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EMPLOYERS' HIRING PRACTICES, EMPLOYMENT PROTECTION, AND COSTLY
SEARCH: A VACANCY-LEVEL ANALYSIS

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**EMPLOYERS' HIRING PRACTICES, EMPLOYMENT PROTECTION, AND COSTLY
SEARCH: A VACANCY-LEVEL ANALYSIS**

BY

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Abstract

An employer with a vacancy may adjust to high search costs by lowering hiring requirements. While such an adjustment increases the employer's chances of filling the vacancy, it more likely results in a match that terminates when hit by match-specific productivity shocks. Drawing on a novel Slovenian vacancy dataset, we find that employers who are searching to fill temporary positions more likely hire under-qualified workers when search costs are high. Search costs are to a lesser extent taken into consideration when employers are searching to fill permanent positions. These are novel findings about the employers' hiring practices in the presence of employment protection and costly search. That is, for employers who search to fill a permanent position the benefits of lowering hiring requirements when search costs are high are likely outweighed by: a) high expected firing costs if an under-qualified worker is hired on a permanent contract or b) costs of starting a new search if an under-qualified worker is hired on a temporary contract.

Keywords: Search costs, Qualification mismatch, Employment protection
JEL-Code: J32, J63

1. Introduction

Employment protection legislation (EPL), among other things, imposes costs on the employer-induced terminations of permanent employment contracts and limits the employers' use of cheaper temporary employment contracts. Because the EPL tends to be most restrictive in continental Europe, its effects on the labour market have been studied extensively in an attempt to explain observed differences in the performance of labour markets between continental Europe and the U.S. The existing research has examined theoretically and assessed empirically the EPL's effect on job flows, worker flows into and out of unemployment, and on productivity.¹

In this paper we draw on a novel Slovenian vacancy dataset in an attempt to assess whether and how the EPL affects employers' hiring practices. A standard sequential search model of Lippman and McCall (1976) and Mortensen (1977) serves as a theoretical framework for our empirical analysis. Of particular interest is the model's prediction that an employer may respond to high costs of continued search by lowering hiring requirements. In a sequential search environment such a hiring requirement adjustment improves the employer's chances of filling a vacancy each search period and can thus help the employer avoid high search costs.

However, because the employer's hiring requirement adjustment is more likely to result in hiring of an under-qualified worker such a response to high costs of continued search becomes very costly in the presence of EPL. These additional costs occur upon realization of a bad match-specific productivity shock as the employer either becomes trapped in a low productivity match the employer would terminate had the employer not faced high firing costs entailed by EPL, or incurs the firing costs if the employer decides to terminate the match. Since these costs are more likely to

¹ Some examples, though far from exhaustive, are Bertola (1990), Hopenhayn and Rogerson (1993), Blanchard and Landier, (2002), Cahuc and Postel-Vinay (2002), Dolado et al. (2002), Holmlund and Storrie (2002). The EPL's effects on productivity are explored in Nagypál (2002), Wasmer (2006), and Autor et al. (2007). Saint-Paul (2002) examines the EPL's effects on R&D investments. Pries and Rogerson (2005) explore the EPL's effects on the employers' hiring practices.

occur when an under-qualified worker is hired, the employer may choose to hire such a worker on a temporary contract that is not subject to employment protection laws.

By adjusting an offered employment contract and hiring requirement the employer can avoid both continuing with costly search and high expected firing costs. In this paper we are interested in two questions: Do employers respond to high costs of continued search by lowering their hiring requirements? Do employers accompany these requirement adjustments with an adjustment in the offered employment contract in an attempt to minimize the costs entailed by the EPL? By addressing these two questions we want to assess whether the costs imposed on employers by the EPL affect the employers' hiring practices and subsequently the outcomes of the employers' costly search; i.e. productivity and duration of new employment matches.²

To address these questions we draw on a Slovenian vacancy dataset. The dataset exists on account of two legal provisions that require employers to report every vacancy and every new hire. We therefore observe both vacancy characteristics at the time the vacancies were first identified and vacancy outcomes. An employer's hiring adjustments are identified by comparing a required qualification and an offered employment contract at the time a vacancy was identified with an attained qualification of a new hire and an actual employment contract we observe at the time the new hire started work. Using these insights we examine whether an employer's hiring adjustments are associated with: a) search costs measured by how quickly an employer has to fill a vacancy and b) expected firing costs inferred from the type of offered employment contract.

Related to this paper's analysis is the literature that draws on predictions in Mortensen (1977) to empirically estimate the extent the costs of continued search affect the employer's

² Related are papers by Bosch (2006) and Smith (2007). In Smith an employer chooses the optimal reservation value of the match and, upon meeting a job applicant and observing the value of the match, the duration of employment. Unlike in our paper, however, the employer's choice of employment duration is affected by the employer's anticipation of a change in the future composition of a stock of job searchers rather than the EPL costs. In Bosch, on the other hand, employers choose the optimal reservation value of the match and whether to hire a worker in a formal or an informal sector, where only matches in the formal sector are subject to EPL.

search; i.e., the employer's hiring requirements, search effort, and decision when to end the search.³ This paper is distinct from this literature in one important respect. Namely, while an employer who faces high costs of continued search is more likely to hire an under-qualified worker, we find that these adjustments tend to occur when employers are searching to fill positions that offer temporary employment. Search costs are to a lesser extent taken into consideration when employers are searching to fill a vacancy that offers permanent employment.

Search costs an employer incurs while searching are likely quite negligible compared to the costs of hiring an under-qualified worker on a permanent contract that may last several years and is costly to terminate due to EPL. An employer with a permanent position could lower hiring requirements when search costs are high and hire an under-qualified worker on a temporary position. That we do not find strong evidence that such adjustments take place indicates that these adjustments are also costly as the employer has to undertake new search to recruit a qualified worker permanently once temporary employment of an under-qualified worker ends. EPL and the costs of future search can explain why we find that the employers seem to respond to search costs differently depending on whether they are searching to fill a temporary or a permanent position.

These results are quite interesting in light of the EPL literature. Note that in a standard matching model (e.g., Mortensen and Pissarides, 1994) the EPL raises the threshold match productivity at which the employers are willing to hire and decreases the threshold match productivity at which the employers terminate their matches. Hence, EPL is expected to have a negative effect on worker turnover and an ambiguous effect on match productivity. Evidence in this paper is consistent with these predictions as they relate to the employers' hiring decisions.

³ Van Ours and Ridder (1991) and Brenčič (2007b) examine whether employers who face different search costs differ in the likelihood of hiring an under-qualified worker. Van Ommeren and Russo (1997) explore differences in the number of recruitment channels employers who face different search costs use. Barron et al. (1997), Burdett and Cunningham (1998), and Brenčič (2007a) explore whether employers who face higher costs of search fill their vacancies faster.

Importantly, we find that some of the low productivity matches are not left unexploited but rather are formed on temporary contracts exempt from the EPL. These matches are more likely when forgoing to match is costly; i.e., when the costs of continuing with search are high.

The results in this paper contribute in three respects to empirical literature on the EPL effects. First, this paper exploits differences in the EPL coverage between permanent and temporary employment contracts in Slovenia. While Slovenia has a relatively restrictive EPL compared to other European countries (Riboud et al., 2002, page 8), the effects of these legislative restrictions on the Slovenian labour market have to a large extent remained unexplored. Second, studies that similarly explore the EPL's effects within a single country tend to rely on firm and worker level data.⁴ This paper, on the other hand, provides a vacancy-level analysis of employers' hiring practices. Third, this paper documents that employment contract adjustments take place during an employer's search and are related to match quality. In this respect the paper differs from the literature that examines whether workers are re-hired on permanent contracts once temporary contracts end (Abowd et al., 1999; Booth et al., 2002; Güell and Petrongolo; 2007).

Finally, the paper's results add to the literature that explores whether qualification mismatches are temporary or permanent phenomena. This literature tends to draw on labour force surveys to explore persistence of qualification mismatch in workers' careers (Sicherman, 1991; Sloane et al., 1999; for a recent literature review see McGuinness, 2006). Unlike this stream of literature, the findings in this paper draw on a vacancy-level dataset and provide new insights regarding the persistence of qualification mismatches. Specifically, our findings suggest that the incidence and duration of a qualification mismatch reflect, at least in part, an employer's response to the costs of continued search and the costs imposed by EPL.

⁴ These studies exploit either time-series aspect of available data to study the effects of the EPL changes (e.g., Blanchard and Landier, 2002) or the fact that certain firms (e.g., firms with fewer workers) or certain jobs (e.g., temporary jobs, probation periods) are exempt from restrictions and costs imposed by the EPL (e.g., Boeri and Jimeno, 2005; Ichino and Riphahn, 2005).

In the next section we review the Slovenian EPL to describe an environment the employers face when searching to fill their vacancies. The dataset and variables are discussed in Section 3. In Sections 4 and 5 we discuss the main results and results that pertain to robustness checks. The robustness checks include: a) alternative definition of key variables; b) alternative sets of control variables; c) alternative sample constructions; and d) firm-level fixed effects. Section 6 concludes.

2. Employment protection legislation in Slovenia⁵

EPL restricts an employer-induced termination of permanent (indefinite-length) contracts and an employer's use of cheaper temporary (finite-length) contracts. In particular, in instances a worker was hired on a permanent contract the EPL restricts an employer's decisions that pertain to termination of the contract, requires an employer to provide advance notification of a layoff, and specifies a severance payment an employer has to pay to the fired worker. In Slovenia, for instance, a worker could not be fired if the reason for firing the worker was expected to last less than six months (Article 30). An employer had to either reassign the worker or hire the worker on a part-time basis. If the reason for a layoff was expected to last more than six months, an employer had to at least consider, before firing the worker, reassigning the worker within a firm, providing on-the-job training or employing the worker on a part-time basis.

The decision who to fire was also restricted (Article 36b). An employer had to consider, in order of importance, attained education, work experience, job performance, tenure, health, and social status (e.g., number of dependents). This decision had to draw on the General Collective Agreement negotiated between the unions and the employers. An employer was also obliged to hand in a six month advance notice of a layoff (Article 36e). In instances of a mass layoff, an

⁵ Since we use data that pertain to 2001 we draw on Labour Code that was in effect in Slovenia in 2001. A cross-country comparison in Riboud et al. (2002) suggests that Slovenian EPL was one of the more restrictive EPLs in continental Europe. However, it is unclear to what extent labour legislation was enforced in Slovenia. Drawing on a survey of approximately 17,000 employers in different countries round the world, Piere and Scarpetta (2006) find that employers in countries with a more restrictive EPL report more frequently that they are severely constrained by restrictions imposed by the EPL.

employer had to notify the union and the public employment agency (Article 34). A severance payment had to be paid for each year of tenure in the amount of one half of average monthly earnings a worker received during the last three months of employment (Article 36f).

