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July 2012

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ABSTRACT

How Do the Unemployed Search for a Job? Evidence from the EU Labour Force Survey^{*}

Using harmonized micro data, this paper investigates the job search behaviour of the unemployed in Europe. The analysis focuses on the importance of individual and household characteristics in this context, as well as on cross-country differences in Europe. Our findings suggest that both individual and household characteristics play an important role, with the latter being more decisive for women. However, even when controlling for these factors, remarkable differences remain between countries, which are associated with institutional characteristics at the country level.

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1 Introduction

In April 2012, nearly four years after the start of the global economic and financial crisis, about eleven per cent of the labour force in the European Union were unemployed.¹ Compared to April 2008, this was an increase of more than 4 percentage points. While economic recovery will certainly lead to a reduction in the cyclical component of unemployment, high rates of structural unemployment remain a problem in many European countries, which may also slow down the beneficial labour market effects of the recovery.

In equilibrium, unemployment rates crucially depend on the efficiency of the process of how unemployed, job-seeking individuals are matched with open vacancies (e.g. Pissarides 2000; Petrongolo and Pissarides 2001). Usually, this matching process is treated as a black box. However, individuals can influence the efficiency of the process by deciding on how much effort to devote to job search and on which search methods to employ, taking into account associated costs and expected benefits (e.g. Holzer 1988, Blau and Robins 1990). Benefits accrue in the form of job offers, which may vary in their quantity and quality, and thus determine the probability of being employed and the income earned in the next period. Costs may be of pecuniary nature or relate to time and effort aspects.

In this paper, we shed some light on the job search process in Europe. In particular, we aim to answer the following four questions. First, what are the determinants of an individual's overall job search intensity? Second, how are different search methods related to each other, can we detect certain search patterns? Third, what are the determinants of using specific search methods? Fourth, how are the labour market institutions in the EU Member States associated with job search? Regarding the use of specific search methods, we pay particular attention to the use of the public employment services and to job search via personal networks. On the one hand, these two methods can be considered to be polar examples of a very formal and a very informal search channel. On the other hand, the "Employment Guidelines" agreed on by the EU Member States foresee a key role to be played by the national public employment services in implementing the European employment strategy, which envisages, among others, an employment rate of 75 per cent for women and men aged 20 to 64 by 2020.² It is therefore of high interest to know to which extent the public employment services actually do play a role in the matching process. In order to answer these questions, we use the European Union Labour Force Survey (EU-LFS), a representative and internationally comparable survey of individual workers in Europe.

Our investigation relates to several other studies on the search behaviour of the unemployed (e.g. Barron and Mellow 1979; Holzer 1988; Osberg 1993; Clark 2001; Addison and Portugal 2002; Weber and Mahringer 2008; Riddell and Song, 2011) and contributes to this literature in the following respects. First, we provide detailed cross-country evidence for the European Union, based on a harmonized survey. This can be seen as an update to Clark (2001) who partly used the same data set but focused on the years prior to 1999 when – due to data limitations – comparability of the data across time and countries was more difficult and the EU consisted of 15 countries only. Second, we put special emphasis on the role of household characteristics in determining search behaviour. Detailed household information is rarely available in comparable data sets but should be of major importance assuming that labour supply is, in general, a household decision. From a policy perspective, this appears

¹ See <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&language=en&pcode=teilm020&tableSelection=1&plugin=1>.

² See http://europa.eu/legislation_summaries/employment_and_social_policy/community_employment_policies/em0040_en.htm

particularly relevant as it might help identify specific groups of the population who may be in special need of targeted support by the state. Third, we explore whether country differences in job search behaviour can be linked to (institutional) characteristics of the labour market.

Our analysis is inherently descriptive in nature and exclusively focuses on the determinants of job search behaviour, that is, the ‘inputs’ to the job search process. Since the EU-LFS data consist of yearly cross-sections, we are not able to follow individuals over time. Hence, we are unable to relate search behaviour to subsequent outcomes and cannot draw any conclusions about the effectiveness of different search strategies. However, assuming that individuals base their search choices on a cost-benefit rationale, we are still able to infer factors determining the relative costs and benefits of search strategies as perceived by job-seeking individuals. A detailed understanding of these factors can provide policy makers with the appropriate levers to increase the efficiency of the matching process.

The paper is structured as follows. The next section describes the data used for the analysis. Section 3 outlines the empirical methodology. Results are presented in Section 4 and Section 5 concludes.

2 The EU-LFS Data Set

The analyses in this paper are based on the European Union Labour Force Survey (EU-LFS), a harmonized cross-country survey (Eurostat 2008a, 2008b). The Labour Force Surveys at the national level are conducted by the national statistical agencies and processed by Eurostat to ensure comparability across countries. The sample size is about 1.5 million people per quarter, with the sampling rates in each country varying between 0.2 per cent and 3.3 per cent.

The EU-LFS data set is a representative sample survey among private households which provides both annual and quarterly information on the individual members of the households covered who are older than 15. The annual data set, which is used in the analysis of this paper, consists of yearly cross-sections. This means that it is not possible to follow individuals over time. The data set contains various characteristics of the persons covered, including age, sex, educational attainment, labour market status, unemployment duration, and the search methods of the unemployed used during the four weeks preceding the interview. Furthermore, the EU-LFS contains household information, such as household size and the employment status of the spouse. However, household information is not available for the Nordic countries in the time period analysed. For the analyses conducted in this paper, we restrict attention to unemployed individuals, employing the ILO definition of unemployment.

As far as our main variables of interest are concerned, the EU-LFS data set contains information on thirteen search methods, including active search methods relating to both dependent-status employment and self-employment (e.g. “looked for permits, licences, financial resources”) as well as passive search methods (e.g. “waiting for a call from a public employment office”) and the residual category “Other search methods”. As our analysis focuses on search efforts that are supposed to lead to dependent-status employment, we consider neither passive search methods – active search is a prerequisite for being classified as unemployed according to the ILO definition – nor methods relating to self-employment.³ Furthermore, for reasons of data quality and comparability, we have to restrict our analysis of search

³ Only about two per cent of the unemployed are looking for a job in self-employment.

behaviour to the years 2006 to 2008 and we also discard the residual category, which strongly fluctuates over time and countries.⁴

Having imposed these restrictions, we are left with seven active and comparable search methods used by individuals seeking a job in dependent employment. These are “Contacting the public employment office to find work”, “Contacting a private employment agency to find work”, “Direct applications to employers”, “Asking friends, relatives, and trade unions, etc.”, “Answering or inserting advertisements”, “Studying advertisements”, and “Taking a test, interview or examination”.⁵

In the empirical analysis, we consider both the use of specific search methods and overall search intensity. Following Holzer (1988) as well as Weber and Mahringer (2008), we measure the latter by the number of different search methods used. Other authors have proposed to use the time spent for job search to proxy for search effort (e.g. Barron and Mellow 1979) but this information is not available in the EU-LFS data set.

3 Empirical Methodology

The empirical analysis starts by presenting descriptive evidence on the search intensity of the unemployed. To gain further insight, we follow Weber and Mahringer (2008) in estimating ordered logit models⁶ using two sets of explanatory variables. The first set of factors includes variables at the individual level, such as age, gender, education, and the elapsed unemployment duration. These are the main factors used in basically all existing research on individual labour supply. Including them in the regression yields a baseline with respect to the search behaviour of specific population sub-groups.

