to people in more depressed places, and to federal grants like Equalization that go only to poorer provinces, as policies that create incentives to remain in poorer regions even though their earned income would be higher if people moved to a relatively more prosperous province like Ontario.⁵ For this reason, he referred to relationship between the public sector, migration and economic welfare outlined here as the *transfer dependency hypothesis*.

As an empirical statement, this hypothesis may be true. But it is worth pointing out that in principle at least, the same sort of reasoning that underlies Courchene's analysis can be used to argue that higher rather than lower earned incomes in the poorer provinces will result from government policies that favour them. Consider, for example, the case of people from the Atlantic provinces who are attracted to Ontario because of the fiscal benefits they can enjoy there in the form of better schools accompanied by lower taxes, a situation made possible by the larger and richer Ontario population.⁶ The resulting migration adds to the Ontario labour force and depresses the real wage and the marginal productivity of labour in Ontario. Workers will continue to migrate to Ontario even if the real wage is less than in the Atlantic region as long as they receive compensatory benefits in the form of better or cheaper public services. They will continue to migrate until the resulting decline in the real wage in Ontario just compensates for the advantages that in-migrants receive from the relatively richer Ontario

⁵ In fact people have been leaving the poorer provinces like Newfoundland to go to central Canada for decades. But this net outflow, in Courchene's view, is not large enough.

⁶ In the same manner, one could also point to the more generous public sector in Alberta relative to Ontario made possible by oil revenues.

public sector.

In the Atlantic provinces, to continue this example, the outflow of people leads to a reduced supply of labour and thus an increase in the real wage and in the marginal product of labour. This increase in the real wage compensates those who stay for the disadvantages of the less generous fiscal treatment that they receive from Atlantic governments. The overall result of migration in this case is a situation in which the real wage and marginal productivity of labour are higher in the Atlantic region than in Ontario.

In this example, national output and average earned income in the country as a whole could be increased by moving workers out of Ontario and *back* into the Atlantic region. In such a situation, a federal unemployment insurance system that provided more generous benefits to residents of Atlantic Canada could help to offset the effects of the greater net fiscal benefits provided by Ontario's government.

It is important to keep in mind that regardless of which case appears to be the most applicable, the relevance to policy making of both Courchene's original view and the one just outlined hinge on the actual strength of the relationship between the public components of expected comprehensive incomes and internal migration flows. Many factors besides public policy differentials will also be important for prospective migrants, not the least of which are the probabilities attached by migrants to various components of comprehensive income, some of which will vary with their labour market status and the state of regional economies. Migration costs are also important and, if substantial, such costs may make even large differentials in the public components of expected comprehensive incomes irrelevant. In the end, the matter *is* an empirical one.

In order to resolve the empirical issue of concern in this paper, we need to look at the results of empirical studies dealing with the relationship between regional variation in the generosity of unemployment insurance and internal migration. Before we turn to that literature, it is worth considering what the relationship might look like if the provisions that governed access to insurance benefits and benefit periods were in fact uniform across the country. Could there still be any connection left between the insurance system and internal migration to be uncovered by empirical research?

The answer is that even in this special case there may still be a relationship between the unemployment insurance system and internal migration through the implicit subsidization of job search activities. The reporting requirements of the insurance system do not prevent claimants from travelling to look for work in other cities or provinces. This activity is costly and time consuming, and by offering financial support, the insurance system may make recipients more mobile than if they had received no support while unemployed.

The actual effect of insurance on job search will depend on what might be called the moral hazard effect of insurance payments on job search, versus the income effect. By the moral hazard effect we mean the tendency for an individual insurance recipient to look only in their present location while searching for a job, rather than moving somewhere else where job prospects are better. (Exiting the labour force is not permitted under the unemployment insurance rules.) Income is also higher with insurance payments, and on this account job search in other places is more affordable and for this reason may occur to a greater extent.⁷

The strength of the moral hazard effect relative to the income effect will depend on the

⁷ See Krueger and Mueller (2010) for a recent study of the relationship between job search and unemployment insurance in the United States.

value of “location” in individual preferences, just as will the effect on migration of regional differences in comprehensive incomes. Some people with a strong preference for a particular location may stay put no matter what, while others may be footloose. So this issue is also empirical. We should also note that both the job search effects of unemployment insurance on location and the effects of differentials in comprehensive income will be observed at the same time in the same data. To the best of our knowledge, no one has succeeded in separating out these effects from the overall migration response to the unemployment insurance system.

There may also be a general equilibrium effect of unemployment insurance that involves interregional migration even if the generosity of the system is uniform. Unemployment insurance has a vital role to play in maintaining aggregate demand in times of recession. There is no particular reason why such an effect will be felt uniformly across regions or provinces. The general effects of insurance payments on aggregate demand may precipitate internal migration flows by boosting demand in some regions more than in others along with the associated employment prospects. This effect will also be embedded in the observed response of migration to expected comprehensive income differentials. It is fair to say that distinguishing the general equilibrium effects from the other effects we have discussed is difficult and has not to our knowledge been attempted.

3. Regional variation in unemployment insurance benefits in Canada

Before moving on to a detailed review of the empirical research on the relationship of unemployment insurance and migration, it is helpful to look more carefully at the nature and evolution of regional variation in insurance benefits in Canada. When unemployment insurance was first introduced in Canada in 1941, only certain types of employment were covered and there was no explicit regional variation in the single type of benefit available. Today, virtually all Canadian employees may be eligible not only for regular benefits, but also for a variety of special benefits, including fishing benefits, sickness benefits, maternity leave, parental benefits and compassionate care benefits.

Although an unemployment insurance system with no explicit regional differentiation in its legislated provisions may have regional effects due to differences in regional economic structure - fishing benefits are a case in point - from the perspective of interprovincial migration the parameters of the system that explicitly vary across regions likely matter most.⁸ In Canada, such variation exists only in the category of benefits known as “regular” benefits – that is, in benefits associated with a loss of employment. The massive overhaul of the system in 1971 introduced a regional extended benefit that directly linked benefits received to regional unemployment rates. Under this provision, regular benefits could be extended by up to 18 weeks, depending on the relationship between the regional and national rates of unemployment. Sixteen UI regions were defined by the 1971 Act, some of which corresponded to entire provinces.

⁸ Recently Mendelsohn and Medow (2010) have observed that provincial differences in access to EI during the 2008 recession were not as highly correlated with provincial unemployment rates as one might expect. They attribute this phenomenon to regional differences in the composition of the unemployed.

Since regionally extended benefits were first introduced in 1971, they have been modified several times, as table 2 below indicates. (The following table 3 will be discussed shortly.) The requirement that regionally extended benefits be based on a comparison between national and regional unemployment rates was eliminated as early as 1977, to be replaced by a calculation based solely on the level of the regional unemployment rate. In late 1990, the calculation of weeks of benefits was further simplified by replacing the multi-phase benefit system that had been in place since 1971 with a single table that related weeks of benefits to qualifying weeks of employment and regional unemployment rates.

