Interactions Between Disability Support Programs: Some Canadian Evidence

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Abstract

We examine the interactions that occur between social insurance programs that support disabled persons, using Canadian data. We use a specification that is based on a gravity model from the international trade literature. We find that workers' compensation programs appear to have a large effect on the growth of the Canada/Quebec Pension Plan disability program. However, the other programs (welfare and unemployment insurance) we examine have much weaker effects. We conclude the paper by briefly discussing the implications of our estimates for disability policy.

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1 Introduction

A system of social insurance programs gradually evolved during the 20th century in many industrialized nations, which included a safety net for persons with disabilities. This safety net is comprised primarily of public disability insurance, workers' compensation and welfare programs. However, as this safety net for disabled persons has developed, the expenditures needed to support these people have also escalated. A number of plausible explanations for this growth in expenditures and beneficiaries have been offered. For example, the increased generosity of benefits in workers' compensation programs has contributed to increased claim incidence and duration in these systems (Fortin and Lanoie (2000)). Similarly, the increased generosity of disability benefits has contributed to a decline in the labor force participation of older persons, which has increased the expenditures of disability programs as older persons withdraw from the labor force (Parsons (1980); Gruber (2000); Campolieti (2001a)). In addition, changes in the screening stringency for disability benefits, which influence application and labor supply decisions (e.g., Parsons (1991), Gruber and Kubik (1997), Marvel (1982), Halpern and Hausman (1981)), could also have contributed to program growth.

Recently, a number of observers have also noted that there may be interactions between social programs, which support disabled persons as well as other social insurance programs (e.g., HRDC (1996); Gunderson (2000); Campolieti and Lavis (2000)), that result in overlapping beneficiaries. These interactions (or overlapping beneficiaries) between programs are caused by legislation that make possible the receipt of benefits from multiple sources, which could have contributed to the growth of Canadian disability rolls. Specifically, when workers' compensation programs and laws were established in the early part of the 20th century, they were the only public programs available to support disabled persons.[1] However, this is no longer the case, as disabled persons can draw support from a number of programs. For example, in Canada as many as 17 percent of the beneficiaries on the CPP disability rolls also collect workers' compensation benefits (Workers' Compensation Board of British Columbia (1997)).[2] This overlap could arise because individuals apply to a number of programs and receive benefits if they satisfy the programs' eligibility criteria. Alternatively, some programs may also encourage their beneficiaries to apply for benefits from other programs. In particular, in Canada it has

[1] Private disability insurance markets were also available in the early part of the century (Emery (2001)).

[2] Similar overlaps between programs have also been noted in the United States. For example, Bound and Burkhauser (1999), using data from the Survey of Income and Program Participation, found that almost one third of the SSA DI recipients also received income support from another program.

been noted in policy circles that workers' compensation boards, welfare and private disability insurance programs encourage their beneficiaries to apply for CPP disability benefits in an effort to reduce their own expenditures (HRDC (1996)).

In this paper, we will examine the effects of workers' compensation, welfare and unemployment insurance programs on a public disability insurance program's, i.e., the Canada/Quebec Pension Plan (C/QPP) disability program, growth in beneficiaries and expenditures. We obtain our estimates using an empirical specification that draws on gravity models from the international trade literature. We use pooled cross-sectional time series provincial level aggregate data for a number of reasons.[3] First, it captures a very long time period rather than looking at cross-sectional snap shots, which may be important because the effects of disability policy may vary over time and be hard to pin down in cross-sectional data. Second, unlike the DI program in the United States or other countries, the C/QPP disability program is not centrally administered. Specifically, the QPP program only covers people in Quebec, but the CPP program covers people in the rest of Canada. Consequently, benefit schedules, eligibility criteria and medical screening have varied from time-to-time, which also provides cross-sectional variation in the disability program. Third, workers' compensation programs are a provincial responsibility, which means that we will have cross-sectional as well as time series variation in workers' compensation legislation.[4] Finally, there are some differences in the funding of welfare programs that also provide cross-sectional and time series variation. This abundance of time series and cross-sectional variation allows us to identify these effects more easily, which may not be possible in other countries.

In the next section we briefly discuss some of the reasons why interactions between these disability programs might occur. We then provide a brief discussion of the programs in the disability safety net and some of the legislative changes that may have affected the propensity of these programs to interact with each other. Section 4 presents our empirical strategy. Our empirical results, in Section 5, suggest that the workers' compensation systems have the largest effect on the C/QPP disability program. Our results for the other programs we examine suggest much more modest interactions. Finally, we conclude the paper with some summary remarks and implications for policy.

[3] As Bound and Burkhauser (1999) note, time series data provides a convenient way of generating changes in program structure that will identify the effects of disability policy over time.

[4] In addition, there may also be differences in the degree to which these provincial Boards enforce this legislation.

2 Why Interactions Between Programs?

When considering the existence of interactions between programs, the previous literature has focused primarily on workers' compensation and unemployment insurance (UI) systems. Fortin and Lanoie (1992) developed a model in which some workers might have an incentive to report workplace injuries or to file claims for injuries that occurred off the job if the unemployment insurance replacement rate is less than the workers' compensation replacement rate. Their empirical results, which used pooled cross-sectional time series data on 30 industries in Quebec, suggest that increases in UI benefits reduced the average duration of a workers' compensation claim, with an elasticity between 0.5 and 0.7.

Bolduc, Fortin, Labreque and Lanoie (2001) built on this work and, among other issues, also examined substitution between unemployment insurance and workers' compensation programs with individual level data on construction workers from Quebec. They focused primarily on injuries in which the true health state might be hard to observe, particularly hard-to-diagnose conditions such as low back injuries. Their empirical evidence also suggested that decreases in unemployment insurance benefits would be associated with the increases in the probability of reporting accidents, particularly the hard-to-diagnose conditions.

Fortin and Lanoie (1992) and Bolduc et al. (2001) suggest that moral hazard is one pathway for the interactions between unemployment and workers' compensation programs. Moral hazard reporting problems could also occur in the C/QPP disability program and result in the increased prevalence of hard-to-diagnose conditions, such as musculoskeletal and soft-tissue problems (e.g., low back pain), on the disability rolls (Campolieti (2001c)).

Finally, program features could also contribute to increase the interactions between programs. For example, changes in funding formulas might lead to perverse incentives that could lead to program administrators encouraging their beneficiaries to apply for C/QPP disability benefits. Alternatively, some beneficiaries may be legally entitled to collect benefits from a number of programs. In order to examine these issues more carefully we discuss the features of the social insurance programs in the disability safety net in the next section.

