

Engström, Per; Hesselius, Patrik; Holmlund, Bertil

**Working Paper**

## Vacancy referrals, job search, and the duration of unemployment: a randomized experiment

CESifo Working Paper, No. 2552

**Provided in Cooperation with:**

Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

*Suggested Citation:* Engström, Per; Hesselius, Patrik; Holmlund, Bertil (2009) : Vacancy referrals, job search, and the duration of unemployment: a randomized experiment, CESifo Working Paper, No. 2552, Center for Economic Studies and ifo Institute (CESifo), Munich

This Version is available at:

<https://hdl.handle.net/10419/26597>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

# Vacancy Referrals, Job Search, and the Duration of Unemployment: A Randomized Experiment

PER ENGSTRÖM  
PATRIK HESSELIUS  
BERTIL HOLMLUND

CESIFO WORKING PAPER NO. 2552  
CATEGORY 4: LABOUR MARKETS  
FEBRUARY 2009

*An electronic version of the paper may be downloaded*

- *from the SSRN website:* [www.SSRN.com](http://www.SSRN.com)
- *from the RePEc website:* [www.RePEc.org](http://www.RePEc.org)
- *from the CESifo website:* [www.CESifo-group.org/wp](http://www.CESifo-group.org/wp)

# Vacancy Referrals, Job Search, and the Duration of Unemployment: A Randomized Experiment

## Abstract

One goal of the public employment service is to facilitate matching between unemployed job seekers and job vacancies; another goal is to monitor job search so as to bring search efforts among the unemployed in line with search requirements. The referral of job seekers to vacancies is one instrument used for these purposes. We report results from a randomized Swedish experiment where the outcome of referrals is examined. To what extent do unemployed individuals actually apply for the jobs they are referred to? Does information to job seekers about increased monitoring affect the probability of applying and the probability of leaving unemployment? The experiment indicates that a relatively large fraction (one third) of the referrals do not result in job applications. Information about intensified monitoring causes an increase in the probability of job application, especially among young people. However, we find no significant impact on the duration of unemployment.

JEL Code: C99, J64, J68.

Keywords: vacancy referral, job matching, job search, randomized experiment.

*Per Engström*  
IFAU / Uppsala University  
Sweden - Uppsala  
[per.engstrom@ifau.uu.se](mailto:per.engstrom@ifau.uu.se)

*Patrik Hesselius*  
IFAU / Uppsala University  
Sweden – Uppsala  
[patrik.hesselius@ifau.uu.se](mailto:patrik.hesselius@ifau.uu.se)

*Bertil Holmlund*  
Department of Economics  
Uppsala University  
Box 513  
Sweden - 751 20 Uppsala  
[bertil.holmlund@nek.uu.se](mailto:bertil.holmlund@nek.uu.se)

February 1, 2009

We thank Björn Blomqvist, Anders Forslund, Peter Fredriksson, Fredrik Jansson Dahlén, Tomas Jonsson, Bo Lundgren, Oskar Nordström Skans, Martin Nilsson, Petra Nilsson, Lena Olofsson, Kristina Padrón, Leif Tallskog, Roope Uusitalo and seminar participants at IFAU and the Public Employment Service for valuable comments. Special thanks to Kjell Hjelm, Rolf Adolfsson and Jan Eriksson at the Public Employment Service who skilfully managed all the practical details of the experiment. Patric Tirmén provided excellent research assistance. Financial support from The Swedish Unemployment Insurance Board (IAF) is gratefully acknowledged.

# 1 Introduction

The referral of unemployed job seekers to job vacancies is key instrument whereby the public employment service (PES) attempts to facilitate the matching between job seekers and vacancies. This instrument is also used as a device to monitor job search, thereby reducing the moral hazard problems in unemployment insurance. A job seeker who fails to apply for a job that he is referred to runs a risk of being sanctioned, i.e., being exposed to a benefit withdrawal or a benefit reduction. However, a credible threat of a benefit sanction requires that PES gathers and uses information on whether referrals lead to actual job applications.

Our study focuses on vacancy referrals in Sweden, a country well known for its ambitious active labor market policies. The vacancy referral process is a key ingredient of these policies. A vacancy referral involves a formal letter to the job seeker where a particular vacancy is identified. The letter states explicitly that the job seeker should apply for the vacancy and that failure to do so can result in a reduction or withdrawal of unemployment benefits. The annual flow of referrals via PES has amounted to some 13 – 18 percent relative to the labor force (AMS, 2007a). A referral should take place when the PES administrator has found a job that is “suitable” to the job seeker. The suitability criterion is a bit vague but attempts to prevent “excessive” search for jobs where the qualification requirements would rule out successful matches. The two goals of the referrals – matching and monitoring – may call for different priorities in the process: the more monitoring is emphasized, the less focus should be directed at referring the job seeker to *suitable* vacancies.

We examine how the vacancy referral process works and focus on three main questions. Do referrals lead to actual job applications? Does a “threat” of increased monitoring affect the probability of searching for a job that a worker is referred to? And how does this threat affect the duration of unemployment? To answer these questions, we have undertaken a randomized experiment based on a sample of vacancy referrals during the

fall of 2007. Surveys to employers were used to get information about how often referrals lead to job applications. Some unemployed job seekers – the “treatment groups” – were alerted (via letters from PES) to an increased risk of being monitored, i.e., an increased probability that their referral would be checked with the employer.

We find that about one third of the referrals did not result in actual job applications. Information about increased monitoring resulted in a higher probability of job application. The average impact amounts to an increase in the job application rate by 4 percentage points. The impact is most pronounced – 12 percentage points – among young people. However, there is no statistically significant impact on the duration of unemployment.

We proceed by a brief overview of some related previous studies. Section 3 describes the experiment; section 4 discusses some theoretical issues; section 4 presents empirical results, and section 5 concludes.

