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Fishing in Different Pools: Job-Search Strategies and Job-finding Success in Canada in the Early 1980s

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This article examines the job-search methods of jobless workers and emphasizes sample selectivity in choice of job-search strategies (especially use of public employment agencies). Longitudinal data from the Labour Force Survey of Canada for 1981, 1983, and 1986 indicate that job-search methods change with the business cycle and that many people find jobs without any reported search. The determinants of job-search success also vary substantially over the business cycle, implying a substantial social return to public employment agencies at the 1983 trough of the recession but no noticeable benefits when aggregate unemployment is relatively low.

I. Introduction

Job search can be viewed as somewhat analogous to fishing. A fisherman's choice of lure and location or hours of fishing time is presumably what he or she thinks is optimal under his or her own circumstances. However, whether one gets a bite or not depends on a stochastic process. Normally, fishermen try a variety of lures and are quite interested in empirical discussions (such as this article attempts) of which strategy does, in fact, catch fish. Most fishermen would consider it a bit odd if the literature on fishing focused entirely on which fish one throws back.

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Analysis of which fish is “big enough” to keep (if you can only keep one) can be seen as similar to a discussion of the determinants of the reservation wage in job search—indeed, the “job-search” literature tends to emphasize this issue (see Jones 1988). In models such as those of Lippman and McCall (1979) or Narendranathan and Nickell (1985), job offers simply “arrive” at an exogenously determined rate. Indeed one might more accurately describe such models as theories of “job acceptance” rather than “job search,” since they pay little attention to the process that generates job offers.

Although the total effort that is devoted to job search has been discussed by authors such as Mortenson (1986), analysis of the *process* of job search has been “comparatively neglected” (Jones 1989, p. 277). Devine and Kiefer (1991, chap. 7) comprehensively survey the literature on search strategies and offer arrival rates and conclude that “there are definite advances to be made in studying the process by which workers get offers (on the job or otherwise)” (1991, p. 308).

An individual’s choice of alternative job-search strategies can be seen as analogous to the choice of lure and location by which fishermen seek to maximize their chances of catching an acceptable fish. Analysis of the payoff in job-finding success to job-search strategies is complicated by the fact that individuals have different levels of skill and possess different resources, while fish (jobs) of various types are known to respond to different strategies. Moreover, if the government provides one type of gear free but bigger fish are usually caught by other methods, one can expect that those who use the free gear will typically be those whose alternative options are relatively poor.

In all industrialized countries, the state intervenes directly in the process by which jobs and workers are matched by providing the services of public employment agencies. However, it has long been recognized (see Rees 1966) that relatively good jobs are usually found through “informal information networks” of personal contacts. Public employment agencies, by contrast, typically list jobs paying below average wages. Analysis of the social returns to state intervention is therefore greatly complicated by sample selectivity in job-search strategy choice.

As well, job-search strategies may change over the business cycle. Cyclical dependency in the level and type of job-search effort expended arises because one can expect the jobless to change their search strategies in response to changes in the labor market constraints that they face. These changes in job-search strategies imply that the cost/benefit appraisal of public employment agencies will also vary over the business cycle.

In this article, Section II discusses the process of job-search strategy choice. Section III describes briefly the characteristics of the microdata used here for analysis of job search in Canada in January of 1981, 1983, and 1986. Since the Canada Employment Centre (CEC) system represents

the major public employment agency in Canada, Section IV discusses briefly the determinants of the probability of CEC use.¹ Section V presents estimates of the determinants of job-finding success in Canada over the business cycle of the early 1980s, while Section VI discusses the implications of these results—in particular, the cost-benefit evaluation of public employment agencies.

II. Job-Search Strategy

A. The Job-Search Process

In general, the Canadian labor market is characterized by substantial flows into and out of the labor force and between employment and joblessness. In 1984, for example, 51.3% of the working-age population (i.e., age 15 and over) was in the paid labor force (either working or actively looking for work) for *all* of 1984, 20.9% spent part of the year in the paid labor force, and only 27.8% were out of the paid labor force for the entire year. Of those people who were employed at some point in 1984, only 62% were employed for the full year (Statistics Canada 1985*a*, pp. 94, 103; see also Hassan and de Broucker 1985).² Since so many people are occasionally employed or looking for work, this article focuses on those individuals who have been employed or who looked for work at some point in the last year (the “annual labor force”) and examines the determinants of job-finding success for the currently jobless members of the annual labor force.

This article emphasizes the “jobless” members of the annual labor force (those without paid employment) rather than the “unemployed” (those jobless individuals who actively looked for work) since many jobless Canadians find jobs *without recorded job search*. For example, in 1981, 68.7% of jobless male members of the annual labor force did not report any active job search in January, but one-eighth of those who did not report search in January were in fact employed in February (see table 1). Job search usually increases the probability of job-finding success, but, if employers can contact workers or if acquaintances can bring the news of job openings, job search may not be an absolute requirement for locating employment.

Different job-search methods will typically tap different pools of potential employers. Roper (1988) has emphasized that an employer’s choice

¹ In the province of Quebec, there is a parallel provincial labor exchange system; hence, this paper refers to “public employment agency” (PEA for short) when the relevant population is all of Canada and to “Canada Employment Centre” when Canada outside Quebec is considered.

² The “prime-age” population is characterized by greater continuity in labor force status, but flows are still very significant. Among those aged 25–44, 68.5% were in the labor force for all of 1984 (57.5% employed all year), while 18.4% were in the labor force for part of the year, and 13.0% were outside the labor force for the full year.

Table 1
Search Method Use and Job-finding Success

	Search Method Use (January)*			Job-finding Success (February)†		
	1981	1983	1986	1981	1983	1986
Jobless males:						
Job-search method:						
Direct application	65.9	63.2	65.0	20.6	16.1	14.3
Public employment						
agency	36.6	56.2	49.7	9.6	14.1	11.4
Looked at ads	28.3	37.6	39.7	21.2	11.9	11.9
Friend/relative	10.8	15.2	15.3	17.5	12.2	14.4
Placed/answered						
ads	8.7	10.9	14.0	21.9	19.3	16.5
Union	7.9	9.3	5.6	10.3	11.4	23.0
Private employment						
agency	1.4	3.3	2.6	40.0	12.0	14.6
Other	1.9	.01	1.4	28.6	.0	20.0
No search reported‡	68.7	55.4	55.7	12.5§	10.0§	10.0§
Jobless females:						
Job-search method:						
Direct application	66.0	57.5	62.1	15.8	17.0	16.8
Public employment						
agency	47.1	47.9	42.3	12.3	9.5	14.6
Looked at ads	40.5	46.8	45.0	15.2	12.2	14.6
Friend/relative	6.9	14.1	12.7	11.1	12.7	12.7
Placed/answered						
ads	15.4	18.1	16.0	22.5	14.5	16.0
Union	.0	.02	.0	.0	.0	.0
Private employment						
agency	3.1	2.1	2.3	25.0	12.5	27.6
Other	.0	.0	1.0	.0	.0	27.3
No search reported‡	78.6	71.6	67.7	12.6§	10.9§	11.4§

* Percentage of those who reported active job search who used a particular job-search method.
 † Percentage of January users of job-search method who were employed in February.
 ‡ Percentage of jobless members of annual labor force with no reported job search in January.
 § Percentage of the nonsearching January jobless who were employed in February.

of recruitment strategy implies considerable variation in expected vacancy duration (e.g., advertising in national newspapers casts a wider net than depending on direct application, but it takes longer to fill a vacancy). Barron and Bishop (1985) and Barron, Bishop, and Dunkelberg (1985) have discussed the differences between employers in search strategies (e.g., larger employers typically interview more applicants for each vacancy, firms invest more search effort in filling positions that require more education or training, etc.). Indeed, discussion of employer differences in search strategies goes back at least to Doeringer and Piore (1971, p. 102), who argued that “employers are extremely conscious of the role of recruitment procedures as a screening device. Any given type of recruitment procedure tends to produce candidates with certain common attributes (e.g.) word-

of-mouth recruitment tends to produce applicants similar to those already employed.”

Public employment agencies typically list jobs paying below average wages. In 1986–87, the Job Order Survey of Canada Employment and Immigration indicated that the average hourly wage of jobs in 13 industrial categories listed at Canada Employment Centres was \$6.24.³ This figure will overstate the wages actually available to CEC users to the extent that organizations, such as federal government departments or universities (who want to be seen to be considering Canadian applicants), may list jobs with a CEC without any real expectation that such a listing will produce a serious candidate.⁴ Nevertheless, \$6.24 compares poorly with the average hourly wage of \$11.24 among all employees in a similar industrial aggregate and the average wage of \$7.91 paid to new employees hired in those industries in the latter half of 1986.⁵ Since some high-wage employers depend entirely on referrals by their existing labor force while others list only their unskilled or low-wage vacancies through the CEC system, a choice of job-search strategy by a jobless worker is simultaneously a choice of wage-offer distribution.

