



Job search incentives and job match quality

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ABSTRACT

We examine the impacts of time-limited unemployment insurance (UI) and active labor market programs (ALMP) on the duration and outcome of job search in Norway. We use a comprehensive simultaneous equations model accounting for i) the duration of unemployment spells; ii) their outcomes, iii) subsequent employment stability; and iv) the earnings level associated with the first job. We find that time invested in job search pays off in form of higher earnings once a job match is formed. ALMP raises the probability of eventually finding a job as well as expected earnings, but at the cost of lengthening job search.

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1. Introduction

It is a well-known fact that job search conditions—as reflected in, e.g., unemployment insurance (UI) and active labor market programs (ALMP)—affect the opportunity cost of continued job search, and hence, a job seeker's choosiness and search effort. Participation in ALMP may also improve the human capital of the job seeker, and thus, the distribution of available job opportunities. A number of empirical studies have examined how these effects play out with respect to the duration and outcome of unemployment spells and the quality of a subsequent job match. Leaving aside the huge existing empirical literature on the effects of UI insurance and ALMP on unemployment duration (see [Card et al. \(2007\)](#), [Kluve et al. \(2007\)](#) and [Card et al. \(2010\)](#) for recent reviews), our paper relates closely to two different strands of the literature. The first is the empirical literature on the impacts of unemployment duration and UI generosity on subsequent job quality. While the early contributions to this literature ([Ehrenberg and Oaxaca, 1976](#); [Burgess and Kingston, 1976](#); [Hoelen, 1977](#)) tended to find favorable impacts of time invested in job search, the more

recent evidence is mixed.¹ Based on a quasi-natural experiment, [Van Ours and Vodopivec \(2008\)](#) find that a reform that shortened the maximum duration of UI benefits in Slovenia reduced the duration of unemployment sharply, while leaving the post-unemployment wages and job duration unaffected. They conclude that reducing job search subsidies will speed up the matching process with no loss in the quality of the post-unemployment job match. Similar results are reported for Germany by [Schmieder et al. \(2010\)](#) on the basis of a regression discontinuity methodology exploiting that maximum UI duration depends on exact age. [Tatsiramos \(2009\)](#) uses the European Community Household Panel (ECHP) to assess the effects of UI on unemployment duration and (subsequent) employment duration in eight European countries. The effect of UI is identified by a comparison between recipients' and non-recipients' outcomes. He finds that UI raises unemployment duration, but, in contrast to [Van Ours and Vodopivec \(2008\)](#), he also concludes that UI significantly improves subsequent employment stability. According to these results, policy

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¹ Economic theory suggests that UI may encourage job seekers to wait for more productive jobs; see [Marimon and Zilibotti \(1999\)](#) and [Acemoglu and Shimer \(1999, 2000\)](#). If credit markets are imperfect, UI insurance also involves a non-distortionary income (liquidity) effect (in addition to the distortionary substitution effect), reducing the pressure on credit-constrained individuals to accept suboptimal job matches ([Chetty, 2008](#)).

makers face a tradeoff, whereby a speedier job matching process is obtained at the cost of poorer job matches. Similar results are provided for the United States by McCall and Chi (2008), based on the National Longitudinal Survey of Youth 1979 (NLSY79). Addison and Blackburn (2000) also report evidence of a weak favorable impact of UI on the post-unemployment wage, while Belzil (2001) and Centeno (2004) report evidence of a small favorable impact on job duration.

The second strand of research that our paper is connected to is the empirical literature on transitions out of unemployment based on nonparametric mixed multivariate hazard rate models and the timing-of-events approach; see Abbring and Van den Berg (2003) for a theoretical justification of the methodology and Røed and Zhang (2003, 2005), Van den Berg et al. (2004), Røed and Raaum (2006), Crépon et al. (2009), and Røed and Westlie (2012) for recent applications. Our own paper relates particularly closely to Røed and Westlie (2012), which examines how different UI regimes affect the duration and outcome of unemployment spells in Norway. While they find that shorter maximum UI duration significantly reduces unemployment duration with only minor effects on the distribution of next-state-destinations, they do not consider the characteristics of the resultant job matches. A novelty of the present paper in relation to Røed and Westlie (2012) is thus that we model post-unemployment job quality (earnings and employment stability), facilitating an assessment of the tradeoff between speed and quality in the job matching process. Our paper also relates closely to McCall and Chi (2008) and to Crépon et al. (2012), who both set up simultaneous equations models for unemployment duration and post-unemployment job quality. The models used in these papers allow for correlated unobserved random effects, although not in a completely nonparametric fashion as we do in the present paper. While McCall and Chi (2008) focus on UI receipt and post-unemployment earnings, Crépon et al. (forthcoming) focus on participation in training programs and post-unemployment employment stability. An important finding in the latter of these papers is that training programs have positive effects on subsequent employment duration, but that this gain is obtained at the cost of lengthening unemployment duration (due to a lock-in effect during participation).