## **2 Previous studies**

We are unaware of previous studies that focus on vacancy referrals in the matching process. However, there are a number of related studies that deal with the effects of job search requirements and job search assistance (see Fredriksson and Holmlund, 2006, for a survey). Arguably, the most convincing evidence is based on work search experiments undertaken in the United States. One experiment was undertaken in the state of Washington in 1986-87 and is described in Johnson and Kleppinger (1994). Four different treatments were considered: (i) elimination of work-search requirement; (ii) standard requirement; (iii) individualized requirements; and (iv) intensive services. Individuals in the first category had essentially no search requirements. They were not required to report a specific number of employer contacts and UI payments were made automatically to claimants until they reported change of circumstance, such as return to work. The second category had requirements similar to what had been practiced in most states. Claimants had to make at least three employer contacts per week and those

employers had to be listed on bi-weekly continued claims forms. Individuals in the third category were subject to work-search treatments tailored to specific circumstances of their occupation or local labor market. The fourth category had job search assistance early in the unemployment spell.

The study finds strong evidence that more stringent search requirements reduce the length of benefit receipt. Workers in the first category (no search requirements) had three weeks longer duration of benefit receipt than those with standard requirements. No search requirement also increased the risk of benefit exhaustion and increased the probability of being reemployed by the same employer. There is some evidence that workers in the first category had slightly higher reemployment wages in the short term, a finding consistent with higher reservation wages. However, there is no evidence of any longer-term effects on wages.

Another experimental study was undertaken in Maryland in 1994 and is presented in Benus and Johnson (1997). Benefit claimants were randomly assigned to four treatment groups and two control groups. The control groups were required to follow the standard requirements at the time, including the report of at least two employer contacts per week (although without any verification of the contacts). Participants in one of the control groups were informed that they were part of an experimental study. The treatments were as follows: (i) increased work-search requirements by requiring workers to make at least four employer contacts per week; (ii) requiring two employer contacts per week but without any requirement of documentation; (iii) a requirement that workers should attend a four-day job search workshop early during the unemployment spell; and (iv) information to the claimants that their reported employer contacts would be verified.

The results from the Maryland study suggest that increased search requirements can have non-trivial behavioral effects. Increasing the number of required employer contacts from two to four reduced the duration of benefit receipt by 6 percent. Informing claimants that their employer contacts would be verified reduced the duration of benefit receipt by 7.5 percent. Participation in the job search workshop reduced the number of benefit weeks by

5 percent, a finding broadly consistent with results from other experiments undertaken in the United States. The effect could reflect enhanced skills in job search but may also reflect higher perceived costs of remaining on UI (as the workshop reduces time available for leisure). In fact, the Maryland study suggests that the latter interpretation may be most plausible. The effect is largely driven by a sharp increase in exit rates from unemployment *prior* to the scheduled workshop.

A study by Ashenfelter et al. (2005) also reports results from randomized experiments intended to measure whether stricter enforcement and verification of job search activities reduce UI claims. The experiments were implemented in four states – Connecticut, Massachusetts, Virginia and Tennessee – in 1984-85. The treatments included attempts to verify job search activities and also actual verifications (such as in depth interviews concerning the claimant's search effort and in some cases contacts with employers). The study finds at most a very small effect on benefit payments.

Dolton and O'Neill (1996) report evidence from the Restart experiments in the United Kingdom. Individuals with elapsed unemployment of six months were randomly assigned to participation in an interview to counsel them on active job search (the treatment group). Failure to attend the interview carried an explicit risk of losing benefits. The control group consisted of individuals that were not notified to attend an interview. The study reports that the notification of an interview had a statistically significant positive effect on exit rates to employment. The magnitude of the effect on the job exit rate is also substantial (around 30 percent).

Van den Berg and van der Klaauw (2006) report results from a small experiment undertaken at two local employment offices in the Netherlands. They discuss the tradeoff between formal and informal search, where formal search takes place via public employment offices and informal search involves other channels, such as gathering information from friends. The treatments entailed counseling as well as monitoring, both presumably affecting formal search. The study cannot find any support for the claim that monitoring and counseling raises the transition rate from unemployment to employment.

The interpretation favored by the authors is that monitoring of formal search induced a substitution away from informal search channels.

Recent work by Hägglund (2006) presents some Swedish randomized experiments that shed light on search requirements and search assistance in active labor market policy. Hägglund (2006) describes one of those experiments, where a randomly selected treatment group of job seekers was exposed to intensified monitoring and job search assistance. The combined effects of the two treatments were to substantially increase the rate of outflow from unemployment. The control of search intensity had no independent effect.

Some recent Swedish non-experimental studies have in part dealt with the role of vacancy referrals; see IAF (2006) and Riksrevisionen (2005). Both these studies conclude that referrals are rarely followed up. In 2005, the Swedish PES introduced new rules so as to increase the follow-up of vacancy referrals. Among other things, these rules involved random checks with employers to verify job applications. However, these rules have not been comprehensively implemented. A study by PES (AMS, 2007a) reveals that 15 percent of referred seekers had not sent in a job application (according to the employers) despite the fact that they stated that they had done so.

### **3 Design and implementation of the study**

The practical implementation of the experiment was done by the Public Employment Service. The referrals in the study were randomly selected during a 9-week period in August and September 2007. A number of criteria had to be fulfilled in order to be included in the treatment groups: (i) An employer could appear at most once among the referrals (so as minimize the employer's cost of participating). (ii) A job seeker could appear at most once in any of the treatment groups. (iii) Included referrals had a deadline



for job application within (roughly) three weeks.<sup>1</sup> (iv) Only referrals pertaining to individuals qualified for unemployment benefits (UB) were considered since a non-recipient faces no risk of benefit sanction.

The sampling was made sequentially. Starting from the flow of all new referrals (about 10-15,000 each week) we apply conditions (iii) and (iv) above; this reduced the number of referrals to about 2-3,000. This group constitutes the population (P) of referrals in the study. In the next step all employers and individuals that had been drawn prior weeks were removed from the population. In the final steps conditions (i) and (ii) were applied to the remaining population: first random exclusion of all but one of the referrals pertaining to the same employer, then random exclusion of all but one of the referrals pertaining to the same individual. The population thus consists of all referrals that had an a priori chance of selection.