This article also argues that a reasonable job-search model should exhibit cyclical dependence. One normally expects that when there are fewer fish available fishermen will change their fishing strategies. Economists typically think of individuals as maximizing utility subject to constraint, and one of the constraints faced by an individual job seeker at a point in time is the current state of the aggregate labor market. In January 1981, the unemployment rate in Canada (not seasonally adjusted) was 8.3%, but in January 1983 it was 13.7% and in January 1986, 10.7%.⁶ As table 1 indicates, both the degree of job-search activity and the allocation of such activity among search methods changed over this cycle, and the changes differed for men and for women.

At the trough of the recession in 1983, for example, the male jobless were considerably more likely to engage in active job search than in 1981. Compared to 1981, in the higher unemployment labor markets of 1983

³ These industrial categories are Forestry, mining, manufacturing, construction, transportation and communication, wholesale trade, retail trade, finance insurance and real estate, business services, public administration, education, health and social services, accommodation.

⁴ Agencies wishing to hire non-Canadians must demonstrate to Employment and Immigration Canada that a search has been made for qualified Canadians but none have been found. Government contractors are not typically required to use CECs for Canadian applicants.

⁵ These are my calculations using the 1986 Labour Market Activity Survey of Statistics Canada.

⁶ Since the object here is to analyze the January/February transition to employment, it is not appropriate to use the seasonally adjusted unemployment rate.

and 1986, men were considerably more likely to report relying on contacts with friends or relatives as a job-search technique, but the payoff to this strategy declined. By contrast, "networking" by women in 1983 and 1986 was both more common *and* marginally more successful than in 1981. Although the success rate among male PEA clients in 1981 was considerably below that of those who used friends and relatives as a job-search method, informal contacts were not as productive as formal job search channels in the depressed labor markets of 1983. Both the use and the success rate of public employment agencies were considerably higher in 1983 and 1986 than in 1981 for males, but the picture is much less clear for women. In short, both men and women appear to change their job-search behavior at different phases of the business cycle but in different ways and with different consequences.

In depressed labor markets, more of one's normal contacts may themselves be unemployed, and those who are still working will more often be employees of establishments that are laying off rather than hiring. Hence, the relative value of the "informal information network" of labor market contacts can be expected to vary with the business cycle (see Maki 1971, p. 4). A consistent finding of the literature (see Rees 1966; Granovetter 1974) is the importance of contacts via "friends and relatives" for job finding. Recently, Holzer (1987*a*, 1987*b*) has added to this literature the observation that some job searchers (such as young blacks in the United States) may be systematically disadvantaged in labor market contacts and may therefore depend relatively heavily on state employment agencies as a job-search strategy. For this reason, evaluation of the efficacy of the U.S. National Employment Service (Johnson et al. 1983) explicitly considered the issue of sample selectivity bias in PEA use, but one should also expect that such selectivity bias might vary over the business cycle.

If each job-search strategy (and the null strategy of no active job search)⁷ is known to draw offers from a different pool of potential employers, with a different distribution of potential wage offers, then it will in general be desirable for an individual to vary his or her level of effort across search strategies since the marginal returns from an hour spent in alternative search strategies will in general differ. A particular search method will be used up to the point where its marginal expected return is equal to the marginal utility of leisure, and it will be common to use several search methods simultaneously. Since the marginal return to search depends on the contacts of each individual, the effort level in each job-search method will depend on the network of informal contacts available to each indi-

⁷ Employers may contact workers directly or, more commonly, an acquaintance who learns of a suitable vacancy may pass on this information to someone who is not actively searching but who they know would like a job.

vidual.⁸ Since individuals will use a particular job-search strategy only if the expected value of returns to that strategy exceed the opportunity cost of time, sample selectivity bias may be especially important for cost/benefit evaluation of public employment agencies, whose clientele is likely to be disproportionately composed of individuals whose informal labor market contacts and other alternative job-search strategies offer relatively poor prospects.

Wielgosz and Carpenter (1987, p. 159) come to the conclusion that “almost all methods of job search are associated with significantly shorter durations of search when compared with the state employment service.”⁹ However, this finding did not control for sample selectivity in PEA use. If much of the PEA clientele would *otherwise* normally expect longer-than-average spells of unemployment, PEA use may still *reduce* the unemployment duration of its clients, even though the reduced duration of unemployment of PEA clients remains greater than the average unemployment duration of all unemployed.

B. An Empirical Model

Section IIA has argued that choice of job-search strategies will vary over the business cycle, that sample selection bias is an important issue in the analysis of returns to public employment agency use, and that some jobless individuals may find employment without initiating active job search.

$$P_{it} = f_t(\hat{e}_{kit}, C_i, X_{it}, Y_{it}) \quad (1)$$

Written in its most general form, equation (1) expresses the probability of individual i getting a job in period t (P_{it}) as a function of the effort used by the individual (\hat{e}_{kit}) in all the k search methods used, personal contacts in the labor market (C_i), the personal characteristics (X_{it}) that influence the reservation wage, and the characteristics of the labor market in which they search (Y_{it}). It is written as a general reduced form (in the tradition of Narendranathan and Nickell [1985]) since, as Atkinson, Gomulka, Micklewright, and Rau (1984, p. 7) note, theory provides no explicit guidance on the functional form one should adopt for the production function for job offers or for the distribution function of potential wage offers.

Ideally, one would estimate a model of job-finding success that incorporated consideration of the simultaneous self-selection of individuals for *all* job-search strategies (i.e., both “pure” strategies of using a single job-search method and “mixed” strategies of using a combination of job-search

⁸ For a formal model see Osberg (1991a).

⁹ This conclusion depends on an ordinary least squares estimate of the association between state employment service use and the job-search duration of youths who eventually found jobs in the 1982 National Longitudinal Survey (NLS) data.

methods). However, the estimation of models of simultaneous self-selection can involve a considerable computational burden.¹⁰ In this case, the data identify seven distinct job-search methods, and the computational burden of estimation of simultaneity in the selection of seven “pure” strategies would be extreme, even if one were willing to ignore the use of mixed search strategies. (Maddala [1983, p. 63] notes, in discussing estimation of the multinomial probit model [which, unlike the multinomial logit does not impose independence among alternatives], “for more than four alternatives the computations are almost impractical.”)

Self-selection in the use of public employment agencies is, however, particularly interesting, both because PEA use may be an indicator of the relative unavailability of labor market contacts and because the provision of PEA services is the major public policy intervention in the job-search process. For these reasons, this article assumes that job offers are in fact produced by some combination of individual effort and personal contacts and that individuals differ in the unobservable continuous variable C_i , “social contacts”; hence, persons with relatively good contacts do not need to use public employment agencies (and one can think of this as occurring when C_i exceeds some critical value C'). One would like to use the variable C_i in estimating the determinants of job-finding success, but instead the variable C^* (equals one if an individual uses a public employment agency ($C_i > C'$); equals zero otherwise) is observed.

As Maddala (1983, p. 120) outlines, this can be seen as a model of the following general type (where eq. [2] represents a linearization of eq. [1]):

$$P_{it} = a_0 + a_{1t}C_i + a_{2t}X_{it} + a_{3t}Y_{it} + \sum_{k=1}^m \alpha_{tk}e_{kit} + u_1, \quad (2)$$

$$C^* = bZ + u_2. \quad (3)$$

This model can be estimated in two stages, where equation (3) is estimated as a probit model (see the Appendix for variable definitions and table A1). Denote the cumulative distribution function of the standardized normal variate derived from the estimation of (3) as $F(bZ)$. Equation (4) then gives an unbiased estimate, for the entire sample of users and nonusers of CECs, of the probability of job finding:

¹⁰ For example, Tunali (1986) provides (in another context) exact specification of a two-stage model of simultaneous selection by only two criteria, which involve the estimation of a bivariate probit model.

$$\begin{aligned}
 E(P_{it}) &= E(P_{it}|C^* = 1) \times \text{prob}(C^* = 1) + E(P_{it}|C^* = 0) \\
 &\quad \times \text{prob}(C^* = 0) \\
 &= a_0 + \sum_{k=1}^m \alpha_{tk} e_{kit} + a_{1t} F(bZ) + a_{2t} X_{it} + a_{3t} Y_{it} + u_3.
 \end{aligned}
 \tag{4}$$

Equation (4) therefore includes explicit consideration of all job-search strategies used, models sample selectivity in use of CEC as a search strategy, and allows the influence of each variable to vary over time, on the expectation that the use of, and payoff to, alternative job-search strategies will vary over time. In particular, we expect to observe sample selectivity in the use of public employment agencies and, controlling for such sample selectivity, a payoff in job-finding probability to PEA use that varies with the business cycle.

