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Recruitment in Recovery

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Recruitment in Recovery

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Abstract

Burgess (1993) and Burda and Wyplosz (1994) find that hiring rates for the unemployed do not move proportionately to changes in the overall hiring rate. Burgess hints at employed job seekers who start looking in tight conditions and crowd out the unemployed. But he leaves the search behaviour of firms unaddressed. Russo et al. (2000, 2001) on the other hand, show that firms switch their preferred recruitment channel in changing labour market conditions. They, however, do not link their findings to the endogenous search behaviour of job seekers. In this paper we develop and test the hypothesis that endogenous search behaviour on both sides of the market implies that the unemployed obtain less than their 'fair share' of the job offers: they search in the wrong channel when conditions tighten. Consequently, the gap between the aggregate and the unemployed hiring rate increases in tighter market conditions. We use panel data from the Netherlands to test our hypothesis and find that indeed the least confident and educated do not switch to the channel where most intense searching takes place in an economic recovery.

Keywords: employer search, job search, recruitment channels, tightness

JEL classification: J23, J64

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1 Introduction

Economic recovery does not automatically translate into job growth. This "jobless recovery" is the worst nightmare of a policy maker and therefore a well-researched and understood phenomenon (Gordon and Baily, 1993; Michelacci and Lopez-Salido, 2007). Fears that the recovery from the 2008-2009 global crisis will be jobless are very real. But even if we do have employment growth picking up again, that does not automatically translate into jobs for the unemployed. Burgess (1993) for example showed that in the last big recovery, the 1980s, a one percent increase in the hiring rate on the British labour market only led to a 0.31 percent increase in the outflow rate for the unemployed. CWI (2003) found similar results for the Netherlands in the economic boom of the late 1990s. Consequently, economic recovery, even if it generates new jobs, does not necessarily mean it generates jobs for those who are out of employment. This paper aims to develop and test an explanation for this phenomenon.

The empirical literature to date (e.g. Blanchard and Diamonds, 1994; Krause and Lubik, 2006) largely focuses on competition effects on the supply side to explain this finding. Since on-the-job search increases in tightening labour markets, competition for jobs intensifies in a qualitative sense in favourable economic conditions. That is, the overall job queue may shorten in tight labour market conditions and the relative rank of the unemployed jobseekers in the job queue will simultaneously worsen. This then implies that the immediate job prospects for the unemployed do not improve as much as might be expected and may even deteriorate.

This paper contributes to that literature by exploring search channel switching as an additional factor that increases competition and reduces the hiring rate for the unemployed in tightening markets. On the job search predominantly takes place through "open" search channels, such as advertisements and the internet. This means that competition for the unemployed rises primarily in that channel. Building on the findings of e.g. Russo et al. (2000, 2001) we then show that firms hiring workers will switch to the open channels in response to the higher quality and arrival rates there. To the extent that unemployed job seekers fail to switch their search effort to the open channels, they lose out on the increasing hiring rate.

This interaction between search behaviour on both sides of the market adds to the literature and the two sides have, to our knowledge, not yet been brought together on this particular question. The unemployed fail to benefit fully from a recovery not only because on-the-job search predominantly take place in tightening labour market conditions, but also because matching largely takes place outside the exclusive job search channel for the unemployed: the labour exchange office, when the hiring rate rises. In tightening conditions the unemployed jobseekers thus face a dilemma: switch search channel accordingly, or stay at the labour exchange office where competition is low, but job offers are not increasing at the aggregate job creation rate. We predict and show that, for obvious reasons, the least confident and qualified unemployed will not make the switch and therefore do not fully benefit from job opportunities in tightening conditions.

To test our hypotheses, we need consistent data on both sides of the job market and we therefore use the information from the labour demand and supply panel surveys for the

Netherlands – collected bi-annually by the Institute of Labour Studies (OSA) – for the 1986 – 2006 period. This period includes two full business cycles. The remainder of the paper is then structured as follows. Section 2 firmly positions the paper in the literature to which it intends to contribute, develops our main hypotheses and describes our data. Section 3 presents our empirical set-up, tests the key hypotheses and discusses the results. Section 4 then addresses policy implications and Section 5 concludes.

2 Search and recruitment behaviour

The empirical literature on job search has largely confirmed the Burgess (1993) finding that the correlation between the hiring rate and the outflow rate out of unemployment is (much) less than one. Several competing explanations have been put forward, though most scholars contend or hypothesise that there is a mismatch between in particular the unemployed job seekers and the jobs offered. The explanations, however, differ widely in the *type* of mismatch they explore.