Table 2: Changes to the Regionally Extended Benefit Provision

Date of legislation	Regionally extended benefit provision
UI Act of 1971	Introduction of regional extended benefit as fifth phase of benefits. Individuals eligible to receive regional extended benefits if the regional unemployment rate was at least 4% AND the regional unemployment rate was at least 1 percentage point higher than the national rate. Eligibility for these benefits was determined after all other benefits had been exhausted, and was continually re-evaluated from week to week. The maximum number of weeks of regional extended benefit was 18.
1977 Amendments	Number of benefit phases reduced to three. Two weeks of regional extended benefit for every half percentage point by which the regional unemployment rate exceeds 4.0%, up to a maximum of 32 weeks.
1990 Amendments	Single benefit schedule. Table 2 of Schedule relates weeks of benefits to regional unemployment rate
1994 Amendments	Two weeks of regional extended benefit for every percentage point by which regional unemployment rate exceeds 4%. Weeks of benefits range from 14 to 50 weeks.
EI Act of 1996	Schedule I of Act relates weeks of benefits to hours of insurable employment and regional unemployment, with weeks of regular benefits ranging from 14 to 45 weeks
2009 Amendments	Across-the-board increase in benefits of five weeks between March 1, 2009 and September 12, 2010. Weeks of regular benefits range from 19 to 49 weeks.
September 12, 2010	Return to 1996 schedule of benefits

Table 3: Variable Entrance Requirements, 1977-2010

Regional unemployment rate	Weeks of insurable employment required to qualify for benefits
As of December 4, 1977:¹	
6% and under	14
over 6.0% to 7%	13
over 7.0% to 8.0%	12
over 8.0% to 9.0%	11
over 9.0%	10
As of February 11, 1990:	
0% to 100%	14
As of November 18, 1990:²	
6% and under	20
over 6.0% to 7%	19
over 7.0% to 8.0%	18
over 8.0% to 9.0%	17
over 9.0% to 10%	16
over 10% to 11%	15
over 11% to 12%	14
over 12% to 13%	13
over 13% to 14%	12
over 14% to 15%	11
over 15%	10
July 3, 1994 to December 31, 1996:³	
6% and under	20
over 6.0% to 7%	19
over 7.0% to 8.0%	18
over 8.0% to 9.0%	17
over 9.0% to 10%	16
over 10% to 11%	15
over 11% to 12%	14
over 12% to 13%	13
over 13%	12
As of January 1, 1997:³	
	Hours of insurable employment required to qualify for benefits
6% and under	700
over 6.0% to 7%	665
over 7.0% to 8.0%	630
over 8.0% to 9.0%	595
over 9.0% to 10%	560
over 10% to 11%	525
over 11% to 12%	490
over 12% to 13%	455
over 13%	420

¹ Source: Dingledine (1981), page 92

² Source: Table 1 of Schedule, Unemployment Insurance Act 1971, revised 1990. David S. McFarlane, Gregory S. Pun, and Antonio D. Loparco, *The Annotated Unemployment Insurance Act 1993*. Carswell (Thompson Professional Publishing), 1992.

³ Source: Table 1 of Schedule, Unemployment Insurance Act, 1971, revised 1993-94. Karen L. Rudner, *The 1996 Annotated Unemployment Insurance Act*. Toronto: Carswell (Thompson Professional Publishing), 1995.

⁴ Source: Section 7 of the Employment Insurance Act of 1996, available at: www.servicecanada.gc.ca/eng/ei/legislation/c12_ei_act_part1.shtml (accessed August 13, 2010).

The Employment Insurance Act of 1996 constitutes one of the most important reforms of the Canadian unemployment insurance system since 1971, but it did not greatly change the nature of regional variation in benefits. Under EI there remains a single table of benefits that relates insurable employment, now measured in hours, and regional unemployment rates to weeks of benefits. According to this table, benefits range from 14 to 45 weeks. With the exception of the brief period from March 1, 2009 to September 12, 2010, this table has remained in effect since the passing of the 1996 Act.⁹

Entrance requirements as well as benefits once qualified also vary across the country. The “variable entrance requirement,” or VER, was first introduced in 1977. The VER related weeks of insurable employment required to qualify for benefits to the regional unemployment rate. As shown in table 3 above, under the initial incarnation of the VER the minimum weeks of work required to qualify for benefits could differ across unemployment insurance regions by up to four weeks, with fewer qualifying weeks required in high unemployment regions. In 1990 the maximum possible discrepancy between regions increased to 10 weeks, only to be reduced to 8 weeks in 1994.

A variable entrance requirement remains a feature of the EI system introduced in 1996, although the entrance requirements are now expressed in terms of hours rather than weeks of work. Consequently, it is difficult to directly compare the generosity of the VER under the old and the new systems. At most one can say that under the reformed system, it takes considerably longer for many part-time workers in all regions to qualify for benefits.

⁹ Benefits were increased by five weeks across the board between March 1, 2009 and September 12, 2010 as a temporary measure to compensate unemployed workers for the increased difficulty of finding employment during and immediately after the 2008-2009 recession. However, this absolute increase in weeks of benefits was independent of regional unemployment rates.

In order to provide a more concrete picture of the disincentive to migrate that is created by the insurance system, we compute what the minimum qualifying requirement, and weeks of benefits for minimal qualifiers, would have been for individuals in each province under the simplifying assumption that each entire province constitutes one unemployment insurance region.¹⁰ So that we can compare qualifying requirements under UI and EI, we convert the hours required under EI to weeks assuming a work week of 37 hours, which is equal to the Canadian average value of hours of work per week over the 1987-2009 period.¹¹ Then we compare graphically the results of these calculations for a high unemployment province, Newfoundland and Labrador, to those for a province that has generally enjoyed low unemployment rates, Ontario.

As figure 1 shows, until the introduction of the VER in 1977 there was no difference between the two provinces in the minimum qualifying requirement for benefits. Post-1977 there was very little variation in the minimal qualifying requirement in Newfoundland and Labrador, because the unemployment rate remained persistently high in that province.¹² In Ontario, generally lower provincial unemployment rates caused the minimal qualifying requirement to remain above that in Newfoundland and Labrador except during the recession of the early 1980s. After 1984 the gap between the two provinces tended to increase for much

¹⁰ See Day and Winer (forthcoming) for a complete explanation of the calculations for the 1966-1996 period. The same methods were applied to EI for the period 1997-2009. Currently there are 58 different Employment Insurance regions in Canada.

¹¹ Data on average actual hours worked for total employed, all industries, both sexes were obtained from CANSIM Table 280022 (series V261492), retrieved August 13, 2010. During this period average weekly hours for Canada ranged from a high of 37.8 in 1989 to a low of 35.3 in 2009. Average weekly hours also vary across provinces, but this variation is not taken into account in our calculations.

¹² Note that the 1990 spike in the Newfoundland line is due to the temporary lapse of the VER in that year. The minimum qualifying requirements are not quite the same in the two provinces in that year because the 1990 value is actually a weighted average of the values for different months.

of the period, with the exception of a brief decline between 2000 and 2003. At its peak in 1998-1999, the gap in qualifying weeks between the two provinces amounted to approximately 8 weeks (or 280 hours).