III. Data

The Canadian Labour Force Survey (LFS), like the Current Population Survey in the United States, is a rotation sample. The inhabitants of a random sample of dwelling units are interviewed for 6 successive months, before being replaced by a new sample. This article uses the LFS sample initially interviewed in September of 1980, 1982, and 1985, whose responses in September were matched with their responses to the LFS in the subsequent January and February. Since the Annual Work Patterns Survey (AWPS) was administered in January of 1981, 1983, and 1986 as an addendum to the LFS, recall data on labor force experience for the entire preceding year are available for each respondent.

Since the LFS is based on a sample of dwellings, one will be reinterviewing the same individuals only if they did not move during the sample period. All movers, and those who did not respond to all survey waves, were therefore dropped from analysis. Since neither moving nor nonresponse is a purely random event (e.g., smaller households are more likely to be missed on reinterview), the sample was reweighted to ensure that population densities by household characteristic from the longitudinal panel correspond to those observed in the January LFS. As well, military personnel, agricultural workers, those who reported themselves permanently unable to work, and individuals with no record of employment or job-search activity in the previous year (in either the monthly LFS or in the recall data of the AWPS) are excluded. The LFS contains no direct information on wages, but the same sample frame is used for the Survey of Consumer Finances (SCF), and many variables are common between these surveys. It was therefore possible to use the SCF to estimate the expected value of earnings for individuals with given characteristics and to use such

predicted earnings as an instrument for the wages potentially available to jobless individuals.

An advantage of this data set is that we avoid much of the recall error associated with memories of past job-search methods by matching *contemporaneously reported* job-search activity in January with February labor market outcomes. The relevant job-search questions ask the following (interviewer instructions are bracketed): (56) “In the past 6 months has _____ looked for work?” (If no, skip to 64, if yes go to _____.) (57) “In the past 4 weeks, what has _____ done to find work?” (List/mark all methods reported.) “In the past 4 weeks has _____ done anything else to find work?” (Mark all methods reported; for each method given ask, “When did _____ last [repeat method].”)

The onus is clearly on respondents to volunteer information about active steps taken to secure employment, as is consistent with the LFS definition of unemployment as those “without work, who had actively looked for work in the last four weeks and were available for work.”¹¹ If respondents answer as the questionnaire designers intend, the passive receipt of information (e.g., from a friend who calls up with news about a potential vacancy) will not be captured as “job search.” Since, by January, respondents and interviewers have been through the instrument four times previously, the problems raised by “rotation bias” in other contexts are not relevant here.

A major disadvantage of this data set is its lack of information on hours expended in each job-search method—as Devine and Kiefer (1991) note, the rarity of this information has meant that many of the available studies on job-search methods exploit the same data set (a special supplement to the May 1976 CPS).¹² (Kahn and Low [1988] and Holzer [1987a] have also used the 1980 NLS Youth Cohort.) A major advantage of the data set of this article is that the replication of the LFS at different phases of the business cycle enables one to examine explicitly the possible importance of cyclical dependence.¹³

¹¹ In March of each year, Statistics Canada has run a supplement to the LFS survey that also measures a looser definition of unemployment—those jobless individuals who “want work and are available for work.” In 1983, this looser definition would have produced an additional 476,000 unemployed (roughly 2.5% of the working-age population). Although the number of such people who cite personal and other reasons for their absence of job search is fairly constant (at roughly 120,000–140,000), the number citing labor market reasons for absence of search varies directly with the unemployment rate (see Statistics Canada 1985a).

¹² The U.S. unemployment rate was 8.3% in 1975, 7.6% in 1976, and declined to 5.8% in 1979—i.e., this special survey catches search behavior just after a cyclical trough.

¹³ Although a number of authors (e.g., Kahn and Low 1988) include regional dummy variables or the local unemployment rate as explanatory variables, the

However, our measure of search is certainly not perfect. Very short periods of search (i.e., commencing and concluding between the January and February interview dates) will not be captured in our data. In Section V, the variable RECALL distinguishes those individuals who did not actively search because they were waiting for recall to a previous job (in order to control for temporary layoff unemployment), but those who searched in January for a job to start after February (e.g., university students looking for a summer job) are mingled in our data with those who wanted a job to start immediately. As well, some of those beginning employment in February will have lined up their job by a search process that terminated in December or earlier.

A. Unemployment Insurance

For many years the literature has emphasized the role that unemployment insurance might (e.g., see Cousineau 1985) or might not (Atkinson et al. 1984) play in influencing the transition from joblessness to employment. As Devine and Kiefer (1991, p. 304) note, “The effect of unemployment benefits on unemployment duration is still unsettled. . . . Estimates vary across samples and there is evidence that the benefit effect varies with local labour market conditions, elapsed duration and age.” Given the importance of the unemployment insurance (UI) issue (see Hamermesh 1977; Benham 1983; Blau and Robins 1986), however, it is clear that one must consider the role of UI explicitly.

The AWPS data contain a detailed employment history of each individual for the previous year, while the duration of any current spell of unemployment is captured by the LFS. Eligibility for unemployment insurance in Canada depends on both an individual’s work history and the unemployment rate in his or her local labor market. The variable ELIG (equals one if now eligible for UI; equals zero if not) is calculated by comparison of an individual’s work history with the entrance requirement for unemployment insurance applicable in his or her economic region.¹⁴ In Canada, the maximum duration of UI benefits depends on an individual’s weeks of insured employment in the qualifying period and the local unemploy-

cross-sectional variation in unemployment at a point in time can be expected to reflect variations in industrial structure, population composition, or other regulations (such as minimum wages). Search strategies presumably adapt both to differences in the local “natural rate” of unemployment *and* to cyclical deviations from it. There is no reason to think that an individual’s optimal search strategy would change in the same way in response to a cyclical rise in unemployment in their local area or if they moved to a locality whose higher minimum wage implied a higher local unemployment rate.

¹⁴ Where an individual has more than one spell of unemployment in the past year, it is assumed that UI was used in the first spell, and the individual’s work history is compared with that required to qualify for UI.

ment rate, both of which we know. Since the LFS records the duration of an individual's current spell of unemployment, one can obtain the weeks of unemployment insurance benefits remaining for an individual (variable BENLEFT) by subtraction (assuming that workers file for UI benefits immediately upon separation from their previous employment). In the theoretical literature there has long been an expectation (e.g., see Burdett 1979) that the reservation wage should decline as an individual nears the end of his or her benefit eligibility. Moffitt (1985) and Ham and Rea (1987) have found that the approaching exhaustion of benefits is associated with an increase in the probability of job finding.

This article follows the lead of Narendranathan, Nickell, and Stern (1985, p. 310), who argue that one should write the probability of job finding "as a general function of benefits and wages" since the use of the benefit/wage *ratio* as an independent variable is equivalent to the maintained hypothesis that the coefficient on benefits is the inverse of that on wages, if entered separately (a maintained hypothesis that one should test explicitly). Using the SCF, one can estimate the expected weekly wage available to a jobless individual with given characteristics, which is entered as variable WAGE. Since Canadian UI legislation defines the benefit/wage ratio as equal to .6 if weekly wages are less than maximum insurable earnings, but equal to $.6 \times (\text{maximum insurable earnings})/(\text{actual weekly earnings})$ if actual earnings exceed the insurable maximum, there is a substantial range in the replacement ratio actually open to individuals. Given the provisions of the legislation, we compute the expected benefits open to an individual from his or her expected wage and include it as variable UIBEN.¹⁵

¹⁵ The Unemployment Insurance Act sets maximum insurable earnings equal to the previous year's average industrial weekly earnings. Since the SCF contains data on annual weeks of unemployment and total UI benefits received, one can also estimate directly the expected value of the benefit/wage replacement ratio open to an individual of given characteristics, as reported in Osberg (1988). Use of the directly estimated expected value of the benefit/wage replacement ratio produces less sensible results on UI variables but does not affect the other results reported in tables 2 and 3. There is also substantial evidence, however, that jobless Canadians often do not claim unemployment insurance benefits, even if eligible. Glenday and Alam (1982, p. 45) note that in some 52.8% of the spells of nonemployment experienced by Canadians in the period 1974–79 a UI claim was *not* filed, even though 88.4% of spells were preceded by employment of sufficient duration to establish eligibility for benefits. Since nearly half of all jobless Canadians in the 1970s could have claimed UI but did not do so, UI claimants are a "self-selected" group. An earlier version of this research (Osberg 1988) estimated the probability of claiming UI and conditioned estimates of job-finding success on the inverse Mills ratio calculated from a probit model of the probability that individuals will in fact claim UI benefits as well as on the self-selection in PEA use. Estimates of the impact of PEA use and other search methods are almost identical.