A first part of this literature focuses on the poor competitive position of (long-term) unemployed job seekers, which makes them unlikely candidates to fill vacancies when invited. Two main reasons have been proposed: First, skill decay following persistent spells of unemployment lowers the likelihood of being selected for a job – see Bean (1994) or Blanchard and Diamond (1994). And second, employed job seekers provide tough competition for unemployed job seekers especially in tight labour market conditions, when on-the-job search typically takes place – see Barlevy (2002) and Krause and Lubik (2006). We might refer to this type of skill-mismatch as the skills of the unemployed make them less or unsuitable for the jobs on offer. There is some evidence to support this hypothesis. Burgess (1993) hints at the importance of on-the-job search in tight markets. Under such conditions the job offer rate is high and consequently the expected revenues from job search in terms of finding a new – better paying – job are higher. Therefore, Burgess argues that, although tightness leads to more job openings and falling aggregate unemployment rates, it also triggers on-the-job search and subsequently on-the-job seekers partially crowd out unemployed job seekers.[4]

Other types of mismatch, however, may produce similar outcomes. For example, another strand of the literature focuses on the lower likelihood that (long-term) unemployed job seekers even meet the employers who post vacancies. First, employers may neglect unemployed job seekers in application procedures outright, *i.e.* stigmatise the (long-term) unemployed – see Riach and Rich (2002), Eriksson and Lagerstrom (2006) and Oberholzer-Gee (2008). We could refer to this as perceived skill mismatch on the demand side. Second, continuous application rejections may demoralise the unemployed job seeker to continue searching for a job, which reduces his job find chances – see Layard *et al.* (1991) and Lindsay *et al.* (2003). That may give rise to low job search intensity on the supply side. Institutional settings, such as the minimum wage and unemployment benefits, may also adversely affect the job search intensity of the

[4] Our paper is – like Burgess (1993) – on (unemployment) flows; not on stocks. One could argue that whenever an employed job seekers accepts a job, he also 'produces' a vacancy (*i.e.* the job he leaves), which would leave the aggregate employment outcome unchanged. However, as Burgess already demonstrates, employed job seekers lengthen the jobless spell of the unemployed. Since we will be discussing timing issues of labour market policy, analysing the job search is relevant for our purpose.

unemployed – see Roed and Zhang (2003), Van den Berg *et al.* (2004), Abbring *et al.* (2005) and Bloemen (2007). And finally spatial mismatch may explain the Burgess finding. That is, unemployed job seekers may simply be spatially separated from the job opportunities through agglomeration effects – see Wheeler (2001), Coulson *et al.* (2003) and Holzer and Stoll (2003). All these impediments have in common that they either rely on actual skill mismatches, the psychology of one of the searching parties or on the exogenously given geographical or institutional circumstances in which the searching parties find themselves.

In this paper we offer an additional source of mismatch that emerges when (unemployed) job seekers and employers interact in their search behaviour. We refer to this mismatch as *search channel mismatch* and it follows from a mismatch between the search intensity of the demand and supply side in two types of recruitment channels. We should point out at this stage that search channel mismatch can occur independently of all sources of mismatch mentioned above and importantly, has quite distinct labor market policy implications.

To develop our hypotheses first consider the search behaviour of on-the-job job searchers. There is abundant evidence to support the hypothesis that on-the-job search intensity increases when the hiring rate increases. Burgess (1993) and Burda and Wyplosz (1994) show for various industrialised countries that on-the-job search is pro-cyclical. Nagypal (2006) suggests that workers start searching for alternative employment in a boom, because they see improved opportunities (*i.e.* more job openings available), while Krause and Lubik (2006) argue that a boom not only creates more jobs, but also better jobs, which spurs on workers to find alternative employment. To make our case for the Netherlands in the period under consideration, however, we will first reproduce these results in our data and test the hypothesis:

Hypothesis 1: The incidence of on-the-job search is pro-cyclical.