3 The Canadian Social Insurance System for Disabled Persons

3.1 C/QPP Disability Program

This program is a fairly new addition to social insurance safety net in Canada. The program was passed into law during 1966 and began paying benefits in 1970. Individuals who suffer from a prolonged mental or physical disability that prevents them from working and also satisfy a contribution requirement, which provides a recency-of-work test, are eligible to collect benefits. Currently, the CPP program requires applicants to make contributions in 4 of the last 6 years or 5 of the last 10 year. Prior to 1987, the CPP program required contributions in 5 of the last 10 years or one third of the contribution period. In addition, the CPP program also relaxed their eligibility criteria between 1987 and 1997, requiring contributions in 2 of the last 3 years or 5 of the last 10 years. Furthermore, the period between 1989 and 1995 can also be characterized as period with less stringent medical screening, since the CPP program allowed reasons such as high regional unemployment rates, the lack of particular jobs in a region and a person's skills to be used to determine eligibility for benefits. On the other hand, the QPP program maintained much more stringent medical screening (HRDC (1996)).

C/QPP disability benefits contain as many as three components: 1) a lump sum that is unrelated to previous labor market earnings; 2) an earnings related portion; and, for those with eligible children (under the age of 18), 3) a payment per eligible child. Currently, the benefit schedules, i.e., the formula and maximums, are identical between programs and have been so since 1987.[5] However, prior to 1987 the lump sum component of a QPP disability pension was larger than the level in the CPP program. But this difference was equalized in 1987 when the CPP disability program increased its lump sum component by almost $150 per month.

3.2 Workers' Compensation Programs

Workers' compensation programs are the oldest form of social insurance in Canada. These systems of no fault insurance evolved during the first few decades of the 20th century as an alternative to tort remedies for workers who suffered work-related accidents or were afflicted with industrial diseases (Chaykowski and Thomason (1995)). In Canada, workers' compensation is the responsibility of provincial governments and there is considerable variation in legislation across the country.

[5] The only difference between these two programs is that the QPP program pays less per eligible child.

Like the C/QPP disability program, workers' compensation programs provide income replacement benefits to workers that have a disability that prevents them from working. However, unlike the C/QPP disability program, the disability must arise out of or in the course of employment. Benefits are also entirely a function of labour market earnings and subject to maximums, which are larger in some provinces if the individual has dependents. Replacement rates for benefits vary from province to province as well as across time. For example, replacement rates were 75 percent of gross earnings in all provincial jurisdictions in 1970. However, benefit maximums did vary from province to province, so despite a similar replacement rate a benefit payment might be larger in one province compared to another province for a person with same labor market earnings. The benefit maximums have also tended to increase with time, for example in Ontario the maximum weekly benefit increased from $541.69 to $647.94 between 1985 and 1998. On the other hand, the replacement rates for earnings have tended to decline over time, since many provinces moved to replacement rates of 90 percent or less of net earnings in the 1980s and 1990s.

In addition to differences in the level of benefits, provincial workers' compensation boards also differ in how they treat C/QPP disability benefits. As noted earlier, all of the provincial workers' compensation programs were in place before the legislation that created the C/QPP disability programs was enacted. As a result, after the C/QPP disability programs came into effect an injured worker collecting workers' compensation benefits could also draw support from the C/QPP disability program, i.e., collect 'stacked' benefits. In fact, British Columbia and Alberta still allow beneficiaries to stack workers' compensation and CPP disability benefits. However, in the early- and mid-1980s many provinces began 'integrating' their benefits, i.e., an individual could collect a C/QPP disability pension and workers' compensation benefits, but the workers' compensation benefits would be reduced by the amount of the C/QPP disability benefits. For example, if an individual is entitled to workers' compensation benefits of $1500 per month and the worker also receives a CPP disability pension of $500 per month, then their workers' compensation benefits will be reduced by the amount of the CPP disability pension.[6]

Closely related to this issue of benefit stacking and integration is the 'residual' insurer and 'first' payer. Most workers' compensation boards (WCBs) in Canada view themselves as the residual insurer. Consequently, they often encourage their beneficiaries to apply for

[6] In addition, some provincial workers' compensation boards also vary in the degree to which they enforce these integration provisions. For example, in the late-1980s and early-1990s many Boards began to ensure and verify that their beneficiaries were applying for benefits from other programs when they were entitled to them.

disability benefits (HRDC (1996)).[7] However, this is not the case in Quebec. In Quebec, there is legislation, which came into effect in 1986, that names the workers' compensation board in Quebec, the Commission de la Santé et dé la Securité du Travail (CSST), as the first payer and the QPP disability program as the residual insurer (Workers' Compensation Board of British Columbia (1997)) for occupational injuries.

3.3 Welfare/Social Assistance Programs

Welfare programs provide means tested support for low income persons, which includes both income and in-kind benefits. Recently, the National Council of Welfare estimated that about 27 percent of welfare beneficiaries in Canada during 1997 collected benefits because of disabilities. However, no consistent time series on the exact figures on the number of disabled welfare beneficiaries are generally available (Campolieti and Lavis (2000)). These programs are provided by provincial governments in Canada and have been cost-shared by the federal and provincial governments through the Canada Assistance Plan (CAP). The CAP program allowed for 50-50 cost sharing of welfare expenditures between provincial and federal governments. However, in 1990 the federal government changed this arrangement by imposing a 5 percent cap on the growth in CAP payments to Alberta, British Columbia and Ontario, which could make the federal share less than 50 percent.

Part of the increased caseload that occurred between 1987 and 1995 in the CPP disability program may reflect welfare beneficiaries, as well as workers' compensation and private disability insurance recipients, moving on to the disability rolls, as a result of increased referrals from social assistance programs (HRDC (1996)). In fact, Vaillancourt (2000) argued that this large increase in the CPP disability rolls, while the QPP disability rolls were fairly constant, may be attributed to the cap on the CAP payments, which would have induced welfare programs to shift beneficiaries onto the CPP program. Vaillancourt also argued that there would not have been similar pressures in Quebec because the welfare payments in Quebec would still have been equally cost shared. On the other hand, one could argue that the degree of substitution or shifting from the welfare rolls was not as extensive as Vaillancourt claims because welfare beneficiaries can receive in-kind benefits, such as, assistive devices and other medical aids, that C/QPP disability beneficiaries do not receive (HRDC (1996)). As a result, not all disabled

[7] In addition, until very recently, there were no information sharing arrangements in place between the workers' compensation boards and the CPP disability program. Beneficiaries were required to report additional benefits, but there was no mechanism in place to monitor these reports.

welfare beneficiaries may be willing to apply for C/QPP disability benefits.

