E C O N O M I C S B U L L E T I N

Disability insurance eligibility criteria and the labor supply of older men

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Abstract

I estimate the effect of allowing individuals to use socioeconomic conditions to qualify for disability benefits on the labor supply of older men in Canada. I obtain my estimates using a difference−in−difference approach and I also adjust my standard errors to properly account for the sampling variability in the data. I find that this policy change led to a 1.5 percentage increase in the nonparticipation of older men (aged 45 to 64) in the CPP provinces, relative to Quebec where there was no change in eligibility requirements.

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1. Introduction

Most of the research examining the effects of disability programs on the labor supply of older men have emphasized the effects of benefits on labor supply decisions (see Bound and Burkhauser (1999) for a survey). Recently, Autor and Duggan (2003) suggested that the interaction of more generous benefits with looser screening requirements could combine with fewer opportunities for low-skilled workers and result in an increase in the number of applications for disability benefits from displaced workers. In fact, Autor and Duggan (2003) found that the greater availability of disability benefits after 1984 have contributed to a 0.5 percentage point drop in the unemployment for low-skilled workers between 1984 and 1998. In addition, Gruber and Kubik (2001) examined the effects of disability insurance denial rates on nonparticipation decisions and found that a 10 percent increase in denial rates would lead to 2.8 percent reduction in nonparticipation. These estimates suggest that changes in screening stringency might also influence the labor supply decisions of individuals.

In this paper, I will examine the effect of a change in the eligibility criteria in the Canada/Quebec Pension Plan (C/QPP) disability program on the labor force participation of older men (aged 45 to 64). In particular, the CPP program allowed socioeconomic conditions such as the unemployment rate or the lack of particular jobs in a region to be used to determine eligibility for benefits. My empirical strategy (i.e., a difference-in-difference estimator) exploits the fact that the CPP and QPP programs are separately administered. In particular, the QPP did not implement the change in eligibility criteria adopted by the CPP program. This means there will be cross-sectional and time series variation in the eligibility criteria used by these programs that will make it easier to separate the effect of the policy change from unobserved time effects. This is not possible in other countries (for example, the United States) since their disability insurance programs are centrally administered and have no cross-sectional variation in the eligibility rules. Consequently, the estimates from Canada can provide valuable information for other jurisdictions. In addition, a number of recent papers have noted (for example, Donald and Lang (2001) and Wooldridge (2003)) that the standard errors for difference-in-difference estimators may understate the sampling variability in the data. As a result, these papers have suggested some alternative approaches for computing the appropriate standard errors. I use an approach proposed by Wooldridge (2003) to obtain my estimates.

In the next section I provide some background information on the on the policy change. I then describe my empirical strategy and present my empirical results. I conclude the paper with some summary remarks.

2. Description of Canada /Quebec Pension Disability Program

The C/QPP disability program provides disability insurance benefits to persons who have a prolonged mental or physical disability and also satisfy the contribution

requirements to the program, which provide a measure of attachment to the labor force.[1] As noted earlier, these programs are separately administered: the QPP program only covers individuals in the province of Quebec and the CPP program covers individuals in the rest of Canada. This difference in administrative structure is beneficial since I can use the QPP program as a 'control' group when evaluating the effects of a 'treatment', i.e., a change in disability policy, in the rest of Canada.

The focus of the paper is a change in CPP disability program's eligibility criteria in 1989. Specifically, the CPP program permitted the use of socioeconomic conditions such as high regional unemployment, a person's skills and the lack of particular sorts of jobs in a region to qualify for CPP disability benefits (Canada Pension Plan Consultations (1996)).[2] In contrast, the QPP program maintained eligibility based solely on medical criteria.

This change resulted from the appeal of a rejected claim in 1998, which is referred to as the Leduc decision. In its decision the Appeals Board for the CPP disability program ruled that socioeconomic and economic conditions could be used as mitigating factors when adjudicating applications for CPP disability benefits (Torjman (2002)). In order to make its adjudication process consistent with the Appeals Board decisions, HRDC issued an policy directive in 1989 that allowed for the consideration of these factors when reviewing applications. Since the Appeals Board is an independent body this suggests that plausible exogeneity of the policy change in 1989.

By allowing socioeconomic conditions to determine eligibility for disability benefits the CPP program allowed for the possibility that some of its beneficiaries may have been able to work, but unable to find work. Although the replacement rates for disability benefits are much lower than those for unemployment insurance, the disability benefits would not be of limited duration, providing much longer term income support. In addition, at the time these changes in eligibility criteria were implemented reassessments of disability beneficiaries were not very common (HRDC (1996)), which further increases the likelihood that beneficiaries who were not truly disabled could use the program as a long-term income support program.