While employment on a permanent contract can be terminated at considerable costs, employment based on a temporary contract simply ends on the date specified in the contract. However, EPL typically restricts instances when a temporary contract can be used, the number of times the contract can be renewed, and the contract's maximum accumulated employment duration. Unlike the case for majority of European countries, Slovenian legislation imposed no restrictions on the number of successive temporary contracts or their maximum accumulated duration (Riboud et al., 2002, page 61). Nevertheless, temporary contracts were permitted only in certain instances; e.g., when the tasks a job entailed were of inherently short duration (Article 17).⁶

Importantly, in Slovenia temporary contracts could also be used if none of the job applicants met an employer's hiring requirements (Article 14). In such instances, an employer could hire an under-qualified worker but for no longer than one year and only if filling a vacancy prevented interruptions in the production process. Hence, regardless of the inherent job duration an employer had an option to use a temporary contract when hiring an under-qualified worker could prevent incurrence of costs associated with keeping a vacancy unfilled.

3. Dataset and variables

This paper's analysis of the employers' hiring decisions in an environment with costly search and restrictive EPL draws on a vacancy dataset we obtained from a public employment agency, Employment Service of Slovenia (ESS). The dataset exists on account of a legal note that

⁶ These instances are: tasks last for a fixed length of time, a new hire is a replacement for a temporarily absent employee, project assignment, temporary increase in product demand, introduction of new technologies or products, or when work assignment is seasonal in nature. Importantly, from a legal standpoint workers on temporary contracts had the same rights (e.g., vacation, paid leave, 30 minute daily break) as workers on permanent contracts. A report published by the Institute of Republic of Slovenia for Labour suggests, though, that violations of these rights were common (Uran, 2003).

requires all employers to inform the ESS of any vacancy they have within eight days since the need to fill a vacancy was first identified.⁷ The vacancy dataset was merged with two additional datasets: a) a dataset obtained from the Health Insurance Institute of Slovenia (ZZZS) that provides information about the vacancies' outcomes; and b) a dataset obtained from the Agency of the Republic of Slovenia for Public Legal Records and Related Services (AJPES) that provides information about employers who registered their vacancies to the ESS.⁸

The dataset obtained from merging the three datasets records information about each vacancy's characteristics at the time of a vacancy's registration at the ESS as well as about the outcome of a vacancy if a vacancy was filled. Of the vacancy's outcomes we observe the date a worker started working at a position, a hired worker's occupation, and employment contract used at the time of hire (i.e., temporary, permanent). Among vacancy characteristics that we observe the most important are the date the vacancy was registered at the ESS, required occupation, and offered employment contract (i.e., temporary, permanent). For instance, we observe: a) whether an employer who is searching to hire an engineer with a bachelor degree ends up hiring an engineer with an associate degree; b) whether the contract used to hire the engineer differs from the contract an employer offered at the time of the vacancy's registration at the ESS; and c) the number of days between the vacancy's registration date and the date the worker started work.

⁷ This is a rather unique feature of the dataset since most datasets obtained from the employment agencies typically record only vacancies for which the agency's help was requested (e.g., van Ours, 1994). In Slovenia, however, employers are required, by submitting a PD-1 form, to report every vacancy (Unemployment Insurance Code, Article 9). Article 2 identifies a firm, institute, cooperative, other legal entity, or an individual who partakes in a profitable activity as subject to this requirement.

⁸ Printed on each PD-1 vacancy registration form is a unique number that is assigned to a vacancy that is registered to the ESS upon the PD-1 form's submission. When notifying the ZZZS of a new hire (such notification is legally required within eight days since a worker started working for an employer; Article 11 of the Mandatory Health Insurance Code), M-1 form, which records data about the new hire, together with the ESS-stamped copy of the PD-1 form have to be submitted to the ZZZS. The ZZZS sends information about the vacancies' outcomes together with the vacancies' identification numbers to the ESS. The merging of the ESS and the ZZZS datasets is thus based on a vacancy identification number. The data on firms, obtained separately from AJPES, are merged with the vacancy data based on a unique identification number assigned to a firm at the time of the firm's establishment. The firm's ID is recorded in both vacancy and firm datasets. The firms' characteristics pertain to the last day in 2000.

The dataset we use records vacancies that were registered at the ESS in 2001. Due to the paper's focus we consider vacancies where the hired worker started working sometime during 2001.⁹ Of 158,556 vacancies that were registered to the ESS in 2001, 96,523 vacancies had been filled by the end of 2001.¹⁰ The sample used in the estimations is reduced due to missing values for the dependent variables or the main explanatory variables.¹¹ Since some of the vacancies are filled not as a result of the employers' search but rather because workers were elected to fill the vacancies, we exclude such vacancies from our sample (e.g., positions on managerial boards, regular jobs filled by former interns). These two restrictions reduce the sample to 83,016 vacancies. Tables 1 and 2 report descriptions of variables and summary statistics, respectively.

<Insert Tables 1 and 2>

3.1. Search costs

From the vacancy registration forms submitted to the ESS one can identify among employers with a vacancy those who have to fill a vacant position immediately, those who have to fill a vacant position at a specified future date, and those who noted that the date the vacancy has to be filled is to be determined between an employer and a new hire. We treat an employer with a vacancy that has to be filled immediately or within a week since its registration as an employer who is facing high costs of keeping a vacancy unfilled on account of interruptions in the production process; i.e., the costs of forgone output (Burdett and Cunningham, 1998, page 452).¹²

⁹ Because of our focus on search costs the sample design is particularly important. Barron et al. (1997) report that employers who face lower costs of continuing with search keep their vacancies unfilled on average for a longer period of time. Therefore, our sample likely under-represents low search cost vacancies. Of the low search cost vacancies those with a relatively short duration are over-represented. Our sample may therefore under-state true differences between low and high search cost vacancies.

¹⁰ Statistical Office of the Republic of Slovenia's estimate is 143,149 for the number of registered vacancies in 2001 (http://www.stat.si/letopis/index_vsebina.asp?poglavje=12&leto=2002&jezik=en; Table 12.13 accessed on May 28th, 2008).

¹¹ Observations with a missing value for the following variables were dropped: contract type agreed at the time of hire, offered contract type at the time of the vacancy's registration, required occupation category, new hire's occupation, and search costs. In all other instances indicator variables were constructed for missing values to preserve sample size. We get similar results for the sample of vacancies for which we observe information for all variables. The results are available upon request.

¹² We think that this specification is reasonable. The Slovenian Labour Code (Article 8) in effect in 2001 set the minimum duration for the job application period to eight days; i.e., an employer had to accept job applications for at least eight days since the date of the job opening's public posting.

An alternative measure for the costs of continued search that we consider consists of several indicator variables that differentiate among vacancies that have to be filled immediately, vacancies that have to be filled on the date agreed between an employer and a new hire, vacancies that have to be filled either within one week, between a week and three weeks, or sometime more than three weeks since their registrations at the ESS. We interpret the date the worker has to start working as the date the costs of continued search are likely to increase. Using this alternative measure, we can assess, at least in part, whether employers who differ in their proximity to the search cost increase date at the time of their vacancies' registrations at the ESS search differently.

3.2. Qualification requirement adjustment

We use the ESS occupation classification to infer an employer's qualification requirement adjustment. According to the classification, each occupation is described by a five-digit code; e.g., the first code 10101 refers to a farm worker while the last code 89899 to a doctor of theology. A qualification requirement adjustment variable is constructed based on the comparison between the first digits of the five-digit codes of the required and the new hire's attained occupations.¹³ A newly hired worker is identified as under-qualified when the first digit of the worker's attained occupation is lower than the first digit of the required occupation.¹⁴ An alternative measure we consider treats a new hire as under-qualified whenever the first digit of the worker's attained occupation falls below the first digit of the required occupation by more than one level.

A problem we are clearly facing is that we can only observe an employer's adjustment in the hiring requirements along one dimension; i.e., an adjustment in a qualification requirement.

¹³ Such a measure is also referred in the literature as an objective or an external measure of educational mismatch. Hartog (2000) and McGuinness (2006) discuss drawbacks associated with external measures of educational mismatch.

¹⁴ An employer has an option to specify a secondary required occupation in addition to the primary required occupation. For 16.5 percent of the sample employers specified both requirements. The majority (85.5 percent) of the matches identified as under-qualified using the primary required qualification are also categorized as under-qualified when using the secondary required qualification; i.e., 1.1 percent are identified as over-qualified while 13.4 percent as qualified by the secondary requirement. We constructed an alternative measure that identifies a hire as under-qualified when the attained qualification of the new hire is below both the primary and the secondary required qualifications. The results are consistent with the findings reported in this paper and are available upon request.

An under-qualified hire may, however, compensate for not meeting the required qualification by meeting or exceeding other hiring requirements that pertain to the worker's human capital.

Similarly, a new hire who we identify as meeting an employer's qualification requirement may not be meeting other hiring requirements. With the available data we cannot assess whether and to what extent employers substitute between different hiring requirements.¹⁵

The existing evidence in the literature is not clear-cut on this issue. Drawing on a Dutch vacancy dataset, van Ours and Ridder (1991), for instance, find that employers adjust their education requirements less frequently compared to their work experience requirements. The authors do not find evidence that would suggest that employers substitute between education and work experience hiring requirements. Sicherman (1991), on the other hand, draws on a labour force survey and finds that, compared to over-educated workers, under-educated workers tend to have greater endowment of other forms of human capital (e.g., work experience, training).

3.3. Offered employment contract adjustment

An employment contract can either specify permanent (indefinite-length) or temporary (fixed-length) employment. The difference between the two types of employment contracts, in addition to their implied employment duration, is in the firing costs an employer faces when terminating a contract; i.e., high firing costs occur when employment based on a permanent contract is terminated, while termination of a temporary contract takes place at the contract's specified end date with no explicit costs to the employer. While the Slovenian EPL placed restrictions on when temporary contracts can be used, the EPL placed no restrictions on the

¹⁵ An attempt to obtain additional information about the hired workers from the ZZZS was not successful. We were interested in obtaining a part of the new hire's unique identification number (EMŠO), similar to the U.S. social security number, an employer submits in an M-1 form when notifying the ZZZS of a new hire. The identification number in Slovenia contains the hire's date of birth. The year of birth and the hire's qualification code could potentially provide us with a measure for the hire's work experience. This proxy could then be compared to the required work experience we observe in a vacancy dataset to infer an adjustment in the work experience requirement. Note, however, that while it would be interesting to observe differences in the required and the attained work experience, the required work experience was not specified for 35 percent of the vacancies in the sample.

number of times a temporary contract could be renewed or on the contract's maximum cumulative duration with one exception. An employer with a permanent position could hire an under-qualified worker for at most one year to prevent production interruptions (Article 14).