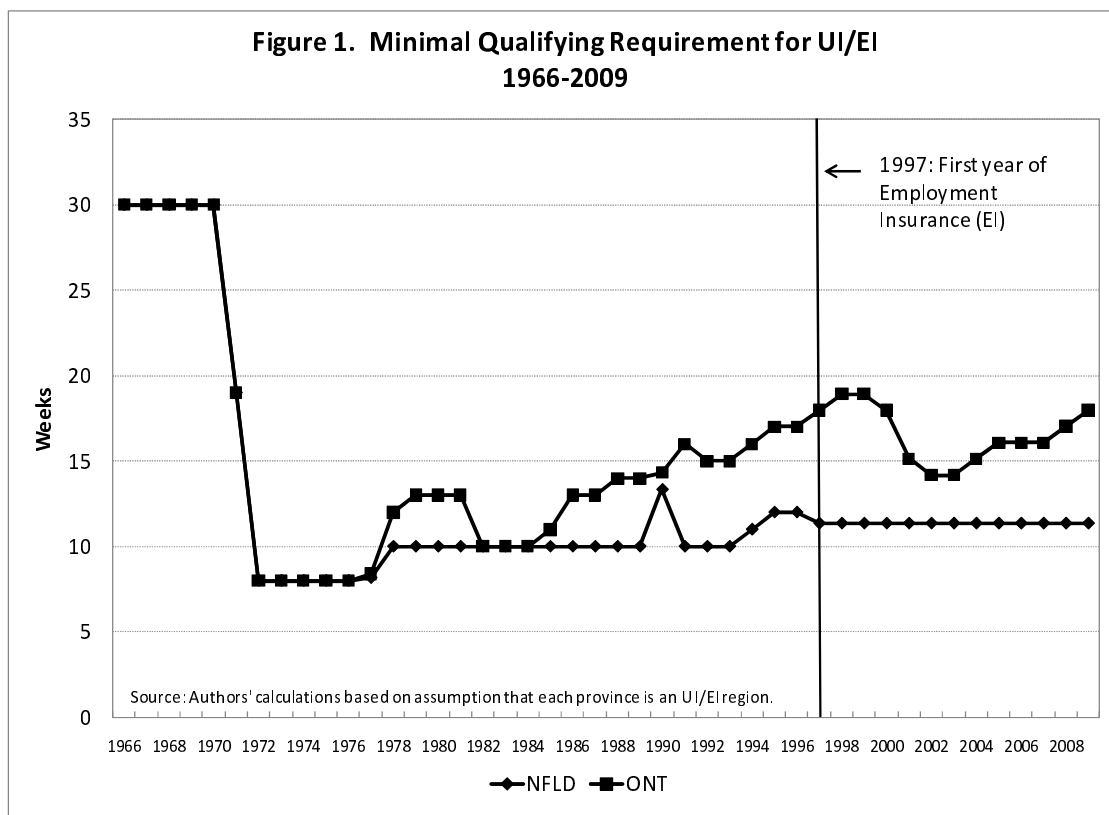
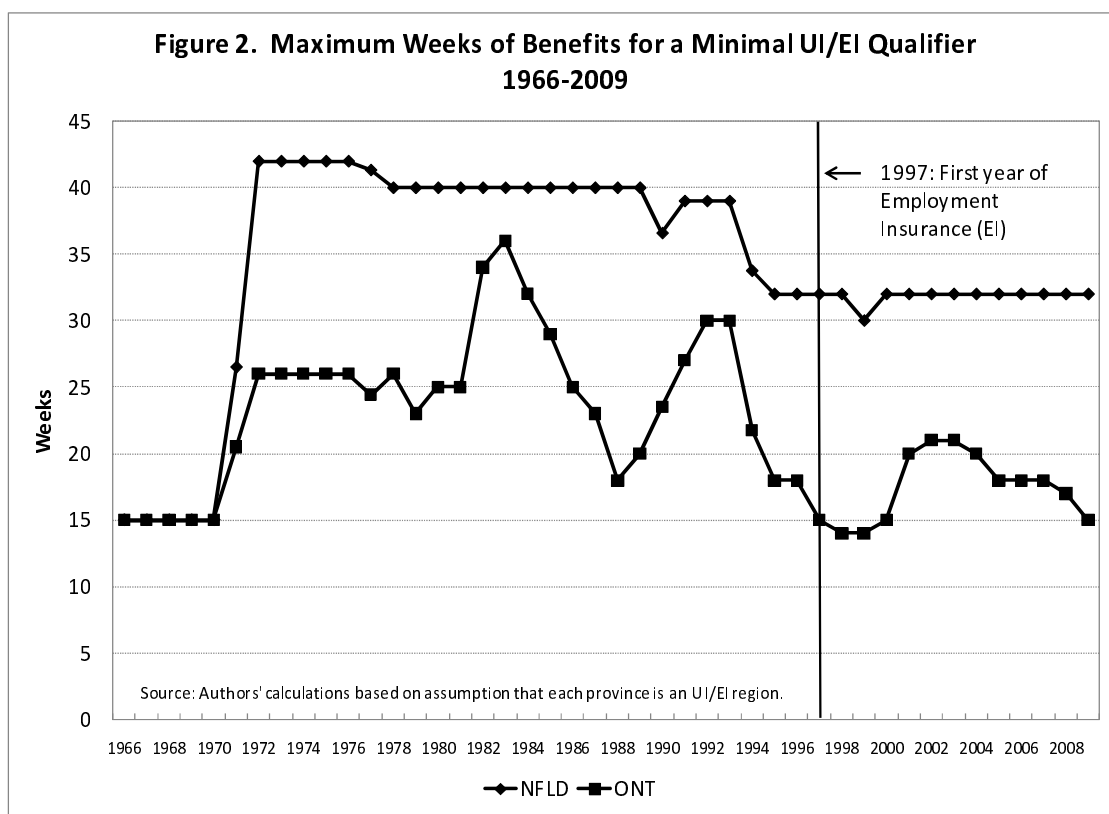


Figure 2 shows that not only was it easier for the typical Newfoundland worker than for the typical Ontario worker to qualify for benefits, a Newfoundlander who met the minimal qualifying requirement was also entitled to quite a few more weeks of benefits than his or her Ontario counterpart. In the initial years of regional extended benefits, from 1972-1981, the difference in weeks of benefit entitlement ranged from 14 to 17 weeks in favour of

Newfoundland. Only during post-recessionary periods, such as 1982-1984 and 1992-1993, did the difference in weeks of benefits fall below 10 weeks. In 2009 the difference in weeks of benefits for minimally-qualified workers was 17 weeks.



Note that neither figure shows any striking change in the gap between Ontario and Newfoundland as a result of the move from UI to EI in January of 1997. While this lack of any obvious impact may be the result of the assumption of a 37-hour standard work week, using province-specific values of average hours worked per week is unlikely to make much difference. In 1997, average hours per week were 37.2 in Ontario and 37.9 in Newfoundland. Since then,

average hours worked per week have tended to increase slightly in Newfoundland and decrease slightly in Ontario.¹³

In describing regional variation in the unemployment insurance system, it is also important to point out that even a low unemployment province such as Ontario includes some high unemployment EI regions where individuals' minimal qualifying requirements and benefit entitlements are similar to those displayed for Newfoundland and Labrador. Furthermore, when it comes to migration decisions, the generosity of the unemployment insurance system is only one of many factors that individuals will take into account. Indeed, individuals who are already employed and have low expectations of being unemployed in the future may place little weight on unemployment insurance when deciding whether or not to move, and where to move to.

Finally, we should recognize that due to differences between regional economies, certain types of benefits - for example fishing benefits, which were first introduced in 1957 - are unevenly distributed across the country and tend to be more heavily utilized in high-unemployment provinces. Fishing benefits remain a feature of the current EI system, and although there is no regional differentiation in EI provisions with respect to fishing benefits, they will as a matter of course be unevenly distributed across the country because the fishing industry is concentrated on the East and West coasts.

¹³ See CANSIM Table 2820022.