B. Duration Dependence and Previous Unemployment

A fairly consistent finding in the literature is negative duration dependence—that is, the probability of job finding diminishes as the duration of the current spell of unemployment increases. This finding has been explained by some (e.g., see Hayes and Nutman 1981) as due to the “scarring” effect of unemployment in decreasing the employability of the jobless and by others as due to unobserved heterogeneity among the unemployed. Disentangling these two alternative hypotheses in a rigorous way remains a complicated affair (see Heckman and Borjas 1980; Corcoran and Hill 1985; or Devine and Kiefer 1991). However, one can note that the “sorting” effect of unobserved heterogeneity is a more credible explanation of negative duration dependence in the first few months of unemployment than among the long-term unemployed since after several months of unemployment those who remain jobless should be almost entirely those workers with “bad” characteristics (which are unobserved by the econometrician). Yet the “scarring” effect of unemployment, in the depreciation of job skills, changed psychological attitudes, and loss of credibility to potential employers (“if you are really that good, how come you are still unemployed?”) presumably takes some time to appear. We therefore split the sample into the long duration (greater than 3 months) and the short duration (less than 3 months) jobless. One can test the hypothesis of structural similarity in the equations predicting job-finding success by calculating the difference between the likelihood ratio for the pooled population and the sum of the likelihood ratios for the subpopulations, which is distributed as chi-square under the null hypothesis of no structural dissimilarity. In every case, our data reject this hypothesis.

IV. Who Uses Public Employment Agencies?

It is a fairly safe bet that the readers of this article did *not* find their current job through the local office of their state employment agency. Public employment agencies serve a distinct segment of the labor market—one that has decreased in relative importance in recent decades. Partially as a result, public employment agencies have been subject to widespread criticism. As Wielgosz and Carpenter (1987) indicate, in the United States, the United Kingdom, and Australia complaints of inadequate screening of referrals, slow service, and irrelevance to most recruitment decisions have been similar to those heard in Canada.

Section II has outlined why a model of job-finding success might need to allow for sample selection bias, and the probit model of CEC use which that requires can also be interpreted directly as a form of multivariate “market analysis” of CEC use. The determinants of CEC use are discussed in more detail in the notes to table A1 in the Appendix and, as one would expect from table 1, vary over the business cycle of the early 1980s. In all

years, however, the probability of using a CEC increases as the duration of unemployment increases, indicating that people tend to turn first to other job-search methods. Controlling for other influences, the probability of CEC use is higher for those who lost their last job, compared to those who left for other reasons. Although one might have expected that Canada Employment Centres would be primarily used by unstable workers, hence (*ceteris paribus*) negatively associated with previous job tenure, such an effect is only detectable among males in 1986. We do, however, find some indirect support for the contentions of Barron and Mellow (1982), Keely and Robins (1985), and St. Louis et al. (1986) that a requirement for visible, ascertainable job-search activity (as in unemployment insurance) may induce a shift of job search toward more demonstrable methods, such as CEC use. Eligibility for unemployment insurance is consistently, and positively, associated with the probability of CEC use.

V. The Probability of Getting a Job

Tables 2 and 3 report the results of a logit model of the probability that someone who has been in the labor force in the previous year but was jobless in January of 1981, 1983, or 1986 would be employed in February. The model is estimated separately for men and for women, and, as can be calculated from the estimated standard errors of the coefficients reported in tables 2 and 3, in almost all cases one can reject at 95% confidence the hypothesis that the coefficients of interest are equal (which is not surprising given the differences in search strategies and outcomes between men and women, which are apparent in table 1). Since the primary focus of this article centers on the role played by job-search strategies and unemployment insurance incentives, these coefficients are presented in tables 2 and 3, conditional on control variables for (1) demographic and family characteristics, (2) education, (3) local labor market characteristics, (4) industry, (5) occupation of prior employment, and (6) employment history. (Appendix table A2 contains the full model.)

Among males in 1981, we observe a consistent negative partial correlation between CEC use (variable PUBEMPL) and job-finding success, which is statistically significant for long-duration jobless. For women, the relationship is inconsistent. However, it is hard to argue that the act of visiting a Canada Employment Centre, *ceteris paribus*, actually *hurts* an individual's chances of finding a job, and there were differences in the data available to estimate the probability of CEC use in 1981, compared to 1983 or 1986. A more cautious interpretation is to argue that sample selection bias (variable CDF—see eq. [4] above) has not been as well captured in the 1981 data, as in 1983 or 1986.¹⁶ If so, the first two columns of tables

¹⁶ Sample selection bias in public employment agency use is not constant over the business cycle—the cumulative distribution function (variable CDF) is statistically significant for males in 1986 and the long-duration female jobless in 1981 and short-duration jobless in 1983, but it is not significant otherwise.

Table 2
Job-finding Success (January/February) for Females, Canada Outside Quebec
 Logit Model: Dependent Variable = 1 If Jobless in January and Employed February, 0 If Jobless Both Months

	1981		1983		1986	
	Short	Long	Short	Long	Short	Long
ELIG = 1 if eligible for UI	.995 (.73)	-.583 (.57)	1.825 (.89)	-.0328 (-.03)	-1.027 (-.92)	-1.563 (-2.31)**
WAGE—expected weekly wage	.0041 (.78)	.0015 (.617)	.00135 (.19)	.0047 (1.34)	-.0111** (-2.21)	.0011 (.42)
UIBEN—UI benefits payable	.0051 (.56)	-.0104 (-1.45)	-.0029 (-.23)	.0093 (-1.28)	.0129 (1.47)	.0047 (.91)
BENLEFT—weeks remaining in UI claim	-.038 (-1.42)	.034 (1.17)	.0121 (.29)	-.0098 (-.39)	.493 (.21)	.0247 (1.37)
PUBEMPL = 1 if used public employment agency	.397 (.44)	-.276 (-.40)	.00111 (.0015)	.434 (.97)	.557 (1.58)	1.017 (2.95)**
CDF—selection bias correction	.156 (.11)	5.06*** (2.95)	-3.737*** (-2.33)	-.917 (-.72)	-.771 (-.68)	-1.79 (-1.39)
PRIVEEMPL = 1 if used private employment agency	.012 (.006)	-.227 (-.0005)	-.24.6 (.005)	-6.941 (-.37)	.863 (1.15)	...

EMPLOYJ = 1 if contacted employers	-.493 (-.79)	.678 (1.25)	1.239 (2.05)**	.575 (1.46)	.319 (1.04)	1.142*** (3.73)
FRIENDR = 1 if used friends or relatives	.928 (.77)	.927 (-.51)	-1.219 (-1.34)	-1.38 (-1.55)	.302 (.60)	-15.19 (-.035)
PLACEAD = 1 if placed advertisement	.677 (.80)	.685 (1.02)	-.252 (-.28)	.962** (2.02)	-.377 (-.93)	.129 (.32)
LOOKAD = 1 if looked for advertisements	.364 (.41)	.005 (.007)	-.00928 (-.014)	-.199 (-.45)	-.625* (-1.79)	.129 (.39)
LJMLSWRK = log of months since last worked	-.19 (-.37)	-.0328 (-.102)	-2.287*** (-3.16)	-.297 (-.86)	-1.09*** (-3.409)	.357* (1.91)
Log likelihood (0)	-161.87	-202.9	-199.4	-249.4	-382.0	-413.9
Log-likelihood function	-122.41	-164.1	-123.2	-199.9	-332.9	-347.1
Sample size	319	691	348	889	680	1,459
$P_w = 1$	65	59	90	72	169	120
Likelihood ratio test	78.9	75.8	152.5	98.9	98.1	133.8

NOTE—t-statistics are in parentheses.

* Significant at the .10 level.

** Significant at the .05 level.

*** Significant at the .01 level.

Table 3
Job-finding Success (January/February) for Males, Canada Outside Quebec

	1981		1983		1986	
	Short	Long	Short	Long	Short	Long
ELIG = 1 if eligible for UI	-.878 (-.64)	.247 (.19)	.794 (.44)	-.656 (.71)	.575 (.55)	1.0985 (1.59)
WAGE—expected weekly wage	-.000679 (-.15)	-.00389 (-.69)	.00165 (.42)	-.00226 (-.75)	-.0007 (-.45)	-.0016 (-1.11)
UIBEN—UI benefits payable	.00406 (.53)	-.147 (-1.42)	-.0097 (-1.34)	.00297 (.566)	-.00459 (-1.41)	-.00027 (-.085)
BENLEFT—weeks remaining in UI claim	.036 (1.22)	.0681 (1.82)*	.040 (.98)	-.0110 (-.50)	.0121 (.49)	-.0106 (-.58)
PUBEMPL = 1 if used public employment agency	-.546 (-.99)	-.160 (-2.43)**	-.136 (.33)	1.291 (2.69)*	-.052 (-1.17)	-.302 (-.92)
CDF selection bias correction	.262 (.26)	1.61 (.92)	2.39 (1.05)	-.883 (-.71)	-4.831 (3.49)***	-4.126 (-3.34)***
PRIVEMPL = 1 if used private employment agency	-21.0 (-.001)	...	2.33 (2.46)**	-.349 (-.27)	.918 (.99)	-.0645 (-.085)