Once we have confirmed Hypothesis 1 in our data we can proceed to the second assumption we make in our argument, *i.e.* employers switch to advertisements as the preferred recruitment channel in tight labour markets, because on-the-job search takes place through that channel. Russo *et al.* (2000, 2001) show – using Dutch firm level data – that firms switch from recruitment through the labour exchange office to using advertisements as the prime recruitment channel when the labour market tightens. Since advertisements generate more applicants, such a recruitment channel switch enables the recruiting employer to smooth the arrival rate of applicants over the business cycle. CWI (2003) provides more detailed information for the Dutch case and they show that between 1991 and 2003, a period covering about one full economic cycle, the use of advertisements is indeed negatively correlated with the use of the labour exchange office and moves pro cyclically.[5] CWI (2003) concludes that the advertisement is the most frequently used recruitment channel in tight conditions; in loose conditions the labour exchange office and in particular informal contact become more important.

Moreover, Russo *et al.* (2000, 2001) show that advertisements yield a higher average quality pool of applicants than recruiting via the labour exchange office and CWI (2003)

[5] In addition they show a rising importance of the Internet and informal channels such as open job applications.

also confirms this finding. They show that in loosening labour market conditions as in 2002-2003 the effectiveness, which is defined as the number of hires through a channel over the number of vacancies posted in that channel, falls for advertisements (49% to 36%) and increases (8% to 11%) for the labour exchange office. As all this evidence was already collected for the Dutch case we could simply assume that employers switch their recruitment channel in response to more intense on the job search, but as we have the data available we can easily test this hypothesis in our sample as well. Consequently:

Hypothesis 2: Employers switch to advertisements as the preferred recruitment channel in tight labour markets.

Once we have confirmed both Hypotheses 1 and 2 for our data, we can proceed with the innovation of this paper. That is, if employers indeed switch away from the labour exchange office as a recruitment channel in tight labour market conditions, unemployed job seekers will either follow the employers and start searching through advertisements or avoid competition and continue their search through the labour exchange office where vacancies are not posted at the same rate as in open channels. This then sets the stage for the unemployed job seeker who faces a search channel choice dilemma when the labour market tightens. Continuing search via the labour exchange office is no lucrative alternative as (relative) vacancy supply through that channel declines. Our data do not allow us to verify that unemployed job seekers indeed face this dilemma, but assuming unemployed are somewhat rational, we can observe their search behaviour and infer from that if and how they have decided. It is immediately clear that if unemployed job seekers switch in response to the employers' switching, the first unemployed to follow will be those that have least to fear from employed job seekers in the open recruitment channels. We therefore hypothesise that the least qualified and self-confident unemployed will not make the switch.

Hypothesis 3: The least confident and qualified job seekers search through the labour exchange office and do not change that strategy in tight labour markets, foregoing the full benefits of the increasing aggregate hiring rate.

To test our hypotheses we use information from labour demand and supply panel surveys for the Netherlands, collected bi-annually by the Institute of Labour Studies (OSA). We employ the 1986 to 2006 labour supply panels and the 1991 and 2005 labour demand panels. The 1991 – 2005 period covers at least two full business cycles.

The OSA labour panels contain labour related themes among samples of households and firms in the Netherlands. The panels cover a broad range of work and life course related, and business environment related items. The labour demand panel is fielded in rotation to the labour supply panel. The latter is comparable in content to the German Socio-Economic Panel (SOEP) and the British Household Panel Survey (BHPS), though the Dutch panel survey is smaller in terms of sample size. The relatively small sample size (and consequently the small number of unemployed in the data set) and high attrition rates of respondents (both in the supply and demand panels) constrain us in exploiting the panel characteristics of the data to the full extent, which we will explain below. As currently the OSA labour demand and supply panels are no longer collected, we are unable to get data after 2006.

3. Empirical analysis

3.1 Tightness and On-the-Job Search

The validity of our first hypothesis is a crucial first step to establish the existence of search channel mismatch, as it initiates the chain of events on which it depends. That is, only if on-the-job search is pro-cyclical will the quality of job seekers in the advertisement channel and subsequently the attractiveness of that recruitment channel to employers increase when the labour market tightens.

We use eleven waves of the labour supply survey to test Hypothesis I. Studying employed job search in a panel context is possible using the OSA labour supply panels, but as the number of unemployed job seekers in the panel is too low to test for hypothesis 3 later on, we chose to simply pool the data for this hypothesis as well. This implies we have to control for dependence between dependent variables (respondents potentially enter our pooled data set eleven times), which may bias the standard errors. To this end we apply cluster techniques (cluster in respondent number), which allows for observations that are dependent within a cluster (although they must be independent between clusters) and ensures robust standard errors.