4. What has empirical research on Canada found?

Studies of the effects of unemployment insurance on internal migration in Canada have mostly focussed on interprovincial migration, due a lack of data on intra-provincial mobility. In all of these studies, some measure of migration appears on the left-hand side of the empirical model, while various factors believed to influence migration appear on the right-hand side of the model. There, however, the similarities end. Some studies use time-series data to study migration trends over long periods of time, while others use large microdata sets that generally span just a few years. Some studies estimate simple linear models of migration, while others estimate more complicated nonlinear ones. And different studies include differing sets of explanatory variables or different measures of unemployment insurance generosity. In this section of the paper, we limit ourselves to outlining the important features of the relevant studies and their results. In the next section we evaluate their sometimes contradictory findings, and draw some general conclusions regarding the relationship between unemployment insurance and internal migration in Canada.¹⁴

Before looking at the individual studies themselves, a few general comments about data and statistical models are in order. First of all, only two of the existing Canadian studies employ data for the post-1996 period. In other words, most of the existing empirical evidence pertains to the old UI system, not to the current EI system. Nonetheless, as we have suggested above, since the changes to the system in terms of the migration incentives it creates are not substantial, we think that studies of UI are just as relevant to the current policy debate as

¹⁴ There exist many other studies of interprovincial migration in Canada that do not examine the role of unemployment insurance as a determinant of migration. See Grady and Macmillan (2007), Gomez and Gunderson (2007), and Day and Winer (forthcoming) for surveys of some aspects of this literature.

studies of EI.

Secondly, both aggregate time-series data and microdata can provide important insights - albeit somewhat different ones - into the effect of unemployment insurance on migration flows. Since aggregate time series data generally cover a longer period, they can provide more insight into the effects of major changes in the insurance system. Moreover, the representation of fiscal structure in these studies is often more sophisticated. Microdata sets, on the other hand, allow researchers to control for a wider variety of individual characteristics that may also influence migration decisions.

Thirdly, while no two migration studies include exactly the same set of explanatory variables on the right-hand side of the migration equation, there does exist a certain amount of agreement regarding the determinants of migration. For example, incomes and employment prospects in the sending and receiving regions, and moving costs (frequently proxied by distance), are generally considered relevant. Some studies also include measures of public goods and services available in different provinces, as well as taxes and transfer payments.¹⁵

Fourth, the choice of statistical model - linear or nonlinear - often depends on the nature of the data available. In linear models, the dependent variable is either a migration rate, or an actual gross or net migration flow. Such models can only be estimated using aggregate data (time series or census data), because migration rates and flows do not exist for individuals. Instead, researchers using microdata estimate nonlinear models such as logit and probit models, in which the dependent variable equals one if the individual moved and zero otherwise. Conditional logit models are multinomial versions of the logit model that are well-

¹⁵ For example, see Winer and Gauthier (1982), Day (1992), and Day and Winer (2006).

suited to migration modelling because they apply to situations where individuals face more than two options, such as a choice between the ten Canadian provinces. These models have a special property that allows them to be estimated relatively simply using aggregate time series data as well as individual data, and in comparison to simple linear models they ensure that the characteristics of all possible destination choices are taken into account. Table 4, which summarizes the important features of the studies we review, indicates which type of model is used by each study.¹⁶

[Table 4 here]

Finally, when it comes to measuring the migration effects of unemployment insurance in Canada, all studies face the same major challenges: how to capture the relevant features of the system using a small number of explanatory variables, and how to distinguish the effect of regional differences in benefit provisions from the effect of differences in unemployment rates. Regional differences in unemployment rates lead to differences in benefit payments even in the absence of the variable entrance requirement and regionally extended benefits. In the following discussion, we shall pay particular attention to the methods researchers have used to deal with these two issues.

Since the focus of this paper is on the impact of insurance benefits on internal migration, a useful way to classify the studies is in terms of the measure of insurance benefits included in the empirical model. In this respect, the twelve existing studies can be divided into four groups: (i) those that construct an index of unemployment insurance generosity, (ii) those that use a dummy variable to identify individuals who received benefits in the year prior to

¹⁶ See chapter three of Day and Winer (forthcoming) for further information on the properties of these models.

moving, (iii) those that adopt a structural approach to incorporating parameters of the unemployment insurance system, and (iv) those that employ more than one of the above approaches. Each of these groups of studies is examined in turn

4.1 *Studies that use indices of unemployment insurance generosity*

The earliest studies of the effect of unemployment insurance generosity on interprovincial migration used relatively simple indices of generosity in their empirical models, whether linear or nonlinear. For example, Courchene (1970) uses the ratio of total unemployment insurance benefit payments to total earned income in each province in each year. The estimated coefficient of this variable supports his hypothesis that more generous unemployment insurance benefits tend to impede out-migration, holding unemployment rates in both the origin and destination provinces constant.

Boadway and Green (1981), Shaw (1985, 1986), and Winer and Gauthier (1982) follow Courchene's lead by defining measures of unemployment insurance generosity that reflect the actual rate at which benefits replace earnings. In these three studies, generosity is measured by dividing a measure of average weekly insurance benefits by average weekly earnings. All three studies find some evidence that increased unemployment insurance generosity, as measured in this fashion, in the origin province (or census metropolitan area in Shaw's study) reduces out-migration, while increased generosity in the destination increases in-migration. However, Winer and Gauthier (1982) find that their results are not consistent across all their Courchene-type equations; for example, for Ontario and the western provinces increased unemployment insurance generosity in the origin appears to *increase* out-migration rather than decrease it,

while increased generosity elsewhere *reduces* out-migration instead of increasing it. For Newfoundland, though, the results are consistent with Courchene's hypothesis that more generous unemployment insurance benefits in a province will increase in-migration to and reduce out-migration from that province.

Both Shaw (1985, 1986) and Winer and Gauthier (1982) also extend Courchene's simple model, by including other measures of unemployment insurance. Shaw adds to his model a measure of the probability of receiving unemployment insurance benefits, defined for each province as total weeks of benefits paid divided by total weeks of unemployment. In addition, in an attempt to discern the effects of the 1971 reforms that introduced regional extended benefits, he divides his Census data into two subsamples, one covering the pre-1971 period and the other covering the post-1971 period. While his measure of the probability of receiving unemployment insurance benefits never has a statistically significant coefficient, his unemployment insurance generosity measure for the province of origin has a negative and significant coefficient that more than doubled in magnitude after 1971. Similarly, the coefficient of unemployment generosity in the destination is positive and significant only after 1971. These results suggest not only that more generous benefits in the province of origin inhibit out-migration, holding all else (including unemployment rates and job growth in the origin and destination provinces) constant, but also that the post-1971 increase in generosity of the system magnified this effect.

In their conditional logit models of interprovincial migration for the 1951-1978 period, Winer and Gauthier (1982) use a different index of unemployment insurance generosity designed to incorporate three aspects of the system: the variable entrance requirement,

regional extended benefits, and the degree to which eligibility rules are enforced. For province k , the measure is defined as follows:

$$UIDEX_k = \frac{MAX_k}{MIN_k} \frac{CA_k}{CF_k}, \quad (1)$$

where MAX_k is the maximum number of weeks of benefits to which a person with minimum qualifying weeks is entitled, MIN_k is the minimum number of weeks required to qualify for benefits, CA_k is the number of claims accepted, and CF_k is the number of initial claims filed. Increases in the generosity of the system would lead to increases in the value of this index.

Winer and Gauthier present their results concerning this index in table 4-14 of their study, which indicates that the coefficients of $UIDEX_i$ (origin) and $UIDEX_j$ (destination) are statistically significant with the expected signs in only fourteen of 72 equations. However, in the eight equations explaining out-migration of low-income individuals from the Atlantic provinces their coefficients are always statistically significant with the expected sign. They thus conclude that the unemployment insurance system did influence the migration decisions of at least this subset of the Canadian population. Their simulation results suggest that the 1971 reforms to the unemployment insurance system reduced out-migration of low-income individuals from Atlantic Canada, but increased migration between the four Atlantic provinces.