4 Empirical Strategy

Our empirical specification incorporates the fact that C/QPP disability program features, such as benefit enrichment and eligibility criteria, may influence the number of beneficiaries as well as total program expenditures. However, we also allow for factors from other disability programs to influence the number of beneficiaries and, consequently, expenditures in the C/QPP disability program. These applicants from other programs may arise for a number of reasons. First, there may be moral hazard effects that induce individuals to apply for disability benefits. In addition, individuals may also be aware of their rights to compensation from a number of programs and apply for those benefits. In addition, as noted earlier, there were also increased referrals to the CPP disability program from welfare, private disability insurers and workers' compensation programs during the mid- to late-1980s (HRDC (1996)). These factors suggest that changes in other programs can potentially cause exogenous increases in the number of beneficiaries in the C/QPP disability programs.

To obtain estimates of these cross-program effects, we can exploit a number of differences between programs to obtain cross-sectional as well as time series variation in our aggregate data. First, the CPP and QPP disability programs are separately administered so there will be differences in eligibility criteria or screening stringency between the programs throughout our sample period.[8] Second, there are also cross-sectional differences in the benefit schedule prior to 1987. Third, we have differences in the nature of workers' compensation legislation from province to province.[9] Finally, we will also be able to exploit differences in the funding of welfare programs after 1990. Since we estimate our model with aggregate data we can only make statements about the potential influence of other programs on the C/QPP disability program. We cannot distinguish between the reasons for the links between programs, only that these links exist.

We obtain our estimates using a two-stage model based on the gravity model developed by Frankel and Romer (1999). In their work, Frankel and Romer sought to determine the effect of trade on growth, and to circumvent the confounding problem of the dual causality of these two

[8] For example, the QPP disability program uses a tougher adjudication standard on musculoskeletal and soft tissue conditions as well mental disorders than the CPP disability program.

[9] In particular, there will be differences when provinces switched from stacked to integrated benefits as well as changes in the level of benefits.

variables. Their solution was to use a model based on "gravity" – the exogenous propensity of a country to engage in trade with other countries in the world. Gravity was determined by a few basic factors: a country's size, its proximity to its neighbors, whether it is landlocked, and other pre-determined factors, which establish a country's propensity to trade with the rest of the world. Specifically, their model was formulated as:

$$\begin{aligned} \log(Y) &= \alpha + \beta Trade + \gamma X + \varepsilon \\ Trade &= \varphi + \phi P + \delta A + \omega B + \zeta L + u \end{aligned}$$

where Y denotes growth in income, $Trade$ is the propensity to trade, X represents country-specific characteristics, and P represents the proximity to other countries, A denotes a country's area, B is a dummy variable equal to one if the two countries share a common border, and L is a dummy variable equal to one if the country is landlocked.

Our innovation is to apply this framework to the study of disability insurance programs. The problem in analyzing growth and trade is that they are jointly causal: countries with large growth tend to trade more, and trading more will cause higher growth. Similarly, in disability insurance programs we have the joint causality of the total number of beneficiaries and the total amount spent by the program. To circumvent this problem, we rely upon the fact that just as a country has a propensity to trade (given certain characteristics), so too will there be a propensity for beneficiaries from other social insurance programs to find their way onto the C/QPP disability rolls.

The size of this "gravity" may differ between programs. For example, unemployment insurance beneficiaries might try to apply for C/QPP disability benefits, but they must have a disability in order to be eligible for C/QPP disability benefits. However, both workers' compensation programs and the C/QPP disability program require applicants to suffer from a disability that prevents them from working (the key difference between these programs is that WCBs require the condition to be work-related, but the C/QPP disability program does not). Since the eligibility criteria between the two programs are fairly similar there is potentially a much greater probability that beneficiaries from workers' compensation programs may also collect C/QPP disability benefits In this sense, a "gravity" exists between the workers' compensation programs and the C/QPP disability program, which allows for workers' compensation policy to affect the growth of the disability rolls.[10]

[10] As noted earlier, there is some support for these notions, for example, the survey evidence that 17 percent of all CPP beneficiaries in 1996 received payments from provincial workers' compensation boards (Workers' Compensation Board of British Columbia (1997)).

The model we use is generally specified as:

$$\begin{aligned} \Delta C/QPP\ Expenditures &= \alpha + \beta(\Delta C/QPP\ beneficiaries) \\ &\quad + \widetilde{X}'\gamma_1 + \varepsilon, \qquad (1) \\ \Delta C/QPP\ Beneficiaries &= \varphi + Z'\delta + X'\gamma_2 + u, \qquad (2) \end{aligned}$$

where Δ is the differencing operator, the vectors X and $\widetilde{X}$ contain controls for demographic factors (such as the age of the population and a proxy for health status), the unemployment rate and controls for C/QPP disability policy. The actual variables included in these vectors will be discussed in a later section. The vector Z represents policy-specific variables from other social insurance programs, i.e., workers' compensation, social assistance/welfare and unemployment insurance. We estimate the model with two stage least squares, in which we estimate equation (2) with OLS and construct the fitted values for the change in beneficiaries $\Delta C/QPP\ \widehat{Beneficiaries}$ and estimate equation (1) as

$$\Delta C/QPP\ Expenditures = \alpha + \beta(\Delta C/QPP\ \widehat{beneficiaries}) + \widetilde{X}'\gamma_1 + \varepsilon'. \qquad (3)$$

The OLS estimates of equation (3) account for the potential endogeneity of the change in beneficiaries. We can compare the estimate for β from equation (3), which allows for the effects of other programs, to the estimate of β from equation (1), which does not allow for the effects of other programs. If the IV estimate of β from equation (3) is larger than the OLS estimate of β this suggests that other disability programs may influence the growth in C/QPP disability expenditures. This can be tested using a Hausman test. In addition, the estimates of equation (2), i.e., the first stage equation, contain some valuable information about the effects of other programs on the change in the number of C/QPP disability beneficiaries.

5 Data

We used pooled cross-sectional time series aggregate provincial data to estimate our models, which covers the years between 1970 and 1997.[11,12] We started the study period in 1970 since that was the first year benefits were paid out in the CPP disability program.[13] Our empirical specification contains a number of different variables which include controls for the incentive

[11] The data on the disability programs, both expenditures and beneficiaries, were obtained from Human Resources Development Canada's (HRDC) website.

[12] We did not include data from the two Canadian territories in our analysis.

[13] The data on workers' compensation programs, from the HRDC website, has not been updated since 1997.

effects of the C/QPP disability program, the incentive effects of other disability and social insurance programs and demographic factors.