UNION = 1 if checked with union	-1.67 (-1.3)	.468 (.37)	.068 (.093)	-.31 (-.26)	.709 (1.56)	.87 (1.18)
EMPLOYJ = 1 if contacted employers	.268 (.62)	2.05 (3.53)***	.831 (2.14)**	.739 (1.79)*	-.242 (-.97)	.953 (3.25)***
FRIENDR = 1 if used friends or relatives	-1.85 (-2.12)*	.809 (.81)	.826 (1.73)*	.598 (1.02)	.460 (1.34)	.106 (.31)
PLACEAD = 1 if placed advertisement	.371 (.50)	-2.38 (-2.0)**	2.23 (4.02)***	.679 (1.44)	.398 (1.17)	.641 (1.81)
LOOKAD = 1 if looked for advertisements	1.06 (1.75)*	1.27* (1.86)	-1.83*** (-3.81)	-.712 (-1.64)	-.251 (-.87)	.268 (.91)
IJMLSWRK = log of months since last worked	-.617 (-1.23)	-.99 (-1.31)	-1.96 (-3.51)***	-.101 (-.24)	-.768 (-2.19)**	-.309 (.89)
Log likelihood (0)	-223.8	-154.8	-262.11	-196.1	-431.8	-342.3
Log likelihood function	-175.35	-101.1	-191.35	-164.6	-345.1	-284.9
Sample size	390	542	516	860	813	1,297
$P_w = 1$	102	144	107	52	181	96
Likelihood ratio test	96.9	107.6	177.5	62.9	173.5	114.9

NOTE.—*t*-statistics are in parentheses.

* Significant at the .10 level.

** Significant at the .05 level.

*** Significant at the .01 level.

2 and 3 may not indicate that CEC use in 1981 hurt the chances that the jobless would obtain employment—but certainly in the relatively low unemployment (8.3%) labor market of January 1981, there is no evidence that CEC use *improved* chances of job finding.

In the high unemployment (13.7%) labor market of January 1983, jobless women derived no benefit from CEC use and neither did short duration jobless males. However, there is no evidence of sample selection bias among the long-duration male jobless of 1983, for whom there is a statistically significant and large increase in the probability of job-finding success associated with CEC use. These results can be read as indicating that public employment agencies perform a “safety net” role in severe recessions, when they are used by “average” members of the labor force who have exhausted their normal job-finding strategies.¹⁷

In the 1986 data, tables 2 and 3 echo the findings of Johnson et al. (1983)—a study that referred to a similar point in the U.S. business cycle—in finding no indication of a payoff in greater probability of job-finding success for males but a significant impact on job-finding probability for females. Tables 2 and 3 can therefore be read as indicating that public employment agencies do not help much at the peak of the business cycle, since jobs are relatively plentiful and job seekers find them on their own, but do perform a valuable “safety net” function for the long-duration male jobless who have exhausted their normal job search methods in the trough of the recession and seem to provide significant assistance to jobless women at the midpoint of the business cycle.

As table 1 indicated, direct application to employers and use of public employment agencies are the two most commonly reported methods of job search. As tables 2 and 3 illustrate, direct approaches to employers are fairly consistently associated with a higher probability of job-finding success. The third most commonly reported job-search method, looking at ads, is a more passive tactic, and tables 2 and 3 indicate that, although this might work (for males) when unemployment is low, as in 1981, dependence on a passive strategy is negatively associated with success when jobs are scarce. Other job-search methods are less commonly reported. The strategies of talking to friends or relatives, placing or answering ads, or using a union hiring hall or private employment agency have mixed success.

Comparing 1981, 1983, and 1986, the expected weekly value of unemployment insurance benefits has no statistically significant association with job-finding success. Theory would predict a negative association between weeks of benefits remaining and probability of job finding, but the only

¹⁷ Using a 1982 U.K. sample, Jones (1989, p. 281) reports that “the decline in hours of search with growing spell lengths is especially marked for search by friends or via firms”—i.e., as spell length increases, one’s network of contacts is “mined out.”

statistically significant result has the “wrong” sign. Eligibility for unemployment insurance has the expected negative impact on job finding for the long-duration female jobless in 1986 but not otherwise.

A consistent finding for both men and women for 1983 and 1986 is negative duration dependence among the short-term jobless but no statistically significant impact on unemployment duration among the long-term jobless. In the more buoyant labor market of 1981, one cannot reject the hypothesis of no duration dependence. These findings for 1983 and 1986 would appear to be more consistent with the “sorting” interpretation of duration dependency than with the “scarring” hypothesis.

VI. Implications

Since public employment agencies represent the only important way in which the state intervenes directly in the job-search process, it is of interest to estimate whether the costs of such involvement are justified by the social returns. If an individual’s use of a CEC has no positive impact on his or her probability of job finding (as in 1981—see tables 2 and 3), one’s estimate of the social benefits of the existence of a PEA system such as the Canada Employment Centres must be nil. In 1983 the long-duration male jobless appear to have benefited from their use of the CEC system, and in 1986 the same could be said of the long-duration female jobless. How does the value of these benefits in 1983 and 1986 compare with the costs of providing CEC services?

Each jobless individual has a particular probability of finding a job, and that probability implies an expected duration of unemployment. In 1983 and 1986 data, one can calculate, for all users of the CEC system, the change in job-finding probability associated with CEC use, hence the change in the expected duration of a spell of unemployment. The monetary value of this decrease in the length of unemployment spells depends on the weekly wages of the individuals involved and the number of spells of unemployment that they have each year.

The expected value of weekly wages (W_i) of each individual is calculated from the wage equations reported in Osberg (1991a). From the Annual Work Pattern Survey one knows the number (n_i) of unemployment spells experienced by an individual in the previous year. If ΔD_i is the expected value of the change in unemployment spell duration associated with the use of the CEC system by individual i , equation (5) represents an upper-bound estimate of the total benefits of the CEC system in Canada in 1983 and 1986 arising from the reduction in unemployment spell duration:¹⁸

¹⁸ Implicitly, this “ceteris paribus” methodology assumes that the abolition of the CEC system would not prompt other compensating changes in job-search methods—hence, it must be interpreted as an “upper bound” on the benefits of the existence of the CEC system. For a fuller discussion, see Osberg (1988, pp.

$$TB = \sum_i \Delta D_i \times n_i \times w_i. \quad (5)$$

One of the major benefits to government of the CEC system is the reduction in unemployment insurance payments caused by more rapid job finding, which can be calculated as per equation (6) (where $ELIG_i$ equals one if eligible for UI benefits, equals zero otherwise; $UILEFT$ equals one if benefits have not expired, equals zero otherwise; and $UIBEN$ equals weekly UI benefits payable):

$$UISAVED = \sum_i \Delta D_i \times n_i \times ELIG_i \times UILEFT_i \times UIBEN_i. \quad (6)$$

In 1983 CEC use had a large impact on male job-finding probability (see table 3), and there were a large number of long-duration male jobless, who used CECs relatively frequently; hence, the total social benefits of the CEC system in 1983 are large—\$1.06 billion. One must qualify this estimate by noting that it depends on expected wages, given personal characteristics in 1982, as the measure of the opportunity cost of time spent in unemployment. If unemployed individuals have to “shift down” in labor market aspirations in order to find employment, the expected wage of the employed might overstate the potential wage available to the unemployed.¹⁹ A crude correction for this would be to adjust the expected benefits of CEC use by the ratio in 1986 between the average wages of jobs listed in the CEC system to the average wages of all new jobs (i.e., to .79), which would cut the social benefits of the CEC system to approximately \$836 million. One would not want to ascribe a misleading degree of precision

94–102). Note that since the logit model is a nonlinear function of explanatory variables one must explicitly calculate expected unemployment duration for each individual, with and without the use of the CEC system.

¹⁹ One explanation of the effectiveness of CEC use for men, and the ineffectiveness of CEC use for women in 1983, is that men may have displaced women from the jobs that women would otherwise have obtained through the CEC system. The variable $CECPENET$ (CEC placements in each local labor market as a percentage of the local labor force) was included in initial specifications of the logit model as an explicit test for the “displacement” effect. If placements by public employment agencies simply imply that the clients of public employment agencies “jump the queue” of job searchers, then (a) the private benefits of PEA use to individuals overstate the social benefits of the existence of public employment agencies and (b) greater penetration by CEC should be associated with a lower probability of job-finding success for those who did not use CEC (i.e., $CECPENET$ should enter with a negative sign). However, the variable $CECPENET$ was statistically insignificant. Table 1 can be read as consistent with a “displacement” hypothesis, but the insignificance of $CECPENET$ is not consistent. On balance there is no clear support for the “displacement” hypothesis.

to either of these estimates since the abolition of public employment agencies would represent a nonmarginal institutional change that might prompt compensating changes in other institutions, but either estimate is *very* much greater than the cost of the CEC system.