Using the information at the household level contained in the EU-LFS data, we construct a second set of control variables, which provides some insight into the correlations between household-specific variation and the outcome variables of interest. This set of controls comprises information on the number of small children (0-4 years), number of older children (5-14 years) and the number of elderly persons (65 and above) living in the household. Furthermore, we control for the size of the household by adding the number of persons aged between 15 and 64 living in the household to our set of control variables. Finally, we also add information on the labour market status of the spouse – if present in the household. The information derived from these extended models might have highly-relevant policy implications, as they may point to flaws and shortcomings in existing institutions which hamper job search or the use of specific search methods.

All these models are estimated jointly and separated by gender, as it may well be the case that different forces are at work in determining job search. Especially with regard to the number of children and elderly living in the household, we expect – as traditional role models

⁴ In earlier years, the exact set of surveyed methods differs between countries. As far as the residual category is concerned, it is striking that is filled with zeros for all the observations of some countries, but on the other hand entirely filled with ones for a country such as Portugal, for example. Without a more detailed knowledge of what these “other search methods” comprise, it is difficult to disentangle to what extent this reflects real differences in search behaviour and to what extent this is simply due to the survey design. However, none of our results changes in a qualitative way if we include the residual category.

⁵ Only the method “Taking a test, interview or examination” is not strictly comparable across all countries because it is not surveyed in the UK.

⁶ In principle, since the number of search methods is a cardinal variable consisting of non-negative integers, one could also think of estimating count data models. However, a cardinal interpretation is misleading if the number of search methods is used as a proxy for search intensity. For example, while we maintain the assumption that someone using four job search methods searches more intensively than someone using only two methods, we do not assume that her search intensity is (exactly) twice as high.

would suggest – that their influence varies by gender. Unfortunately, no household information is available for Denmark, Finland and Sweden, so that we have to exclude these countries from this part of the analysis. We always include country fixed effects for the country of residence to control for country-specific effects which are constant over time, as well as dummy variables for each survey year in order to capture time-varying effects such as the business cycle. Furthermore, to account for a potential serial correlation in the error term within countries, we cluster standard errors at the country level. Note that this yields more conservative standard errors than the ones obtained if we cluster at the household level instead.

In the second step of the analysis, we examine whether certain search methods are usually used together, thus forming “bundles” of search methods. For this purpose, one possibility would be to analyse all the bundles actually used by the unemployed individuals, but with seven different methods the number of bundles would be far too large. Therefore, we instead explore in more detail the correlation matrix of the search methods and conduct a factor analysis (cf. e.g. Gorsuch 1983, Johnson and Wichern 2008).

Generally speaking, for the p observed variables (search methods) x_1, \dots, x_p , we aim to find q common factors F_1, \dots, F_q (with $q < p$) that linearly reconstruct the p original variables:

$$X_j = F_1\alpha_{1j} + F_2\alpha_{2j} + \dots + F_q\alpha_{qj} + e_j,$$

where x_j denotes the j -th variable, F_k the k -th common factor, and α_{kj} the set of linear coefficients called factor loadings. Finally, e_j is the error term, also known as unique or specific factor. Accordingly, the term uniqueness refers to that part of the variance of the original variable that is not accounted for by the common factors. Common and specific factors are assumed to be uncorrelated and – as in most applications – the common factors are also assumed to be uncorrelated with each other. Note that a normalization of this kind is necessary to make the model identifiable since in contrast to a regression model, the F_k are unobserved and need to be estimated alongside the factor loadings. Even after this normalization, factors and factor loadings are only identified up to an orthogonal rotation (see below). At the end of the procedure, the predicted correlation matrix – where each variable is described only in terms of the common factors – should be reasonably close to the original correlation matrix.

In order to conduct the factor analysis, we proceed as follows. First, we base the analysis on the matrix of tetrachoric correlations, following the recommendation of Knol and Berger (1991). This is because we have a series of binary yes-no variables for the different search methods, making the standard product-moment correlation matrix, which requires interval-scaled variables, inappropriate. Second, in order to extract the common factors, we choose the principal-component factor method, which minimizes the variance accounted for by the specific factors summed across all variables. In this case, the resulting factor-loadings matrix is made up of the scaled eigenvectors corresponding to the q largest eigenvalues of the sample correlation matrix. Third, to enhance the interpretation, we use the Varimax rotation for factor rotation, which tends to produce the simplest (that is, easiest-to-interpret) structure of the factor-loadings matrix.

The third step of the analysis consists in a detailed analysis of the use of specific search methods. In order to do so, we first provide descriptive evidence on the frequency of use of different search methods across EU Member States. We then investigate the determinants of the use of these search methods running separate probit regressions. As for the control vari-

ables, we apply the same methodology as for the analysis of search intensity described above, focussing on the role of individual and household characteristics in the job search context.

In the final step of the analysis, we examine whether the intensity of the job search of the unemployed as well as the use of specific search methods is related to the labour-market framework of the EU countries under investigation. In order to investigate the link between job search and institutions, we take the fixed effects from the regressions on job search intensity (step 1 of the analysis) and on the use of specific search methods (step 3) as a starting point. These fixed effects provide a measure of the level differences between countries which are purged of the composition effects which may result from differing characteristics of the pools of the unemployed in the EU Member States. We correlate these fixed effects with indicators for the institutional set-up which are provided at the country level by Eurostat and the OECD (cf. Table 7).

We thus obtain an overall impression of which labour market features may explain country differences in job search behaviour. Clearly, this step of the analysis does not provide any proof of causality. Nevertheless, we think that the results may give an indication of where cross-country institutional differences are likely to have an impact on job search behaviour, and where therefore further investigations may be worthwhile.

4 Empirical Analysis

4.1 Search intensity

Most unemployed individuals state that they have used several different search methods during the previous four weeks in order to find work (Figure 1). The average number of methods used – among the seven we selected for our analysis – is 3.3, with search intensity being highest in Slovenia and Austria (4.7 and 4.4 methods, respectively) and lowest in Portugal, Sweden and Estonia (2.1 the former, 2.2 the latter two).

In order to examine which factors determine the overall job search intensity of the unemployed, we run a series of ordered logit regressions. In doing so, we start with a baseline specification which mainly includes individual characteristics and then add more variables, e.g. on household characteristics, to obtain extended specifications. Note that in the extended specifications, we lose all the observations of Denmark, Finland and Sweden because there is, at least for our period of analysis, no household information available for these countries. Table 1 displays the marginal effects of the explanatory variables on the odds ratio and the associated t-values. This effect is expressed as a multiple of the baseline odds ratio so that values greater than one denote a positive and values smaller than one a negative correlation with the outcome.

The regression results are the following (Table 1). First, we find clear correlations between search intensity and individual characteristics. To start with, men search more intensively than women, holding all other characteristics constant. Moreover, consistent with Riddell and Song (2011) and Weber and Mahringer (2008), search intensity increases with the skill level of unemployed job seekers, which is in line with theoretical predictions. On the one hand, search is likely to be less costly for high-skilled individuals who may be more aware of the different search channels and in a better position to use them. On the other hand, the expected benefits are higher for the high-skilled than for the low-skilled since the former have a

higher probability of receiving a job offer and, in general, face a larger wedge between potential wage income and unemployment benefits.