The last study that falls into this category is that of Liaw and Ledent (1987). Although they use a more complex statistical model than the other studies, an extension of the conditional logit model known as the nested logit model, their index of unemployment insurance generosity - the ratio of unemployment insurance benefits per person in the destination to unemployment insurance benefits per person in the origin - is actually simpler

than that of Winer and Gauthier. However, they interpret this variable as an indicator of the severity of unemployment in the destination relative to the origin, rather than a measure of unemployment insurance generosity. In their destination choice model they find that this variable has a negative and significant coefficient, implying that the higher are average unemployment insurance benefits in a province relative to those in the province of origin, the less likely it is that individuals will choose to move to that province. However, in their model of the decision to move, which includes the average benefit in the origin only, they find no evidence that the decision to move is affected by unemployment insurance benefits.

4.2 *Studies that use dummy variable indicators of receipt of benefits*

Dummy variable indicators of receipt of benefits are found only in studies that use microdata. Because such data sets consist of observations on individuals, indices of unemployment insurance generosity that do not vary across individuals cannot be included in a model of migration to be estimated using such data if the number of time periods is short. The problem is that there is then insufficient time-series variation in the data set with which to identify the coefficient of the index variable. Information about the geographic location of the individual is often limited as well, so that geographic variation cannot be counted on to identify the coefficient of an unemployment insurance generosity index either. However, in the microdata sets researchers have used to study migration, it is often possible to identify individuals who received income from UI or EI in the previous year. Thus all Canadian microdata studies that have examined the impact of these insurance schemes on interprovincial migration in Canada include a dummy variable that is equal to one if the individual received benefits in

the year prior to migration, and zero otherwise. Because this variable is independent of the number of weeks of benefits it cannot tell us anything about the effect of regional extended benefits, but it will be affected by the variable entrance requirement since the VER affects the probability of receiving benefits.

The first two microdata studies of interprovincial migration and unemployment insurance in Canada were those of Osberg, Gordon, and Lin (1994) and Lin (1995), both of which use data from the Labour Market Activity Survey (LMAS). The first of these studies examines the 1986-87 period, while the second covers the period 1988-90. For men, both studies reach the same conclusion: individuals who received unemployment insurance benefits the previous year are no more or less likely to make an interprovincial move than individuals who did not receive benefits. However, Lin found that in 1990 (but not 1989) women who had received benefits in the previous year *were* significantly more likely to move than those who had not received benefits.

Two other studies, by Finnie (2004) and Ostrovsky, Hou, and Picot (2008), use panel data from the Longitudinal Administrative Database (LAD) maintained by Statistics Canada. This database is compiled from the tax returns filed by a sample of individual Canadians, and thus contains detailed information about income over a long period of time, but little information about personal characteristics such as level of education. Finnie's analysis covers the period 1982-1995, a relatively long period for a study that uses microdata, and he estimates separate models for men and women in each of four different age groups. His results indicate that after controlling for province of residence before the move, language, size of community, age, family status, earnings, provincial unemployment rate, and year, receipt of unemployment insurance

benefits in the previous year has a positive and significant effect on the probability of making an interprovincial move for all groups examined except young men aged 20-24. The magnitude of these effects ranges from an 18% increase in the probability of moving for 45-54 year-old women, to an increase of just 6% for women aged 20-34.

In their study, Ostrovsky, Hou, and Picot (2008) examine migration to Alberta from elsewhere in Canada, and focus on the differences between recent immigrants (those who have lived less than 15 years in Canada) and other Canadians over the 1996-2005 period. This study is of interest not just because it includes a variable related to unemployment insurance, but also because it is one of only two that deal with the period after the introduction of the Employment Insurance system. Their initial results for immigrants imply that those who received EI benefits in the year prior to moving were significantly less likely to move to Alberta. However, when they re-estimate their model for immigrants after supplementing the LAD data with information about the immigrant's region of origin and immigration class from Citizenship and Immigration Canada's immigration records, this result changes. After the addition of the new variables to the model, receipt of EI benefits significantly increases the probability that immigrants will move to Alberta. This finding is consistent with their results for the rest of the Canadian population.

4.3 *Studies that adopt a structural approach*

Two other studies, Day (1992) and Day and Winer (2006, forthcoming), use as their starting point somewhat more rigorous, theoretically consistent approaches to modelling migration in which labour market uncertainty is modelled using an expected utility framework.

Both studies assume that individuals contemplating moves face uncertainty about labour market outcomes in each destination. This uncertainty takes the form of different possible states of the world, each of which has a probability attached to it. Individuals are then assumed to choose the destination where their expected utility - that is, the probability-weighted sum of utilities in the different states of the world - is maximized. This approach leads to the construction of explanatory variables that are complex nonlinear functions of incomes and leisure times in the different states of the world. Unemployment insurance enters these variables as a component of income or leisure time in one or more states of the world rather than appearing separately in the estimating equation.¹⁷ Thus, in these models unemployment insurance is assumed to play a statistically significant role if the associated composite variable does.

In the first of these papers, both of which are estimated using time-series data, Day defines three states of the world, two of which involve unemployment. The two unemployment states differ in terms of whether or not the individual is covered by unemployment insurance. The probability of being unemployed in a particular province is measured by the unemployment rate, while the probability of being covered is simply the proportion of the population covered by UI. The question of whether or not one is covered by UI is relevant in this study because the sample period includes nine years prior to 1971, the year coverage was extended to virtually all employed Canadians. Unemployment insurance benefits in each province were also measured in a simple fashion as the average amount of regular benefits paid. Since the coefficient of the relevant composite variable (referred to as "Prices") has the expected positive sign in almost all

¹⁷ All time spent not working, including time spent receiving benefits, is treated as leisure time in these models.

equations, Day concludes that higher average UI benefits in a particular province will increase in-migration to (and decrease out-migration from) that province.

Day and Winer (2006, forthcoming) extend this approach and apply it to migration data similar to that used by Winer and Gauthier (1982), constructed from tax files for the period 1968-1996. First, they define four different states of the world that can be viewed as involving different degrees of labour market attachment, and hence different degrees of reliance on the unemployment insurance system. This approach allows them to incorporate more features of the UI system in the explanatory variables of their model. For example, unemployment insurance benefits in state 3 (weakly attached to the labour market) depend directly on MIN, the minimal number of weeks required to qualify for benefits, and MINWKS, the maximum weeks of benefits an individual with MIN qualifying weeks can receive. Benefits in state 2 of this model (working just enough to collect benefits for the remainder of the year) also depend on the regional variation in the unemployment insurance system.¹⁸ Since the model assumes that individuals gain utility from leisure time - that is, time spent not working - as well as consumption, the parameters of the UI system enter the model through a composite leisure time variable as well as a composite income variable, both of which are probability-weighted sums.

Day and Winer estimate several specifications of their model for three different income classes, with most results pertaining to the 1974-1996 period. In most specifications and for most subsamples, the composite income variable does have the expected positive and significant coefficient, but the estimated coefficient of the other composite variable is

¹⁸ In state 1 (employed all year) and state 4 (not attached to the labour market and receiving social assistance all year) individuals do not receive any unemployment insurance benefits.

sometimes insignificant or inconsistent with expectations. These inconsistencies are likely due to collinearity between the explanatory variables.

Due to the complex manner in which the UI parameters enter Day and Winer's model, it is not possible to infer their impact directly from the coefficient estimates. However, marginal effect calculations suggest that a decrease in generosity in the form of an increase in MIN in a particular province would reduce the net-in-migration of low- and middle-income individuals to that province.¹⁹ This effect is largest in the Atlantic provinces, and largest for the middle-income group. The marginal effects of changes in MINWKS are much smaller in magnitude and less clear-cut, in that the sign of the effect on net migration varies across provinces as well as models and income classes.