3. Data and Empirical Strategy

I use data from 1987 to 1991 that was drawn from the Survey of Consumer Finances (SCF), which is an annual supplement to the Labor Force Survey that is collected in April, to estimate the effect of the policy change using a difference-in-difference estimator. This method involves a comparison of the change in behavior outside of Quebec, where the eligibility criteria were changed, with the change in behavior in Quebec, where the eligibility criteria were unchanged. I use 1987 and 1998 as

[1] During the period covered by my study, the CPP program required contributions in 2 of the last 3 years or 5 of the last 10 years. The QPP program required contributions in 5 of the last 10 years or one third of the contribution period.

[2] In addition, the CPP disability program also changed its definition of the ability to work from 'any' job to 'current' job (Human Resources Development Canada (1996); Canada Pension Plan Consultations (1996)).

my before period and 1990 and 1991 as my after period. I excluded the year of the policy change from the analysis in order to remove the transitory phase for the new eligibility criteria. I restrict my attention to males between the ages of 45 and 64 during my study period.

The difference-in-difference estimator proceeds by estimating the following linear probability model with ordinary least squares (OLS) (with White's adjustment to the standard errors)

$$NP_{it} = x'_{it}\beta + \delta_1 CPP_j + \delta_2 After_t + \delta_3 CPP_j * After_t + u_{it}, (1)$$

where NP denotes a dummy variable that takes the value 1 for individuals who do not participate in the labor force and 0 otherwise, x is a vector of controls for observable characteristics (containing dummy variables for age, marital status and education) as well as the provincial unemployment rate for prime age males (25 to 44), which controls for differences in labor markets and economic conditions across time and provinces. *CPP* is a dummy variable that takes the value 1 for the CPP provinces and 0 otherwise, it controls for differences in nonparticipation due to location. I define the dummy variable *After* to take the value 1 in the years after the policy change in 1989 and 0 otherwise.[3] This dummy variable controls for time effects on nonparticipation. Finally, the term *CPP*After* is an interaction term between *CPP* and *After*. The coefficient estimate on this interaction term is the difference-in-difference estimate of the effect of the policy change on labor force nonparticipation. This estimate captures the effect of being covered by the CPP program, relative to being covered by the QPP program, after the less stringent eligibility criteria were implemented in the CPP disability program.[4]

Recently, a number of papers have noted that the standard errors for difference-in-difference estimators may be biased downwards because they do not account for the grouped nature of the data (Donald and Lang (2001) and Wooldridge (2003)). In order to correct the difference-in-difference estimates I used a 2-step approach suggested by Wooldridge (2003).[5] Wooldridge's approach separates variables that vary at the individual and group level, with equation (1) being rewritten as

$$NP_{it} = \tilde{x}'_{it}\beta + \phi_g + v_{it}, (2)$$

where ϕ_g is a set of group specific intercepts for each different geographic area (CPP or QPP) for each of the years in the study period. There will be eight elements in the

[3] I restricted the 'after' period to end in 1991 because the CPP program allowed for late applicants for benefits beginning in 1992, which made a number of individuals who were previously ineligible, eligible for benefits (Campolieti and Lavis (2000)). Similarly, the 'before' period does not include years prior to 1987 because there was a large increase in CPP disability benefits during that year.

[4] Unfortunately, the SCF does not include any measures of health or disability status. Consequently, I, like Gruber (2000) who also used the SCF, cannot include these factors in my nonparticipation equation.

[5] This approach is equivalent to the approaches used in Loeb and Bound (1996) and Baker and Fortin (2001).

parameter vector ϕ. The estimates of the group specific intercepts are then used to estimate the following regression

$$\hat{\phi} \quad \text{on } 1, UR, After, CPP, CPP * After \text{ , (3)}$$

i.e., the ϕ_gs are regressed on the variables that only vary at the group level. Wooldridge (2003) refers to this approach as a minimum distance estimator. However, Wooldridge notes that to obtain an efficient minimum distance estimator the standard errors (se) for the group-specific intercepts should be used as weights, i.e., $1/\text{se}(\phi_g)^2$. The two-step estimates, i.e., efficient minimum distance estimates, of the participation equation will be more efficient than the OLS estimates of equation (1) (Wooldridge (2003)).

4. Empirical Results and Discussion

The estimates from the first stage of Wooldridge's approach are presented in Table 1. The controls for the observable individual characteristics (see Table 1) had signs that were consistent with *a priori* expectations.