The number of search methods used also differs by age groups, which again is in line with the existing literature (e.g. Weber and Mahringer 2008). Search intensity is significantly lower for the highest age group. The (exponentiated) coefficient of 0.57 of the latter variable tells us that the odds of observing a search intensity greater than m versus less than or equal to $m - m$ could be any number of search methods – is 43 per cent lower for the age group 55 to 64 years than for the reference category, that is, unemployed job seekers aged 15 to 24. This can reflect the former's higher costs in accessing non-standard search channels, which would be a cause for worry. On the other hand, individuals of different age groups may have different perceptions regarding the expected benefits of job search activities, and older individuals, being more experienced, may simply have better knowledge of the effectiveness of different search methods.

The two dummy variables capturing the elapsed unemployment duration are individually insignificant but jointly significant.⁷ Moreover, individuals having been in unemployment for more than eleven months search significantly less than individuals that have been in unemployment between six and eleven months, i.e. the relationship between search intensity and unemployment duration is hump-shaped. Several explanations for this pattern may be at work. First, long-term unemployed individuals may become discouraged and therefore search less intensively. Second, other observable or unobservable characteristics that drive both, the speed of leaving unemployment as well as search intensity – such as a strong intrinsic work motivation – may be responsible for this correlation. Third, there may be reverse causality if those unemployed individuals that search more intensively are also more likely to leave unemployment quickly, which may be an optimal search strategy in a stock-flow search framework (Petrongolo and Pissarides, 2001). In the latter two scenarios differences between duration classes emerge even without any change in individual behaviour.

In fact, all three mechanisms may well be at work but it is important to note that we are unable to discriminate between them since the data do not allow us to follow individuals over time. In light of the previous discussion we would expect to see a difference in search intensity between the short-term (<6 months) and the medium-term (6 to 11 months) unemployed, too. It is possible that the mentioned factors contributing to a negative correlation between unemployment duration and search intensity are counteracted by an incentive effect, which goes in the opposite direction. In general, unemployment benefits are only paid for a limited period of time so that the pressure to find a new job increases the closer the date of benefit exhaustion comes. In fact, this end-of-benefits spike is found in many empirical studies on unemployment duration (e.g. Meyer 1990). Given these opposing forces, it is not surprising that existing empirical results on the correlation between unemployment duration and search intensity are ambiguous. Holzer (1988) finds a positive relationship between the two variables whereas Barron and Mellow (1979) find a negative one.

Adding household variables to the regression does not alter the previous conclusions on individual characteristics in a qualitative sense. The analysis of household variables yields further interesting insights. Search intensity decreases with the number of children and the number of elderly individuals living in the household. The negative correlation with the number of children could be due to the time resources that have to be spent on them, and hence

⁷ The respective Wald test statistic has a value of 18.57, which corresponds to a p-value of 0.0001.

cannot be used to search for work. Likewise, to the extent that the elderly persons in the household need to be taken care of, they might also absorb some of the time that could otherwise be used for job search. In theoretical terms, both components of the household structure seem to make job search more costly for the unemployed. An alternative but complementary interpretation is that the expected benefits of job search are also negatively affected if small children and elderly individuals are present in the household. On the one hand, this may be due to a low availability of offers of jobs that allow for a high enough flexibility to assume family and care responsibilities. On the other hand, it may reflect that any realisable wage income has potentially to be weighed against care costs. This implies that even a relatively high expected income may not be accompanied by a corresponding increase in search intensity if expected (child) care costs are high, too.

There is no statistically significant difference in the search intensity between individuals having an employed spouse living in the household and the ones without a spouse in the same household. By contrast, having a non-working spouse living in the household is associated with a significantly lower search effort. Thinking in terms of financial need, we would expect the latter to be positively correlated with search intensity. Again, there are several potential explanations for this finding. First, due to assortative mating (i.e. the tendency of individuals with similar inclinations to marry each other) or common shocks (e.g. to household wealth), couples might share some characteristics not accounted for by the other variables that limit the opportunity or the readiness to search for work. In this case there would be no causal relationship but a correlation driven by factors that are unobservable to the researcher. Second, and more worrying from a policy perspective, the availability of certain search channels may be reduced if the spouse is not working. For example, “Asking friends, relatives, and trade unions, etc.” may be less of an option if the social network does not have useful information on the matter, simply because most of its members are not in employment, either. Similarly, “Direct applications to employers” may also be more difficult if relevant inside information is missing. Indeed, the importance of social networks in determining labour market outcomes has been highlighted theoretically by, e.g. Montgomery (1991) and Calvó-Armengol and Jackson (2004), and empirically by, e.g., Rees (1966) and Loury (2006). In the context of job search behaviour the empirical relevance of social networks has been underscored in recent papers by Caliendo et al. (2010), Cappellari and Tatsiramos (2010) and Cingano and Rosolia (2012). We will examine these issues in more detail in Section 4.4.

As the relationship described above may hide important differences between men and women, we run separate regressions by gender. In contrast to the above regressions, this allows us to analyse not only aggregate level differences between men and women, but also behavioural differences with respect to different factors. Regression results are displayed in Table 2. Indeed, whereas there is no noteworthy difference between the sexes with respect to the correlations between search intensity and the socio-demographic characteristics as well as unemployment duration, the correlations of search intensity with the household variables differ considerably. In short, all household characteristics matter much more for women than for men. To start with, the number of small children (0 to 4 years) in the household is negatively correlated with search intensity of women but not of men. The same goes for the number of adults living in the household. Regarding the number of older children (5 to 14 years) and the number of elderly individuals living in the household, both are associated with significantly less search effort for both sexes but – at least in the case of older children – again to a much stronger extent for women.

The correlation of search intensity with the labour market status of the spouse differs, too. Search intensity is lowest for both women and men if the partner is non-employed. However, for women, not having a spouse living in the household is positively related to search intensity compared to the base category – having an employed spouse living in the household. This gives some indication that the traditional family model with a dominant male bread-winner and a female partner who takes care of the children and does not search very intensively for own paid work is still present in the EU. In contrast, men living together with an employed partner search more intensively than the two other groups. This may again hint at assortative mating but also result from support within the household or even pressure to find a job.

4.2 Search patterns

After an extensive examination of the determinants of overall search effort, we now turn to an analysis of the specific search methods. In a first step we are interested in the question which search methods tend to be used together and which ones are used independently from each other. With this knowledge we may be able to assign the methods to different groups and, subsequently, to interpret them.

Tables 3 and 4 display the results of the factor analysis after rotation. We extract three common factors, which together explain 67 per cent of the total variance.⁸ Among the different methods, “Taking a test, interview or examination” and “Contacting the public employment office to find work” display the highest degree of idiosyncrasy, i.e. the largest share of the variance not accounted for by the common factors (cf. the column headed “Uniqueness”). The factor loadings, that is, the pairwise correlations between the factors and the original variables, help us to structure the data matrix and to interpret the factors. Following common practice, we only interpret factor loadings that exceed 0.5 in absolute value.

The first factor is mainly correlated with the two methods relating to the use of advertisements. Thus, these two are highly correlated with each other but not clearly related to any of the other methods. It is therefore suggestive to simply call this factor “Ads”. The second factor is positively related to the methods “Direct applications to employers” and “Asking friends, relatives, and trade unions, etc.” and negatively correlated with the method “Contacting the public employment office to find work”. Hence, we might call this factor “Informal vs. formal search channels”. This is an interesting pattern because it seems to illustrate the opposing roles of taking one’s own initiative on the one hand and relying on public institutions on the other hand. Thus, in general, these two strategies do not go hand in hand. To the extent that the public employment office aims at serving as a catalyst for the use of other search methods, this cannot be satisfactory. On the other hand, it may well be efficient because under these circumstances, the public employment office is able to direct all its resources to those individuals that do not have access to alternative search channels or where the latter are unlikely to be successful.