We construct an indicator variable for an offered employment contract adjustment by comparing the offered employment contract at the time of the vacancy's registration at the ESS with the actual employment contract that was in place at the time the worker started working for an employer.¹⁶ In our sample, only 27.4 percent of all vacancies were registered to the ESS in 2001 as offering permanent employment.¹⁷ This finding most likely reflects high turnover associated with temporary employment. Of vacancies that were registered as offering a permanent contract, 59.0 percent were filled as temporary positions. On the other hand, of positions that were registered as offering temporary employment 20.0 percent were filled as permanent positions.¹⁸

3.4. Control variables

Several variables are constructed to measure required human capital. Specifically, these variables identify the number of years of required work experience (a set of range dummies), required qualification level inferred from a five-digit occupation code assigned to each vacancy at the time of the vacancy's registration, and the number (and its square) of required skills, attributes, or certificates specified by an employer when registering a vacancy to the ESS (e.g., required

¹⁶ The ESS representative indicated that the ZZZZ does not send the ESS updated information about a contract that was signed between a worker and an employer after the worker was hired. Since 1998 employers were no longer required to register a vacancy when renewing a temporary contract at the contract's end date by re-hiring an incumbent worker. We think that these two observations support our interpretation that the difference between the offered employment contract and the employment contract agreed upon at the time the worker started working identifies a change that occurred during an employer's search.

¹⁷ ZMAR reports a similar estimate (http://www.umar.gov.si/fileadmin/user_upload/publikacije/eo/2003/og0603/ang/azap.pdf, accessed on May 28th, 2008). Note that the proportion of employed on a temporary contract (i.e., stock composition) in 2001 was only 10.8 percent (Employment in Europe 2002: Recent Trends and Prospects, 2002, page 199).

¹⁸ While distinct from this paper, several papers examine whether a worker is re-hired on a permanent contract once temporary employment ends. Using British household survey data from the 1990s, Booth et al. (2002) report the transition rate from temporary to permanent positions to be 38 percent for men and 36 percent for women. Abowd et al. (1999) use a sample of French establishments between 1987 and 1990 and note that approximately one third of all short-term employment contracts were converted at the time of their termination to long-term contracts. For Spain between 1988 and 2002, Güell and Petrongolo (2007) report that between 5 to 18 percent of temporary contracts were converted into permanent contracts.

language skills, computer skills, managerial skills, worker’s minimum or maximum age, different types of driver’s license, physical attributes such as required strength, or “other” requirements).

We are interested in these variables as potential controls for the costs of a qualification requirement adjustment. Namely, vacancies that are assigned many worker-specific requirements are likely vacancies where worker characteristics are an important determinant of match productivity and where qualification requirement adjustments may therefore be more costly. An inclusion of the required qualification as a control variable is also important for another reason. When searching to fill a vacancy that entails higher qualification an employer faces a larger proportion of job searchers who are under-qualified. Hence, hiring an under-qualified worker becomes more likely regardless of the costs of continued search an employer may be facing.

In addition, we construct several variables to control for job characteristics such as whether a job position is full-time rather than part-time, has a one-shift rather than a multi-shift or a flexible work schedule, and whether a position is to be filled by a worker rather than an intern. To control for firm attributes we construct variables for firm industry and firm size (a set of range dummies). Variables that identify a month when a vacancy was filled measure potential seasonal influences.

4. Evidence

4.1. Employers’ hiring practices and search costs

Adjustments in required qualification: To infer the association between the search costs and the employer’s hiring requirement adjustment we estimate a probit model with a dependent variable equal to one if an under-qualified worker was hired and zero otherwise:

$$\text{Prob}(\text{under-qualified worker hired}_i = 1 | X_i) = \Phi(\beta_0 + \beta_1 \text{search costs}_i + \delta' X_i), \quad (1)$$

where $\Phi(\cdot)$ denotes the standard normal cumulative distribution function and X_i a vector of vacancy attributes (whether a job is full-time, permanent, internship, and a job’s work schedule),

employer attributes (size, industry), worker requirements (work experience, qualification, number of skills), and variables for the month a vacancy was filled. Table 3 reports marginal effects evaluated at the sample mean values for continuous variables and at zero for dummy variables. In all tables robust standard errors clustered on employers' identification numbers are reported.¹⁹

Consistent with predictions of a standard search model, we find that an employer who faces low costs of keeping a vacancy unfilled is less likely to hire an under-qualified worker compared to an employer who faces high costs of keeping a vacancy unfilled.²⁰ For instance, an employer who faces low search costs is 2.2 percentage points (or approximately 7.0 percent) less likely to hire an under-qualified worker. More specifically, an employer with a vacancy that has to be filled more than three weeks since its registration to the ESS faces a 13.2 percentage points (or approximately 41.8 percent) lower probability of filling a vacancy with an under-qualified worker compared to an employer with a vacancy that has to be filled within a week.²¹

The pattern persists when we consider an alternative measure for qualification mismatch that treats a new hire as under-qualified whenever the attained qualification level of the new hire is below the required qualification level by at least two levels on an eight-level scale rather than one as is the case in the baseline specification.²² Overall, the results in Table 3 are consistent with a notion that an employer is less selective when he is facing higher costs of continued search and therefore is more likely to hire an under-qualified worker compared to an employer who faces low search costs. By lowering hiring requirements an employer increases the likelihood of filling a vacancy each search period and can thus avoid high costs of continued search.

¹⁹ For complete results refer to the Appendix.

²⁰ The sign switches if we do not control for the level of qualification requirement. The results are available upon request. This switch can be in part attributed to the fact that a larger proportion of job searchers is under-qualified when a vacancy entails higher required qualification. In such instances hiring an under-qualified worker is more likely regardless of the costs of continued search. This consideration motivates the inclusion of required qualification level as a control variable.

²¹ Employers with the lowest qualification requirement cannot adjust their qualification requirement when faced with high search costs. We have also considered using a sample that excludes such vacancies. The results are similar and are available upon request.

²² To preserve space we do not report the results. The results are available upon request.

Adjustments in offered employment contract: In Table 4 we report results from two binary probit models. In the first model (column 1) we restrict the sample to positions that offer temporary employment, while in the second model (column 2) to positions that offer permanent employment at the time of their registration at the ESS. The dependent variable in both columns identifies whether a contract that was in effect at the time a new hire started working differs from a contract that was offered at the time of the vacancy's registration; i.e., the variable takes value 1 if a permanent contract was signed and 0 otherwise in column 1, and value 1 if a temporary contract was signed and 0 otherwise in column 2. In particular, we estimate:

$$\text{Prob}(\text{offered contract adjusted}_i = 1 | X_i) = \Phi(\beta_0 + \beta_1 \text{search costs}_i + \delta' X_i), \quad (2)$$

where $\Phi(\cdot)$ is the standard normal cumulative distribution function and X_i a vector of vacancy attributes (full-time job, work schedule, internship), employer attributes (size, industry), worker requirements (work experience, qualification level, number of other skill requirements), and indicator variables for the month a vacancy was filled. Table 4 reports marginal effects evaluated at the sample mean values for continuous variables and at zero for dummy variables.

The results in Table 4 point to two findings. First, employers who face high search costs are 1.7 percentage points (or approximately 8.5 percent) more likely to hire a worker on a permanent contract rather than the initially offered temporary contract compared to employers who face low costs of continued search (see column 1). Compared to employers who have to fill a vacancy within a week, employers who have to fill a vacancy more than three weeks since the vacancy's registration at the ESS face 8.7 percentage points (or about 43.5 percent) lower probability of hiring a worker on a permanent rather than the initially offered temporary contract.

Second, search costs are not associated with the likelihood a worker is hired on a temporary rather than the initially offered permanent contract (see column 2). When we consider a more

detailed measure for search costs, we find that employers who have to fill a vacancy one week to three weeks (more than three weeks) since the vacancy's registration at the ESS face a 19.6 (25.4) percentage points or approximately 33.2 (43.1) percent higher probability of filling the vacancy on a temporary rather than initially offered permanent contract compared to employers who have to fill a vacancy within a week since its registration (see Specification 2 in column 2).

These latter two findings suggest that, compared to a low search cost vacancy, a high search cost vacancy is more likely filled as a permanent position regardless of the type of employment contract it initially offers. This observation is consistent with a notion that the job searchers may draw utility from job stability and are therefore more likely to accept a permanent rather than a temporary job offer.²³ An offered employment contract can therefore be used as a tool that helps an employer avoid high costs of continued search, in a similar way as do the exerted search effort or hiring requirement adjustments. The evidence in the next section suggests, though, that these employment contract adjustments depend on attained qualifications of new hires.

4.2. Employers' hiring practices and EPL

Evidence thus far suggests that employers who face higher search costs are more likely to hire an under-qualified worker or fill a vacancy as a permanent position. Presumably the employers pursue these adjustments in an attempt to improve their chances of filling their vacancies and thus avoid high costs of continuing with search. In this section we examine whether employers take into account the costs imposed by the EPL when pursuing these adjustments.²⁴ We want to first assess whether an employer who faces high costs of continued search is more likely to hire an under-qualified worker only when the contract agreed at the time of hire is temporary and

²³ Evidence of such behavior has long been established in psychology literature on job-attribute ranking (e.g., Jurgensen, 1978).

²⁴ These costs arise: a) because of the firing costs associated with termination of a match in an instance the match is hit by a particularly bad match-specific productivity shock; or b) due to the fact that, upon realization of a match-specific productivity shock, an employer is stuck with a match the employer would terminate had the employer not faced high firing costs.

thus exempt from the EPL. Second, we want to examine whether a permanent contract is used to facilitate search when the costs of continuing with search are high only when the match is of high enough quality and therefore the expected costs entailed by the EPL are low.

Table 5 provides some preliminary insights. The table reports the incidence of requirement and employment contract adjustments for the full sample, for low and high search cost vacancies. We can see that permanent positions were filled as temporary positions for 24.2 percent of 26,197 vacancies that were filled with under-qualified workers. Such an adjustment in the employment contract occurred for 12.4 percent of 56,819 vacancies that were filled with qualified workers. Note also that temporary positions were filled as permanent for 16.0 percent of vacancies that were filled with qualified workers but only for 11.4 percent of vacancies that were filled with under-qualified workers. Similar patterns can be observed for both low and high search cost vacancies.