In 1985/86, \$62.993 million was spent on the labor exchange activities of Employment and Immigration Canada outside Quebec. One might reasonably argue that the total cost of the CEC system should also include the cost of acquiring labor market information (\$15.863 million) and labor market development services (\$85.056 million). The total cost of the CEC system, for Canada outside Quebec in 1985/86, was therefore approximately \$164 million. Clearly, in the trough of the recession in 1983 the social benefits of the CEC system exceeded its financial costs. Indeed, since accelerated job finding reduced the expenditure of the UI system to the tune of approximately \$339 million, one can argue that in 1983 the CEC system produced substantial financial savings to government.

In 1983, therefore, one has no reason to be concerned about the marginal welfare cost of the taxation required to finance the CEC system. However, in 1986 the efficiency case for the CEC system rests with its female clientele of long-duration jobless.²⁰ They are fewer in number, used the system less in 1986, and experienced a smaller change in job-finding probability. In 1986, the social benefit of CEC use, as calculated from equation (5), is \$104.1 million, and the cash savings to government from decreased UI payments amount to only \$21 million. In 1986 the CEC system would, therefore, fail a strict cost/benefit appraisal, even laying aside any consideration of the marginal welfare cost of taxation.²¹

The cost/benefit picture is clearly even worse in 1981 since this article contains no evidence that job seekers derived *any* benefit from the presence of the CEC system in finding jobs in the relatively buoyant labor market of 1981. However, public employment agencies cannot be turned on and off from one year to the next, so the crucial question is whether over the business cycle *as a whole* the present value of the benefits associated with the CEC system exceed the present value of its costs. Since this article argues that the CEC system pays off, in a big way, in recessionary troughs but has essentially no social benefits at the peak of the business cycle, a full assessment of the costs and benefits of this microeconomic intervention in labor markets requires some estimate of the likely future course of the macroeconomic business cycle.

Macroeconomic forecasting lies beyond the scope of this article, but it is desirable to draw the general moral that labor market behavior varies

²⁰ Note that Johnson et al. (1983) drew a similar conclusion for the United States, at a similar phase of the business cycle.

²¹ Browning (1987) discusses the wide variation in plausible estimates of the marginal welfare cost of taxation.

over the business cycle.²² This should not surprise economists, who usually think of individuals as maximizing utility subject to constraints since conditions in the labor market as a whole represent an exogenous constraint to all individuals at any particular point in time. However, the implications of the cyclical sensitivity of microeconomic behavior for the cost/benefit evaluation of state intervention in labor markets have not generally been recognized.

An evaluation of labor market policy intervention that uses only a single year's data should not be interpreted to have *general* validity—since labor market behavior is cyclically dependent, a single year's data can only yield contingent statements, *conditional on* the phase of the business cycle.

However, an important dimension of job-finding behavior, in all years, is the difference between men and women in search strategies used and the differences in payoffs obtained from particular search strategies. Furthermore, this article does not find any evidence that the incentives of the UI system have a significant effect on job-finding probability. The data do indicate that job finding without reported search is fairly common in Canada. This issue deserves further research.

Appendix

Definition of Variables

- ELIG = 1 if eligible for UI benefits, given work history from AWPS,
= 0 otherwise;
- UIBEN = Imputed UI benefits, conditional on weekly earnings;
- WAGE = Imputed weekly wages (Osberg 1991a, table A4);
- BENLEFT = Estimated remaining number of UI benefit weeks;
weeks = benefit entitlement minus current unemployment spell duration;
- PUBEMPL = 1 if used PEA as job-search method;
= 0 otherwise;
- CDF = cumulative distribution function of standardized normal variate from probit model of probability of using public employment agency as a job-search strategy (see eq. [4]);
- PRIVEMPL = 1 if private employment agency sued,
= 0 otherwise;
- EMPLOYJ = 1 if contacted employers directly,
= 0 otherwise;
- FRIENDR = if used friends or relatives as job-search method,
= 0 otherwise;

²² See also Osberg (1991b) for a discussion of the cyclical sensitivity of interindustry mobility, using the same data base.

- PLACEAD = 1 if placed or answered ads,
 = 0 otherwise;
- LJMLSWRK = log of months since last work;
- UNION = 1 if union member,
 = 0 otherwise;
- SINGLE = 1 if single, widowed, separated or divorced,
 = 0 otherwise;
- EDUCOT8 = 1 if 0–8 years of education,
 = 0 otherwise;
- POSTSEC = 1 if some postsecondary education,
 = 0 otherwise;
- CERTDIPL = 1 if postsecondary certificate or diploma
 education,
 = 0 otherwise
- UNIVERSITY = 1 if university degree,
 = 0 otherwise;
- HOMEOWNER = 1 if home owned by household member,
 = 0 otherwise;
- MARITIME = 1 if resident of Newfoundland, Prince Edward
 Island, New Brunswick, or Nova Scotia;
 = 0 otherwise;
- PRAIRIE = 1 if resident of Manitoba, Saskatchewan, or
 Alberta;
 = 0 otherwise;
- BC = 1 if resident of British Columbia,
 = 0 otherwise;
- PRNSRUR = percentage of local labor market who live in rural
 areas;
- GOODMFG = 1 if industry where last employed was
 manufacturing,
 = 0 otherwise;
- RESAGMIN = 1 if industry of last employment was resources,
 agriculture, or mining;
 = 0 otherwise;
- GOVERNMENT = 1 if industry of last employment was public
 administration,
 = 0 otherwise;
- LFENTRANT = 1 if never worked or last worked more than 5
 years ago,
 = 0 otherwise;
- UTILTRSP = 1 if utilities, transportation, or communications
 industry,
 = 0 otherwise;
- KNOW = 1 if managerial, sciences, religion, teaching,
 medical, or artistic occupation;
 = 0 otherwise;
- DATA = 1 if clerical or sales occupation,
 = 0 otherwise;

- SERV = 1 if personal service occupation,
 = 0 otherwise;
 JPJOBTN = months of previous job tenure;
 JWKSLOOK = number of weeks looking for work;
 RECALL = 1 if did not search because waiting for recall,
 = 0 otherwise;
 REASMOV = 1 if left last job because changed residence,
 = 0 otherwise;
 REASDIS = 1 if left last job because of dissatisfaction,
 = 0 otherwise;
 REASILL = 1 if left last job because of illness,
 = 0 otherwise;
 REASLJL = 1 if laid off or lost last job,
 = 0 otherwise;
 USERTRIL = 1 if local CEC had fully converted to new
 organizational format,
 = 0 otherwise;
 TRANSNAL = 1 if local CEC partly converted to new
 organizational format,
 = 0 otherwise;
 SPUNEMPL = 1 if spouse unemployed,
 = 0 otherwise;
 SPNOTLF = 1 if spouse not in labor force,
 = 0 otherwise;
 UNEMFAM = number of unemployed family members;
 SPELLS = total number of unemployment spells in the
 previous year;
 LHUBYWG = log of husband's imputed wages;
 EPRATIO = employment/population ratio in local labor
 market area;
 DURAWKS = total unemployment spell duration in the previous
 year;
 URB100T = 1 if resident in urban area of 30,000–100,000,
 = 0 if not;
 URBLT30T = 1 if urban area with population less than 300,000,
 = 0 otherwise;
 RURAL = 1 if rural area,
 = 0 otherwise;
 SCHOOL = number of years of education.

Table A1
Determinants of the Probability of CEC Use (January)

	Males				Females			
	1981	1983	1986	1981	1983	1986	1981	1986
AGE	-.007 (-1.1)	-.016*** (-3.3)	-.0052 (-1.61)	-.011 (-1.6)	...	...	...	-.007* (-1.89)
SINGLE	.328* (1.9)	-.465*** (-3.9)	-.351*** (-4.7)	...	-.296** (-2.2)	.126 (1.0)	...	...
EDUCOT8	...	...	-.175** (-1.9)	.304 (1.3)	...	...	...	...
POSTSEC	...	...	...	...	.528*** (2.9)	.159 (1.37)	...	...
CERTDIPL	-.1511** (-2.5)	.289* (1.7)	...	...	.316 (1.6)	.17 (1.44)	...	...
UNIVERSITY	.609 (1.6)	-.592** (-2.6)	...	...	.458** (2.0)	...	...	...
HOMEOWNER	...	-.212** (-2.2)	-.265*** (-4.1)	-.179 (1.1)	-.185 (-1.5)	...	...	...
MARITIME	...	-.257** (-1.8)	-.245*** (-2.7)	...	...	...	...	.235** (2.3)
PRAIRIE	...	-.286** (-2.3)	-.497*** (-5.8)	-.310 (-1.6)	-.343** (-2.2)	...	...	...
BC	...	-.465*** (-3.5)	-.453*** (-5.3)	...	-.215 (-1.3)	...	...	...
PRNSRUR	-.004* (-1.8)	.005** (2.2)	.0036*** (2.7)	.004 (1.6)	.008** (3.1)	.004** (2.4)	...	...
GOODMFG	.275** (2.1)	...	...	-.292 (-1.4)	-.218 (-1.4)	...	...	...
RESAGMIN	...	-.341*** (-3.2)	...	-.741* (-1.9)	...	...	...	...