With these criteria applied, some 500 referrals were included each week. Individuals were randomly allocated to three treatment groups denoted A, B and C. Group A was subject to increased monitoring via surveys to employers so as to verify job applications associated with referrals. In addition, the members of this group were informed by letter that a referral to a job opening would most likely be followed up through employer contacts. See Appendix A for a description of the information letter. People in group B were also subject to increased monitoring via surveys to employers but no “advance warning” was given to them. Group C received the same information letter as group A, but no employer contacts took place. Group D is defined as the remaining population of referrals after group A, B and C have been removed, i.e.  $D=P-(A+B+C)$ .

The selection of referrals into the three groups was made each Friday between August 3 and September 28 (9 occasions in total). The letters to the job seekers were sent out as soon as the selection was made. The letters were expected to arrive approximately within a week after the individual had been given the referral.

---

<sup>1</sup> The formal criterion was that the “last day of publication” (at PES) should not exceed three weeks. In practice, this

The survey to employers for group A and B was sent out shortly after the “last publication day” of the vacancy, which generally coincides with the last day for application. The timing was chosen so that the survey should arrive when the employer was actively handling the applications. The purpose was to reduce the effort of answering the survey and thereby increase the response rate. If the employer failed to answer the survey within a given time period, a reminder letter was sent out.

In addition to the question about whether a person referred to a vacancy actually applied for the job, questions were also asked about whether an applicant had the necessary qualifications (“realistic” application), if she was offered the job and if she accepted or turned down the job.<sup>2</sup> The employer was also asked to report his subjective impression of whether or not the applicant appeared seriously interested in the job. See Appendix B.

Table 1 shows how different samples are used in our analyses. When exploiting the employer survey we compare group A (treatment) with group B (control), conditional on receipt of unemployment benefits (UB) at some point between the date of the referral and the vacancy’s last day of publication. Receipt of UB includes individuals who receive compensation associated with participation in labor market programs. We observe from Table 1 that the response rates among groups A and B are virtually identical.

In the analysis of unemployment duration we also use sample C; this group received the information letter but were not included in the employer survey. Unemployment duration is defined in terms of weeks of benefit receipt subsequent to the referral week. The treatment set consists of groups A and C and the control is group B. The analysis is conditioned on positive benefit receipt during the week when the referral was made.

---

criterion typically coincides with the deadline for job application.

<sup>2</sup> Responses regarding job offers and job acceptances are not used since we have found that some employers interpreted these questions differently than others.

Table 2 shows some descriptive statistics. The differences in means are negligible and statistically insignificant across the three groups A, B and C. A comparison with group D reveals that there are fewer men in D as well as more prior referrals.

Table 1. Samples and response rates.

Sample	Sample usage	A	B	C	D
Overall sample	Descriptive statistics	1504	1485	1506	22895
Responses	Never used	948	947		
Response rate		0.63	0.64		
Response and some UB between referral and last day of publication	Survey analysis	782	799		
Overall sample and some UB during referral week	Duration analysis	1148	1138	1118	

Table 2. Descriptive statistics for samples (A, B and C) and population (D).

Variable	A	B	C	D
Male	0.48	0.50	0.51	0.43
Age (years)	40.5	40.5	40.2	40.1
Less than high school	0.21	0.22	0.21	0.19
High school	0.48	0.47	0.49	0.48
Some university education	0.31	0.32	0.30	0.33
Number of prior referrals 2006 and 2007	4.18	4.02	4.33	5.22
Elapsed duration of UB receipt (days)	129	128	130	136
UB during referral period	0.82	0.84	0.82	0.85
N	1504	1485	1506	22895

*Notes:* The variables are dummies unless otherwise stated. “UB during referral period” is a dummy for some UB receipt between the date of the referral and the last publication date of the vacancy.

## 4 Theoretical issues

We are interested in how intensified monitoring affects job applications and job findings. A positive impact on application rates is plausible, but it is not clear that this will translate into a positive impact on job findings. First, some applications are unlikely to meet the qualification requirements for the jobs; indeed, our survey indicates that only some 60 percent the applications were deemed “realistic” by the employers (see Table 3 below). Second, a higher propensity to adhere to formal search rules may come at the expense of informal search as discussed by van den Berg and van der Klaauw (2006). A worker who is induced to spend more time applying for referred vacancies may find less time to search via other channels, such as direct employer contacts. The link between job application and job finding is thus not immediate. In general, we expect that the impact on job finding should be weaker than the impact on application.

The impact of intensified monitoring on formal and informal search can be illustrated by means of a simple partial equilibrium model.<sup>3</sup> Consider an unemployed worker who has access to two search channels, viz. formal and informal search. Informal search is not effectively monitored so there is no risk of a benefit sanction as a result of limited search effort. Formal search takes place via vacancy referrals undertaken by PES and the worker runs a risk of losing benefits if she fails to apply to a referred job. Let  $s_i$  denote search effort along the formal ( $i=1$ ) and informal channel ( $i=2$ ), respectively. Job offers via the informal channel arrive at the Poisson rate  $s_2\alpha$ , where  $\alpha$  is a measure of (exogenous) labor market conditions.

Vacancy referrals arrive at the Poisson rate  $\mu$  and may result in a transition to work or a benefit sanction. Let  $\mu s_1\lambda$  denote the probability per unit time of a job transition,

---

<sup>3</sup> The model has similarities with the model in van den Berg and van der Klaauw (2006) but there are also differences. The job acceptance decision is trivial in our model since the wage offer distribution is degenerate by assumption. Our model focuses on vacancy referrals and the risk of a benefit sanction if search effort is deemed insufficient.

where  $\lambda$  is a measure of labor market conditions.<sup>4</sup> The analogous probability of being exposed to a benefit sanction is  $\mu\pi$ , where  $\pi = \pi(s_1; \sigma)$  depends on search effort along the formal margin and the intensity of monitoring,  $\sigma$ . Holding monitoring constant, an increase in formal search should reduce the risk of being sanctioned. Holding formal search effort constant, an increase in monitoring should increase the sanction probability since more non-compliance is detected. We thus assume  $\pi_1 < 0$  and  $\pi_2 > 0$ . We also assume  $\pi_{12} < 0$  which implies that a higher intensity of monitoring should increase the marginal return to search in terms of an increased probability of *not* being sanctioned.