Given the binary nature of on-the-job search (OJS), we employ a clustered logit regression, which is specified as follows.

$$\mathrm{OJS} = \alpha + \beta\theta_{\mathrm{t}} + \gamma \mathrm{X}_{\mathrm{it}} + \upsilon_{\mathrm{it}} \qquad (1)$$

Equation 1 contains a tightness variable, θ_t, a vector of control variables, X_{it}, and error υ_{it}. To proxy for labour market tightness, we use the vacancy rate (vacancy to employment ratio) for the years 1986 through to 2006. Labour market tightness fluctuated substantially in this time frame. Vector X_{it} consists of the educational level of employees, job security, sector of employment, and a regional dummy. The latter is included to detect any regional differences in job search behaviour. We expect job security to relate negatively to on-the-job search, because a secure job reduces the need to search for alternative employment.

Table 1 provides the results. The results confirm our expectations. An increase in the vacancy rate by one standard deviation (X% points) will increase the propensity of workers to engage in on-the-job search by 0.046*X%. This may seem small, but note that this implies that for every % point the vacancy rate rises, every unemployed faces an additional 90*0.046= 4.14 competitors when the unemployment is below 10%. As expected we also find that employees with a permanent contract search significantly less than employees on a fixed term contract regardless whether there are prospects for a permanent contract. Moreover, on-the-job search is positively related to educational levels, strongest in trade and transport and not significantly different in different regions.

Table 1 Job search decision employees, pooled 1986-2006, clustered[1]

Dependent variable / Independent variables	On-the-job search decision
Constant	– 3.32 (0.19) ***
Vacancy rate	0.32 (0.03) ***

Place of birth:	Netherlands	Reference
	Elsewhere	– 0.08 (0.09)
Education:	Primary education	Reference
	Lower vocational	0.20 (0.08) **
	Intermediate vocational	0.61 (0.08) ***
	Higher vocational	0.81 (0.09) ***
	University	0.93 (0.10) ***
Contract type:	Permanent	Reference
	Fixed term (future)	1.58 (0.05) ***
	Fixed term (no future)	1.31 (0.05) ***
Sector:	Agriculture, Mining, and Fishery	Reference
	Manufacturing	0.48 (0.15) ***
	Construction	0.28 (0.17)
	Wholesale, Retail, and Trade	0.51 (0.15) ***
	Transport and Communication	0.56 (0.15) ***
	Commercial services	0.32 (0.14) **
	Government	0.33 (0.14) **
Regions:	North	Reference
	East	0.05 (0.07)
	West	0.07 (0.06)
	South	0.02 (0.07)
N		29,309
Pseudo R-squared		0.07
Wald χ^2		1699.18 ***

[1] Robust standard errors in parentheses
* 10% significance, ** 5% significance, *** 1% significance

We can conclude form Table 1 that hypothesis 1 is confirmed in our data.

3.2 Employer Recruitment Behaviour and Tightness

Having shown that on-the-job search mainly takes place in tight conditions and bearing in mind that on-the-job search takes place through the advertisement channel, we expect employers to switch to the advertisement channel in an attempt to fill their vacancies when the labour market tightens. This is the gist of our second hypothesis.

To test Hypothesis 2, we turn to the OSA labour demand panels. Each panel contains information about labour market conditions in the period between two panels. We will use information on the intensity at which various recruitment channels have been used by employers. We are interested in the intensity at which firms use the advertisement channel (both in newspaper and online). The intensity is measured on a four point Likert scale (make … never / sometimes / often / always … use of the advertisement channel for recruiting purposes). We link this information to the labour market conditions the firm faces. We construct two proxies for labour market tightness: the 'vacancy – employment ratio' and the 'difficult to fill vacancies – employment ratio'. Since we have firm level data, these tightness proxies are firm / sector specific. We expect both tightness proxies to correlate positively with the firm's recruitment intensity in the advertisement channel.

Furthermore we include several control variables, notably categorical variables measuring the share of the workforce whose highest obtained degree is 'lower general secondary education' or less, firm size and sector.