Finally, the third factor is positively correlated with the two methods “Contacting a private employment agency to find work” and “Taking a test, interview or examination”. These are the two least used methods among the seven selected ones and it is interesting that they seem to be correlated with each other. If this correlation is not driven by other variables, it might be that individuals are asked to take the interview or examination with the agency itself

⁸ One common approach is to keep all the factors that correspond to an eigenvalue greater than one. While in our application the first two (unrotated) factors feature eigenvalues greater than one, the eigenvalue of the third factor is 0.85. However, the first two factors account for only 55 per cent of the overall sample variance. In order to increase the explanatory power of the factors, we decided to keep the third factor.

or that the agencies are able to arrange them with external companies. This factor might be called “Specialised search channels”.

For research purposes and from a policy perspective, the factor “Informal vs. formal search channels” is the most interesting one. Figure 2 shows how mean scores of this factor differ by country. It becomes apparent that Latvia has the highest and Germany the lowest use of informal relative to formal search methods. Moreover, in most of the Mediterranean countries – except for Portugal – direct applications and search via personal networks clearly outweigh the use of the public employment office. The same is true for the Central and Eastern European countries where apart from Slovakia, the use of direct methods relative to the public employment office is above the EU-LFS average.

A natural question to ask is whether the relatively low use of the public employment services particularly in the Mediterranean countries potentially reflects a lower (perceived) quality of these services, i.e. a lower productivity in generating acceptable job offers as compared to the rest of Europe. We are not aware of any evidence suggesting that this may indeed be the case and with the data at hand we are not able to explore this possibility further.

Instead, it might be that the lower use of the public employment office is simply the other side of the coin of a better access to informal search channels. Stronger and more extended family ties could be the reason for this pattern. For example, research by Bentolila and Ichino (2008) shows that households hit by unemployment are more likely to receive financial support from their (extended) family in Italy and Spain than is the case in Britain. The authors also suggest that in the Mediterranean countries, family members are more likely to live in the same geographical area. It is therefore conceivable that the help of family members also extends to job search, thereby reducing the importance of the public employment agencies. This does not need to be a cause for worry since existing research suggests that informal search channels are among the most effective ones in leading to a new job (e.g. Rees 1966; Holzer 1988).

On the other hand, it could be the case that a relatively low use of public employment services is accompanied by a low level of job search requirements and monitoring of the unemployed (cf. McVicar, 2008). If this was true, this would be a cause for concern because the latter instruments have been shown to be important in reducing unemployment duration (cf. e.g. Borland and Tseng 2007, as well as the discussion in OECD 2005, Chapter 4 and OECD 2007, Chapter 5). Venn (2012) reports that in many countries, eligibility criteria for unemployment benefits include job search requirements, but this does not mean that job search has to be through the public employment office. Indeed, using the indicators reported by Venn (2012), we did not find a correlation between the degree of job search requirements and the probability of searching via the public employment office at the country level.⁹

4.3 Search methods

In this subsection we investigate the predictors of using specific search methods. In particular, we focus on the two methods which we consider to be of highest interest from a research and policy perspective, that is “Contacting the public employment office to find work” and “Search via friends, relatives, and trade unions, etc.”, which both load highly on the second factor identified in the preceding analysis, but with opposing signs.¹⁰ We estimate separate probit regressions for the two methods. As in the regressions on search intensity, we control

⁹ Detailed results available upon request from the authors.

¹⁰ A descriptive overview of the use of all considered job search methods by country is given in Table 5.

for age, the level of educational attainment, unemployment duration, the household characteristics detailed above, as well as for the country of residence and the year of the survey. Furthermore, we again report separate regression results for men and women. Note that due to the use of household characteristics, we again lose the observations on the Scandinavian countries.

Table 6 displays the marginal effects and associated t-values. As was the case with overall search intensity, the correlations of the specific search methods with individual characteristics are pretty similar for women and men. As far as the former are concerned, we can detect some interesting age patterns. Older unemployed individuals (55 to 64 years) are less likely than medium-aged individuals (25 to 54 years) to use any of the two methods. However, there are differences for young job seekers (15 to 24 years). They have the lowest likelihood of contacting the public employment office – although the difference between them and the oldest age group is not statistically significant – but do not differ in a statistically significant way from medium-aged individuals in the probability of searching via personal networks.

Concerning the level of educational attainment, it can be seen that the highly skilled – particularly among men – are the least likely to contact the public employment office. Thus, a pattern of selection becomes apparent, where the public employment office is contacted, above all, by those individuals that, arguably, have less favourable characteristics to find a job. This is a common finding in the literature (e.g. Weber and Mahringer 2008). It also goes hand in hand with the empirical observation that jobs obtained through the public employment office pay, on average, lower wages and/or are shorter-lived (e.g. Osberg 1993; Addison and Portugal 2002; Weber and Mahringer 2008; Gregg and Wadsworth, 1996, draw a more optimistic picture for Britain). However, it is not (necessarily) informative about the quality of the public employment services but may rather reflect the fact that the public employment office can play an important role in reducing the search costs of individual job searchers, which are particularly high for the low-skilled (Fougère et al., 2005). Furthermore, employers tend to post their higher-level jobs at other search outlets. Thus, according to Osberg (1993, p. 352) “[...] a choice of job-search strategy by a jobless worker is simultaneously a choice of wage-offer distributions”. Individuals aiming at better-paying jobs will therefore search via those other channels in the first place. Hence, expected benefits rather than costs – which should in general be low – are likely to determine the choice of this particular search method.

Interestingly, the estimated coefficients on the dummy variables capturing unemployment duration do not reveal clear patterns of duration dependence. Therefore, the choice of search method seems to depend on fixed, rather than time-varying, personal characteristics, such as educational attainment.

We now turn to the household variables. It becomes apparent that none of them is negatively correlated with the use of the public employment office. In contrast, both the number of small children (for women) and the number of elderly individuals in the household (particularly for men) are negatively related to the search via friends, relatives, and trade unions. Although a correlation driven by unobservables cannot be ruled out, both findings might indicate that individuals assuming care responsibilities lose attachment to their personal network, and thereby, indirectly also to the labour market.

A similar picture emerges regarding the labour market status of the spouse – if present in the household. Having an inactive or unemployed spouse in the household is associated with

a lower probability of searching via personal networks compared to the base category, having an employed spouse in the household. This correlation, however, is only weakly statistically significant for women. In contrast, men with a non-employed partner have the highest probability of searching via the public employment office. Again acknowledging the potential role of selection and common shocks, this finding lends more support to the hypothesis that individuals without or at least with less immediate contact to the working population might be less aware of or have less access to search channels other than the public employment office.

4.4 Institutions and job search behaviour

The previous sections have paid particular attention to correlations between individual and household characteristics and job search behaviour. However, even when controlling for these characteristics, important differences remain between countries, as the highly significant sets of country dummies confirm. Thus, the job search behaviour of the unemployed is likely to be influenced by the institutional features of the national labour markets. We therefore investigate how cross-country differences with respect to job search – as measured by the country dummies in the respective regressions – are correlated with institutions across the EU Member States (cf. Section 3).