5.1 C/QPP Policy Variables

We control for a number of features of the C/QPP disability program that might affect the labor supply and applications behavior of economic agents. First, we include a proxy for the effects of benefits on individual behavior. We control for this using what we refer to as the *"target replacement rate"*, which is computed as the average replacement rate for C/QPP disability benefits minus 0.25. We compute the average replacement rate by taking the annualized average C/QPP disability benefits and dividing them by annualized average industrial earnings. We use this measure because it provides a metric to determine the overall 'generosity' of C/QPP disability benefits. When the C/QPP disability program was initially conceived it was envisioned that the replacement rate for benefits be equivalent to about 25 percent of gross earnings (HRDC (1996)). As a result, target replacement rates less than zero suggest that benefits are not very generous, but target replacement rates greater than zero suggest more generous benefits. In general, the period prior to 1987 in the CPP program can be characterized as a period with less generous disability benefits.

We also include a control for the period of relaxed eligibility in the CPP program by including a dummy variable that takes the value 1 for CPP provinces during the years between 1987 and 1995. Some of empirical specifications also include a dummy variable for Quebec, which controls for the fact that disability insurance arrangements in that province differ from those in the rest of Canada. In particular, the disability insurance safety net in Quebec can be characterized as a single payer system since the programs are all administered by the provincial government, but jurisdictions in the rest of Canada have both federal and provincial programs.

5.2 Economic and Demographic Variables

We also include controls to capture the effects of demographic factors as well as the effects of economic and labor market conditions. First, we include the median age of the population to proxy for the aging of the population. As the population ages there may be greater prevalence of disabilities since many conditions, such as back pain and heart disease, have multifactorial causes that are spread over a lifetime (Frank and Maetzel (1999)). Second, we also include a

variable to capture the decline in mortality that has occurred during our study period.[14] Since mortality rates have fallen people are living longer and are more likely to suffer from chronic conditions that can be disabling. We also include the percentage of women in the labor force in our regressions to control for the fact that women have become an increasing proportion of C/QPP disability beneficiaries during our study period (Campolieti (2001a)).

We also include the unemployment rate to control for the effects of economic conditions. There are a number of reasons why economic conditions can influence the number of beneficiaries. First, as economic conditions worsen some individuals might apply for disability benefits as a form of long term income support (Black, Daniel and Sanders (2002)).[15] Conversely, some researchers (Brooker, Frank and Tarasuk (1997); Ruhm (2000)) have found that health status as well as workers' compensation claims are pro-cycical – as the economy improves and unemployment rates fall, health status declines and occupational injuries increase.

5.3 Policy Variables from Other Programs

We include the controls for the effects of other programs in the vector we denote by Z. The elements of this vector will vary from program to program. For workers compensation programs we include three variables: 1) a dummy variable for integrated benefits; 2) the real benefit payment per beneficiary; and, 3) a dummy variable for the legislative change in Quebec that made the workers' compensation board (the CSST) the 'first' payer and the QPP disability program the 'residual' insurer for occupational injuries. The real benefit expenditure per beneficiary controls for the economic incentives associated with workers' compensation benefits .

We include two variables to capture the effects of welfare programs on the C/QPP disability programs. First, we control for financial incentives using real welfare benefits per capita, which includes claimants as well as dependents.[16] Second, we use a dummy variable that controls for the change in the funding in the CAP program that occurred in British Columbia, Alberta and Ontario during 1990. Finally, we control for effects of unemployment insurance benefits by

[14] We control for the decline in the mortality using the remaining years of life for men and women aged 45 to 64. The average remaining years of life for a demographic group is the mean number of years remaining to be lived by those surviving to that age, for a given set of mortality rates. We picked those aged 45 to 64 since that demographic group forms the largest age group on the disability rolls, historically 75 to 90 percent of all disability beneficiaries are between 45 and 64 years of age (Campolieti (2001a)).

[15] This may be particularly true for economic downturns that are more permanent in nature.

[16] We were not able to obtain data on the number of beneficiaries that excludes dependents. In addition, the benefit data and beneficiary data we have is for all persons, not disabled recipients. These factors might limit our ability to make inferences about the effects of welfare benefits on the growth of the C/QPP disability programs.

using UI expenditures per claim.[17]

We include some summary statistics and variable definitions for these controls in Table 1.

6 Empirical Results

We present the estimates of both the first and second stage equations in a number of tables. The estimates of the first stage equation, show the effects of different income support programs on the change in C/QPP disability beneficiaries. The interactions between workers' compensation, welfare and unemployment insurance programs with the C/QPP disability program are presented in Tables 2 through 4, respectively, and Table 5 presents the first stage estimates for the interactions between all of these programs with C/QPP disability. We present the estimates of the second stage equations, of the change in C/QPP benefit expenditures, in Tables 6 and 7. We estimate both linear and log-linear regressions models for the change in the number of beneficiaries and expenditures.

6.1 Results from First Stage Regressions

Since our models instrument for the change in beneficiaries, we are concerned with the quality of our instruments and the identifying assumptions we make. The F-statistics from our first stage regressions in Tables 2 to 5 are all greater than 10, which suggests that our instruments have an acceptable level of correlation with the variable we are instrumenting (Staiger and Stock (1997)). In addition, the first stage F-statistics become much larger when we work with log-linear specifications.

6.1.1 Workers' Compensation and C/QPP Disability

Table 2 contains a number of estimates for the effects of the interaction between workers' compensation and C/QPP disability programs. The vector X includes the unemployment rate, median age, remaining years of life, the dummy variable for the relaxed eligibility criteria in the CPP disability program and the target C/QPP replacement rate. The workers' compensation policy variables include benefit expenditures per lost-time claim, the integrated benefits dummy and the 'WCB first payer in Quebec' dummy. We also include a number of interaction terms between some of the C/QPP variables and the workers' compensation variables. In particular,

[17] We include the effects of unemployment insurance programs in our analysis, since previous research suggests that there may be moral hazard problems that might induce able bodied persons who are unable to find work to apply for C/QPP disability benefits.

we interact WCB benefit expenditures with the dummy variable controlling for the period of relaxed eligibility to test whether there would be greater interactions between programs. We interpret a positive estimate on this interaction term as evidence of cost shifting between programs.

The unemployment rate had negative estimates that were also statistically significant in a number of specifications. These estimates suggest that as the unemployment rate increases the growth in C/QPP disability beneficiaries decreases. This is consistent with the findings in Black, Kermit and Sanders (2002), as the economy improves there are fewer people moving onto the disability rolls. The control for median age also suggested, in almost all cases, that as the population increases there would be increases in the growth of disability beneficiaries. The remaining years of life, suggests that the decline in mortality rates are associated with decreases in the growth of disability beneficiaries.