We next turn to two multinomial logit models. In the first model (Table 6A) we restrict the sample to vacancies that offer temporary employment, while in the second model (Table 6B) to vacancies that offer permanent employment. In the two models the dependent variable, y_i , identifies employment contract and qualification requirement adjustments for vacancy i ; i.e., y_i identifies whether an under-qualified worker was hired on initially offered contract, an under-qualified worker was hired on a contract that differs from initially offered contract, a qualified worker was hired on a contract that differs from initially offered contract, or a qualified worker was hired on initially offered contract. The probability an employer chooses type j adjustment is:

$$Prob(y_i = j) = \frac{e^{(\beta_{0j} + \beta_{1j} search\ costs_i + \delta_j^* X_i)}}{\sum_{k=0}^3 e^{(\beta_{0k} + \beta_{1k} search\ costs_i + \delta_k^* X_i)}}.^{25} \quad (3)$$

²⁵ A multinomial logit model stipulates that relative probabilities for any two alternatives depend solely on the characteristics of the two alternatives. A multinomial probit model is less restrictive in this sense. Nevertheless, the estimated coefficients are similar in terms of the sign and magnitude to those obtained from the multinomial logit model. The results from the generalized Hausman test further suggest that the multinomial logit model is an appropriate specification. The results are available upon request.

In Tables 6A and 6B we report odds ratios. Values greater than one suggest that the odds an adjustment j is pursued rather than adjustment k (the reference choice) are greater for a low search cost vacancy compared to a high search cost vacancy. Values less than one suggest the opposite. In order to assess whether employers take into account the costs imposed by the EPL when searching, we report odds ratios for different reference choices. In columns 1 and 2 the two types of adjustments in the odds ratio differ as to whether an under-qualified worker was hired but are the same in terms of the type of offered contract adjustment. Columns 1 and 2 can therefore help us assess whether an under-qualified worker is more likely hired when search costs are high only when a temporary contract is used to hire the worker. In columns 3 and 4 the two types of adjustments in the odds ratio differ in the type of contract adjustment but are the same in terms of the match quality. Columns 3 and 4 can help us better assess whether a permanent contract is used to facilitate search when search costs are high only if the match is of good enough quality.

<Insert Tables 5 and 6>

The results in Table 6A pertain to the sample of vacancies that offer temporary employment. We find that an employer who faces high search costs is more likely to hire an under-qualified worker rather than a qualified worker only when a temporary contract is agreed at the time of the hire. The odds ratio of 0.897 for the search cost variable suggests that an employer with a low search cost vacancy faces a probability of hiring an under-qualified rather than a qualified worker on a temporary contract that is 0.103 lower than the probability for an employer with a high search cost vacancy (see column 2 in Table 6A). Therefore, while Table 3 suggests that there exists a positive association between the search costs and the likelihood an under-qualified worker is hired, the results in Table 6A (that pertain to 72.6 percent of the sample) reveal that the association is found only for vacancies that are filled as temporary positions.

Note also that the results in Table 4 suggest that an employer may use a permanent contract to facilitate search when the costs of continued search are high. Columns 3 and 4 in Table 6A additionally reveal that the positive association between the search costs and the likelihood a temporary position is filled as a permanent position can be found for vacancies filled with a worker who met or exceeded the employer's qualification requirements. The relation exists only when we consider an alternative measure for an under-qualified hire; i.e., when a hire's qualification is below the required level by at least two levels rather than one as in the baseline specification. A low search cost vacancy has a probability of being filled with a qualified worker as a permanent rather than a temporary position that is 0.119 lower than for a high search cost vacancy.²⁶ We find no difference between low and high search cost vacancies in terms of probability that a permanent rather than a temporary contract is used to hire an under-qualified worker (see column 3).

We next turn to results from a multinomial logit model for the sample of vacancies that were registered as offering permanent employment (about 27.4 percent of the sample) in Table 6B. The only significant odds ratio for the search cost variable is in column 2. This ratio suggests that an employer with a low search cost vacancy faces a probability of hiring an under-qualified rather than a qualified worker on an initially offered permanent contract that is 0.185 lower than the probability for an employer with a high search cost vacancy. We find that no odds ratio is different from one at a five percent significance level when we consider an alternative hiring qualification adjustment measure; i.e., when a definition of a qualification mismatch requires a larger discrepancy between a required and attained qualification. The results from firm-level fixed effects and sample restrictions we discuss in Section 5 indicate that the odds ratios in Table 6B remain insignificantly different from one, while the results in Table 6A persist.

²⁶ The results are available upon request.

Overall, these results seem to suggest that when an employer is trying to fill a permanent position search costs are not that important in terms of explaining the likelihood an under-qualified worker is hired. Namely, the costs an employer incurs while searching for a few weeks are likely negligible compared to the costs associated with hiring an under-qualified worker on a permanent contract that may last several years and is costly to terminate. When an employer is searching to hire a worker for a job that lasts only a couple of months, however, the search costs play a much more important role in determining an employer's search outcomes. These considerations may help explain why search costs are more likely taken into consideration when an employer is searching to fill a temporary position and to a lesser extent when a position is permanent.

An employer searching to fill a permanent position could respond to high costs of continued search by hiring an under-qualified worker temporarily. In fact, such adjustments are anticipated in the Slovenian EPL (Article 14). That we do not find strong support that these adjustments take place can be explained as follows. Article 14 stipulates that an employer with a permanent position can hire an under-qualified worker temporarily for at most one year when search costs are high. Hence, while an employer's hiring adjustments may result in avoidance of search costs, these adjustments come at the expense of search costs an employer incurs when a new search has to be undertaken once temporary employment of an under-qualified worker ends.²⁷

4.3. Job application period, vacancy duration, and search costs

The results discussed thus far suggest that the costs of continued search can explain, in part, the likelihood that the employers pursue adjustments in qualification requirement and offered employment contract. We argue that the employers pursue these adjustments in an attempt to increase the likelihood of filling their vacancies and hence avoid further incurrence of high search

²⁷ We find some evidence in our data that is consistent with such behavior. The results from a firm-level fixed effects OLS regression suggest that a proportion of permanent positions an employer filled as temporary positions in a given week is positively associated with a proportion of new vacancies an employer registered as offering permanent employment that same week.

costs while keeping in mind the EPL costs their adjustments entail. If this explanation is valid, we expect to observe that employers who face high search costs are more likely to fill their vacancies each search period compared to employers who face low search costs.

Hence, to explore further the validity of our argument we proceed in two steps. First, we check whether employers who face higher costs of continued search allow for a shorter job application period when registering their vacancies at the ESS. In particular, we exploit the fact that the Labour Code (Article 8) in effect in Slovenia in 2001 required that prospective job applicants be given at least eight days to apply to a job opening. In the dataset we observe whether employers comply with this requirement. We construct a dependent variable that differentiates between vacancies to which job applicants are to apply within at most eight days and vacancies to which applicants are to apply within more than eight days. In particular, we estimate:

$$\begin{aligned} \text{Prob}(\text{job application period exceeds legal minimum}_i = 1 | X_i) = \\ = \Phi(\beta_0 + \beta_1 \text{search costs}_i + \delta' X_i), \end{aligned} \quad (4)$$

where $\Phi(\cdot)$ denotes the standard normal cumulative distribution function and X_i a vector of vacancy, employer, and worker attributes described in Section 3.4. Column 1 in Table 7 reports marginal effects evaluated at zero for dummy variables and at the sample mean values for continuous variables. The results suggest that employers with low search cost vacancies are 4.5 percentage points (or approximately 71.4 percent) more likely to allow for a job application period that exceeds the legally required minimum of eight days compared to employers with high search cost vacancies. The identified association increases in magnitude the longer the period between the vacancy's registration at the ESS and the date the vacancy has to be filled.

<Insert Table 7>

Next, we examine the association between the costs of continued search and the conditional likelihood that a vacancy is filled each search period. To do so, we first construct a measure for vacancy duration; i.e., the number of days between the date the vacancy was registered at the ESS and the date the worker started working at the position.²⁸ Upon restricting the sample to observations for which a valid measure for vacancy duration is observed, we estimate Cox proportional hazard model.²⁹ Let $t_1 < \dots < t_i < \dots < t_n$ denote an ordered sequence of completed durations for n vacancies in our sample. The likelihood that vacancy i is filled at t_i rather than some other vacancy j that remained vacant until t_i (i.e., vacancy i 's risk set $R(t_i)$) is

$$L_i = \frac{e^{(\beta_0 + \beta_1 \text{search costs}_i + \delta' X_i)}}{\sum_{j \in R(t_i)} e^{(\beta_0 + \beta_1 \text{search costs}_j + \delta' X_j)}}.$$

Below partial likelihood function, a product of L_i terms for all

filled vacancies in the sample, is maximized to obtain estimated coefficients:

$$L = \prod_{i=1}^n \left(\frac{e^{(\beta_0 + \beta_1 \text{search costs}_i + \delta' X_i)}}{\sum_{j \in R(t_i)} e^{(\beta_0 + \beta_1 \text{search costs}_j + \delta' X_j)}} \right). \quad (5)$$

Table 7 (column 2) suggests that employers with low search cost vacancies face 20.7 percent lower conditional likelihood of filling a vacancy each search period compared to employers with high search cost vacancies. More specifically, employers who have to fill a vacancy between a week and three weeks (more than three weeks) after the vacancy's registration at the ESS face approximately 29.7 (67.0) percent lower conditional likelihood of filling a vacancy each search period compared to employers who have to fill a vacancy within a week.

²⁸ For details regarding the construction of this measure see Brenčič (2007b).

²⁹ The duration measure is valid if the vacancy registration date at the ESS precedes the date the worker started working.

5. Robustness checks³⁰

Employers' search heterogeneity: We consider restricting the sample to vacancies we anticipate are more homogenous in terms of how employers go about their search. In the first specification we restrict the sample to vacancies for which employers requested ESS' help. The evidence pertaining to the association between the likelihood that an under-qualified worker is hired and the search costs persists. This finding suggests that the ESS does not appear to improve the employers' search outcomes. Interestingly, we find no difference between vacancies that have to be filled immediately and those that do not when it comes to the likelihood that an offered employment contract is adjusted. This finding may suggest that the employers are more reluctant to change the offered contract when a governmental agency oversees their search efforts.

In the second specification we restrict the sample to vacancies for which the date a vacancy was registered at the ESS precedes the date the worker started working for the employer. That is, we exclude from the sample vacancies that were registered at the ESS after the worker started working. For these vacancies the employment contract adjustments may have taken place after a worker started working rather than during the employer's search. The results for this restricted sample are similar to those reported for the full sample of vacancies. Importantly, the odds ratios from Table 6B are statistically insignificant for these two alternative specifications.

Firm fixed effects: We next estimate linear probability models with firm-level fixed effects. The results we get confirm the main findings in the paper. We find that there exists a positive association between the search costs and the likelihood an under-qualified worker is hired. Further examination reveals that the association is only found in the sample of vacancies that were registered and filled as temporary positions. For all other vacancies search costs cannot explain

³⁰ To preserve space we do not report results that pertain to alternative specifications we discuss in this section. The results are available upon request.

the likelihood an under-qualified worker is hired. We also do not find an association between the search costs and the likelihood of an offered employment contract adjustment.