In this part of the analysis, we concentrate on overall search intensity, as well on the use of the two specific search channels analysed in the previous section, that is, search through the public employment office and through friends, relatives, trade unions, etc. (hereafter “friends” for short). In particular, we identify six institutional or macroeconomic indicators which are correlated in a meaningful way with search intensity (cf. Table 7). For three of these indicators, the correlations with the two specific search channels mentioned above are also instructive and are therefore reported. It should be stressed that while this exercise may provide some suggestive evidence and point to potential avenues for further research, it is based on a limited set of country observations only so that statistical significance at conventional levels can rarely be obtained. Moreover, we establish mere associations and not any causal relationships.

The first labour market institution that is clearly associated with wage expectations and that should, therefore, have an influence on the job search behaviour of the unemployed is minimum wage legislation. In this context, two effects can be at work. On the one hand, a binding minimum wage *ceteris paribus* increases expected wages, which in turn raises the search intensity of the unemployed. On the other hand, minimum wages may reduce the number of jobs available (Neumark and Wascher 2008), which makes job search less attractive. From our empirical analysis, it becomes apparent that search intensity is positively correlated with the level of the minimum wage (Figure 3a). Therefore, this could be viewed as suggestive evidence that the first effect, higher expected wages, has a stronger impact on search intensity than the second effect.

This interpretation of the association between minimum wages and search intensity is corroborated by the evidence on income inequality in this context. In particular, the correlation between income inequality and search intensity is negative (Figure 3b), i.e. the unemployed search more intensively in countries where income inequality is relatively low. It can be expected that for most unemployed, expected wages are shaped by the lower end of the wage offer distribution. Since the latter is in general strongly affected by minimum wage legislation, similar mechanisms are likely to be at work. A further inspection reveals that this result is

mainly driven by the fact that high wage inequality goes together with a significantly lower use of the public employment office (Figure 4a). Job search through friends, on the other hand, is slightly elevated in countries with higher wage inequality (Figure 4b). These findings could be due to the fact that the search channel “friends” generally allows for a more targeted job search than search through the public employment office. Thus, search through the former channel may help to overcome the overall reduction of the expected wage, which makes search through friends more attractive when wage inequality is higher. Another explanation is that in countries where governments in general play a larger role, there is both more income redistribution and also a stronger reliance on public employment services.

The unemployment rate is weakly negatively correlated with search intensity (Figure 3c). This is despite the fact that in countries with high unemployment, unemployed individuals search more through the public employment office than in countries with low unemployment (Figure 4c), and that the use of the search channel “friends” is uncorrelated with unemployment at the national level (Figure 4d). Therefore, the other search channels seem to drive the negative correlation between search intensity and unemployment. The relatively low search intensity in countries with high unemployment could again be due to lower wage expectations in these countries and also due to a lower job availability. Furthermore, the finding that high unemployment is associated with a higher use of the public employment office is in line with Osberg (1993) who, however, detects this relationship within a country (Canada) over the business cycle.

With respect to unemployment benefits, we investigate both the coverage rate and the net replacement rate (result not reported) of unemployment benefits in the first year of unemployment. Both measures are positively correlated with search intensity (Figure 3d). This result seems surprising as more generous unemployment benefits reduce the financial burden on unemployed individuals, which should reduce search intensity. However, the receipt and the level of unemployment benefits only constitute one dimension of the unemployment benefit system. Other aspects of unemployment benefit systems such as monitoring and sanctions have been found to be equally important (e.g. Abbring et al. 2005) and are likely to be correlated with the coverage rate and the net replacement rate. Denmark is a good example for this, as it features a high coverage rate and a high net replacement rate, but nevertheless search intensity is at a relatively elevated level.

Expenditure on active labour market policy (ALMP) measures as a share of GDP is weakly positively correlated with search intensity (Figure 3e). This seems to be mainly due to the fact that in countries where ALMP measures are prevalent, the use of the public employment office is more pronounced (Figure 4e). This result could be due to the fact that in many countries, ALMP measures are linked to specific job search requirements of the unemployed, which are administered by the public employment office. Furthermore, countries with many ALMP measures feature a generally relatively active role of the public employment office, which also extends to the provision of support for job search. This more active role, however, seems to crowd out other search methods such as the search through friends, which in turn leads to a negative correlation between this search channel and ALMP measures (Figure 4f).

Finally, job search intensity is weakly negatively correlated with the level of employment protection (Figure 3f). This could be an indication that employment protection not only reduces the number of lay-offs in an economy, but that it also makes it harder for the unemployed to find a suitable job. Therefore, job search has a lower expected value, which may well lead to less search in countries with higher employment protection.

5 Conclusion

In this paper, we investigate the job search behaviour of unemployed individuals in the EU, using information at the level of the individual from the EU-LFS. We focus on both individual determinants of search behaviour and cross-country differences, making use of the fact that the data are harmonized for the countries included in the data set.

In particular, we examine four related topics. First, we analyse overall search intensity and how it is determined by individual and household characteristics. Second, we investigate whether specific search methods are generally used together, thus forming “bundles” of search methods. Third, we analyse in detail two specific search methods, search through the public employment office and search through friends and networks. Finally, we scrutinize to what extent search intensity and the use of specific search methods are correlated with the institutional features of the EU Member States.

The main findings are the following. First, individual characteristics and labour market histories play an important role. It becomes apparent that those individuals that, arguably, have better chances to find a job, i.e., that are more highly skilled and still fairly young, have a higher job search intensity. Furthermore, there is a hump-shaped pattern of search intensity with respect to unemployment duration, with long-term unemployed individuals using the lowest number of search methods. Finally, holding all other characteristics constant, unemployed women search less intensively than men.

Second, household characteristics are important predictors of search intensity. In general, individuals living in households with more children and more elderly persons search less intensively. Moreover, having a non-working spouse in the household is also associated with less search efforts and with a stronger reliance on the public employment office. For unemployed women, there is in general a more negative correlation between search intensity and household characteristics.

Third, we find important evidence for the use of search bundles. In particular, as a general result the use of the public employment office is at best independent of, if not negatively related to, the other search methods. To a large extent this is likely to be driven by selection mechanisms. The public employment office seems to be approached predominantly in cases where alternative search channels are not available or unlikely to yield a positive outcome.

Finally, even after controlling for individual and household characteristics, important differences regarding the job search behaviour remain between countries. At least to some extent, these cross-country differences can be linked to differences in labour market characteristics and institutions. Our analysis indicates that this is in particular true for minimum wages and the unemployment benefit system. Here, further research is clearly warranted.

Although the analyses in this paper do not allow us to conclude whether search choices are optimal or not, the results suggest a role for policy makers in targeted support for specific groups among the unemployed. For example, efforts should be made such that search becomes less costly and more worthwhile for women, particularly if they have many family responsibilities. Non-working couples seem to constitute another risk group. The results indicate that they are in a worse position to make use of search methods other than the public employment office which may be due to the fact that they have already become alienated from the labour market. This is a cause for worry because under these circumstances, labour-market segregation along family lines may emerge, and unemployment may become

more persistent. Furthermore, although it may to some extent be efficient that different groups among the unemployed make use of different search methods, it should nevertheless be ensured that all unemployed job seekers are aware of all available search channels and in a good position to use them.

Finally, we find that in several countries that have been particularly hard-hit by the global economic and financial crisis – among them Spain, Italy, Greece and Ireland – search via informal channels clearly outweighs the use of the public employment services as a job search method. If governments in these countries aim to adopt active labour market policy measures to fight the job crisis, these efforts should probably be accompanied by strengthening the role of the public employment services in the placement process. However, the question of whether the search behaviour of the unemployed and related policies improve or worsen the matching efficiency in the labour market, and hence the speed of economic recovery, is left to future research.