The estimates in Table 2 are from the group level regression. The difference-in-difference (d-in-d) estimate, i.e., the interaction term between the control for the CPP regions and the dummy variable *After,* was 0.015 and it was statistically significant at the 5 percent level. This suggests that allowing individuals to use socioeconomic conditions to qualify for disability benefits in the CPP program reduced the labor supply of older men in Canada by 1.5 percentage points in provinces covered by the CPP disability program relative to Quebec, which had no change in its eligibility requirements. [6]

The impact of the policy change on nonparticipation decisions is similar to the estimates in Gruber (2000). Gruber (2000) examined the effect of 36 percent increase in CPP benefits in 1987, relative to QPP benefits that did not change, and obtained estimates that suggested increases in the probability of nonparticipation for men aged 45 to 59 between 1.8 to 2.3 percent points in the CPP provinces. Gruber was able to convert these estimates into (arc) elasticities for benefits between 0.19 and 0.36. This suggests that using much slacker screening requirements can also have a large effect on the participation decisions of older males comparable to large benefit increases. Similarly, Gruber and Kubik (1997) examined the effect of increases in denial rates for disability insurance programs on labor force participation of older men in the United States. Their principal estimates suggest statistically significant denial rate elasticity for nonparticipation of –0.28. Using their elasticity estimate, my estimate for the effect of the

[6] In order to examine the robustness of the results I also conducted a falsification exercise, which checks the sensitivity of the results for pre-existing trends. I picked 1982 as my before period and 1983 as my after period, since there were no changes in CPP or QPP policy during those years that would have impacted the labor force participation of older men in Canada. However, these estimates could not be obtained with Wooldridge's method so a variant of equation (1) was estimated with OLS. The difference-in-difference estimates from the counterfactual exercise was 0.009 and had a standard error of 0.015 and not statistically significant (p-value = 0.573). This indicates that there were no pre-existing trends in the data.

less stringent screening CPP disability program requirements on nonparticipation implies a 23 percent fall in denial rates at the initial stage.

These estimates imply that the screening requirements can have a large effect on the participation decisions of older males and so have large effect on flows onto the disability rolls. This points to problems inherent in having eligibility criteria that do not focus exclusively on medical criteria to determine which applicants are granted benefits. The experience of the caseload growth of the CPP disability program in the late-1980s until 1995 illustrates the potential consequences of these looser screening requirements coupled with more generous benefits. In particular, there was a steady increase in the number of applications to the CPP disability, as well as new beneficiaries, to the CPP disability program but very little variation in the QPP program during this period (see Campolieti and Lavis (2000). However, after the CPP program began to reform its application's process, which included not allowing socioeconomic conditions to qualify for benefits in 1995, there was large drop in applications to the program and new beneficiaries as well as increases in denial rates for applicants to the CPP disability program.

5. Concluding Remarks

I estimated the effect of a change in eligibility criteria that allowed socioeconomic criteria to be used to qualify for disability benefits on the labor force participation of older workers. My estimates suggest that this policy change had a fairly large effect on the labor force participation of older males in Canada. They also point to the problem of using non-medical conditions to determine eligibility for disability benefits, which can affect individual labor supply decisions and lead to hidden unemployment on the disability rolls.

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Table 1: First Stage Estimates, OLS

	Coefficient Estimates	Standard Errors
[Age 60-64]		
Age 45-49	-0.282***	0.006
Age 50-54	-0.252***	0.006
Age 55-59	-0.148***	0.007
Married	-0.107***	0.007
[No Schooling or Elementary Education]		
Grade 9-10	-0.082***	0.007
Grade 11-13	-0.131***	0.006
Some Post Secondary	-0.177***	0.008
Post Secondary Diploma	-0.169***	0.008
University Degree	-0.232***	0.008
Group Specific Intercepts		
1987 and CPP=0	0.589***	0.015
1987 and CPP=1	0.557***	0.009
1988 and CPP=0	0.579***	0.014
1988 and CPP=1	0.557***	0.010
1990 and CPP=0	0.622***	0.012
1990 and CPP=1	0.604***	0.009
1991 and CPP=0	0.628***	0.012
1991 and CPP=1	0.614***	0.009
R-squared	0.325	
Sample Size	35,964	

Notes: Excluded reference category in square brackets. Standard errors computed using White's adjustment for heteroskedasticity. Group specific intercepts are for different regions and years, CPP=1 denotes CPP provinces and CPP=0 denotes Quebec. Triple asterisk denotes significant at the 1 percent level.

Table 2: Efficient Minimum Distance Estimates of Nonparticipation Equation

	Coefficient Estimate	Standard Error
Prime Age Male Unemployment Rate	0.354*	0.196
After	0.036***	0.006
CPP	-0.027***	0.005
After*CPP	0.015**	0.007
Constant	0.549***	0.020
R-squared	0.990	
Number of Groups	8	

Notes: Single asterisk denotes statistically significant at 10 percent level, double asterisk denotes statistically significant at 5 percent level and triple asterisk denotes statistically significant at 1 percent level.