Since the dependent variable is an ordinal construct we need to apply ordinal logistical regressions. The regression specification looks as follows:

$$\mathrm{Ads}_i^* = \beta\theta_i + \gamma \mathrm{X}_i + \varepsilon_i \qquad (2)$$

$$\mathrm{Ads}_i = \begin{cases} 1 & \text{if} \quad \mathrm{Ads}_i^* \le \mu_1 \\ 2 & \text{if} \quad \mu_1 < \mathrm{Ads}_i^* \le \mu_2 \\ 3 & \text{if} \quad \mu_2 < \mathrm{Ads}_i^* \le \mu_3 \\ 4 & \text{if} \quad \mathrm{Ads}_i^* > \mu_3 \end{cases}$$

where, Ads^*_i is an unobserved continuous variable representing the intensity at which firm i uses the advertisement channel to recruit personnel; Ads_i is the observed ordered estimate of Ads^* which we retrieve from the data set; θ_t measures tightness; X_i is a vector of control variables and μ_i are estimated threshold parameters. Estimating equation (2) for the two firm specific indicators of tightness we obtain the results in Table 2.[6]

Table 2 Recruitment intensity in advertisement channels, 1991 – 2005, clustered[1]

Dependent variable / Independent variables	Intensity in ads channel	
Threshold μ_1	– 0.20	– 0.20
	(0.10)	(0.09)
Threshold μ_2	1.41	1.40
	(0.10)	(0.10)
Threshold μ_3	3.65	3.57
	(0.12)	(0.12)
Tightness proxy: Vacancies / Employment	1.69***	
	(0.45)	
Difficult Vacancies / Employment		2.45***
		(1.41)
Share labour force whose highest obtained degree is Lower General Secondary Education or less:		
≥ 75%	– 0.43***	0.42***
	(0.07)	(0.07)
≥ 50% but < 75%	– 0.17**	– 0.18***
	(0.07)	(0.07)
≥ 25% but < 50%	0.14**	0.14**
	(0.06)	(0.06)

[6] We decide to present coefficients in Table 2, though this is technically not correct. The coefficients in an ordinal regression are hard to interpret – see Greene (2008). To be correct, marginal effects should be presented. However, since we have four ordinal categories and two regressions in Table 2 (and Table 3), presenting marginal effects would lead to 10 columns. To keep the table(s) legible, we do not present marginal effects but instead present coefficients. We did run marginal effects. The interpretation of the coefficients does not differ from those findings.

	< 25%	reference	reference
Firm size:	< 10 employees	reference	reference
	≥ 10 but < 20 employees	0.29***	0.29***
		(0.10)	(0.10)
	≥ 20 but < 50 employees	0.76***	0.74***
		(0.10)	(0.10)
	≥ 50 but < 100 employees	1.07***	1.07***
		(0.09)	(0.09)
	≥ 100 but < 500 employees	1.24***	1.24***
		(0.09)	(0.09)
	≥ 500 employees	1.51***	1.56***
		(0.10)	(0.10)
Sector:	Agriculture, Mining, Fishery, and Manufacturing	reference	reference
	Construction	– 0.18*	– 0.20**
		(0.09)	(0.09)
	Wholesale, Retail, and Trade	0.34***	0.35***
		(0.08)	(0.08)
	Transport and Communication	0.03	0.04
		(0.12)	(0.13)
	Finance, Property, and Insurance	0.44***	0.46***
		(0.08)	(0.09)
	Government	0.69***	0.70***
		(0.07)	(0.07)
	Non-Commercial services	0.72***	0.70***
		(0.12)	(0.13)
N		9,059	8,042
Pseudo R-squared		0.05	0.05
LR χ^2		835.30***	786.84***

[1] Robust standard errors in parentheses
* 10% significance, ** 5% significance, *** 1% significance

We observe that a tight labour market (for both tightness specifications) induces firms to intensify recruitment activities in the advertisement channel. As we have not controlled for the search behaviour of the employed or unemployed in this regression, we cannot conclude from this regressions that the employers switch towards the more open channel because on-the-job search has intensified or the other way around. Still, as the data covers the same period in the same country, we can be confident that the two mechanisms operated as hypothesised in the period under study.

The control variables show that large firms and firms employing high educated employees search more intensively through the advertisement channel. This corresponds nicely with the observation that educated workers tend to search more on-the-job in Table 1. The comparison of sectors is a little harder to make, as OSA labor demand and supply panels do not synchronise sector divisions.