Let  $r$  denote the discount rate,  $E$  the expected present value of employment,  $U$  the value of unemployment and  $S$  the value of a sanction. There is no wage dispersion so workers always accept job offers. Assuming an infinite time horizon, we can write the value function as:

$$(1) \quad rU = b - c(s_1, s_2) + \mu s_1 \lambda (E - U) + \mu \pi(s_1; \sigma) (S - U) + s_2 \alpha (E - U)$$

where  $b$  is unemployment benefits and  $c(s_1, s_2)$  is the search cost function. For simplicity, we normalize the value of a sanction to zero. The search cost function is increasing and strictly convex in each argument. In addition, an arguably plausible property is  $c_{12} > 0$ . Van den Berg and van der Klaauw (2006) make this assumption arguing that “the efforts along the two channels are relatively similar activities compared to most other ways to spend time and money.”

The first-order conditions for an interior solution are:

$$(2) \quad s_1 : -c_1 + \mu[\lambda(E - U) - \pi_1 U] = 0$$

$$(3) \quad s_2 : -c_2 + \alpha(E - U) = 0$$

---

<sup>4</sup> A natural benchmark is  $\alpha = \lambda$ , but this equality need not hold if informal and formal search cover different segments of the labor market. In any case, this is irrelevant for the results.

The first terms in (2) and (3) capture the marginal costs of search. The second terms capture the marginal returns to search along the formal and informal channels. Note that the marginal return to formal search involves terms associated with the gain from job finding,  $\lambda(E - U)$ , as well as the reduced risk of benefit sanction,  $-\pi_1 U > 0$ . Assume for simplicity that employment is an absorbing state and treat  $E$  as constant. The value of unemployment depends on the intensity of monitoring; a rise in  $\sigma$  reduces the value of unemployment.<sup>5</sup> It is thus clear that intensified monitoring affects the marginal return to formal search (via  $\pi_1(s_1; \sigma)$  and  $U(\sigma)$ ) as well as the marginal return to informal search (via  $U(\sigma)$ ). Assuming that the second-order conditions are satisfied, straightforward calculations based on (2) and (3) yield:

$$(4) \quad \text{sign} \frac{\partial s_1}{\partial \sigma} = \text{sign} \left[ -\mu\pi_{12}Uc_{22} - \mu(\lambda + \pi_1) \frac{\partial U}{\partial \sigma} c_{22} + \alpha \frac{\partial U}{\partial \sigma} c_{12} \right]$$

$$(5) \quad \text{sign} \frac{\partial s_2}{\partial \sigma} = \text{sign} \left[ -\alpha \frac{\partial U}{\partial \sigma} c_{11} + \mu\pi_{12}Uc_{12} + \mu(\lambda + \pi_1) \frac{\partial U}{\partial \sigma} c_{12} \right]$$

where  $c_{11} > 0, c_{22} > 0, \pi_{12} < 0, \partial U / \partial \sigma < 0$  and (probably)  $c_{12} > 0$ . The signs of these expressions are ambiguous in general but the mechanisms are intuitive. The first term in the bracket of (4) is positive and captures that the marginal return to formal search increases via stronger incentives to avoid a sanction since  $\pi_{12} < 0$ . The second term in the bracket of (4) incorporates the impact via the value of unemployment; the term cannot be signed since  $\lambda + \pi_1$  can take either sign. The third term in (4) is negative and captures interactions between formal and informal search via the search cost function: an increase in informal search increases the marginal cost of formal search (and vice versa) if formal and informal search are “relatively similar activities” in the sense that  $c_{12} > 0$ .

---

<sup>5</sup> Use (1) to obtain  $U = [b - c(\bullet) + \mu s_1 \lambda E + s_2 \alpha E] / [r + \mu s_1 \lambda + \mu \pi(\bullet) + s_2 \alpha]$ , where  $\partial U / \partial \sigma < 0$  since  $\pi_2 > 0$ .

The impact of monitoring on informal search works via the value of unemployment and thereby the marginal return to search,  $\alpha(E - U)$ . The first term in (5) is positive since  $\partial U / \partial \sigma < 0$  and thus  $\partial(E - U) / \partial \sigma > 0$ . Intensified monitoring would thus tend to increase informal search. However, this effect is counteracted by the second and possibly the third term. The second term is negative as long as  $c_{12} > 0$ .

Summing up, it is not clear how intensified monitoring of vacancy referrals will affect formal and informal search. The overall impact on job finding, which depends on both types of search activities, is ambiguous. The properties of the search cost and monitoring technologies are crucial for the outcomes. Empirical evidence on these properties is, unfortunately, close to nonexistent.

## 5 Empirical results

### 5.1 The survey

Some basic results from the employer survey are reported in Table 3. Over 30 percent of referrals did not result in job applications. This number may perhaps appear to be on the high side but the lack of previous studies cautions against strong priors about what is reasonable or not. There is a presumption that the reliability should be higher for positions in the public sector since those employers are required to keep records on job applications. However, when we look separately on jobs that most likely pertain to the public sector, we find roughly the same rate of non-compliance. Moreover, a small survey to employers undertaken by PES during 2008 found that about 25 percent of the referrals did not result in job applications.

Table 3. The survey results.

Question	Group	Yes	No	Unknown or uncertain	N
Applied for the job	A	0.68	0.32		782
	B	0.64	0.36		799
	$t(A-B)$	1.65			
Interested in the job	A	0.65	0.10	0.25	530
	B	0.64	0.08	0.28	510
	$t(A-B)$	0.46	1.00	-1.14	
Realistic application	A	0.59	0.16	0.25	530
	B	0.58	0.15	0.27	510
	$t(A-B)$	0.15	0.42	-0.51	

Notes: The  $t$ -statistics test for equality of the means.