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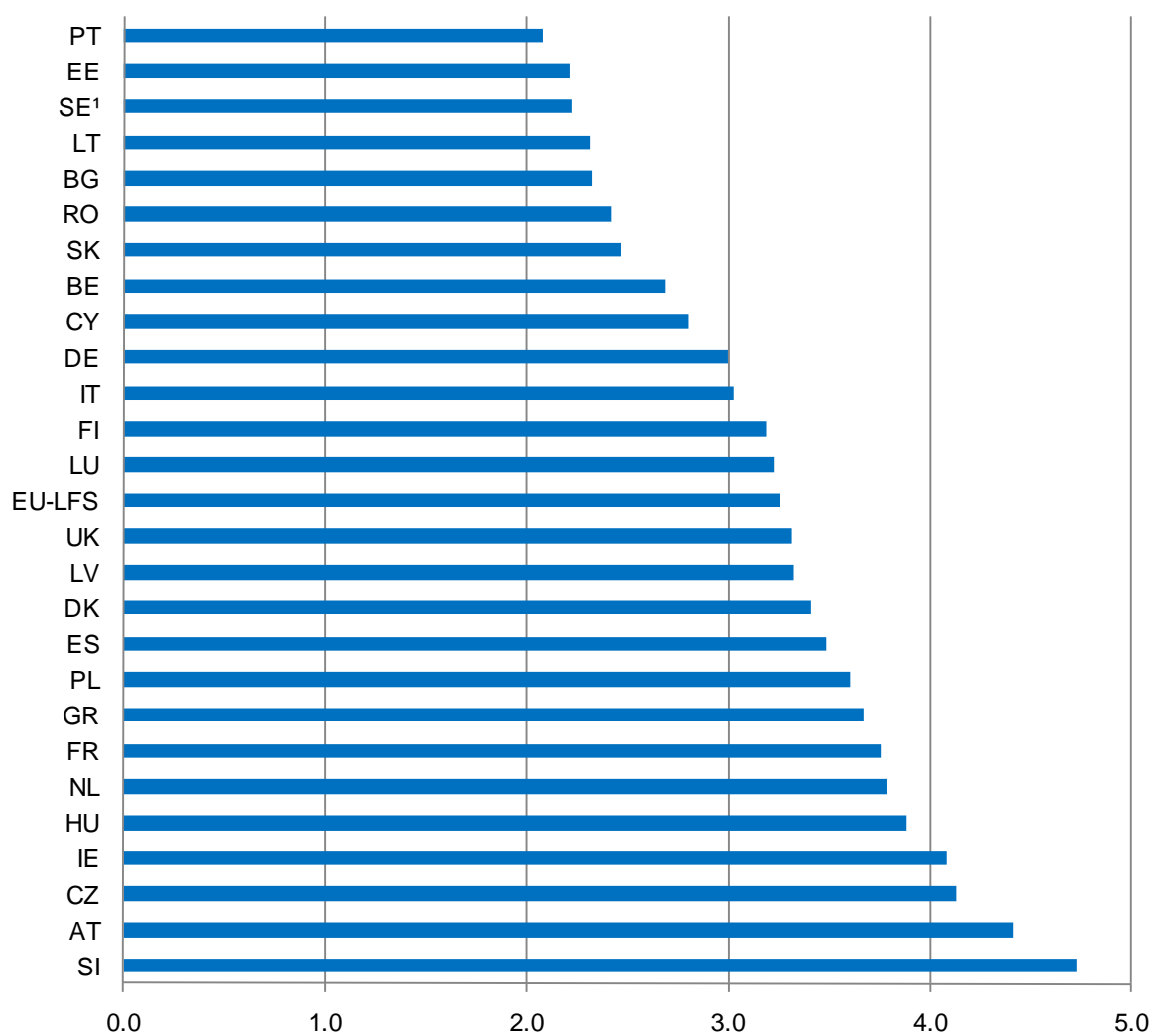
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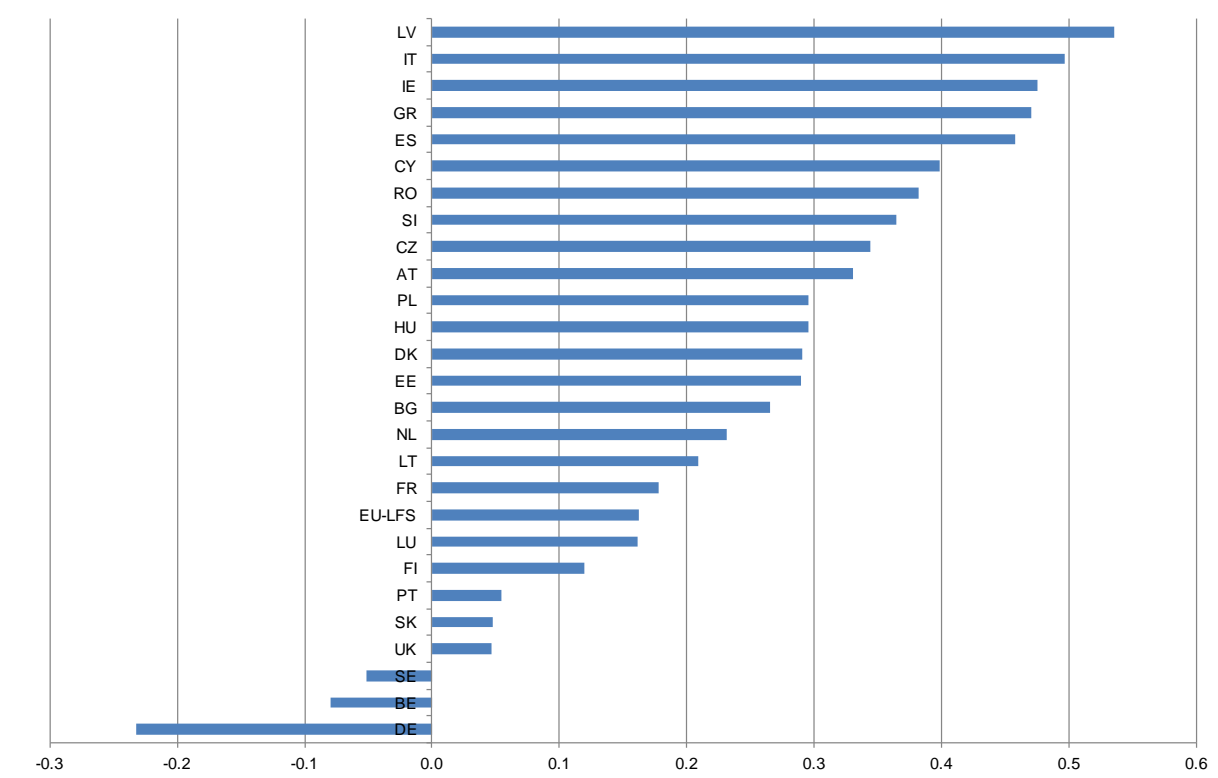
Figures and Tables