The results in Table 2, however, do not provide conclusive evidence that employers switch away from the public (*i.e.* labour exchange office) channel in tight labour market conditions. To establish this part of hypothesis 2 we explore the relationship between the preferred recruitment channel of employers (public channel versus advertisement

channel) and labour market tightness. We use two questions from the labour demand survey to derive the dependent variable: the intensity at which firms use the advertisement channel (the dependent variable in Table 2) and similarly the intensity at which firms use the public channel. The binary dependent variable in Table 3 equals zero, if the applied intensity in the advertisement channel exceeds the intensity applied in the public channel, and unity otherwise.

We use the same independent variables as in equation 2. Table 3 presents the results of this logit specification (education level labour force, firm size and sector variables not shown).

Table 3 Recruitment preference for public channel, 1991 – 2005[1]

Dependent variable / Independent variables	Preferring public channel	
Constant	0.36*** (0.09)	0.39*** (0.10)
Tightness proxy: Vacancies / Employment	– 0.89** (0.44)	
Difficult Vacancies / Employment		– 1.45*** (0.56)
N	8,754	7,765
Pseudo R-squared	0.04	0.04
LR χ^2	368.85***	358.68***

Standard errors in parentheses
* 10% significance, ** 5% significance, *** 1% significance

We find a statistically significant negative link between the employer's preference of the public channel for recruitment purposes and tightness on the labour market. That is, employers indeed switch away from the public channel in favour of the advertisement channel in tightening labour market conditions, which confirms our second hypothesis.

3.3 The Unemployed Job Seeker's Dilemma

Now that Hypotheses 1 and 2 are confirmed, we know that unemployed job seekers face a dilemma in tight conditions: continue searching in the public channel where competition is low, like the rate of posted vacancies, or alternatively, switch to the advertisement channel where competition is fierce, though the posted vacancy rate is high.

In testing Hypothesis 3 we return to the labour supply surveys. OSA only collects data on search channels for unemployed job seekers. This implies that we basically face a two stage problem. The probabilities of using one channel or another are conditional on the probability of being unemployed. Still, as Hypothesis 3 is formulated also in these conditional terms, we can test it in a single stage estimation framework. We distinguish three types of search channels: two formal channels (advertisement and the labour exchange office) and one rest category within the informal channels (including open applications, network of friends, and temp agencies). We focus on the unemployed job seeker's use of the two formal channels.

Hypothesis 3 stipulates that we would expect only the most confident unemployed job seekers (arguably, the short-term unemployed and highly educated among the unemployed) to switch towards the advertisement channel once firms make that switch in tight labour market conditions. To test this hypothesis we use the unemployed's preferred search channel (advertisement versus labour exchange office) as a dependent variable. Equation 3 gives the logit specification.

$$\text{Ads}\left[0,1\right]_{\text{t}} = \alpha + \beta\theta_{\text{t}} + \boldsymbol{\gamma}\mathbf{X}_{\text{it}} + \mu_{\text{it}} \qquad (3)$$

Where θ_t is the tightness indicator, which is the aggregate vacancy rate that varies only over time (vacancies to employment ratio), X_{it}, is a vector of control variables, and μ_{it} the error term. Table 4 presents the results of this regression. We have two different specifications. In the left column vector X_{it} includes dummy variables for long-term unemployment (an uncompleted spell of unemployment of one year is the threshold), for place of birth and a categorical variable indicating the unemployed's confidence to find a job. In the right column vector X_{it} includes dummy variables for long-term unemployment, for place of birth and a categorical variable indicating educational attainment. As in Table 1, we have pooled the data and clustered on respondent number to obtain robust standard errors.

First we note that labour market tightness is an insignificant predictor of search channel switches to the ads channel. Therefore we may conclude that tightness does not strongly induce the unemployed to switch towards or away from that channel. Consequently, as the vacancy arrival rate through that channel increases less than proportional in an economic upturn, it is only to be expected that hiring rates for the unemployed do not increase much in tightening markets. In addition, Table 4 reveals that the unemployed with the lowest preference for using ads are the ones who either have very low confidence in finding a new job or who have very low educational attainments, *i.e.* the most disadvantaged unemployed job seekers.