The results from the C/QPP policy variables are mixed. The estimates for the target replacement rate are not statistically significant and do not have the expected positive sign. A plausible explanation for this finding is that average benefits in the CPP program were below the 25 percent threshold, which means that they were not overly generous, during most of our study period. However, the relaxed eligibility criteria dummy variable has a significantly positive coefficient, implying a strong growth in C/QPP beneficiaries during this period of lax screening. It should also be noted that the eligibility criteria were relaxed at the same time of benefits became more generous, i.e., were above the 25 percent threshold, so it may be difficult to separate the effects of the two policy changes.

Perhaps more importantly, some of the controls for the effects of workers' compensation programs had statistically significant impacts on the growth of C/QPP disability beneficiaries. First, per capita WCB benefit expenditures were associated with increases in the number of C/QPP disability beneficiaries. In fact, the interaction term between the WCB benefits and the relaxed CPP eligibility criteria has the expected positive sign, which is consistent with beneficiaries shifting from workers' compensation programs to the CPP disability program. Further evidence in favor of this proposition is from the estimates for the 'WCB first payer in Quebec' dummy variable, which had a significantly negative sign. This estimate suggests that the legislation that named the CSST (the workers' compensation board in Quebec) as the 'first payer' and the QPP disability program as the 'residual insurer' would be associated with a decrease in the growth of QPP disability beneficiaries. Similarly, the estimates for the integrated benefits dummy variable are also associated with increases in the number of C/QPP

disability beneficiaries.[18]

6.1.2 Welfare Programs and C/QPP Disability

The estimates in Table 3 contain the effects of welfare programs on the growth of C/QPP beneficiaries. The controls for demographic factors and the C/QPP policy variables had effects that were similar to those in Table 2. For example, we find: unemployment rates are negatively related to the growth in beneficiaries; the period of relaxed eligibility criteria is associated with an increase in the number of beneficiaries; median age is associated with an increase in the growth of beneficiaries; the average remaining years of life are associated with increased growth in the number of beneficiaries; and, increases in the proportion of women in the labor force are associated with increases in the growth of the disability rolls. However, the results for the effects of welfare programs on the growth of C/QPP beneficiaries differ from those observed for workers' compensation programs.

First, unlike workers' compensation systems, higher welfare expenditures are associated with declines in the growth of C/QPP beneficiaries. This may reflect the fact that as welfare payments become more generous, welfare beneficiaries will be less likely to apply for C/QPP benefits because of larger levels of income support. Combining this increased level of income support with the in-kind benefits provided by welfare programs, which are not provided by the C/QPP disability program, may make welfare beneficiaries less likely to apply for C/QPP disability benefits (HRDC (1996)). Similarly, our estimates on the interaction term between the welfare payments and the relaxed eligibility criteria dummy, also suggests more evidence in favor of there being a negative interaction between these programs. On the other hand, our control for the 'cap on CAP' does have the anticipated positive effect on the growth of beneficiaries. This suggests that in the provinces (Alberta, British Columbia and Ontario) where the CAP program was not 50-50 cost shared after 1990, there would be increases in the growth of CPP beneficiaries. This is consistent with the observation that some have made about shifting beneficiaries from the welfare rolls to the disability rolls (e.g., Vaillancourt (2000)).

6.1.3 Unemployment Insurance and C/QPP Disability

Table 4 contains the effects of the unemployment insurance (UI) program on the growth of C/QPP beneficiaries. The controls for the demographic factors and the C/QPP policy vari-

[18] To test for nonlinearities in the effects of integration of workers' compensation benefits with C/QPP benefits, we estimated a specification with an interaction term between the integrated benefits dummy and the time trend. This specification produced estimates that were very similar to those presented in the paper.

ables had effects that are similar to the results in the previous two tables. However, although the growth in C/QPP beneficiaries is positively correlated with UI benefits levels, there is no evidence for a positive effect of these benefits when they are interacted with the relaxed eligibility criteria variable. This is consistent with a general lack of an interaction between the C/QPP and unemployment insurance programs. This suggests that there may not be large moral hazard effects that induce unemployed and able bodied persons onto the C/QPP disability rolls.

6.1.4 Workers' Compensation, Welfare, Unemployment Insurance and C/QPP Disability

Table 5 contains the effects of substitution between all three programs and the C/QPP disability program. The estimates for the effects of the demographic variables are fairly similar to those in Tables 2 through 4. For example, the unemployment rate has a consistently negative effect in all specifications, and C/QPP target replacement rate is not significant. As before, there are strong effects on the change in beneficiaries that may be related to the other income support programs in this analysis. For instance, the Quebec first-payer variable still has a significantly negative impact on the growth in C/QPP beneficiaries and, in the levels specification, the integrated benefits variable has a significantly positive impact. In some cases, the integrated benefits effect is positive, but less significant because of its high correlation with the period in which C/QPP eligibility was relaxed (and with the three interaction variables with the relaxed period). Overall, there seems to be strong evidence in favour of interactions between C/QPP disability and workers' compensation, since the coefficient on these benefits is largest and also positively significant.

Evidence for interactions between C/QPP disability and unemployment insurance is mixed, since the UI benefit levels are significant only in the log-linear specification and they are also not as large as the coefficient estimates on the workers' compensation variables. As was the case in Table 3, welfare benefits seem to have little effect on C/QPP disability rolls. In addition to the benefit levels offered by workers' compensation, unemployment insurance and welfare programs, our analysis interacted these variables with the relaxed eligibility criteria dummy in some of the regressions. The interaction between the benefit levels in workers' compensation and unemployment insurance with the relaxed eligibility criteria dummy suggest positive effects for both programs, in most of the specifications we estimated. However, the interaction term between the welfare payments and the dummy variable for the relaxed eligibility criteria, like the estimates in Table 3, has a negative effect. Overall, the results in Table 5 suggest that workers'

compensation programs are associated with the largest increases in the C/QPP beneficiaries, since the controls for workers' compensation policy consistently have significant impacts, while the effects from the unemployment insurance and welfare programs are much more modest.

6.2 Second Stage Estimates

We present the second stage estimates of our model, i.e., the estimates from equation (3), which instruments the growth in beneficiaries, in Tables 6 and 7. For brevity we only present the results from column (4) of each of the first stage regressions. We also focus our discussion on the estimates of the change in beneficiaries.[19]

The results in the first columns of Tables 6 and 7 suggest that allowing for the effects of workers' compensation programs leads to a significantly larger increase in the benefit expenditures than indicated by the OLS estimate. These estimates are consistent with some sort of interaction between workers' compensation and C/QPP disability, in which workers' compensation beneficiaries find their way onto the disability rolls.