Table A1 (Continued)

	Males			Females		
	1981	1983	1986	1981	1983	1986
GOVERNMENT	-.281 (1.0)	...	.332** (2.5)	...	...	.243* (1.7)
LFENTRANT	...	...	...	-.500 (1.3)	...	...
UTILTRSP	...	-.295 (-1.6)	...	-.584 (-1.2)	...	.612*** (2.8)
KNOW	-.679* (-1.9)	.296* (1.8)	-.22** (-2.2)	-.591** (-2.1)	...	-.41*** (-3.1)
DATA	-.325* (-1.7)	-.163 (1.2)	-.256** (-2.4)	...	...	-.264*** (-2.7)
SERV	...	...	...	-.429** (-2.3)	...	-.216** (-2.1)
JPJOBTN	.002* (1.7)	...	-.0013** (-2.4)	.002 (1.4)	-.002 (-1.5)	-.0016* (-1.7)
JWKSLOOK	.062*** (10.3)	.025*** (9.2)	0.13*** (8.2)	.046*** (8.2)	.031*** (8.3)	.015*** (7.6)
RECALL	...	-.702 (-1.1)	...	.780 (1.4)	-1.314* (-1.7)	...
REASMOV	...	-1.377** (-2.3)	.639** (2.3)	-.916 (-1.2)	-.931** (-2.0)	.546*** (2.7)
REASDIS	...	...	.931*** (7.4)	.447* (1.4)	...	.887*** (6.7)
REASILL	...	...	.45** (2.4)	.534** (2.1)	...	.387* (1.89)
REASLJL	.868*** (6.9)	.684*** (6.8)	.649*** (8.8)	.409** (2.4)	.217* (1.8)	.614*** (6.9)

Table A2

Logit Model of Job-finding Success (P_{it}) for Females, Canada Outside Quebec
 Dependent Variable = 1 If Jobless in January and Employed February, 0 If Jobless Both Months
 A. For Females

	1981		1983		1986	
	Short	Long	Short	Long	Short	Long
Demographic:						
AGE	.0391** (2.41)	.0149 (.85)	-.03015 (-1.57)	-.0128 (-.78)	.0127 (1.13)	-.0289 (-2.33)
SINGLE	.0042 (.0095)	-1.2456** (-3.03)	18.997 (1.52)	-8.5954 (-.86)	-2.2798*** (-2.87)	-1.4282** (-2.5)
SPUNEMPL	...	...	-1.6006 (-1.04)	-2.2935** (-2.51)	-.1613 (-.24)	-.6018 (-1.12)
SPNOTLF	...	...	-.4819 (-.3)	-1.2178 (-1.23)	-1.2068** (-2.2)	.1926 (.41)
UNEMFAM	...	...	1.0332** (2.31)	1.0621*** (3.52)	.5105 (-1.38)	.2511 (.77)
LHUBYWG	...	...	1.8999 (1.52)	-.831 (-.82)	-.2152*** (-2.72)	-.0316 (-.56)
Education:						
EDUCOT8	-1.5139** (-2.19)	-1.3382 (-1.9)*	-.2513 (-.32)	.6521 (1.18)	-.6405 (-1.45)	-.0059 (-.01)
POSTSEC	-1.1038 (-1.51)	.3431 (.68)	.0685 (.09)	-.2086 (-.4)	.5027 (1.55)	-.255 (-.78)
CERTDIPL	.6687 (.91)	.0318 (.054)	2.0254*** (3.29)	-.1356 (-.23)	.8209*** (2.60)	.2841 (.85)
UNIVERSITY	-.1971 (-.26)	-.3477 (-.45)	2.9909*** (3.25)	1.1146 (1.82)	.3618 (.85)	.3038 (.75)
Location:						
EPRATIO	-.0801** (-2.02)	-.0463 (-1.34)	.004 (.1)	-.0329 (-1.05)	.0186 (.82)	.0194 (.86)
MARITIME	-.6923 (-.92)	-1.5343** (-2.07)	-.7318 (-.84)	-1.237 (-1.81)	-.0277 (-.06)	.6157 (1.37)

PRAIRIE	.9745**	.6372	.2877	.0651	.1247	.0365
	(1.97)	(1.53)	(.52)	(.15)	(.44)	(.13)
Industry:						
RESAGMIN	-.0031	.0514	-1.357	-.5525	-.7873	.9906*
	(-.0036)	(.0588)	(-1.54)	(-.87)	(-.92)	(1.91)
GOODMFG	1.3714	.8086	-2.2101**	.0514	.6218	-.2104
	(1.51)	(1.3)	(-2.05)	(.09)	(1.36)	(-.45)
GOVERNMENT	-2.5293***	.5392	-.2256	-.2986	-.5717	.7807**
	(-3.06)	(.94)	(-.25)	(-.51)	(-1.04)	(2.2)
UTILTRSP	-.8464	-.6373	-1.8948	-6.5758	1.2775**	-.8595
	(-.84)	(-.44)	(-1.32)	(-1.21)	(2.11)	(-.82)
Occupation:						
DATA	1.1079	.4587	-.5169	.1224	.3435	.1542
	(1.47)	(.71)	(-.58)	(.25)	(.76)	(.34)
SERV	.1524	.5413	-1.1453	-6.147	.0394**	-.3588
	(.19)	(.76)	(-1.28)	(-.97)	(2.14)	(-.69)
Work history:						
LFEINTRANT	-1.3918	1.105	-3.5785**	1.7622*	.8873	-.0944
	(-.89)	(.96)	(-2.29)	(1.63)	(1.28)	(-.13)
JPJOBTN	-.0001	-.0012	.0102**	.0014	-.0005	-.0027
	(-.04)	(-.36)	(2.48)	(.49)	(-.17)	(-.95)
SPELLS	.5593**	-.2985	.8494***	-.1785	.3396**	.0121
	(2.05)	(-.94)	(2.87)	(-.67)	(2.39)	(.06)
DURAWKS	-.0826**	-.0739***	-.02385	-.0161	-.027	-.0228**
	(-2.15)	(-2.73)	(-.73)	(-1.02)	(-1.89)	(-2.11)
LJMLSWRK	-.1948	-.0329	-2.2868***	-.2975	-1.0992**	.3566*
	(-.38)	(-1.0)	(-3.16)	(-.87)	(-3.41)	(1.91)
REASLJL	-.5295	.5055	.4791	.2374	.0126	1.099
	(-1.23)	(1.17)	(.93)	(.58)	(.04)	(.37)
REASDIS	-1.5038	1.6355**	-.3249	-.8093	-.7804	.3438
	(-1.7)	(2.37)	(-.27)	(-.85)	(-1.39)	(.82)
REASILL	-1.1262	-1.213	-.848	-.061	.3039	.6423
	(-1.24)	(-1.22)	(-.81)	(-.08)	(.55)	(1.33)
REASMOV	...	.5689	...	-.6951	3.2747*	-.8525
		(.667)		(-.67)	(1.99)	(-1.41)

Table A2 (Continued)

	1981		1983		1986	
	Short	Long	Short	Long	Short	Long
UI benefit status:						
ELIG	.9547 (.73)	-.5826 (-.57)	1.8252 (.88)	-.0328 (-.3)	-1.027 (-.92)	-1.5629** (-2.32)
UIBEN	.0051 (.56)	-.0105 (-1.45)	-.0029 (-.22)	-.0094 (-1.28)	.0029 (1.47)	.0047 (.91)
WAGE	.00409 (.78)	.0016 (.62)	.0013 (.19)	.0047 (1.34)	-.0111** (-2.21)	.0011 (.42)
BENLEFT	-.0381 (-1.42)	.0347 (1.17)	.012 (.29)	-.0098 (-.39)	.0049 (.21)	.0247 (1.37)
Job-search method:						
PUBEMPL	.39759 (.44)	-.2759 (-.4)	.0011 (.002)	.4346 (.97)	.5569 (1.58)	1.0172*** (2.95)
CDF	.1561 (.11)	5.0694*** (2.95)	-3.737** (-2.34)	-.917 (-.72)	...	...
EMPLOYJ	-.4934 (-.79)	.6776 (1.25)	1.2385* (2.05)	.5752 (1.46)	.3196 (1.04)	1.1421*** (3.73)
FRIENDR	.9281 (.77)	-.9278 (-1.51)	-1.2189 (-1.35)	-1.3872 (-1.35)	.3018 (.6)	-15.085 (-0.3)
PLACEAD	.6771 (.80)	.6845 (1.02)	-.2524 (-.29)	.9624** (2.02)	-.3771 (-.95)	.1289 (.32)
CONSTANT	1.8945 (.74)	-.00875 (-.0037)	-20.45 (-1.64)	8.2178 (.81)	.7847 (.43)	-2.8783 (-1.69)
Log-likelihood fn	-122.41	-164.15	-123.16	-199.96	-332.96	-347.06
N	319	691	348	889	680	1,459
Log-likelihood (o)	-161.87	-202.09	-119.4	-249.44	-382.01	-413.95
Log-likelihood ratio	78.915	75.873	152.49	98.948	98.089	133.787