Day and Winer (2006, forthcoming) also simulate the effects on interprovincial migration of eliminating regional variation in the unemployment insurance *system*. They find that eliminating the variable entrance requirement alone would tend to move people out of the Atlantic region and Quebec, and into Ontario. Elimination of regional extended benefits alone has a similar effect, as does the elimination of all regional variation in the UI system, although the magnitude of the effect varies considerably from one model to another. But they also find that the overall volume of migration (i.e., the number of people who move) is not greatly affected, which means that even the complete elimination of regional variation in the unemployment insurance system is unlikely to have any important consequences for unemployment rates.

¹⁹ The exact magnitude of the decrease is not clear as it varies considerably between models. For example, for Model 1 of Day and Winer (forthcoming), the marginal effect in Newfoundland of an increase in MIN is a decline in net in-migration of 96.5 middle-income people; for Model 2, the same marginal effect is only 7.4.

4.4 *Studies that use a combination of approaches*

This final group of studies has just one member: Audas and McDonald (2003). This study uses microdata from the Survey of Labour and Income Dynamics (SLID), which allows Audas and McDonald to examine migration between official unemployment insurance regions, not just provinces. It is also one of only two studies that include the post-1996 period. Audas and McDonald's sample period of 1993-1999 allows them to examine the effects of the switch from UI to EI. Finally, this study goes beyond the dummy variable approach of other microdata studies by including an index of insurance generosity - in this case, the sum of maximum and minimum weeks of benefits in the insurance region²⁰ - and by using instrumental variables techniques in an attempt to control for the possibility that mobility decisions and past receipt of benefits may depend on the same unobservable factors. Failing to account for this possibility can lead to biased estimates of the coefficient of the receipt of benefits dummy variable.

Another problem addressed by Audas and McDonald, a problem that is encountered in other studies such as Day and Winer (2006, forthcoming) as well, is the correlation that exists between parameters of the insurance system and regional unemployment rates. The dependence of benefits and qualifying requirements on regional unemployment rates guarantees that such a correlation will exist. The existence of this correlation makes it difficult to distinguish statistically the effects on migration of unemployment rates from those of changes in program parameters.²¹ Audas and McDonald use two methods of dealing with this

²⁰ This index differs from that in equation (1) in that *MIN* in equation (1) is minimum qualifying weeks, not minimum weeks of benefits. Thus Audas and McDonald's index reflects only changes in the generosity of benefits at either end of the range of benefits, not changes in the ease of qualifying for benefits.

²¹ In principal, one can control for the effects of other variables such as unemployment rates by including them as explanatory variables in one's model. However, strong correlations between explanatory variables can result in

problem: the first is to use employment rates and employment growth rates as explanatory variables instead of regional unemployment rates, while the second is to test for changes in the coefficients of unemployment insurance parameters after 1996. The first method will be effective if employment rates and employment growth rates are less highly correlated with unemployment benefits than are unemployment rates, while the second method focuses on the effect of a major change in the system.

Like other researchers, Audas and McDonald estimate different versions of their model for different subsets of their sample. They divide their sample according to the degree of labour market attachment of the individual, on the grounds that those who are strongly attached to the labour market may also face higher fixed costs of moving. Four levels of labour market attachment are defined, based on the number of weeks worked during the year.²²

The results obtained by Audas and McDonald show that the degree of labour market attachment is indeed important when it comes to measuring the effects of unemployment insurance on migration between insurance regions. When the entire sample is pooled, neither receipt of benefits in the previous year nor their insurance generosity index appear to have a significant effect on mobility. However, when the sample is disaggregated, some evidence of insurance-related effects appear among those who are *not* strongly attached to the labour force - that is, among those who worked less than 50 weeks per year.²³ For those whose

large estimated standard errors for the coefficients of the correlated variables, leading to the conclusion that the estimated coefficients are not statistically significant.

²² Note that in Day and Winer (2006, forthcoming), the degree of labour market attachment is assumed to be unknown when the individual makes a migration decision. Audas and McDonald, on the other hand, rely on the information available to them about the ex post degree of labour market attachment.

²³ Audas and McDonald define "strongly attached" differently than do Day and Winer (2006, forthcoming). "Moderate" attachment to the labour market in Audas and McDonald corresponds to state 2 (strongly attached) in

attachment to the labour market is deemed to be moderate, receipt of UI or EI benefits in the previous year seems to reduce mobility among both UI/EI regions and provinces, although the effect decreases in magnitude and/or significance when instrumental variables estimation is used. In addition, those with low or no labour market attachment appear to have changed their behaviour after the 1996 reforms, with the probability of moving increasing given the regional unemployment rate after the introduction of EI. Audas and McDonald suggest that this finding may reflect an increase in the difficulty of qualifying for benefits under the new system.

5. Our evaluation: What is the “bottom line?”

If all the studies reviewed in the previous section had obtained similar results, it would be easy to draw a conclusion about the effect of unemployment insurance on interregional migration. However, they do not. Consequently, we need to look more critically at the various approaches to arrive at a judgement about the nature, strength and consequences of the evidence concerning the relationship between unemployment insurance and interregional migration.

First of all, consider the studies that use an index of some sort to represent the relevant characteristics of the unemployment insurance system. An obvious problem with this approach is that a single index may not adequately capture all the relevant aspects of the system. In particular, both the ease of qualifying for benefits and the generosity of benefits once an individual has qualified need to be taken into account. The simple ratio of benefits to earnings used in most of these studies may increase as it becomes easier to qualify for benefits and as

Day and Winer, while “weak” attachment in Audas and McDonald corresponds to state 3 in Day and Winer. “Strong” attachment in Audas and McDonald corresponds to state 1 (employed all year) in Day and Winer.

the generosity of benefits increases, but it does not allow these two aspects of the generosity of the system to affect migration decisions independently. Only Shaw (1985, 1986) allows measures of both the generosity of benefits and the probability of receiving them to have separate effects on migration decisions (although the latter did not appear to have a statistically significant effect).

An additional problem with this approach as it was implemented by the various studies is that with only one exception, the index used does not distinguish between regular benefits, which since 1971 have been subject to regional variation, and other types of benefits, which are not.²⁴ This is a potential problem since in principle the unemployment insurance indices used could rise due to an increase in payments of, say, parental benefits or fishing benefits, in the absence of any changes in the degree of regional variation in regular benefits. Thus the inclusion of special benefits that do not vary across regions may to some extent contaminate the results, making it harder to determine the effects of the regional variation built into the system. Only the work of Courchene (1970), whose sample period pre-dates the introduction of explicit regional variation in benefits, is exempt from this criticism, although Winer and Gauthier (1982), in the second part of their study, employ an index that depends primarily on parameters of the system that vary across regions rather than on total benefits actually paid.

After 1990, the literature splits into two distinct strands: studies that use microdata, and studies that apply a more structural approach to time-series data. Studies that use microdata include a dummy variable for receipt of insurance benefits during the year prior to moving. But while these studies do provide many new insights into the determinants of migration, when it

²⁴ These studies seem to use total unemployment insurance benefits rather than just regular benefits as the measure of benefits paid in the numerator of the index.

comes to investigating the effects of regional variation in the unemployment insurance system on internal migration they have some limitations.

First of all, all but one of these studies restrict their attention to the move-stay decision, ignoring the choice of destination. Even the one study that does consider destination choice - Ostrovsky, Hou and Picot (2008) - limits the destination choices to Alberta and any province other than Alberta. Consequently, unlike the time-series studies these studies do not include both origin and destination characteristics as explanatory variables. In the presence of regional differences in unemployment insurance benefits, however, one might expect the identity of the province of origin to affect the nature of the relationship between receipt of benefits and the migration decision. When all origins are pooled, as is the case in these studies, it is impossible to capture such differences - only the average effect will be measured. Needless to say, this average effect may vary with the data set.