Strategic use of job requirements: According to the Slovenian EPL (Article 14) an employer could fill a permanent position temporarily for at most a year when no qualified worker could be found and an employer risked production interruptions. Hence, an employer could exaggerate hiring requirements and the costs of keeping a vacancy unfilled to justify the use of a temporary contract. While this is an interesting question that could be examined in more detail in the future, we think that such practices are costly. Note that while an employer with a permanent position can hire a seemingly under-qualified worker on a temporary contract, an employer has to let a qualified worker go and start a new search after the temporary contract ends. By abusing Article 14 an employer only postpones his task; filling a permanent position with someone who is qualified to do the job. These considerations provide incentives for an employer to hire a qualified worker permanently when a job an employer is trying to fill is of inherently long duration.

6. Concluding remarks

Initial analysis suggests that an employer who faces high costs of continued search is more likely to hire an under-qualified worker compared to an employer who faces low costs. Further examination reveals that this positive association arises largely on account of employers who search to hire a worker on a temporary position. When a position an employer is trying to fill offers permanent employment, search costs do not seem to play an important role in explaining the employer's hiring decisions. This finding suggests that search costs an employer incurs while searching are likely negligible compared to the costs associated with hiring an under-qualified worker on a permanent contract that may last several years and is costly to terminate.

When searching to fill a permanent position an employer could avoid high costs of continuing with search by accompanying an adjustment in qualification requirement with an adjustment in an offered employment contract; i.e., by hiring an under-qualified worker on a temporary rather than initially offered permanent employment contract. That we do not find strong evidence that such adjustments take place may indicate that these adjustments come at the expense of search costs an employer incurs in the future when a temporary contract ends and a new search has to be undertaken. Hence, both the EPL costs and the costs of future search may explain why we find that the employers seem to respond to search costs differently depending on whether the employers are searching to fill a temporary or a permanent position.

Overall, these findings document new vacancy-level insights into the employers' hiring practices in the presence of employment protection and costly search. Future research could extend these findings in two interesting ways. In 2003 new legislation came into effect in Slovenia that appears to further restrict the use of temporary contracts and reduce the firing costs associated with termination of permanent contracts. A collection of new data that pertain to the period during which the legislative change occurred would allow an analysis of the effect of the legislative change on vacancy creation, vacancy pool composition, and employers' search outcomes.

Evidence in this paper suggests that search costs do not play as important role when an employer is searching to fill a permanent position compared to when searching to fill a temporary position. Preliminary analysis suggests that, at least in part, this observation can be explained by the fact that hiring an under-qualified worker temporarily in an attempt to avoid high search costs only postpones the inevitable; i.e., search costs an employer incurs when an employer has to undertake a new search to fill a permanent position once temporary employment ends. Future research could consider including such considerations in a formal model of employers' search.

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Table 1: Description of variables

Variable name:	Description :
Worker requirements	
1 if up to two-year vocational schooling required	1 if job position requires no training and incomplete elementary school, short training and completed elementary school, or up to two years of professional (vocational) education, and 0 otherwise
1 if more than two-year vocational schooling and less than college attendance required (excluded group)	1 if job position requires two-and-a-half-year professional (vocational) education, three years of professional/vocational education with foreman exam, or four to five years of such education, and 0 otherwise
1 if some college or more required	1 if job position requires two years of college level education, four to five years of college level education, or at least Master's degree, and 0 otherwise
Requirements (number)	Number of requirements specified by employer: physical skills, driver's license, managerial skills, language requirements, training, and other specialization requirements
Work experience (in years)	Number of years of required work experience
Job characteristics	
Permanent vs. temporary position	1 if job position is registered as a permanent (indefinite-length) position and 0 if registered as a temporary (fixed-length) position
Full time vs. half time	1 if job position is a full-time position (i.e. eight-hour work day) and 0 if position is less than a full-time position
Work schedule	1 if work is organized in one shift (morning, afternoon, or evening) and 0 if work schedule consists of two or more shifts, is truncated, or flexible
Worker vs. intern	1 if job position is to be filled by a worker and 0 if job position is to be filled by an intern
Costs of keeping a vacancy unfilled	1 if job position has to be filled at some future date based on the agreement between a new hire and an employer or on a date that exceeds 7 days since the date the position was registered at the ESS and 0 if a position is to be filled immediately or within 7 days since its registration at the ESS
Firm characteristics	
Firm size	Number of employees/1,000
Firm industry	A set of dummy variables for firm's industry (manufacturing, government and public services, health, education, financial services, social or community services, small businesses, restaurant, trade, transportation, construction, agriculture and water management)
Employer's search decisions	
1 if under-qualified worker hired	1 if a hired worker's attained qualification level is below required qualification level
Temporary to permanent employment contract reversal	1 if a permanent (indefinite-length) contract is signed between a worker and an employer to fill a position that was registered (posted) as a temporary (fixed-length) position
Permanent to temporary employment contract reversal	1 if a temporary (fixed-length) contract is signed between a worker and an employer to fill a position that was registered as a permanent (indefinite-length) position
Vacancy duration (in days)	Difference between the date the vacancy was registered at the ESS and the date a worker started working for an employer (in days)
Length of job application period (in days)	Number of days available for application to a job posting
Active help of ESS requested	1 if ESS' active help in recruiting a worker to fill a vacancy is requested and 0 otherwise

Notes: Data on vacancies were obtained from the Employment Service of Slovenia (ESS). Data on vacancy outcomes were obtained from the Health Insurance Institute of Slovenia (ZZZS). Data on firms were obtained from the Agency of the Republic of Slovenia for Public Legal Records and Related Services (AJPES).

Table 2 Summary statistics

Dataset: Vacancies registered at the Employment Service of Slovenia in 2001			
Sample:	All vacancies	LOW SEARCH COST vacancies	HIGH SEARCH COST vacancies
Variable name:	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Worker requirements			
1 if up to two-year vocational schooling required	0.320 (0.466)	0.293 (0.455)	0.332 (0.471)
1 if more than two-year vocational schooling required	0.532 (0.199)	0.486 (0.500)	0.553 (0.497)
1 if some college or more required	0.148 (0.355)	0.221 (0.415)	0.115 (0.319)
Requirements (number)	2.408 (2.310)	2.576 (2.355)	2.333 (2.286)
Required work experience (in years)	1.035 (2.077)	1.069 (1.968)	1.019 (2.124)
1 if missing data on required work experience and 0 otherwise	0.347 (0.476)	0.322 (0.467)	0.358 (0.479)
Job characteristics			
1 if permanent contract offered and 0 if temporary contract offered	0.274 (0.352)	0.218 (0.413)	0.298 (0.457)
1 if full time position and 0 if half time position	0.960 (0.197)	0.958 (0.200)	0.960 (0.195)
1 if work schedule consists of one shift and 0 otherwise	0.582 (0.493)	0.589 (0.762)	0.579 (0.494)
1 if missing work schedule and 0 otherwise	0.113 (0.317)	0.102 (0.302)	0.118 (0.323)
1 if worker required and 0 if an intern required	0.945 (0.227)	0.928 (0.258)	0.953 (0.211)
Firm characteristics			
Firm's size (number of employees/1,000)	0.153 (0.310)	0.231 (0.361)	0.118 (0.278)
1 if missing firm size and 0 otherwise	0.272 (0.445)	0.185 (0.388)	0.310 (0.462)
Employer's search decisions and search environment			
1 if under-qualified worker hired	0.316 (0.465)	0.330 (0.470)	0.309 (0.462)
1 if temporary position filled as permanent position	0.145 (0.368)	0.139 (0.346)	0.148 (0.355)
1 if permanent position filled as temporary position	0.161 (0.446)	0.135 (0.342)	0.173 (0.378)
Vacancy duration	34.058 (36.052)	39.119 (35.030)	30.414 (36.337)
Length of job application period (in days)	8.527 (2.743)	8.786 (3.274)	8.411 (2.462)
1 if active help of ESS requested and 0 otherwise	0.319 (0.466)	0.383 (0.486)	0.290 (0.454)
1 if low search costs and 0 if high search costs	0.308 (0.462)	1.000 (0.000)	0.000 (0.000)
Number of observations	83,016	25,573	57,443

Notes: (i) Summary statistics for vacancy duration are based on restricted sample of 47,568 vacancies for which we observe a valid measure for vacancy duration. (ii) Variables that measure firm size and required work experience are included in econometric models as a set of indicator variables.

Table 3: Probit results for employers' hiring requirement adjustments

Dependent variable: whether vacancy filled with an under-qualified worker. Marginal effects evaluated at zero for indicator variables and sample means for continuous variables. Robust standard errors clustered on firms reported in parentheses.

Dataset: Vacancies registered at the Employment Service of Slovenia in 2001		
Dependent variable:		1 if UNDER-qualified worker hired
Variable name:	Sample means	Marginal effect (S.E.) (1)
Specification 1: BASELINE		
1 if low search costs and 0 if high search costs	0.308	-0.022 (0.006)***
Incidence of outcome (in proportion)		0.316
Observations		83,016
Pseudo R ²		0.187
Log-likelihood		-42,084.50
Specification 2: Alternative search costs measure		
1 if immediately available position	0.642	-0.000 (0.029)
1 if position available within a week	0.050	...
1 if position available within 1 to 3 weeks	0.035	-0.045 (0.043)
1 if position available in more than 3 weeks	0.043	-0.132 (0.043)***
1 if hire date based on agreement	0.230	-0.057 (0.033)*
Incidence of outcome (in proportion)		0.316
Observations		83,016
Pseudo R ²		0.187
Log-likelihood		-42,077.56

Notes: (i) In Specification 1 a negative sign indicates that employers who face low search costs are less likely to hire an under-qualified worker compared to employers who face high search costs. If an employer who faces high costs of continued search lowers hiring requirements in an attempt to avoid high search costs we expect the marginal effect to have a negative sign. (ii) Specification 2 pertains to an alternative measure for search costs. (iii) * indicates significance at 10%; ** indicates significance at 5%; *** indicates significance at 1%. (iv) Control variables not reported in the table: worker requirements (number of requirements, requirements squared, work experience, qualification level), job attributes (work schedule, internship, part-time, permanent employment at the vacancy's registration), firm attributes (industry, size), and month a vacancy was filled.

Table 4: Probit results for employers' offered employment contract adjustments

Dependent variable: whether a worker is hired on a contract that differs from the contract offered at the time of a vacancy's registration at the ESS. Column 1: whether a vacancy offering temporary employment at the time of its registration was filled as a permanent position. Column 2: whether a vacancy offering permanent employment at the time of its registration was filled as a temporary position. Marginal effects evaluated at zero for indicator variables and sample means for continuous variables. Robust standard errors clustered on firms reported in parentheses.