B. For Males

	1981		1983		1986	
	Short	Long	Short	Long	Short	Long
Demographic:						
AGE	-.0025 (-.13)	-.049 (-1.74)	.0427** (2.16)	.0122 (.63)	-.0046 (-.42)	-.0361** (-2.03)
SINGLE	-.1458 (-.3)	-2.2504*** (-2.76)	1.1377 (1.65)	-.7336 (-1.23)	-1.1951*** (-3.8)	-.6492* (1.59)
SPUNEMPL	...	...	1.1984 (1.57)	-.7183 (-.85)	-1.8914*** (-3.68)	-.882 (-1.58)
SPNOTLF	...	...	.3844 (.6)	-.0308 (-.05)	-.7075*** (-2.87)	-.2181 (-.73)
UNEMFAM	...	...	-1.1293** (-2.01)	.0739 (.2)	1.3338*** (3.4)	1.2266*** (3.3)
Education:						
EDUCOT8	-.5039 (-1.0)	-.4943 (-.67)	-.8908* (-1.89)	-.5263 (-.83)	-.9106*** (-2.6)	-.9979* (-1.67)
POSTSEC	.143 (.22)	1.2618** (2.05)	.0662 (.11)	-.0132 (-.02)	-.6344* (-1.76)	.869*** (2.7)
CERTDIPL	.6558 (.85)	-.5924 (-.46)	-.6217 (-1.06)	.6071 (1.03)	1.2317*** (3.66)	.9253* (1.88)
UNIVERSITY	-1.2733 (-.86)	1.2236 (1.02)	1.7059** (2.28)	-.3517 (-.33)	.0583 (.11)	1.0075* (1.84)
Location:						
EPRATIO	.0379 (1.12)	.0419 (.91)	.0775** (2.44)	.0429 (1.27)	.0394* (1.83)	.0453* (1.74)
MARITIME	.3217 (.55)	-1.2541 (-1.46)	.8399 (1.31)	-.2862 (-.4)	.1105 (.22)	.5827 (1.14)
PRAIRIE	.5282 (1.14)	-.2844 (-.41)	-.4555 (-1.05)	-.6601 (-1.24)	-.3916 (-1.06)	1.205 (.36)
BC	.4912 (1.05)	.0902 (.16)	.5289 (1.19)	.5557 (1.15)	.1923 (.46)	.4619 (1.21)
PRNSRUR	.0018 (.24)	-.0099 (.91)	.0119 (1.58)	.015 (1.76)	-.0062 (-1.13)	.011** (1.82)

Table A2 (Continued)

	1981		1983		1986	
	Short	Long	Short	Long	Short	Long
BENLEFT	.036 (1.22)	.0681* (1.82)	.0403 (.99)	-.011 (-.5)	.0121 (.5)	-.0106 (-.58)
Job-search method: PUBEMPL	-.5461 (-1.0)	-1.601** (-2.44)	-.136 (-.33)	1.2911*** (2.69)	-.527 (-1.17)	-.3022 (-.92)
GDF	.2628 (.27)	1.6057 (.92)	2.3927 (1.05)	-.8831 (-.71)	-4.831*** (-3.50)	-4.126 (-3.34)***
EMPLOYJ	.2685 (.63)	2.0575** (3.53)	.8314** (2.14)	.7391* (1.79)	-.2421 (-.99)	.9534 (3.25)
FRIENDR	-1.8504 (-2.13)	.8092 (.81)	.8261* (1.73)	.5981 (1.03)	.4601 (1.34)	.0159 (.31)
PLACEAD	.3709 (.5)	-2.3831** (-2.01)	2.2297*** (4.02)	.679 (1.44)	.3957 (1.17)	.6413* (1.81)
LOOKADS	1.0677* (1.75)	1.2774* (1.86)	-1.8314*** (-3.81)	-.7116 (-1.64)	-.2506 (-.87)	.2681 (.9)
UNION	-1.6743 (-1.3)	.4682 (.37)	.0689 (.09)	-.3139 (-.27)	.7095 (1.56)	.8786 (1.18)
PREIVEMPL	-21.058 (-0.01)	...	2.3363** (2.46)	-.35 (-.27)	.9184 (1.0)	-.0645 (-.08)
CONSTANT	-3.7166 (-1.45)	-2.3819 (-.65)	-7.42*** (-3.13)	-4.8765** (-2.14)	-1.5829 (-1.01)	-4.7239** (-2.53)
Log-likelihood fn	-175.35	-101.09	-191.35	-164.66	-345.09	-284.88
N	390	542	516	860	813	1,297
Log-likelihood (o)	-223.8	-154.88	-262.11	-196.13	-431.83	-342.2
Log-likelihood ratio test	96.919	107.588	177.5	62.944	173.464	114.004

NOTE.—t-statistics are in parentheses.
 * Significant at the .10 level (two-tailed test).
 ** Significant at the .05 level (two-tailed test).
 *** Significant at the .01 level (two-tailed test).

Discussion: Notes to Table A1

Among the male jobless outside Quebec in 1986, older workers are slightly less likely to use CECs, and single workers are considerably less likely. Those with very little education have a lower probability of using CECs than high school graduates (which may be because they have a greater tendency to withdraw from the labor force—that is, do no active job search at all). Women with some postsecondary training or university turned to CECs in the recession of 1983, but men did not.

Since the control category is Ontario residence, the negative coefficients in 1983 and 1986 on the dummy variables for maritimes, prairies, and British Columbia reported for males indicate that Ontario residents are significantly more likely to use CECs than those in other regions, with prairie residents the least likely to use the CECs. (Among women, it is maritime residents who are most likely to use CECs.)

A dummy variable for homeowner status is included on the basis that homeowners may be more well established in local communities, and therefore have a greater network of personal contacts to draw on in the labor market, and hence be less likely to use CECs. The negative coefficient reported in table B1 for males supports this hypothesis, but notably this variable is not statistically significant for women. The variable PRNSRUR, which measures the percentage of the local labor market that is rural, was included on the expectation that rural residents may have a smaller number of personal contacts and hence be more likely to use the formal information network offered by the CEC. The positive coefficient of this variable, for both men and women, confirms this hypothesis in 1983 and 1986.

If ex-government employees are attempting to regain government employment, and governments tend to advertise (at least nominally) through formal information networks, one can explain the positive coefficient on past government employment observed. It is, however, notable that the independent influence of the variable LFENTRANT (which indicates whether an individual was a labor force entrant in January) was statistically insignificant.

Among both male and female respondents, occupations in the professional/administrative or clerical categories (variables KNOW and DATA, respectively) are negatively associated with the probability of CEC use. This is not unexpected since it has long been suspected that public employment agencies are not very successful in white-collar placement. Among female workers, those in personal service occupations (which is, again, a relatively expanding occupational sector) are less likely than those in goods-based occupations to use CECs.

The reason one left one's last job also seems to be a determinant of one's probability of using a CEC. The "control category" is "personal responsibilities and going back to school." The variable REASDIS indicates whether an individual was dismissed from his or her last job; the variable REASILL indicates whether he or she lost the last job as a result of illness, and the variable READLJL indicates whether he or she

lost the job as a result of layoff or plant closing. Among both the male and female jobless, individuals who lost their job for any of these three reasons are more likely to use CECs.

The larger the number of unemployed family members (variable UNEMFAM) the higher the probability that an individual will use a CEC center—an observation that is consistent both with increased job search *in general* due to the unemployment of other family members (the “additional worker effect”) *and* with the observation that other family members are now less useful contacts, hence formal search methods are more valuable. However, the unemployment of one’s spouse increases the probability of CEC use for women but decreases it for men.

Over the 1982–86 period Employment and Immigration Canada reformed the method and emphasis of delivery of CEC placement services. Employment and Immigration Canada provided to us a coding, for each labor force catchment area, of the status of the CEC serving that area. A CEC that has completed the reorganization was labeled REORGANIZ; those that had begun but not completed the process were coded TRANSITION, and the balance are controls. The residence code for LFS respondents was matched to the revitalization status of the local CEC to assess the impact of this reform program.

One supposes that one of the aims of the revitalization program was to make CECs more effective as a job-search strategy and thereby increase their attractiveness to potential clients. For women, the positive coefficient on the variable REORGANIZ is consistent with the hypothesis that this program may have been successful since it indicates that women in areas serviced by revitalized CECs are more likely, other things being equal, to use CECs than those women in areas serviced by traditional or transitional CECs.

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