Second, a dummy variable indicator of receipt of benefits shares some of the same limitations as the benefit indices used in earlier studies. It does not reflect regional differences in weeks of benefits, because it will equal one for all benefit recipients regardless of the length of the period for which they received benefits. Only regional differences in the ease of qualifying for benefits will be captured by the dummy variable, since such differences should lead to more individuals with a value of one in high unemployment regions. Furthermore, these dummy variables do not appear to distinguish between receipt of regular benefits and other types of benefits that are not subject to regional differences in generosity.²⁵

²⁵ The variable definitions provided in the studies simply state that the dummy variable equals one if the individual received unemployment insurance benefits. The data files probably do not distinguish between regular and special benefits.

Finally, if some of the explanatory variables included in a model estimated using microdata are correlated with unobservable factors that also influence migration, the parameter estimates will be biased and cannot be interpreted as reflecting causal relationships between the explanatory variables. As Audas and McDonald (2003) point out, it is possible that such a correlation exists between the receipt of unemployment insurance benefits and unobservable factors that also influence migration decisions. There is the only microdata study thus far that attempts to correct for this problem using an instrumental variables estimator, but it is not clear that their instrumental variables (industry dummy variables) are adequate.²⁶

Indeed, the existence of such a correlation may partially explain the conflicting results emerging from microdata studies to date. It is notable that studies based on data sets such as the LMAS or the SLID that provide more information about personal characteristics such as education, industry, and occupation generate different results from those based on the LAD, which does not contain such information. In particular, the former studies (Osberg, Gordon, and Lin 1994; Lin 1995; Audas and McDonald 2003) find little or no impact of receipt of unemployment insurance benefits on migration (even without using instrumental variables estimators), while the latter (Finnie 2004; Ostrovsky, Hou, and Picot 2008) find that receipt of benefits has a positive impact on migration. This comparison suggests that the positive correlation observed in the LAD-based studies may simply be an artefact of the inability of the researchers to control for all important determinants of migration. If so, the microdata studies based on the LMAS and the SLID may provide a more accurate picture of the migration effects

²⁶ The quality of instrumental variables estimates depends heavily on the quality of the instrumental variables used. Audas and McDonald do not provide any information about the strength of their instruments, probably because tests for weak instruments were not widely used at the time they carried out their research.

of receipt of unemployment benefits than to the LAD-based studies.

Of course, endogeneity problems that lead to correlations between the explanatory variables and the error terms of a migration model may also exist in studies that use time-series data. In fact, economic theory suggests that wages, unemployment rates and migration flows are all jointly determined. Flows of migrants between labour markets in response to wage and unemployment rate differentials should in principle lead to changes in those wage and unemployment rate differentials, leading to further changes in migration flows. But because annual rates of net in-migration to the Canadian provinces tend to be small, this endogeneity problem may be less serious than that facing microdata studies.²⁷ Furthermore, Day and Winer (2006, forthcoming) find that under favourable assumptions about the effect of migration on unemployment rates, even the complete elimination of regional variation in unemployment insurance would have a very small effect on those unemployment rates as a result of interprovincial migration.

Because it allows the researcher to include more policy parameters than other approaches, the structural approach adopted by Day (1992) and Day and Winer has the potential to provide more precise information about the migration effects of the design of unemployment insurance systems than do the other approaches. Day and Winer also focus directly on regular benefits, the category of benefits that does involve regional variation in both qualifying requirements and generosity of benefits. These models are also more firmly grounded in microeconomic theory, in that the estimating equation is linked to a specific

²⁷ Annual rates of net in-migration to the ten provinces ranged in absolute value from 0.01% to 2.04% during the 1971-2009 period. During the same period, rates of in-migration ranged from 0.26% to 4.99%, and rates of out-migration ranged from 0.33% to 4.21%. (Migration rates were calculated using data from CANSIM Tables 510001 and 510018, retrieved on October 26, 2010.)

functional form for individual utility functions. However, in practice these models suffer from a collinearity problem that makes it difficult to precisely estimate the effects of unemployment insurance parameters. This problem can be traced in part to the dependence of the insurance parameters on regional unemployment rates, which, as has already been noted, makes it difficult to empirically distinguish the effects of higher unemployment rates from the effects of a more generous unemployment system given the unemployment rate. All time-series studies likely suffer to some extent from this problem, although most don't report correlations between explanatory variables, making it impossible to determine the severity of the problem.²⁸ Day and Winer address this problem by carrying out simulations using more than one version of their model, rather than relying on just one set of estimates. This gives them two alternative estimates of the effect of any policy change, one of which is considerably larger than the other.

Thus no one approach or study can be said to clearly dominate all others, since all have their strengths and weaknesses. As one would expect, more recent studies have made use of advances in data, econometric methods and software that were not available to earlier researchers, but these advances have not succeeded in eliminating all the problems inherent in evaluating the effect of unemployment insurance on migration flows.

So what is the "bottom line" of this review? First of all, we know that theoretically, an unemployment insurance system can have two opposing effects on migration. The first is to finance job search, which would tend to increase migration, while the second is to influence the choice of destination by encouraging people to choose destinations with more generous

²⁸ Only Liaw and Ledent (1987), Day (1992), and Day and Winer (2006, forthcoming) report coefficients of correlation between at least some of their explanatory variables.

benefits. The studies that use time-series data, together with Audas and McDonald (2003), suggest that if unemployment benefits have an effect on migration, it is the destination choice effect that is the stronger of the two. Secondly, although the results of Finnie (2004) and Ostrovsky et al. (2008) suggest that it is the mobility-enhancing job-search effect that is stronger, there is reason to believe that this result simply reflects the dependence of both migration decisions and receipt of insurance benefits on the same unobservable factors, rather than a causal relationship between unemployment insurance benefits and migration decisions.

Thirdly, the work of Winer and Gauthier (1982), Audas and McDonald (2003), and Day and Winer (2006, forthcoming) suggests that only a subset of the population is influenced by unemployment insurance benefits when making migration decisions. This subset of the population consists of individuals who are more likely to make use of the unemployment insurance system because they are not strongly attached to the labour force in the sense that they are not likely to be employed for the full year. (Winer and Gauthier and Day and Winer divide their samples into income classes, but their low income class is likely to contain a high proportion of individuals who are not strongly attached to the labour force in the sense of Audas and McDonald.) Although neither Winer and Gauthier nor Day and Winer provide direct information on the proportion of tax filers that fall into their low income class, in Audas and McDonald's study moderately attached and weakly attached individuals account for only 12% of household heads, while 78% of household heads are strongly attached to the labour market. In light of the fact that such a small proportion of the labour force is likely to care much about unemployment benefits, it is not surprising that studies that aggregate across the entire population or sample do not always observe much of an effect.

Last but not least, the marginal effects and simulation results provided by some studies suggest that where a statistically significant effect exists, it is too small to have much of an effect on provincial economies. Even when they use the set of estimates that is most likely to yield large effects, Day and Winer (2006, forthcoming) find that a simulation in which both the variable entrance requirement and regional extended benefits are eliminated would only reduce Newfoundland's average unemployment rate over the 1978-1996 period to 16.5%, as compared to an actual average unemployment rate over that period of approximately 16.8%.²⁹ Thus while there does exist empirical evidence that Courchene's (1970) argument about the direction of the effect of the regional variation in unemployment insurance generosity is correct, the magnitude of the effect appears to be too small to have serious consequences for the interregional allocation of labour services.