Dataset: Vacancies registered at the Employment Service of Slovenia in 2001				
Sample:	Positions registered as TEMPORARY		Positions registered as PERMANENT	
Dependent variable:	1 if PERMANENT contract signed		1 if TEMPORARY contract signed	
Variable name:	Sample means	Marginal effect (S.E.) (1)	Sample means	Marginal effect (S.E.) (2)
Specification 1: BASELINE				
1 if low search costs and 0 if high search costs	0.332	-0.017 (0.006)***	0.245	0.023 (0.014)
Mean of dependent variable		0.200		0.590
Observations		60,310		22,706
Pseudo R ²		0.022		0.022
Log-likelihood		-29,486.43		-15,026.48
Specification 2: Alternative search costs measure				
1 if immediately available position	0.617	0.063 (0.033)*	0.709	0.038 (0.063)
1 if position available within a week	0.052	...	0.045	...
1 if position available within 1 to 3 weeks	0.037	0.037 (0.049)	0.028	0.196 (0.084)**
1 if position available in more than 3 weeks	0.044	-0.087 (0.048)*	0.040	0.254 (0.084)***
1 if hire date based on agreement	0.250	0.001 (0.040)	0.178	0.058 (0.072)
Mean of dependent variable		0.200		0.590
Observations		60,310		22,706
Pseudo R ²		0.023		0.023
Log-likelihood		-29,478.70		-15,017.93

Notes: (i) In Specification 1 a negative sign in column 1 suggests that an employer with a temporary position who faces low search costs is less likely to hire a worker on a permanent contract compared to an employer with a temporary position who faces high search costs. A positive sign in column 2 suggests that an employer with a permanent position who faces low search costs is more likely to hire a worker on a temporary contract compared to an employer with a permanent position who faces high search costs. If employers offer a permanent contract in an attempt to increase the probability of ending search when search costs are high, we expect a negative (positive) sign in column 1 (2). (ii) Specification 2 pertains to an alternative measure for search costs. (iii) * indicates significance at 10%; ** indicates significance at 5%; *** indicates significance at 1%. (iv) Control variables not reported in the table: worker requirements (number of requirements, requirements squared, work experience, qualification level), job attributes (work schedule, internship, part-time), firm attributes (industry, size), and month a vacancy was filled.

Table 5: Filled vacancies by employers' adjustments in hiring requirement and offered employment contract

Panel A: All vacancies

	Hiring requirement adjustments			
	Under-qualified workers hired		Qualified workers hired	
	Number	Column (1)	Number	Column (2)
Offered employment contract adjustments	(1)	proportion	(2)	proportion
Temporary positions filled as temporary	13,813	0.527	34,449	0.606
Temporary positions filled as permanent	2,980	0.114	9,068	0.160
Permanent positions filled as temporary	6,350	0.242	7,054	0.124
Permanent positions filled as permanent	3,054	0.117	6,248	0.110
Column sum	26,197	1.000	56,819	1.000

Panel B: Low search cost vacancies

	Hiring requirement adjustments			
	Under-qualified workers hired		Qualified workers hired	
	Number	Column (1)	Number	Column (2)
Offered employment contract adjustments	(1)	proportion	(2)	proportion
Temporary positions filled as temporary	4,905	0.581	11,532	0.673
Temporary positions filled as permanent	982	0.116	2,583	0.151
Permanent positions filled as temporary	1,821	0.216	1,634	0.095
Permanent positions filled as permanent	734	0.087	1,382	0.081
Column sum	8,442	1.000	17,131	1.000

Panel C: High search cost vacancies

	Hiring requirement adjustments			
	Under-qualified workers hired		Qualified workers hired	
	Number	Column (1)	Number	Column (2)
Offered employment contract adjustments	(1)	proportion	(2)	proportion
Temporary positions filled as temporary	8,908	0.502	22,917	0.577
Temporary positions filled as permanent	1,998	0.113	6,485	0.163
Permanent positions filled as temporary	4,529	0.255	5,420	0.137
Permanent positions filled as permanent	2,320	0.131	4,866	0.123
Column sum	17,755	1.000	39,688	1.000

Notes: Each entry in column 1 (2) indicates the number of hired under-qualified (qualified) workers by type of employment contract adjustment for a full sample in panel A and separately for a sample of low and high search cost vacancies in panels B and C, respectively. For instance, the first number from the top in column 1 indicates that 13,813 under-qualified workers were hired on temporary contracts to fill temporary positions. These hires represent 52.7 percent of all 26,197 under-qualified workers who filled vacancies in our sample.

Table 6A: Multinomial logit results for employers' adjustments in offered employment contract and hiring requirement

Dependent variable identifies both whether the new hire's qualification is below the required level and whether the employment contract used to hire the new hire is different from the initial offer. Odds ratios reported. Robust standard errors clustered on firms reported in parentheses.

Dataset: Vacancies registered at the Employment Service of Slovenia in 2001					
Sample:	Positions registered as TEMPORARY				
Odds ratios:	UNDER-QUALIFIED worker hired on a permanent contract versus QUALIFIED worker hired on a permanent contract	UNDER-QUALIFIED worker hired on a temporary contract versus QUALIFIED worker hired on a temporary contract	Under-qualified worker hired on a PERMANENT contract versus Under-qualified worker hired on a TEMPORARY contract	Qualified worker hired on a PERMANENT contract versus Qualified worker hired on a TEMPORARY contract	
Variable name:	Sample means	(S.E.)	(S.E.)	(S.E.)	(S.E.)
		(1)	(2)	(3)	(4)
Specification 1: BASELINE					
1 if low search costs and 0 if high search costs	0.332	0.896 (0.053)*	0.897 (0.033)***	0.923 (0.052)	0.924 (0.040)*
Observations				60,310	
Pseudo R ²				0.115	
Log-likelihood				-53,936.09	
Specification 2: Alternative search costs measure					
1 if immediately available position	0.617	1.043 (0.116)	0.909 (0.058)	1.169 (0.115)	1.019 (0.078)
1 if position available within a week	0.052
1 if position available within 1 to 3 weeks	0.037	1.031 (0.160)	0.824 (0.077)**	1.239 (0.159)*	0.991 (0.120)
1 if position available in more than 3 weeks	0.044	0.670 (0.114)**	0.788 (0.071)***	0.789 (0.111)*	0.928 (0.108)
1 if hire date based on agreement	0.250	0.963 (0.118)	0.826 (0.061)***	1.090 (0.122)	0.935 (0.083)
Observations				60,310	
Pseudo R ²				0.115	
Log-likelihood				-53,924.44	

Notes: (i) An odds ratio greater than one suggests that the odds that one type of adjustment is pursued versus another type are greater for a low search cost vacancy compared to a high search cost vacancy. A value less than one suggests the opposite. (ii) In columns 1 and 2 the two types of adjustments in the odds ratio differ as to whether an under-qualified worker was hired but are the same in terms of the type of offered contract adjustment. An odds ratio less than one in column 1 (2) suggests that the odds an employer with low search costs hires an under-qualified worker rather than a qualified worker on a permanent (temporary) contract are smaller compared to the odds an employer with high search costs is facing. (iii) In columns 3 and 4 the two types of adjustments in the odds ratio differ in the type of contract adjustment but are the same in terms of whether an under-qualified worker was hired. An odds ratio less than one in column 3 (4) suggests that the odds an employer with low search costs fills a vacancy as a permanent position rather than as a temporary position by hiring an under-qualified (qualified) worker are smaller compared to the odds an employer with high search costs is facing. (iv) If the employers pursue hiring adjustments in response to search costs while keeping in mind the EPL costs such adjustments entail we expect that only the odds ratios in columns 2 and 4 are smaller than one. (v) Specification 2 pertains to an alternative measure for search costs. (vi) * indicates significance at 10%; ** indicates significance at 5%; *** indicates significance at 1%. (vii) Control variables not reported: worker requirements (number of requirements, requirements squared, work experience, qualification), job attributes (work schedule, internship, part-time), firm attributes (industry, size), and month a vacancy was filled.

Table 6B: Multinomial logit results for employers' adjustments in offered employment contract and hiring requirement

Dependent variable identifies both whether the new hire's qualification is below the required level and whether the employment contract used to hire the new hire is different from the initial offer. Odds ratios reported. Robust standard errors clustered on firms reported in parentheses.

Dataset: Vacancies registered at the Employment Service of Slovenia in 2001					
Sample:	Positions registered as PERMANENT				
Odds ratios:	UNDER-QUALIFIED worker hired on a temporary contract versus QUALIFIED worker hired on a temporary contract	UNDER-QUALIFIED worker hired on a permanent contract versus QUALIFIED worker hired on a permanent contract	Under-qualified worker hired on a TEMPORARY contract versus Under-qualified worker hired on a PERMANENT contract	Qualified worker hired on a TEMPORARY contract versus Qualified worker hired on a PERMANENT contract	Sample means
Variable name:	(S.E.) (1)	(S.E.) (2)	(S.E.) (3)	(S.E.) (4)	
Specification 1: BASELINE					
1 if low search costs and 0 if high search costs	0.245	0.892 (0.057)*	0.815 (0.055)***	1.152 (0.091)*	1.052 (0.066)
Observations			22,706		
Pseudo R ²			0.110		
Log-likelihood			-25,889.58		
Specification 2: Alternative search costs measure					
1 if immediately available position	0.709	1.263 (0.144)**	1.139 (0.116)	1.014 (0.121)	0.914 (0.107)
1 if position available within a week	0.045
1 if position available within 1 to 3 weeks	0.028	0.997 (0.171)	0.973 (0.164)	1.339 (0.237)*	1.308 (0.226)
1 if position available in more than 3 weeks	0.040	1.076 (0.193)	0.646 (0.115)**	1.492 (0.266)**	0.897 (0.153)
1 if hire date based on agreement	0.178	1.147 (0.147)	0.963 (0.115)	1.106 (0.154)	0.928 (0.123)
Observations			22,706		
Pseudo R ²			0.110		
Log-likelihood			-25,878.67		

Notes: (i) An odds ratio greater than one suggests that the odds that one type of adjustment is pursued versus another type are greater for a low cost vacancy compared to a high cost vacancy. A value less than one suggests the opposite. (ii) In columns 1 and 2 the two types of adjustments in the odds ratio differ as to whether an under-qualified worker was hired but are the same in terms of the type of offered contract adjustment. An odds ratio less than one in column 1 (2) suggests that the odds an employer with low search costs hires an under-qualified worker rather than a qualified worker on a temporary (permanent) contract are smaller compared to the odds an employer with high search costs is facing. (iii) In columns 3 and 4 the two types of adjustments in the odds ratio differ in the type of contract adjustment but are the same in terms of whether an under-qualified worker was hired. An odds ratio less than one in column 3 (4) suggests that the odds an employer with low search costs fills a vacancy as a temporary position rather than as a permanent position by hiring an under-qualified (qualified) worker are smaller compared to the odds an employer with high search costs is facing. (iv) If the employers pursue hiring adjustments in response to search costs while keeping in mind the EPL costs such adjustments entail we expect that the odds ratio in column 1 (4) is smaller (larger) than one. (v) Specification 2 pertains to an alternative measure for search costs. (vi) * indicates significance at 10%; ** indicates significance at 5%; *** indicates significance at 1%. (vii) Control variables not reported: worker requirements (number of requirements, requirements squared, experience, qualification), job attributes (work schedule, internship, part-time), firm attributes (industry, size), and month a vacancy was filled.