Figure 1
Search intensity of unemployed job seekers
2006 to 2008



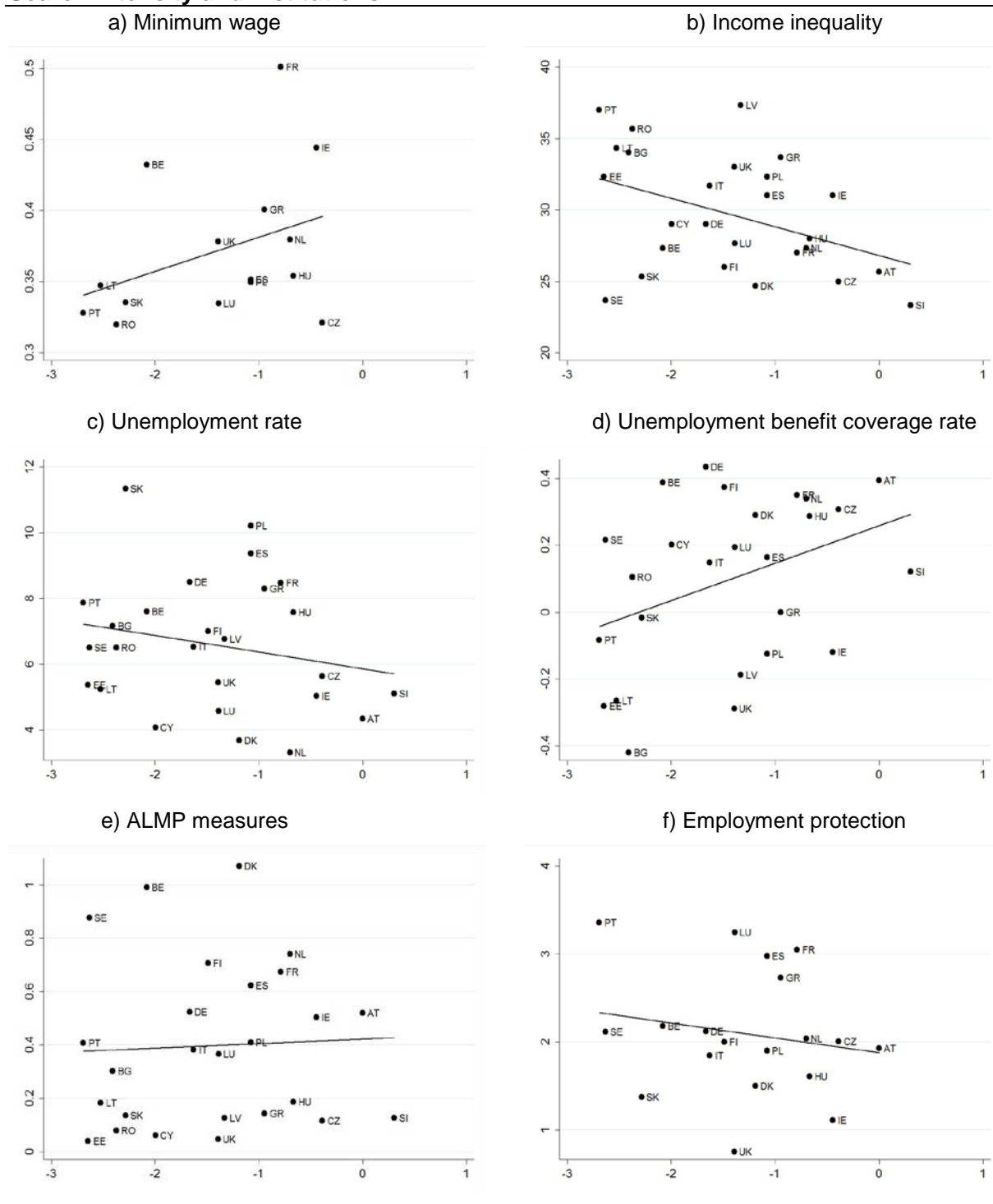
Source: EU-LFS, own calculations. – ¹data refer to period 2007 to 2008 instead of 2006 to 2008.

Figure 2
Use of informal job search methods relative to use of public employment office
 2006-2008



Source: EU-LFS, own calculations. – Note: Graph displays values of Factor 2 of our factor analysis, which is positively correlated with “Direct applications to employers” and “Asking friends, relatives, and trade unions, etc.”, and negatively correlated with “Public employment office” (cf. Table 4). Mean values are based on inverse sampling probability weighted data.

Figure 3
Search intensity and institutions

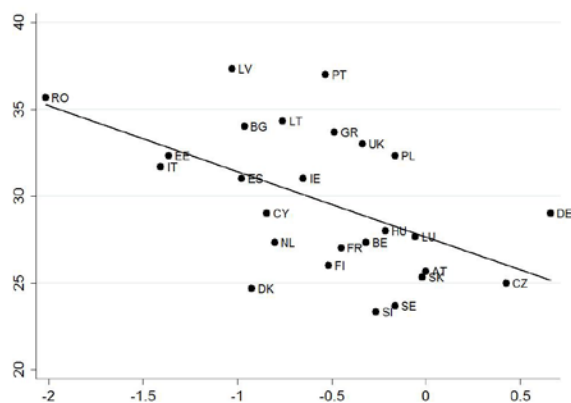


Source: Institutional indicators (y-axis) as described in Table 7, search intensity (country fixed effects, x-axis) computed from EU-LFS. – Note: The correlation coefficients and p-values (in brackets) are as follows. Minimum wage: 0.37 (0.18), income inequality (Gini coefficient): -0.41 (0.04), unemployment rate: -0.21 (0.29), unemployment benefits coverage rate: 0.38 (0.05), ALMP: 0.05 (0.81), employment protection: -0.18 (0.46).

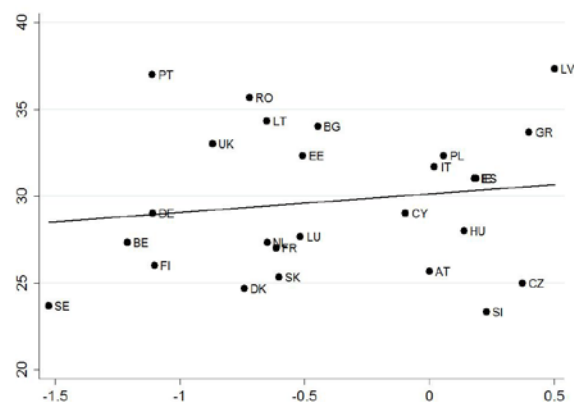
Figure 4

Search methods and institutions

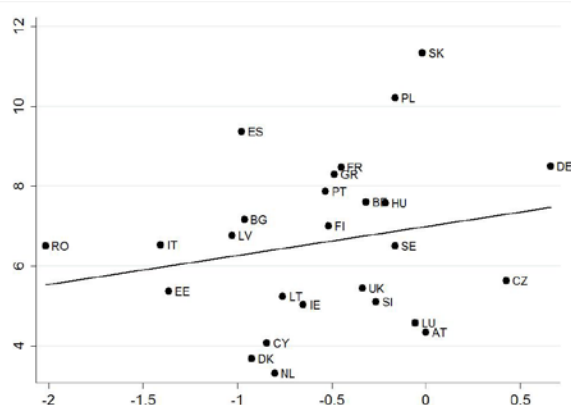
a) Income inequality, public employment office