We find similar effects when the unemployment insurance policy variables are used as instruments, although they do not have a significant effect on the change in beneficiaries coefficient. The results are understandably smaller when we use the welfare program instruments, since we found that increases in welfare benefits are associated with decreases in the number of C/QPP disability beneficiaries. In fact, the large standard errors from the specifications using information on welfare programs as instruments suggests that program may be a poor choice for examining the interactions between support programs.[20]

When variables from all three programs were used as instruments in this analysis the results are mixed. In the log-linear specification, there is a significant increase in the change in beneficiaries coefficient with the IV estimation strategy. However, the increase is not significant in the levels specification. The reason that this approach may not result in such a significant change is that the instrumental variables may be operating at cross-purposes: the welfare variables are causing the coefficient to be smaller, while the workers' compensation and UI variables are causing them to be larger. In addition, it was previously seen that the workers' compensation variables had the most significant relationship with the change in C/QPP beneficiaries; the inclusion of welfare and UI variables may obscure the effect of the workers' compensation

[19] The estimates from the other specifications produced similar results.

[20] Alternatively, the weak effects for the welfare programs can be attributed to poor data. Recall that the HRDC data we used on the welfare beneficiaries did not distinguish between disabled and able bodied welfare recipients.

variables in the IV estimation procedure.

7 Concluding Remarks

In recent years, some observers have suggested that there are strong interactions between the various social insurance programs that support disabled persons in Canada. Our two stage approach allowed us to examine the effects of these factors, i.e., the effects of workers' compensation, welfare and unemployment insurance programs, on the growth of the C/QPP disability rolls and expenditures. Our results show that, after controlling for demographic factors and economic conditions, there are remarkably strong relationships between the increase in C/QPP disability recipients and policy variables that control for features of workers' compensation programs. We also found similar interactions for unemployment insurance and welfare programs, although these effects were not strong as those for the workers' compensation variables. Overall, these results suggest there may be interactions between these programs and the C/QPP disability program.

These findings have several implications for disability policy. First, since our results suggest modest to fairly strong interactions between programs, reforms of one disability or income support program should not be undertaken without examining the potential impacts on other programs. Altering the features of one program may lead to unintended consequences for other programs. Furthermore, there could be a greater role for coordination of disability policy that could reduce the scope for interactions between programs, which may result from perverse incentives. Better coordination of these programs would also result in cost savings because resources would not have to be devoted to monitoring claim payments between programs (i.e., figuring out who gets what and from whom as well as preventing stacked benefits) and programs in this support system would have fewer incentives to shift costs onto other programs. By coordinating and structuring the interactions between programs, at both the provincial and federal level, this support system could be improved in a manner that would not threaten the financial viability of the whole or even parts of the safety net and perhaps, more importantly, improve this network of programs.

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Table 1: Variable Definitions and Summary Statistics

Variable	Variable Definition	Mean
Target C/QPP Replacement Rate	Annualized average benefits divided by annualized average industrial earnings minus 0.25	0.247 (0.065)
Relaxed Criteria	A dummy variable which captures the effect of the relaxed CPP eligibility requirements and takes the value 1 between 1987 and 1995 and 0 otherwise	0.285 (0.453)
Quebec	A dummy variable which takes the value 1 if the province is Quebec and 0 otherwise	0.253 (0.436)
Real WC Benefits per Capita	Real workers' compensation benefits per beneficiary (lost-time claim)	5,453.71 (2135.42)
Integrated Benefits	A dummy variable that takes the value 1 during the periods in which a provincial workers' compensation board integrated their benefits with C/QPP disability and 0 otherwise	0.392 (0.489)
WCB First Payer in Quebec	A dummy variable that captures the effect of the legislation that made the QPP the residual insurer for work related injuries in Quebec after 1986 and 0 otherwise	0.105 (0.307)
Real Welfare Benefits per Capita	Real Welfare (CAP) benefit expenditures per recipient (beneficiaries and dependents)	6,098 (1,312)
Real UI Benefits per Capita	Real UI benefit expenditures per beneficiary	12,372.1 (2,256)
Cap on CAP	A dummy variable that captures the effect of limits on the growth of social assistance variable in the provinces of Alberta, British Columbia and Ontario after 1990 and 0 otherwise	0.175 (0.380)
Unemployment Rate	Provincial Unemployment Rate	8.59 (2.87)
Median Age	Median Age of the Population	30.58 (3.10)
Average Remaining Years of Life (Both Sexes)	Average Remaining Years of life remaining to be lived for males and females between the ages of 45 and 64.	25.10 (1.20)
% Female	Percentage of provincial labor force that is female.	0.412 (0.037)

Note: Standard deviations are listed in parentheses beneath the sample means. Both the sample means and standard errors are weighted by the size of the provincial labor force.

Table 2: First Stage of Worker's Compensation

	Linear				Log-Linear			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Unemployment Rate	56.17	-80.07	23.20	-79.38	-0.040	-0.045	-0.053	-0.050
	(90.11)	(52.92)	(82.12)	(51.93)	(0.019)	(0.019)	(0.017)	(0.017)
Target C/QPP Rep. Rate	-45.82	-65.03	-33.50	-65.35	-0.017	-0.019	-0.011	-0.008
	(43.51)	(46.66)	(45.42)	(47.92)	(0.010)	(0.010)	(0.010)	(0.008)
Relaxed Criteria	1,944	-10,771	1,769	-10,778	0.194	-0.608	0.135	-0.442
	(1,094)	(2,005)	(1,075)	(2,056)	(0.166)	(0.311)	(0.159)	(0.332)
Real WC Ben. Per cap.	326.5	-293.7	349.1	-294.8	0.299	0.228	0.310	0.245
	(337.3)	(233.5)	(333.6)	(238.2)	(0.027)	(0.034)	(0.027)	(0.033)
Median Age	386.2	519.9	299.6	522.2	0.291	0.298	0.245	0.249
	(123.1)	(97.51)	(135.3)	(112.0)	(0.036)	(0.036)	(0.036)	(0.036)
Integrated Benefits	1,585	944.2	1,714	940.4	-0.238	-0.263	-0.167	-0.253
	(593.0)	(594.0)	(598.3)	(603.7)	(0.156)	(0.158)	(0.154)	(0.144)
Quebec WCB First Payer	-3,276	-2,076	-4,214	-2,052	-0.598	-0.566	-1.029	-0.618
	(931.4)	(713.6)	(941.9)	(814.6)	(0.328)	(0.327)	(0.307)	(0.268)
Year	-569.5	-378.2	-674.1	-375.5	-0.157	-0.147	-0.220	-0.171
	(118.2)	(78.88)	(135.6)	(90.58)	(0.026)	(0.027)	(0.028)	(0.029)
Quebec			1,743	-42.77			0.927	0.596
			(605.7)	(639.2)			(0.170)	(0.181)
% Female	86,906	87,558	109,290	87,009	19.32	21.13	31.84	24.72
	(27,303)	(17,671)	(30,893)	(19,835)	(3.957)	(3.763)	(4.194)	(4.079)
Average Remaining Yrs	-892.4	-1,262	-449.2	-1,273	-0.709	-0.728	-0.461	-0.513
	(220.5)	(172.7)	(314.0)	(259.0)	(0.070)	(0.068)	(0.083)	(0.082)
Relaxed* Real WC Ben. per cap.		1,632		1,633		0.108		0.097
		(321.9)		(332.9)		(0.035)		(0.041)
R-squared	0.3964	0.6905	0.4070	0.6905	0.7037	0.7125	0.7358	0.7669
F-Statistic	19.09	19.87	18.05	19.56	91.24	105.25	88.73	88.64