Table 4 Channel choice unemployed job seeker, pooled 1986-2006, clustered[1]

Independent variables \ Dependent variable		preference for ads channel	
Constant		2.06 (0.68) ***	1.00 (0.46) **
Vacancy rate		0.18 (0.15)	0.14 (0.16)
Unemployment duration:	Less than one year	Reference	Reference
	One year or more	0.09 (0.19)	0.26 (0.32)
Place of birth:	Netherlands	Reference	Reference
	Elsewhere	– 0.07 (0.37)	– 0.02 (0.17)
Confidence to find a new job:	Very high	Reference	
	High	– 0.80 (0.59)	
	Average	– 0.72 (0.55)	
	Low	– 0.64 (0.55)	
	Very low	– 1.08 (0.54) **	
Education:	Primary education		Reference

	Lower vocational		– 0.21 (0.27)
	Intermediate vocational		0.28 (0.30)
	Higher vocational		0.18 (0.36)
	University		1.46 (0.79) *
N		1,021	1,039
Pseudo R-squared		0.01	0.02
Wald χ^2		10.62	15.68 **

[1] Robust standard errors in parentheses
* 10% significance, ** 5% significance, *** 1% significance

Summarising the complete analysis of the data we can now conclude that on-the-job search indeed increases in tighter labour markets (Table 1) and firms do switch to the advertisement recruitment channels (Table 2 and 3) leaving the unemployed seekers with the choice between the ineffective labour exchange office and tough competition in the advertisement channel.

We find furthermore (Table 4) that (1) the most disadvantaged unemployed job seekers are more likely to search through the labour exchange office and (2) labour market tightness does not induce the unemployed (the most disadvantaged inclusive) to change recruitment channel. This implies the most disadvantaged unemployed trap themselves in unemployment in times when the economy is recovering. Exactly at those times where it is easiest to find employment.

4 Policy implications

The enrichment of the Burgess (1993) analysis – by including firm and job seeker recruitment channel choice – also provides insights into the effectiveness of the labour exchange office as an instrument in labour market policy. Labour market conditions influence on-the-job search, which arguably influences the firm's recruitment channel choice. That is, in tight conditions firms switch away from the labour exchange office, making job search through that channel relatively ineffective.

The relative ineffectiveness of the labour exchange office as a channel through which the unemployed find a job in tight conditions provides an additional explanation for structural mismatch on the labour market. That is, if the unemployed persist in searching via the labour exchange office in prosperous times, the structural co-existence of vacancies and unemployment can be explained in part by search channel mismatch, as firms post vacancies through the advertisement channel and the unemployed look for jobs through the labour exchange office.

Our analysis leads to some interesting repercussions for the use of the labour exchange office as an instrument in labour market policy. In slack conditions the labour exchange office is relatively productive in matching vacancies to job seekers, but the aggregate hiring rate is low. In such conditions the labour exchange office should concentrate on matching job seekers to the available jobs. In tight conditions, however, labour exchange offices should really encourage unemployed job seekers to search through alternative channels like advertisements and/or encourage recruiting firms to also search through the labour exchange office. Otherwise, the unemployed will not be aware and hence do not benefit from the many job prospects that tightening labour markets provide. As these two activities imply quite a different approach, the labour exchange offices should try to

implement pro-cyclical effort on encouraging open channel searching, and a counter-cyclical emphasis on job matching. The labour exchange office cannot withdraw and expect the market to automatically absorb the unemployed in tightening conditions.

5 Concluding remarks

In tightening labour market conditions both the number and the search effort of employed job seekers increases. Since employed job seekers search for jobs through advertisements and not through the labour exchange office, this raises the probability to fill a vacancy through the former channel relative to using the latter. Subsequently in tight conditions firms shift recruitment channel towards advertisements. Not only to keep up the arrival rate of job seekers in tight conditions – like Russo *et al.* (2000) claim – but also to exploit the relative superiority of using advertisements to fill vacancies in tight conditions.

Unemployed job seekers then face a dilemma. Also switch search channel towards advertisements, where competition is strong. Or remain searching for jobs through the labour exchange office where competition is weaker, but where job offers are few and far between. The second option is novel to the existing analysis introduced by Burgess (1993) and reinforces his results: unemployed job seekers only partly benefit from tightening labour market conditions because they are unaware of job offers in the open channels or unwilling to switch into them.

Our findings yield some unorthodox policy implications. The effectiveness of assisting the (long-term) unemployed to employment via the labour exchange office generally depends on labour market conditions, but in a somewhat counterintuitive way. In slack conditions job search via the labour exchange office is more effective than in tight conditions, as a consequence of firms' recruitment strategies. The labour exchange office should, to maximize its effectiveness, emphasize matching through the labour exchange office in slack and searching outside its sheltered channels in tightening conditions.

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