6. Conclusions

One of the difficulties of studying the relationship between the unemployment insurance system and internal migration decisions is that regional variation in unemployment insurance indicators such as the ratio of average benefits to average earnings arises from two different sources. The first is the explicit dependence of both qualifying requirements and benefit periods on regional unemployment rates, while the second is the existence of differences between regional economies. Most empirical studies of the migration effects of unemployment insurance do not clearly distinguish between these two sources of regional

²⁹ This hypothetical change in unemployment rates was calculated by assuming that all out-migrants from Newfoundland were unemployed, while all in-migrants were employed. Using their alternative model, the same simulation yielded no change in the average annual unemployment rate.

variation. A further source of difficulty is that there have not been any controlled experiments that can help us evaluate more accurately the migration effects of unemployment insurance in Canada.

Some studies do better than others in dealing with these and other issues that we have raised in the course of our review. If we look across all of the studies that have been produced so far, we can say that there is no evidence showing that regional variation in the generosity of regular benefits, either before or after 1996, has had an effect on the volume of interprovincial migration substantial enough to alter the provincial allocation of labour services. Simulations based on empirical estimates suggest that even the complete elimination of the explicit regional variation in the system would not be a large enough shock to have an important effect on regional labour markets.

This conclusion must be tempered with the observation that studies based on historical data can only evaluate the experiences that are reflected in that data. Since big shocks or radical policy changes rarely occur, simulations of the effect of such shocks based on estimates derived from historical data may produce inaccurate results. Day and Winer (2006, forthcoming) provide evidence that extraordinary events such as the closing of the Atlantic cod fishery after 1992 have large effects on internal migration flows, and one may ask whether the complete elimination of regional variation in the current EI system constitutes such a large shock. If so, the simulation results reported by Day and Winer might underestimate the effects of such a policy change.

On the other hand, Day and Winer find that the simulated effect of eliminating regional variation in the insurance system is even smaller when they repeat their simulation using

estimates derived from a data set that covers the 1968-1996 period, a period that includes three years of data prior to the initial introduction of regional variation in unemployment insurance in 1971. This suggests that even the elimination of regional variation in the insurance system is not so large a shock that we need to be concerned that its effects have been grossly underestimated. Thus it appears safe to conclude that policy changes involving the degree of regional variation in the unemployment insurance system are unlikely to have serious consequences for the interprovincial allocation of labour services resulting from policy-induced migration. Furthermore, the few studies that consider migration at the sub-provincial level suggest that the effects of regional variation in the generosity of benefits are similar for both intra-provincial and interprovincial migration.

Perhaps the most important implication of our findings for the making of public policy is that if changes in the degree of regional variation in the insurance system are contemplated, justification for such changes is not to be found in the removal of incentives for people to remain where unemployment generosity is relatively high. These incentives exist, but there is no evidence that they have a large impact on interprovincial or interregional migration. There may be efficiency reasons for reducing the generosity of the system in higher unemployment regions, for example because this would alter work-leisure decisions in those regions in a socially beneficial manner. But the longstanding bias against regional variation in insurance generosity based on its consequences for the regional allocation of labour have not been substantiated.

Arguments for regional equity in access to, and in benefits from the insurance system of course remain valid. Such considerations may include concern with the individual inequities

arising from regional differentiation in benefit generosity that were pointed to by the Mowat Task Force in its 2010 discussion paper (Mowat 2010), and may also include long-standing arguments for greater interregional equity on a provincial basis. Like the effect of EI on labour-leisure choices in particular locations, these equity issues are not addressed by the literature we have reviewed. What we can say here is that arguments for equity in the receipt of unemployment insurance cannot be bolstered by an appeal to the removal of inefficient interregional migration as a by-product of the pursuit of greater equity. They must stand on their own.

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Table 4
Summary of Empirical Studies of Effect of UI and EI on Interprovincial Migration in Canada¹

Study	Data	Empirical model²	UI/EI Measure	Results
Courchene (1970)	Gross interprovincial migration rates of family allowance recipients, 1952-67	Linear	Ratio of total UI benefits to earned income in the sending province (two equations only)	Higher UI benefits in origin have significant negative effect on out-migration
Boadway and Green (1981)	Net migration to Newfoundland, 1951-78	Linear	Average weekly UI benefits per claim divided by average weekly earnings in Newfoundland	Increases in UI/EI measure significantly increase net migration to Newfoundland
Winer and Gauthier (1982)	Gross interprovincial migration rates of family allowance recipients, 1951-78 Gross interprovincial migration rates of individuals in 10% sample of income tax records, 1967-77	Linear Conditional logit	Ratio of average weekly UI payments to average weekly wages in origin and destination Origin and destination values of index of UI generosity in (1)	More generous UI impedes out-migration and encourages in-migration in 10 of 18 equations Out-migration from Atlantic provinces negatively related to increases in generosity of UI in Atlantic region, positively related to increases in generosity of UI benefits elsewhere

Shaw (1985, 1986)	Gross migration rates between 17 census metropolitan areas, 1961, 1971, 1976, and 1981 censuses	Conditional logit	Average weekly payment of UI benefits in province divided by average weekly wage in CMA (generosity of UI), ratio of total weeks of UI benefits paid to total number of weeks of unemployment in province (probability of receiving UI)	Increased generosity of UI benefits in origin CMA significantly reduces out-migration In post-1971 sample, generosity of UI benefits in destination CMA also has positive and significant effect on out-migration
Liaw and Ledent (1987)	Gross interprovincial migration rates, 1961-83	Nested logit	Unemployment benefits per unemployed person in destination relative to unemployment benefits per employed person in origin	Relative unemployment benefits has no significant effect on out-migration from region; higher relative unemployment benefits in destination province is significant deterrent to in-migration
Day (1992)	Gross interprovincial migration rates, 1962-81	Conditional logit	UI benefits constitute part of income in state of world in which individual is unemployed and covered by UI	UI benefits have significant impact through composite "price" variable: higher UI benefits in province encourage in-migration
Osberg, Gordon and Lin (1994)	Longitudinal sample of men residing in the Atlantic and Prairie provinces from the LMAS, 1986-87	Bivariate probit	Indicator of receipt of UI benefits the year before moving	Receipt of UI does not significantly affect interregional migration.
Lin (1995)	Longitudinal data from the LMAS, 1988-90	Conditional logit	Indicator of receipt of UI benefits the year before moving	UI benefits have significant positive impact on mobility only for adult women in 1990.

Audas and McDonald (2003)	Longitudinal sample from SLID, 1993–1999	Probit models of interprovincial migration and migration between EI regions; some models estimated using Instrumental Variables methods	Indicator of receipt of UI benefits the year before moving; region-specific UI benefit generosity (minimum weeks plus maximum weeks of UI benefit available); interaction between regional unemployment rate and indicator of post-1996 UI reform.	Receipt of UI/EI benefits inhibits migration of people who are moderately attached to labour market 1996 reforms increase mobility of those with low or no labour market
Finnie (2004)	LAD, 1982-95	Panel logit	Indicator of receipt of UI benefits the year before moving	Receipt of UI associated with increase in out-migration of prime-aged men and women, and to a lesser extent younger men and women and new entrant women.
Day and Winer (2006, forthcoming)	Migration flows disaggregated by age, sex, and income class derived from income tax records, 1968-1996	Conditional logit	UI parameters enter “income” and “leisure” variables based on four states of the world, two of which involve receipt of UI benefits	UI significantly reduces out-migration through composite variables, but effects do not seem to be large in magnitude.
Ostrovsky, Hou and Picot (2008)	LAD combined with immigration records, 1996-2005	Multinomial logit (do not move, move to Alberta, move to another province)	Indicator of receipt of UI benefits the year before moving	Receipt of UI has significant positive impact on migration to Alberta of immigrants and long-time residents of Canada; no impact on moves elsewhere