Note: These are regressions whose dependent variable is the change in C/QPP beneficiaries (by province) from year-to-year. The observations are weighted using the size of the provincial labor force in a given year. Standard errors were calculated using White's method that is robust to heteroskedasticity and autocorrelation.

Table 3: First Stage of CAP/Welfare Expenditures

	Linear				Log-Linear			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Unemployment Rate	-247.0 (95.09)	-301.1 (82.25)	-218.6 (90.48)	-277.9 (77.29)	-0.042 (0.028)	-0.051 (0.027)	-0.040 (0.027)	-0.049 (0.026)
Target C/QPP Rep. Rate	-39.39 (44.59)	-51.59 (42.31)	-46.86 (43.82)	-55.73 (41.95)	-0.015 (0.010)	-0.017 (0.010)	-0.016 (0.011)	-0.018 (0.010)
Relaxed Criteria	-1,007 (729.4)	13,098 (3,532)	-918.7 (745.3)	13,114 (3,490)	-0.403 (0.188)	1.775 (0.540)	-0.402 (0.188)	1.783 (0.542)
Real Wel. Ben. Per cap.	-698.4 (259.1)	-23.29 (139.5)	-616.4 (246.1)	43.34 (148.7)	0.030 (0.047)	0.133 0.043)	0.035 (0.049)	0.140 (0.047)
Median Age	153.2 (128.9)	126.3 (120.4)	252.1 (148.9)	212.4 (128.1)	0.235 (0.041)	0.224 (0.041)	0.240 (0.041)	0.231 (0.040)
Cap on CAP	4,243 (1,177)	2,468 (808.2)	4,280 (1,177)	2,508 (796.4)	1.614 (0.248)	1.360 (0.225)	1.619 (0.252)	1.367 (0.227)
Year	-114.2 (129.7)	-53.04 (104.8)	-47.12 (147.5)	4.982 (118.7)	-0.125 (0.030)	-0.115 (0.028)	-0.121 (0.033)	-0.109 (0.032)
Quebec			-1,000 (638.1)	-869.5 (535.8)			-0.056 (0.204)	-0.082 (0.192)
% Female	88,042 (15,460)	79,557 (13,974)	71,586 (20,250)	65,289 (17,550)	38.20 (4.034)	37.31 (3.804)	37.32 (4.755)	36.04 (4.569)
Average Remaining Yrs	-1,742 (284.1)	-1,771 (225.5)	-2,056 (381.9)	-2,043 (305.5)	-0.942 (0.072)	-0.945 (0.067)	-0.960 (0.098)	-0.971 (0.091)
Relaxed*Real Wel. Ben. Per Cap.		-2,176 (517.9)		-2,167 (508.7)		-0.341 (0.084)		-0.342 (0.084)
R-squared	0.5554	0.6757	0.5598	0.6790	0.6760	0.7053	0.6761	0.7056
F-Statistic	19.64	24.57	19.56	23.61	67.90	65.35	62.81	61.71

Note: The observations are weighted using the size of the provincial labor force in a given year. Standard errors were calculated using White's method that is robust to heteroskedasticity and autocorrelation. The study period used for these regressions was 1970 to 1994, since the federal government began phasing out the CAP program after 1994.

Table 4: First Stage of UI Expenditures

	Levels				Logs			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Unemp. Rate	-96.73	-61.86	-69.08	-47.85	-0.054	-0.055	-0.058	-0.058
	(91.16)	(91.90)	(83.51)	(88.77)	(0.025)	(0.025)	(0.024)	(0.024)
Target C/QPP	-79.32	-82.55	-84.20	-85.18	-0.024	-0.024	-0.024	-0.024
Rep. Rate	(48.08)	(47.55)	(47.11)	(47.14)	(0.009)	(0.009)	(0.009)	(0.009)
Relaxed	1,218	42,840	1,403	40,720	0.124	-0.510	0.114	-0.022
Criteria	(1,067)	(49,879)	(1,126)	(49,250)	(0.248)	(9.239)	(0.250)	(9.277)
Real UI Ben.	589.4	676.4	581.7	667.3	0.207	0.205	0.211	0.211
per cap.	(197.5)	(175.8)	(207.4)	(185.0)	(0.042)	(0.040)	(0.046)	(0.042)
Median Age	59.39	60.26	159.2	117.5	0.209	0.210	0.193	0.193
	(137.0)	(139.3)	(140.4)	(139.5)	(0.042)	(0.042)	(0.040)	(0.039)
Year	-451.3	-500.2	-391.3	-463.2	-0.152	-0.151	-0.167	-0.167
	(122.4)	(115.4)	(178.8)	(115.4)	(0.030)	(0.029)	(0.044)	(0.041)
Quebec			-972.3	-558.3			0.192	0.191
			(1,203)	(966.4)			(0.278)	(0.266)
% Female	129,011	134,322	111,687	124,091	41.54	41.41	44.88	44.84
	(15,648)	(17,197)	(25,172)	(21,212)	(4.375)	(4.247)	(5.909)	(5.216)
Average	-1,050	-875.4	-1,325	-1,043	-0.728	-0.731	-0.671	-0.672
Remaining Yrs	(255.7)	(278.1)	(515.0)	(442.9)	(0.068)	(0.070)	(0.115)	(0.109)
Relaxed*Real		-3,999		-3,785		0.061		0.013
UI Ben. per		(4,748)		(4,685)		(0.884)		(0.887)
cap.								
R-squared	0.2970	0.3192	0.3016	0.3207	0.4995	0.4995	0.5011	0.5011
F-Statistic	24.35	21.89	22.58	20.33	70.78	63.35	60.87	55.63

Note: The observations are weighted using the size of the provincial labor force in a given year. Standard errors were calculated using White's method that is robust to heteroskedasticity and autocorrelation.