Table 7: Job application period (Probit), vacancy duration (Hazard), and search costs

Dependent variable for Probit identifies whether a job application period exceeds the legal minimum of eight days. Marginal effects evaluated at zero for indicator variables and sample means for continuous variables. Cox proportional hazard model used for vacancy duration. Robust standard errors clustered on firms reported in parentheses.

Dataset: Vacancies registered at the Employment Service of Slovenia in 2001				
Model:	Binary probit model for an employer's choice of job application period length		Cox proportional hazard model for vacancy duration	
Dependent variable:	1 if MORE THAN 8 DAYS for job application		Conditional probability a vacancy is filled	
Variable name:	Sample means	Marginal effect (S.E.) (1)	Sample means	Coefficient (S.E.) (2)
Specification 1: BASELINE				
1 if low search costs and 0 if high search costs	0.308	0.045 (0.006)***	0.419	-0.232 (0.020)***
Incidence of outcome/Mean duration (in days)		0.063		34.058
Observations		83,016		47,568
Pseudo R ²		0.060		
Log-likelihood		-18,458.15		-460,970.52
Specification 2: Alternative search costs measure				
1 if immediately available position	0.642	0.185 (0.064)***	0.527	-0.533 (0.050)***
1 if position available within a week	0.050	...	0.054	...
1 if position available within 1 to 3 weeks	0.035	0.474 (0.147)***	0.051	-0.353 (0.055)***
1 if position available in more than 3 weeks	0.043	0.799 (0.085)***	0.072	-1.109 (0.054)***
1 if hire date based on agreement	0.230	0.515 (0.079)***	0.296	-0.710 (0.052)***
Incidence of outcome (proportion)/Mean duration (days)		0.063		34.058
Observations		83,016		47,568
Pseudo R ²		0.060		
Log-likelihood		-18,465.22		-460,341.70

Notes: (i) In Specification 1 a positive sign of the marginal effect estimate in column 1 suggests that employers who face low search costs accept job applications for a longer period of time compared to employers who face high search costs. (ii) The negative sign of the coefficient estimate in column 2 suggests that employers who face low search costs are less likely to fill a vacancy each search period compared to employers who face high search costs. (iii) Results in Specification 2 pertain to a more detailed measure for search costs. * indicates significance at 10%; ** indicates significance at 5%; *** indicates significance at 1%. (iv) Control variables not reported: worker requirements (number of requirements, requirements squared, work experience, qualification level), job attributes (work schedule, permanent employment offer, internship, part-time), firm attributes (industry, size), and month a vacancy was filled.

Appendix: Complete results for Tables 3 and 4 (Specification 1)

Sample:	Dataset: Vacancies registered at the Employment Service of Slovenia in 2001					
	Positions registered as TEMPORARY		Positions registered as PERMANENT		All positions	
	1 if PERMANENT contract signed	Marginal effect (S.E.) (1)	1 if TEMPORARY contract signed	Marginal effect (S.E.) (2)	Sample means	1 if UNDER-qualified worker hired
Dependent variable:						
Variable name:						
1 if low search costs and 0 if high search costs	0.332	-0.017 (0.006)***	0.245	0.023 (0.014)	0.308	-0.022 (0.006)***
1 if up to 2-year vocational schooling required	0.375	-0.033 (0.005)***	0.175	0.006 (0.012)	0.320	-0.305 (0.005)***
1 if some college or more required	0.114	0.047 (0.008)***	0.238	0.020 (0.011)*	0.148	0.394 (0.008)***
Requirements (number)	2.306	-0.001 (0.003)	2.678	0.018 (0.005)***	2.408	0.007 (0.003)***
Requirements squared	10.467	-0.001 (0.000)**	12.900	-0.000 (0.001)	11.132	-0.000 (0.000)
1 if less than ½ year of required work experience	0.135	-0.001 (0.008)	0.129	-0.061 (0.022)***	0.133	-0.002 (0.009)
1 if between ½ and 1 year of required work experience	0.066	0.035 (0.009)***	0.089	0.013 (0.016)	0.073	0.017 (0.009)*
1 if between 1 and 2 years of required work experience	0.051	0.019 (0.010)*	0.103	-0.007 (0.018)	0.065	0.006 (0.009)
1 if between 2 and 3 years of required work experience	0.044	0.039 (0.011)***	0.128	-0.023 (0.018)	0.067	0.026 (0.009)***
1 if between 3 and 5 years of required work experience	0.014	0.009 (0.016)	0.036	-0.013 (0.023)	0.020	0.013 (0.014)
1 if missing work experience	0.368	-0.004 (0.006)	0.292	-0.011 (0.017)	0.347	-0.007 (0.007)
1 if work organized in a single shift	0.569	0.022 (0.006)***	0.616	0.025 (0.011)**	0.582	0.017 (0.006)***
1 if missing work schedule	0.113	0.016 (0.008)*	0.113	0.038 (0.020)*	0.113	0.029 (0.008)***
1 if position for a worker and 0 if for an intern	0.931	-0.042 (0.009)***	0.985	0.004 (0.029)	0.945	-0.014 (0.009)
1 if full-time positions and 0 if half time	0.959	0.010 (0.010)	0.962	-0.009 (0.046)	0.960	0.019 (0.010)*

1 if permanent contract offered	0.000	...	1.000	...	0.274	0.024 (0.005)***
1 if governmental sector	0.175	0.032 (0.013)**	0.285	-0.116 (0.022)***	0.205	-0.067 (0.010)***
1 if health sector	0.041	0.016 (0.016)	0.028	0.029 (0.032)	0.037	-0.044 (0.017)**
1 if education sector	0.062	0.034 (0.016)**	0.053	0.046 (0.027)*	0.059	-0.069 (0.011)***
1 if financial sector	0.099	0.046 (0.015)***	0.156	-0.069 (0.022)***	0.114	-0.034 (0.010)***
1 if social/community services	0.024	-0.005 (0.018)	0.014	-0.050 (0.045)	0.021	0.074 (0.031)**
1 if small trade sector	0.093	0.039 (0.013)***	0.086	-0.020 (0.023)	0.091	-0.052 (0.010)***
1 if restaurant sector	0.048	0.046 (0.014)**	0.048	0.007 (0.026)	0.048	-0.029 (0.011)**
1 if trade sector	0.101	0.050 (0.012)***	0.098	-0.058 (0.027)**	0.100	-0.063 (0.009)***
1 if transport services sector	0.039	0.066 (0.019)**	0.049	-0.055 (0.029)*	0.042	-0.053 (0.013)***
1 if construction sector	0.112	0.014 (0.011)	0.072	-0.006 (0.024)	0.101	-0.054 (0.013)***
1 if agrarian, water management sector	0.011	0.022 (0.022)	0.007	0.048 (0.047)	0.010	-0.031 (0.022)
1 if between 3 and 9 employees	0.050	0.021 (0.010)**	0.067	-0.027 (0.017)	0.055	0.027 (0.010)***
1 if between 10 and 100 employees	0.261	-0.037 (0.007)***	0.233	-0.065 (0.016)***	0.253	-0.001 (0.007)
1 if between 100 and 500 employees	0.183	-0.067 (0.008)***	0.095	-0.096 (0.030)***	0.159	-0.004 (0.011)
1 if more than 500 employees	0.121	-0.103 (0.009)***	0.057	-0.120 (0.034)***	0.104	-0.060 (0.013)***
1 if missing firm size	0.230	-0.007 (0.008)	0.382	-0.064 (0.014)***	0.272	0.030 (0.008)***
Control for month a vacancy was filled		YES	YES	YES	YES	YES
Incidence of outcome (in proportion)		0.200	0.590	0.590	0.316	0.316
Observations		60,310	22,706	22,706	83,016	83,016
Pseudo R ²		0.022	0.022	0.022	0.187	0.187
Log-likelihood		-29,486.43	-15,026.48	-15,026.48	-42,084.50	-42,084.50

Notes: * Indicates significance at 10%; ** Indicates significance at 5%; *** Indicates significance at 1%. Robust standard errors clustered on firms are reported in parentheses.

Appendix: Complete results for Table 6 (Specification 1)