## 5.2 The impact of information on search behavior

We now turn to a more detailed analysis of how the “threat” of a referral follow-up influences the probability of job application. We expect that those exposed to information about a probable follow-up would be more prone to obey the rules and apply for the job (although the theory is somewhat ambiguous about the direction of the effect).

By and large, this presumption is confirmed by the data; see Table 4. The application rate is 4 percentage points higher in treatment group A than in the B control. However, the difference is only marginally significant. The estimate and the standard errors are unaffected by the inclusion of control variables in the second column.

The three last columns of the table include results from alternative specifications. We consider interactions between treatment status and three indicators of labor market experience, namely the number of previous referrals, elapsed duration of unemployment, and age. The broad pattern that emerges is that labor market “inexperience” is associated with stronger responsiveness to the information treatment.



In particular, those who are young or have short previous unemployment spells appear highly responsive; the estimates imply an impact on the application rate of 11 or 12 percentage points. We have also examined if the treatment effects vary by gender and education (not shown in Table 5). We find a significant effect for men (7 percentage points) but not for women. There is some evidence the effect is higher for individuals with relatively low education although the differences are only marginally significant.<sup>6</sup>

An intriguing question is why those with relatively little labor market experience appear to be the most responsive. We speculate that the results may reflect differential assessments of the information letter's implicit threat of benefit sanction. The "objective" risk of benefit sanction has been very low in Sweden: on average around 0.45 sanctions per month out of 100 benefit recipients took place in 2005, 2006 and 2007.<sup>7</sup> Older individuals and those with experiences of long spells of unemployment have presumably learned that the risk of benefit sanction is very low, despite strict formal rules, and adjusted their behavior accordingly. For these groups, a reminder of the rules may not have much impact on the perceived sanction probability. However, those who have recently been introduced to the UI rules, including the rules that apply to vacancy referrals, may be more inclined to take seriously the wordings of the information letter.<sup>8</sup>

### **5.3 The impact of information on unemployment duration**

As discussed above, it is not obvious that a positive impact of monitoring on job application will also imply a positive impact on job finding. Some applications are

---

<sup>6</sup> The impacts of the "other controls" (not shown) are as follows: The application probability is higher for women than for men, increases with age and education, but have no statistically significant relationship with the length of previous unemployment and the number of previous referrals.

<sup>7</sup> See AMS (2007b), p. 79. A sanction is implemented in two steps. First, a notification is sent from PES to the unemployment insurance fund. Second, a decision on sanction, given notification, is taken by an insurance fund. The estimate of 0.45 is obtained by multiplying the average notification rate (0.54) by the average (conditional) sanction rate (0.85).

<sup>8</sup> "If you receive unemployment benefits you are required to apply for referred jobs according to the rules regarding unemployment insurance." See Appendix A.

unlikely to meet the qualification requirements for the jobs. We have also noted that intensified monitoring of formal search may reduce workers' informal search.

We examine how the information treatment has affected subsequent UB receipt rather than job finding; the UB data are arguably of higher quality than the data on job finding. The data on UB receipt include benefit information on a daily basis. A transition out of unemployment is defined as non-receipt of UB during a whole week; the results are insensitive to alternative definitions, such as non-receipt during two weeks.

The treatment we are interested in is unlikely to have a permanent impact on job finding. The information letter specified explicitly the time frame of the referral experiment (August 15 to October 15, 2007). Referrals outside this period should thus not be subject to intensified follow-ups. However, it is conceivable that these dates are not well recalled at later dates. To the extent that individuals perceive a general increase in the likelihood of being exposed to a follow-up, the information letter may well have more long term effects on job finding. Ultimately, this is an empirical question.

Table 4. Estimates of treatment effects. Dependent variable: Did the individual apply for the job? (Yes=1, No=0).

	(1)	(2)	(3)	(4)	(5)
Intercept	0.638 (0.017)				
Treatment (A)	0.039* (0.024)	0.040* (0.024)			
A and few previous referrals			0.059* (0.035)		
A and some previous referrals			0.049 (0.047)		
A and many previous referrals			0.001 (0.045)		
A and short unemployment history				0.105*** (0.033)	
A and intermediate unemployment history				-0.064 (0.047)	
A and long unemployment history				0.010 (0.049)	
A and age $\leq 30$					0.119** (0.051)
A and age $>30$					0.018 (0.027)
Other controls	No	Yes	Yes	Yes	Yes
R2 (%)	0.17	1.53	1.86	2.18	1.73
N	1581	1581	1581	1581	1581

*Notes:* The estimation is by OLS. Standard errors are in the parentheses. Significance: \*=10%; \*\*=5%; \*\*\*=1%. Previous referrals (during 2006 and 2007): few (0, 1); some (2, 3, 4); many (5 or more). Unemployment history is measured as days of UB receipt. Short history (< 100 days); intermediate (100 – 250); long (>250 days). The standard set of “other controls” include age, gender, level of education, number of previous referrals, and days of UB receipt. In the models with interactions we also include controls for the baseline effects of the variables that are interacted with the treatment dummy.

We have studied the impact on unemployment duration through several approaches. First, we ran Cox regressions to explain exits from unemployment during a period that ends in week 14, 2008. At that date, only 16 percent of the spells were right-censored. Second, we ran a number of OLS regressions explaining the probability of remaining on UB after  $x$  weeks after the referral, where  $x$  is 4, 8 and 12. That is, we focus on the labor market state relatively close to the referral period on the assumption that the information letter should have the strongest impact close to this period. For both of these approaches, we allowed for interaction terms along the lines of those in Table 4.

The results from the Cox regressions are shown in Table 5, whereas the results from the OLS regressions are shown in Appendix C. We do not find any significant treatment effects in any of these specifications. Thus, there is no evidence that advance warning about intensified follow-ups of referrals has any positive (or negative) impact on unemployment duration. The precise reasons for this result are unclear but we have emphasized that an impact on job application need not automatically imply an impact on job finding. The result may reflect a substitution of away from informal towards formal search. However, absent data on search this can be no more than a speculation.

Table 5. COX regressions of unemployment duration.