To our knowledge, no empirical evaluation has yet attempted to model the duration and outcome of the job search process within a unified simultaneous equation framework, such that the impacts of UI and ALMP on search duration can be traded off against their impacts on the qualities of its ultimate outcome. The present paper seeks to fill this gap. Our modeling strategy is motivated by the need to identify the causal effects of endogenous events such as unemployment duration and ALMP participation. We then have to take into account that, e.g., unobserved characteristics affecting unemployment duration also influence the quality of the accepted job. Given our non-experimental data, we build on the timing-of-events approach (Abbring and Van den Berg, 2003), and set up a multivariate hazards model to analyze transitions out of registered unemployment. The model takes into account that some job seekers are endogenously sorted into ALMP. We examine the causal impacts of participation in ALMP on the duration and outcome of job search. We also examine the impacts of unemployment duration on the quality of an accepted job. In addition to controlling for a rich set of observed explanatory variables, we allow for jointly distributed unobserved heterogeneity by means of the nonparametric maximum likelihood estimator (NPMLE). Our preferred model contains a discretely distributed six-dimensional vector of unobserved heterogeneity with 27 distinct support-points.

The key findings of our paper are the following: First, during its first six months, the job search process is productive in the sense that the expected earnings from an accepted job match increase significantly with the time spent searching. Second, the transition intensity from unemployment to employment rises sharply in the run-up to UI exhaustion, whereas the level of accepted earnings declines.

And third, while participation in ALMP initially reduces the employment hazard (lock-in effect), the impact becomes favorable after around 6 months of participation. For most participants and program durations, the employment hazard is also significantly higher after participation than it was before entry into the program. In addition, participation in ALMP tends to improve subsequent earnings. Based on model simulations, we summarize the various treatment effects in terms of a comprehensive earnings (value of work) measure, covering a 5-year period after the start of unemployment. Even though program participation raises both the probability of eventually finding a job and the level of earnings given that a job match is formed, it contributes to reduce overall earnings derived from ordinary jobs during the first 5 years after entry into unemployment. The reason is that program participation also tends to increase the duration of the overall job search period (which includes the program period). Given that ALMP also involves some administrative costs, this implies that it might be difficult to defend the programs from a cost-benefit point of view when considering the impacts on subsequent employment performance only. However, many of the program activities (in fact, around 60% in our data) involve some form of subsidized employment. The condition for a simple 5-year cost-benefit analysis to deliver a favorable result is that the economic value of subsidized work is, on average, at least 35% of the participants' predicted earnings from non-subsidized work.

2. Data and institutional background

We use administrative data encompassing all new entrants into registered unemployment in Norway during the period from October 1993 to October 2001. The term “new” is defined as not having had any unemployment experience during the past 3 years prior to the first spell in our data window (we use registers back to 1990 to implement this condition for early entrants). We focus on new entrants in this analysis in order to model the complete unemployment history for each individual, realizing that there might be causal linkages between subsequent spells and their outcomes. Given that our data window covers 8 years, the delimitation to new entrants does not imply that long-term unemployed and individuals with repeated spells are disregarded. Even the longest unemployment careers have to start at some point, and given that they start during the period spanned by our data, we model the subsequent employment and unemployment experiences until October 2001.²

Table 1 offers some key descriptive statistics. There are 373,065 individuals included in our analysis with 413,988 “new” entries into unemployment. Approximately 41,000 individuals (11%) have more than one new entry during the 8-year long data-window. In the statistical analysis, multiple new unemployment spells will be treated as *causally* unrelated. But, as we explain in the next section, they will be related through the assumed persistence of unobserved covariates. In total, around 124,000 individuals (33%) experienced more than one unemployment spell. Repeated unemployment spells starting less than 3 years after the end of a previous spell will be treated as related both through a causal effect (lagged duration dependence) and through the persistence of unobservables.

The time period covered by our analysis was characterized by significant changes in external job search conditions. First, labor demand fluctuated substantially. This is illustrated in the upper panel of Fig. 1, where we report a labor market tightness indicator for Norway measuring the time-path of the monthly transition rate out of unemployment, controlled for observed and unobserved individual

² Given that we allow subsequent spells to be causally related (path-dependent), the exclusion of spells that are not “new” within our data period does *not* generate a sample selection problem. On the contrary, without this exclusion we would have oversampled individuals with frequent spells and at the same time generated an initial conditions problem.

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