Sample:	Dataset: Vacancies registered at the Employment Service of Slovenia in 2001									
	Positions registered as TEMPORARY					Positions registered as PERMANENT				
Variable name:	Under-qualified worker is hired on a permanent contract	Under-qualified worker is hired on a permanent contract versus Qualified worker is hired on a permanent contract	Under-qualified worker is hired on a permanent contract versus Under-qualified worker is hired on a permanent contract	Qualified worker is hired on a permanent contract versus Qualified worker is hired on a permanent contract	Under-qualified worker is hired on a permanent contract versus Qualified worker is hired on a permanent contract	Under-qualified worker is hired on a permanent contract versus Under-qualified worker is hired on a permanent contract	Under-qualified worker is hired on a permanent contract versus Qualified worker is hired on a permanent contract	Under-qualified worker is hired on a permanent contract versus Under-qualified worker is hired on a permanent contract	Qualified worker is hired on a permanent contract versus Qualified worker is hired on a permanent contract	Under-qualified worker is hired on a permanent contract versus Under-qualified worker is hired on a permanent contract
	RRR (S.E.) (1)	RRR (S.E.) (2)	RRR (S.E.) (3)	RRR (S.E.) (4)	RRR (S.E.) (5)	RRR (S.E.) (6)	RRR (S.E.) (7)	RRR (S.E.) (8)		
	Sample means	Sample means	Sample means	Sample means	Sample means	Sample means	Sample means	Sample means		
1 if low search costs and 0 if high search costs	0.332 (0.053)*	0.897 (0.033)***	0.923 (0.052)	0.924 (0.040)*	0.892 (0.057)*	0.815 (0.055)***	1.152 (0.091)*	1.052 (0.066)		
Requirements (number)	2.306 (0.032)***	1.022 (0.018)	1.024 (0.026)	0.961 (0.022)*	1.041 (0.029)	1.003 (0.027)	1.087 (0.032)***	1.047 (0.027)*		
Requirements squared	10.467 (0.004)	1.001 (0.002)	0.994 (0.003)**	0.999 (0.003)	1.001 (0.003)	1.002 (0.003)	0.996 (0.003)	0.997 (0.003)		
1 if up to 2-year vocational schooling required	0.375 (0.007)***	0.168 (0.011)***	0.469 (0.053)***	1.190 (0.048)***	0.065 (0.006)**	0.255 (0.033)***	0.656 (0.095)***	2.567 (0.127)***		
1 if some college or more required	0.114 (2.070)***	4.905 (0.250)***	1.609 (0.097)***	0.461 (0.053)***	12.246 (1.288)***	5.173 (0.339)***	0.841 (0.054)***	0.355 (0.037)***		
1 if less than 1/2 year of required work experience	0.135 (0.096)	1.036 (0.058)	0.994 (0.081)	0.996 (0.067)	0.905 (0.083)	0.998 (0.092)	0.767 (0.088)**	0.846 (0.072)*		
1 if between 1/2 and 1 year of required work experience	0.066 (0.106)	1.070 (0.066)	1.245 (0.111)**	1.274 (0.088)***	1.085 (0.107)	1.027 (0.102)	1.102 (0.114)	1.043 (0.091)		
1 if between 1 and 2 years of required work experience	0.051 (0.115)	1.101 (0.065)	1.036 (0.106)	1.138 (0.088)*	0.944 (0.093)	0.969 (0.092)	0.984 (0.100)	1.010 (0.098)		
1 if between 2 and 3 years of required work experience	0.044 (0.116)	1.179 (0.076)**	1.111 (0.112)	1.319 (0.110)***	1.165 (0.110)	1.136 (0.104)	0.913 (0.097)	0.891 (0.078)		
1 if between 3 and 5 years of required work experience	0.014 (0.179)	1.073 (0.111)	1.003 (0.163)	1.135 (0.153)	1.321 (0.200)*	0.962 (0.124)	1.089 (0.147)	0.793 (0.110)*		
1 if missing work experience	0.368 (0.084)	0.942 (0.044)	1.062 (0.078)	0.944 (0.047)	1.021 (0.082)	1.030 (0.091)	0.965 (0.097)	0.973 (0.071)		
1 if full-time positions and 0 if half time	0.959 (0.116)	1.121 (0.077)*	1.029 (0.098)	1.173 (0.102)*	0.957 (0.131)	0.970 (0.187)	1.185 (0.308)	1.202 (0.176)		
1 if work organized in a single shift	0.569 (1.213)	1.074 (0.074)	1.188 (0.098)	1.053 (0.102)*	1.109 (0.131)	1.007 (0.187)	1.147 (0.308)	1.041 (0.176)		

1 if missing work schedule	0.113	(0.077)**	(0.041)*	(0.069)**	(0.048)	0.113	(0.065)*	(0.058)	(0.077)**	(0.055)
1 if position for a worker and 0 if for an intern	0.931	(0.104)**	(0.060)**	(0.092)	(0.068)	0.985	(0.100)	(0.104)	(0.132)	(0.084)
1 if governmental sector	0.175	(0.097)	(0.046)*	(0.061)*	(0.063)**	0.285	(0.239)	(0.137)	(0.200)	(0.183)
1 if health sector	0.041	(0.088)	(0.050)**	(0.142)**	(0.091)	0.028	(0.088)*	(0.082)**	(0.084)**	(0.067)**
1 if education sector	0.062	(0.158)	(0.084)**	(0.156)	(0.129)	0.053	(0.174)	(0.139)	(0.210)	(0.199)
1 if financial sector	0.099	(0.093)**	(0.056)**	(0.148)	(0.139)	0.156	(0.084)**	(0.084)**	(0.204)	(0.168)
1 if social/community services	0.024	(0.099)	(0.059)**	(0.140)**	(0.120)**	0.014	(0.109)	(0.088)	(0.096)	(0.075)**
1 if small trade sector	0.093	(0.330)	(0.238)**	(0.182)	(0.154)	0.086	(0.351)*	(0.244)	(0.244)	(0.136)
1 if restaurant sector	0.048	(0.097)	(0.052)**	(0.154)**	(0.101)**	0.048	(0.110)	(0.097)**	(0.148)	(0.098)
1 if trade sector	0.101	(0.112)	(0.063)	(0.151)	(0.111)**	0.098	(0.104)**	(0.113)**	(0.214)	(0.133)
1 if transport services sector	0.039	(0.084)**	(0.043)**	(0.156)**	(0.107)**	0.049	(0.094)	(0.111)	(0.119)	(0.093)
1 if construction sector	0.112	(0.151)	(0.060)**	(0.217)**	(0.136)*	0.072	(0.100)**	(0.128)	(0.114)*	(0.127)
1 if agrarian, water management sector	0.011	(0.082)**	(0.065)**	(0.120)	(0.082)	0.007	(0.104)	(0.104)*	(0.134)	(0.098)
1 if between 3 and 9 employees	0.050	(0.181)	(0.121)	(0.252)	(0.196)	0.067	(0.252)	(0.214)	(0.362)	(0.221)
1 if between 10 and 100 employees	0.261	(0.126)	(0.068)	(0.118)	(0.087)	0.233	(0.142)**	(0.123)	(0.114)	(0.082)
1 if between 100 and 500 employees	0.183	(0.083)	(0.048)	(0.066)**	(0.048)**	0.095	(0.095)	(0.082)	(0.102)	(0.066)**
1 if more than 500 employees	0.121	(0.096)	(0.064)	(0.060)**	(0.048)**	0.057	(0.180)**	(0.120)	(0.135)	(0.078)**
1 if missing firm size	0.230	(0.107)	(0.062)**	(0.065)**	(0.045)**	0.382	(0.153)	(0.117)*	(0.150)	(0.103)**
Control for month a vacancy was filled		(0.098)	(0.064)**	(0.083)	(0.058)		(0.104)**	(0.111)**	(0.073)**	(0.061)**
Observations		YES	YES	YES	YES				YES	
Pseudo R ²		60,310	60,310	60,310	60,310				22,706	
Log-likelihood		0.115	0.115	0.115	0.115				0.110	
		-53,936.09	-53,936.09	-53,936.09	-53,936.09				-25,889.58	

Notes: * Indicates significance at 10%; ** Indicates significance at 5%; *** Indicates significance at 1%. Robust standard errors clustered on firms are reported in parentheses.

Appendix: Complete results for Table 7 (Specification 1)

Dataset: Vacancies registered at the Employment Service of Slovenia in 2001				
Model:	Binary probit model for an employer's choice of job application period length		Cox proportional hazard model for vacancy duration	
Dependent variable:	1 if MORE THAN 8 DAYS for job application		Conditional probability of filling a vacancy	
Variable name:	Sample means	Marginal effect (S.E.) (1)	Sample means	Coefficient (S.E.) (2)
1 if low search costs and 0 if high search costs	0.308	0.045 (0.006)***	0.419	-0.233 (0.020)***
1 if up to 2-year vocational schooling required	0.320	-0.001 (0.006)	0.335	-0.166 (0.024)***
1 if some college or more required	0.148	-0.008 (0.004)**	0.175	-0.168 (0.022)***
Requirements (number)	2.408	0.007 (0.002)***	2.485	0.018 (0.012)
Requirements squared	11.132	-0.000 (0.000)	11.586	-0.002 (0.002)
1 if less than ½ year of required work experience	0.133	0.010 (0.009)	0.142	0.327 (0.031)***
1 if between ½ and 1 year of required work experience	0.073	0.007 (0.007)	0.083	0.202 (0.033)***
1 if between 1 and 2 years of required work experience	0.065	-0.000 (0.006)	0.069	0.260 (0.029)***
1 if between 2 and 3 years of required work experience	0.067	-0.007 (0.006)	0.065	0.253 (0.035)***
1 if between 3 and 5 years of required work experience	0.020	-0.021 (0.006)***	0.020	0.261 (0.044)***
1 if missing work experience	0.347	-0.021 (0.005)***	0.321	0.717 (0.029)***
1 if work organized in a single shift	0.582	-0.018 (0.006)***	0.600	-0.070 (0.023)***
1 if missing work schedule	0.113	-0.025 (0.006)***	0.101	0.137 (0.035)***
1 if position for a worker and 0 if for an intern	0.945	0.014 (0.006)**	0.942	-0.160 (0.033)***
1 if full-time positions and 0 if half time	0.960	-0.002 (0.012)	0.957	0.044 (0.066)
1 if permanent contract offered	0.274	0.006 (0.004)	0.249	-0.007 (0.020)
1 if governmental sector	0.205	-0.017 (0.008)**	0.192	-0.123 (0.043)***
1 if health sector	0.037	-0.019 (0.009)**	0.049	-0.162 (0.044)***
1 if education sector	0.059	-0.018 (0.008)**	0.081	-0.217 (0.040)***
1 if financial sector	0.114	-0.008	0.107	-0.253

		(0.008)		(0.043)***
1 if social/community services	0.021	0.039	0.025	-0.005
		(0.047)		(0.061)
1 if small trade sector	0.091	-0.008	0.075	-0.092
		(0.008)		(0.039)**
1 if restaurant sector	0.048	0.006	0.044	-0.196
		(0.013)		(0.049)***
1 if trade sector	0.100	-0.013	0.092	-0.110
		(0.009)		(0.047)**
1 if transport services sector	0.042	-0.025	0.040	-0.218
		(0.007)***		(0.063)***
1 if construction sector	0.101	-0.005	0.112	-0.470
		(0.010)		(0.045)***
1 if agrarian, water management sector	0.010	-0.020	0.011	0.024
		(0.009)**		(0.071)
1 if between 3 and 9 employees	0.055	0.010	0.046	-0.019
		(0.007)		(0.039)
1 if between 10 and 100 employees	0.253	0.004	0.265	-0.061
		(0.007)		(0.032)*
1 if between 100 and 500 employees	0.159	-0.011	0.187	-0.037
		(0.009)		(0.036)
1 if more than 500 employees	0.104	-0.046	0.123	-0.040
		(0.006)***		(0.045)
1 if missing firm size	0.272	0.002	0.243	-0.056
		(0.006)		(0.035)
Control for month a vacancy filled		YES		YES
Incidence of outcome/Mean duration (days)		0.063		34.058
Observations		83,016		47,568
Pseudo R ²		0.060		
Log-likelihood		-18,458.15		-460,970.52

Notes: * Indicates significance at 10%; ** Indicates significance at 5%; *** Indicates significance at 1%. Robust standard errors clustered on firms are reported in parentheses.