	(1)	(2)	(2)	(4)	(5)
Treatment (A)	0.011 (0.040)	0.007 (0.040)			
A and few previous referrals			0.024 (0.060)		
A and some previous referrals			0.024 (0.077)		
A and many previous referrals			-0.032 (0.073)		
A and short unemployment history				-0.042 (0.057)	
A and medium unemployment history				0.048 (0.079)	
A and long unemployment history				0.078 (0.077)	
A and age $\leq$ 30					-0.027 (0.077)
A and age $>$ 30					0.022 (0.046)
Other controls	No	Yes	Yes	Yes	Yes
N	3404	3404	3404	3404	3404

*Notes:* Unemployment duration is measured as weeks of UB receipt subsequent to the referral week. Standard errors are in the parentheses. See notes to Table 4 for details about the variables. The duration data are censored at week 14, 2008, where 16 percent of the spells are right-censored.

## 6 Concluding remarks

We have presented results from a randomized labor market experiment where job search among the unemployed are subject to intensified monitoring. The treatment involves information that PES will most likely contact the employer in order to verify job applications associated with vacancy referrals. We find that the threat of referral follow-ups causes an increase in job application rates, especially among young people. However, we find no impact on unemployment duration.

The possibility that intensified monitoring of formal search may have little impact on total search raises some doubts about the efficacy of such policies. However, there is so far rather limited evidence on the empirical relevance of this possibility. If similar experiments are undertaken in the future, it would be valuable to incorporate collection of more comprehensive data of job search activities.

Our study has focused on how the threat of benefit sanction affects search effort. Monitoring of job search can also affect workers' reservation wages and thereby their propensity to accept job offers. A complete analysis of monitoring and work-search requirements must consider the impact on job acceptance decisions along with the analysis of search effort.

## References

AMS (2007a), Återrapportering enligt regleringsbrevet för 2006 – Kontrollfunktionen i arbetslöshetsförsäkringen – Rapport 2, Dnr 05-3790-00, Arbetsmarknadsstyrelsen.

AMS (2007b), Arbetsmarknadsrapport 2007:2, Arbetsmarknadsstyrelsen.

Ashenfelter, O., Ashmore, D. and Deschenes, O. (2005), Do Unemployment Insurance Recipients Actively Seek Work? Randomized Trials in Four US States. *Journal of Econometrics* 125, 53-75.

Benus, J. and Johnson, T. (1997), Evaluation of the Maryland Unemployment Insurance Work Search Demonstration. Report prepared for Maryland Department of Labor, Battelle Memorial Institute in conjunction with Abt Associates Inc.  
<http://wdr.doleta.gov/owsdrr/98-2/>

Dolton, P. and O'Neill, D. (1996), Unemployment and the Restart Effect: Some Experimental Evidence, *Economic Journal* 106, 387-400.

Fredriksson, P. and Holmlund, B. (2006), Improving Incentives in Unemployment Insurance: A Review of Recent Research, *Journal of Economic Surveys* 20, 375-386,.

Hägglund, P. (2006), Are there pre-programme effects of Swedish active labour market policies? Evidence from three randomised experiments, IFAU Working Paper 2006:2.

IAF (2004), Arbetsmarknadsverkets handläggning av ärenden som rör arbetslöshetsförsäkring m m, IAF-rapport 2004:5. <http://www.iaf.se>

IAF (2005), Redovisning av tillämpningen av regelverket för lämpligt arbete, IAF-rapport 2005:16. <http://www.iaf.se>

IAF (2006), Anvisning till ledig plats, IAF-rapport 2006:5. <http://www.iaf.se>

Johnson, T. and Klepinger, D. (1994), Experimental Evidence on Unemployment Insurance Work-Search Policies. *Journal of Human Resources* 29, 695-717.

Riksrevisionen (2005), Arbetslöshetsförsäkringen – kontroll och effektivitet, RiR 2005:3. <http://riksrevisionen.se>

Van den Berg, G. and van der Klaauw, B. (2006), Counseling and Monitoring of Unemployed Workers: Theory and Evidence from a Controlled Social Experiment. *International Economic Review* 47, 895-936.

## **Appendix A. The letter to groups A and C**

### **Monitoring of job referrals**

You have been selected for a specific follow up of job referrals. The follow up pertains to referrals between August 15 and October 15 2007. If you are referred to a vacancy during this period, the Public Employment Service will with high probability contact the employer regarding your application.

The fact that you have been selected has nothing to do with earlier referrals that you might have received. The selection was random and covered the whole country.

The purpose is to study the Public Employment Service's referrals to vacancies. The result of the study will be processed and handled confidentially.

If you receive unemployment benefits you are required to apply for referred jobs according to the rules regarding unemployment insurance.

Questions may be sent to [anvisningsstudie@ams.amv.se](mailto:anvisningsstudie@ams.amv.se)

Or call the Public Employment Service's customer service, 010 – 487 24 76.

If you want to know more about the Public Employment Service, please visit [www.arbetsformedlingen.se](http://www.arbetsformedlingen.se)

The Public Employment Service



## Appendix B. The survey to employers

1. Did the job seeker apply for the referred job?  
Yes  
No >>>>> exit survey
  
2. Did you get the impression that the applicant was seriously interested in the job?  
Yes  
No  
Uncertain  
Do not know, lack of information  
Comment:.....
  
3. Was the referral realistic in the sense that the applicant met the formal/informal qualifications?  
Yes  
No  
Uncertain  
Do not know, lack of information  
Comment:.....
  
4. Did the applicant get the job?  
Yes  
No  
Vacancy not yet filled  
Comment:.....
  
5. If the answer on the fourth question was “No”: Why didn’t the applicant get the job?  
He/she turned down the job  
It was offered to another applicant  
Comment:.....