Table 5: First Stage of Worker's Compensation, Welfare/CAP, and UI Expenditures

	Linear				Log-Linear			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Unemployment Rate	-137.6 (64.69)	-231.4 (54.39)	-130.3 (62.73)	-194.3 (52.25)	-0.036 (0.022)	-0.038 (0.019)	-0.049 (0.021)	-0.046 (0.018)
Target C/QPP Rep. Rate	-31.41 (35.69)	-38.87 (36.69)	-32.28 (36.03)	-44.38 (35.98)	-0.016 (0.008)	-0.017 (0.009)	-0.013 (0.008)	-0.013 (0.009)
Relaxed Criteria	-94.62 (1,002)	-8,562 (14,340)	-107.3 (1,005)	-9,919 (14,273)	-0.175 (0.198)	-0.326 (3.997)	-0.160 (0.186)	0.374 (3.676)
Real WC Exp. Ben. per cap.	1,028 (164.3)	685.7 (151.1)	1,021 (173.6)	608.4 (150.8)	0.233 (0.034)	0.210 (0.054)	0.249 (0.033)	0.238 (0.057)
Real Wel. Ben. per cap.	-150.9 (121.1)	-49.03 (130.2)	-135.8 (135.6)	139.7 (135.5)	0.030 (0.034)	0.057 (0.039)	0.007 (0.035)	0.030 (0.036)
Real UI Ben. per cap.	174.0 (114.2)	42.49 (104.6)	172.8 (113.4)	28.54 (96.63)	0.087 (0.028)	0.074 (0.028)	0.092 (0.028)	0.086 (0.028)
Cap on CAP	757.5 (780.6)	-723.0 (917.8)	830.7 (785.0)	-397.6 (921.4)	0.562 (0.192)	0.486 (0.273)	0.458 (0.192)	0.464 (0.261)
Integrated Benefits	1,395 (570.0)	661.5 (567.4)	1,415 (575.5)	744.4 (556.1)	0.027 (0.134)	-0.041 (0.154)	0.023 (0.131)	-0.014 (0.154)
Quebec			-169.1 (565.6)	-997.1 (527.4)			0.641 (0.157)	0.609 (0.167)
Quebec WCB First Payer	-3,553 (636.3)	-2,870 (732.2)	-3,452 (746.6)	-2,256 (809.6)	-0.769 (0.318)	-0.707 (0.302)	-1.033 (0.310)	-0.971 (0.301)
Average Remaining yrs	-1,253 (227.6)	-1,356 (180.4)	-1,307 (255.4)	-1,685 (221.9)	-0.852 (0.057)	-0.849 (0.053)	-0.663 (0.071)	-0.666 (0.069)
Relaxed*Real WC Ben. p.c.		483.0 (391.7)		534.6 (390.7)		0.040 (0.071)		0.018 (0.072)
Relaxed*Real Wel. Ben. p.c.		-747.0 (263.9)		-747.4 (255.5)		-0.067 (0.061)		-0.048 (0.063)
Relaxed*Real UI Ben. p.c.		707.8 (1,203)		773.6 (1,195)		0.026 (0.313)		-0.023 (0.287)
R-squared	0.7490	0.8015	0.7491	0.8136	0.7973	0.8008	0.8124	0.8135
F-Statistic	19.61	23.88	18.30	26.29	101.96	91.68	88.91	74.48

Note: The observations are weighted using the size of the provincial labor force in a given year. Standard errors were calculated using White's method that is robust to heteroskedasticity and autocorrelation. The study period used for these regressions was 1970 to 1994, since the federal government began phasing out the CAP program after 1994. Not reported in the regression results are the coefficients on the year and median age variables.

Table 6: Second Stage Linear Regression Specifications

		IV			
	OLS	Workers' Compensation	Welfare	Unemployment Insurance	Workers Compensation, Welfare and Unemployment Insurance
Change in Beneficiaries	8.163 (1.677)	10.88 (2.002)	8.544 (1.935)	11.41 (2.309)	9.097 (2.026)
Unemployment Rate	241.9 (1,732)	762.4 (1,773)	230.8 (2,188)	864.7 (1,610)	441.7 (2,005)
Year	-35.31 (1,248)	210.4 (1,313)	185.9 (1,645)	258.7 (1,369)	93.69 (1,584)
Median Provincial Age	410.8 (1,427)	-1,123 (1,320)	158.9 (1,541)	-1,425 (1,195)	-118.7 (1,578)
Average Remaining Yrs	902.6 (3,705)	2,165 (3,918)	603.9 (5,150)	2,413 (3,640)	1,240 (4,602)
Hausman Statistic		6.174 {0.013}	0.156 {0.693}	4.185 {0.041}	0.675 {0.411}

Note: The observations are weighted using the size of the provincial labor force in a given year. Standard errors were calculated using White's method that is robust to heteroskedasticity and autocorrelation. Each of the reported columns uses the fourth column from Tables 2, 3 and 4 as the first stage for the IV regression. P-values for Hausman test statistic are presented in curly braces.

Table 7: Second Stage Log-Linear Regressions Specifications

		IV			
	OLS	Workers' Compensation	Welfare	Unemployment Insurance	Workers' Compensation, Welfare and Unemployment Insurance
Change in Beneficiaries	0.946 (0.049)	1.028 (0.054)	0.923 (0.081)	1.009 (0.075)	1.017 (0.055)
Unemployment Rate	0.003 (0.024)	0.012 (0.023)	0.003 (0.029)	0.010 (0.023)	0.014 (0.025)
Median Provincial Age	0.018 (0.035)	-0.011 (0.038)	0.021 (0.043)	-0.004 (0.041)	-0.014 (0.038)
Average Remaining Yrs	-0.140 (0.075)	-0.090 (0.073)	-0.153 (0.109)	-0.102 (0.081)	-0.087 (0.083)
Year	0.044 (0.019)	0.045 (0.019)	0.044 (0.020)	0.045 (0.019)	0.043 (0.020)
Hausman Statistic		13.06 {0.0003}	0.127 {0.721}	1.231 {0.267}	8.079 {0.0045}

Note: The observations are weighted using the size of the provincial labor force in a given year. Standard errors were calculated using White's method that is robust to heteroskedasticity and autocorrelation. Each of the reported columns uses the fourth column from Tables 2, 3 and 4 as the first stage for the IV regression. P-values for Hausman test statistic are presented in curly braces.