## Appendix C. Further results on unemployment duration

Table C1. OLS regression explaining the probability of UB receipt 4 weeks after referral

	(1)	(2)	(3)	(4)	(5)
Intercept	0.772 (0.012)				
Treatment (A)	0.000 (0.015)	0.000 (0.015)			
A and few previous referrals			0.028 (0.023)		
A and some previous referrals			-0.040 (0.029)		
A and many previous referrals			-0.005 (0.028)		
A and short unemployment history				0.020 (0.021)	
A and medium unemployment history				-0.020 (0.030)	
A and long unemployment history				-0.014 (0.029)	
A and age $\leq$ 30					0.000 (0.031)
A and age $>$ 30					0.000 (0.017)
Other controls	No	Yes	Yes	Yes	Yes
N	3404	3404	3404	3404	3404

Notes: Standard errors in parentheses. See also Table 4.

Table C2. OLS regression explaining the probability of UB receipt 8 weeks after referral

	(1)	(2)	(3)	(4)	(5)
Intercept	0.686 (0.014)				
Treatment (A)	-0.011 (0.017)	-0.010 (0.017)			
A and few previous referrals			-0.004 (0.025)		
A and some previous referrals			-0.035 (0.033)		
A and many previous referrals			0.002 (0.031)		
A and short unemployment history				-0.001 (0.024)	
A and intermediate unemployment history				-0.016 (0.034)	
A and long unemployment history				-0.024 (0.033)	
A and age $\leq$ 30					-0.032 (0.035)
A and age $>$ 30					-0.004 (0.019)
Other controls	No	Yes	Yes	Yes	Yes
N	3404	3404	3404	3404	3404

Notes: Standard errors in parentheses. See also Table 4.

Table C3. OLS regression explaining the probability of UB receipt 12 weeks after referral.

	(1)	(2)	(3)	(4)	(5)
Intercept	0.590 (0.015)				
Treatment (A)	0.003 (0.018)	0.003 (0.018)			
A and few previous referrals			0.006 (0.027)		
A and some previous referrals			0.008 (0.034)		
A and many previous referrals			-0.007 (0.033)		
A and short unemployment history				0.010 (0.025)	
A and intermediate unemployment history				-0.009 (0.035)	
A and long unemployment history				-0.005 (0.034)	
A and age $\leq$ 30					0.010 (0.036)
A and age $>$ 30					0.000 (0.020)
Other controls	No	Yes	Yes	Yes	Yes
N	3404	3404	3404	3404	3404

Notes: Standard errors in parentheses. See also Table 4.

# CESifo Working Paper Series

for full list see [www.cesifo-group.org/wp](http://www.cesifo-group.org/wp)

(address: Poschingerstr. 5, 81679 Munich, Germany, [office@cesifo.de](mailto:office@cesifo.de))

---

- 2489 Mikael Elinder, Henrik Jordahl and Panu Poutvaara, Selfish and Prospective: Theory and Evidence of Pocketbook Voting, December 2008
- 2490 Maarten Bosker and Harry Garretsen, Economic Geography and Economic Development in Sub-Saharan Africa, December 2008
- 2491 Urs Fischbacher and Simon Gächter, Social Preferences, Beliefs, and the Dynamics of Free Riding in Public Good Experiments, December 2008
- 2492 Michael Hoel, Bush Meets Hotelling: Effects of Improved Renewable Energy Technology on Greenhouse Gas Emissions, December 2008
- 2493 Christian Bruns and Oliver Himmler, It's the Media, Stupid – How Media Activity Shapes Public Spending, December 2008
- 2494 Andreas Knabe and Ronnie Schöb, Minimum Wages and their Alternatives: A Critical Assessment, December 2008
- 2495 Sascha O. Becker, Peter H. Egger, Maximilian von Ehrlich and Robert Fenge, Going NUTS: The Effect of EU Structural Funds on Regional Performance, December 2008
- 2496 Robert Dur, Gift Exchange in the Workplace: Money or Attention?, December 2008
- 2497 Scott Alan Carson, Nineteenth Century Black and White US Statures: The Primary Sources of Vitamin D and their Relationship with Height, December 2008
- 2498 Thomas Crossley and Mario Jametti, Pension Benefit Insurance and Pension Plan Portfolio Choice, December 2008
- 2499 Sebastian Hauptmeier, Ferdinand Mittermaier and Johannes Rincke, Fiscal Competition over Taxes and Public Inputs: Theory and Evidence, December 2008
- 2500 Dirk Niepelt, Debt Maturity without Commitment, December 2008
- 2501 Andrew Clark, Andreas Knabe and Steffen Rätzel, Boon or Bane? Others' Unemployment, Well-being and Job Insecurity, December 2008
- 2502 Lukas Menkhoff, Rafael R. Rebitzky and Michael Schröder, Heterogeneity in Exchange Rate Expectations: Evidence on the Chartist-Fundamentalist Approach, December 2008
- 2503 Salvador Barrios, Harry Huizinga, Luc Laeven and Gaëtan Nicodème, International Taxation and Multinational Firm Location Decisions, December 2008
- 2504 Andreas Irmen, Cross-Country Income Differences and Technology Diffusion in a Competitive World, December 2008

- 2505 Wenan Fei, Claude Fluet and Harris Schlesinger, Uncertain Bequest Needs and Long-Term Insurance Contracts, December 2008
- 2506 Wido Geis, Silke Uebelmesser and Martin Werding, How do Migrants Choose their Destination Country? An Analysis of Institutional Determinants, December 2008
- 2507 Hiroyuki Kasahara and Katsumi Shimotsu, Sequential Estimation of Structural Models with a Fixed Point Constraint, December 2008
- 2508 Barbara Hofmann, Work Incentives? Ex Post Effects of Unemployment Insurance Sanctions – Evidence from West Germany, December 2008
- 2509 Louis Hotte and Stanley L. Winer, The Demands for Environmental Regulation and for Trade in the Presence of Private Mitigation, December 2008
- 2510 Konstantinos Angelopoulos, Jim Malley and Apostolis Philippopoulos, Welfare Implications of Public Education Spending Rules, December 2008
- 2511 Robert Orlowski and Regina T. Riphahn, The East German Wage Structure after Transition, December 2008
- 2512 Michel Beine, Frédéric Docquier and Maurice Schiff, International Migration, Transfers of Norms and Home Country Fertility, December 2008
- 2513 Dirk Schindler and Benjamin Weigert, Educational and Wage Risk: Social Insurance vs. Quality of Education, December 2008
- 2514 Bernd Hayo and Stefan Voigt, The Relevance of Judicial Procedure for Economic Growth, December 2008
- 2515 Bruno S. Frey and Susanne Neckermann, Awards in Economics – Towards a New Field of Inquiry, January 2009
- 2516 Gregory Gilpin and Michael Kaganovich, The Quantity and Quality of Teachers: A Dynamic Trade-off, January 2009
- 2517 Sascha O. Becker, Peter H. Egger and Valeria Merlo, How Low Business Tax Rates Attract Multinational Headquarters: Municipality-Level Evidence from Germany, January 2009
- 2518 Geir H. Bjønnes, Steinar Holden, Dagfinn Rime and Haakon O.Aa. Solheim, ‚Large’ vs. ‚Small’ Players: A Closer Look at the Dynamics of Speculative Attacks, January 2009
- 2519 Jesus Crespo Cuaresma, Gernot Doppelhofer and Martin Feldkircher, The Determinants of Economic Growth in European Regions, January 2009
- 2520 Salvador Valdés-Prieto, The 2008 Chilean Reform to First-Pillar Pensions, January 2009

- 2521 Geir B. Asheim and Tapan Mitra, Sustainability and Discounted Utilitarianism in Models of Economic Growth, January 2009
- 2522 Etienne Farvaque and Gaël Lagadec, Electoral Control when Policies are for Sale, January 2009
- 2523 Nicholas Barr and Peter Diamond, Reforming Pensions, January 2009
- 2524 Eric A. Hanushek and Ludger Woessmann, Do Better Schools Lead to More Growth? Cognitive Skills, Economic Outcomes, and Causation, January 2009
- 2525 Richard Arnott and Eren Inci, The Stability of Downtown Parking and Traffic Congestion, January 2009
- 2526 John Whalley, Jun Yu and Shunming Zhang, Trade Retaliation in a Monetary-Trade Model, January 2009
- 2527 Mathias Hoffmann and Thomas Nitschka, Securitization of Mortgage Debt, Asset Prices and International Risk Sharing, January 2009
- 2528 Steven Brakman and Harry Garretsen, Trade and Geography: Paul Krugman and the 2008 Nobel Prize in Economics, January 2009
- 2529 Bas Jacobs, Dirk Schindler and Hongyan Yang, Optimal Taxation of Risky Human Capital, January 2009
- 2530 Annette Alstadsæter and Erik Fjærli, Neutral Taxation of Shareholder Income? Corporate Responses to an Announced Dividend Tax, January 2009
- 2531 Bruno S. Frey and Susanne Neckermann, Academics Appreciate Awards – A New Aspect of Incentives in Research, January 2009
- 2532 Nannette Lindenberg and Frank Westermann, Common Trends and Common Cycles among Interest Rates of the G7-Countries, January 2009
- 2533 Erkki Koskela and Jan König, The Role of Profit Sharing in a Dual Labour Market with Flexible Outsourcing, January 2009
- 2534 Tomasz Michalak, Jacob Engwerda and Joseph Plasmans, Strategic Interactions between Fiscal and Monetary Authorities in a Multi-Country New-Keynesian Model of a Monetary Union, January 2009
- 2535 Michael Overesch and Johannes Rincke, What Drives Corporate Tax Rates Down? A Reassessment of Globalization, Tax Competition, and Dynamic Adjustment to Shocks, February 2009
- 2536 Xenia Matschke and Anja Schöttner, Antidumping as Strategic Trade Policy Under Asymmetric Information, February 2009

- 2537 John Whalley, Weimin Zhou and Xiaopeng An, Chinese Experience with Global 3G Standard-Setting, February 2009
- 2538 Claus Thustrup Kreiner and Nicolaj Verdelin, Optimal Provision of Public Goods: A Synthesis, February 2009
- 2539 Jerome L. Stein, Application of Stochastic Optimal Control to Financial Market Debt Crises, February 2009
- 2540 Lars P. Feld and Jost H. Heckemeyer, FDI and Taxation: A Meta-Study, February 2009
- 2541 Philipp C. Bauer and Regina T. Riphahn, Age at School Entry and Intergenerational Educational Mobility, February 2009
- 2542 Thomas Eichner and Rüdiger Pethig, Carbon Leakage, the Green Paradox and Perfect Future Markets, February 2009
- 2543 M. Hashem Pesaran, Andreas Pick and Allan Timmermann, Variable Selection and Inference for Multi-period Forecasting Problems, February 2009
- 2544 Mathias Hoffmann and Iryna Shcherbakova, Consumption Risk Sharing over the Business Cycle: the Role of Small Firms' Access to Credit Markets, February 2009
- 2545 John Beirne, Guglielmo Maria Caporale, Marianne Schulze-Ghattas and Nicola Spagnolo, Volatility Spillovers and Contagion from Mature to Emerging Stock Markets, February 2009
- 2546 Ali Bayar and Bram Smeets, Economic and Political Determinants of Budget Deficits in the European Union: A Dynamic Random Coefficient Approach, February 2009
- 2547 Jan K. Brueckner and Anming Zhang, Airline Emission Charges: Effects on Airfares, Service Quality, and Aircraft Design, February 2009
- 2548 Dolores Messer and Stefan C. Wolter, Money Matters – Evidence from a Large-Scale Randomized Field Experiment with Vouchers for Adult Training, February 2009
- 2549 Johannes Rincke and Christian Traxler, Deterrence through Word of Mouth, February 2009
- 2550 Gabriella Legrenzi, Asymmetric and Non-Linear Adjustments in Local Fiscal Policy, February 2009
- 2551 Bruno S. Frey, David A. Savage and Benno Torgler, Surviving the Titanic Disaster: Economic, Natural and Social Determinants, February 2009
- 2552 Per Engström, Patrik Hesselius and Bertil Holmlund, Vacancy Referrals, Job Search, and the Duration of Unemployment: A Randomized Experiment, February 2009