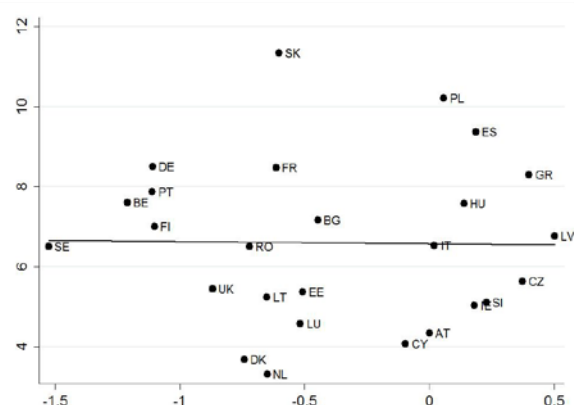
b) Income inequality, friends



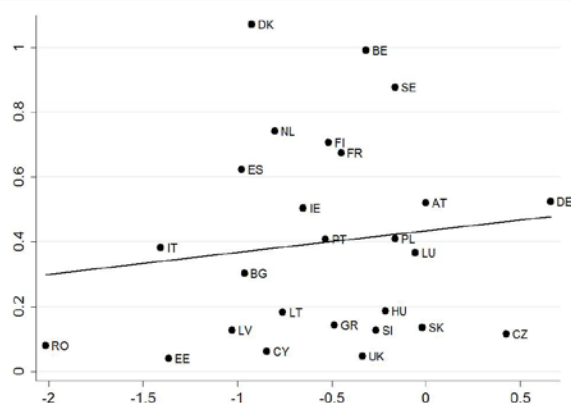
c) Unemployment rate, public employment office



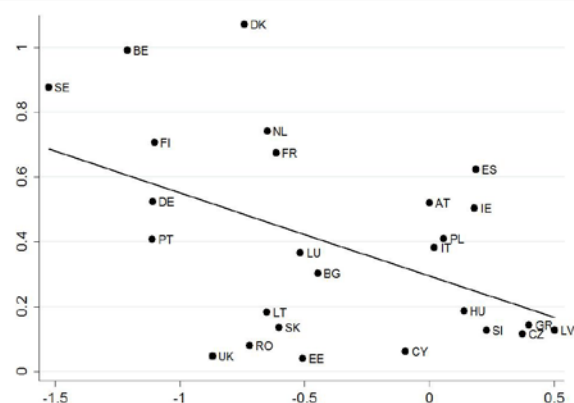
d) Unemployment rate, friends



e) ALMP measures, public employment office



f) ALMP measures, friends



Source: Institutional indicators (y-axis) as described in Table 7, use of search methods (country fixed effects, x-axis) computed from EU-LFS. – Note: The correlation coefficients and p-values (in brackets) are as follows. Income inequality (Gini coefficient) – public employment office: -0.52 (0.01), income inequality – friends: 0.15 (0.47), unemployment – public employment office: 0.21 (0.31), unemployment – friends: -0.02 (0.93), ALMP – public employment office: 0.13 (0.54), ALMP – friends: -0.48 (0.01).

Table 1
Ordered logit estimation of search intensity

	Without household variables		With household variables	
	Odds ratio	t-value	Odds ratio	t-value
<i>Austria</i>	<i>Reference category</i>		<i>Reference category</i>	
Belgium	0.1250	-25.30	0.1237	-25.17
Bulgaria	0.0901	-24.94	0.0927	-23.40
Cyprus	0.1358	-29.67	0.1379	-27.74
Czech Republic	0.6797	-10.88	0.6869	-10.35
Germany	0.1890	-22.41	0.1879	-22.81
Denmark	0.3051	-27.11	NA	NA
Estonia	0.0711	-29.69	0.0706	-29.91
Spain	0.3405	-24.46	0.3441	-22.47
Finland	0.2261	-27.23	NA	NA
France	0.4553	-21.90	0.4562	-21.99
Greece	0.3889	-20.01	0.3852	-19.06
Hungary	0.5145	-19.36	0.5293	-16.53
Ireland	0.6401	-21.93	0.6631	-14.73
Italy	0.1964	-23.94	0.1959	-22.99
Lithuania	0.0802	-31.13	0.0811	-29.81
Luxembourg	0.2496	-26.69	0.2442	-27.69
Latvia	0.2647	-27.11	0.2670	-25.74
Netherlands	0.4959	-17.29	0.4871	-18.75
Poland	0.3410	-22.92	0.3510	-20.01
Portugal	0.0679	-26.49	0.0681	-26.34
Romania	0.0932	-30.00	0.0965	-27.09
Sweden	0.0718	-32.75	NA	NA
Slovenia	1.3580	35.39	1.3432	34.00
Slovakia	0.1019	-24.86	0.1067	-22.44
United Kingdom	0.2487	-32.97	0.2510	-31.88
<i>2006</i>	<i>Reference category</i>		<i>Reference category</i>	
2007	0.9471	-2.32	0.9455	-2.30
2008	0.9291	-1.60	0.9205	-1.72
Male	1.1760	5.61	1.1710	5.66
<i>Age 15-24</i>	<i>Reference category</i>		<i>Reference category</i>	
Age 25-54	0.9956	-0.12	1.0217	0.72
Age 55-64	0.5661	-3.59	0.5695	-4.01
<i>ISCED 0-2</i>	<i>Reference category</i>		<i>Reference category</i>	
ISCED 3-4	1.6600	25.35	1.6199	32.65
ISCED 5-6	2.1602	19.48	2.0974	16.60

Table 1, continued

	Without household variables		With household variables	
	Odds ratio	t-value	Odds ratio	t-value
<i>Unemployment duration < 6 months</i>	<i>Reference category</i>		<i>Reference category</i>	
Unemployment duration 6-11 months	1.0659	1.26	1.0652	1.18
Unemployment duration > 11 months	0.8954	-1.85	0.8954	-1.86
Number of adults (15-64 years) in household	-	-	0.9823	-1.92
Number of children (<=4 years) in household	-	-	0.9397	-2.22
Number of children (5-14 years) in household	-	-	0.9277	-4.96
Number of elderly (>= 65 years) in household	-	-	0.9308	-2.41
<i>Employed spouse in household</i>	<i>Reference category</i>		<i>Reference category</i>	
No spouse in household	-	-	1.0201	0.53
Inactive/unemployed spouse in household	-	-	0.8694	-2.7
Pseudo R ²	0.0365		0.0364	
Number of Obs.	316,181		289,140	

Source: EU-LFS, years 2006-2008, own calculations. – Notes: The table displays exponentiated coefficients that can be interpreted as effect on the odds ratio. – Reference categories: Austria, Year 2006, Female, Age 15-24, ISCED 0-2, Unemployment duration < 6 months, Employed spouse in household (only second specification). – Regressions make use of sampling weights. t-values are based on robust standard errors, clustered at the country level. t-values greater than 1.96 (2.58) in absolute value denote statistical significance at the 5 (1) per cent level.

Table 2
Ordered logit estimation of search intensity by gender

	Women		Men	
	Odds ratio	t-value	Odds ratio	t-value
<i>Age 15-24</i>	<i>Reference category</i>		<i>Reference category</i>	
Age 25-54	0.9715	-1.06	1.0689	1.58
Age 55-64	0.4891	-4.57	0.6085	-4.01
<i>ISCED 0-2</i>	<i>Reference category</i>		<i>Reference category</i>	
ISCED 3-4	1.6395	28.05	1.5984	16.53
ISCED 5-6	2.0737	11.21	2.0825	19.81
<i>Unemployment duration < 6 months</i>	<i>Reference category</i>		<i>Reference category</i>	
Unemployment duration 6-11 months	1.0743	1.36	1.0551	0.97
Unemployment duration > 11 months	0.9187	-1.77	0.8755	-1.79
Number of adults (15-64 years) in household	0.9628	-2.97	0.9915	-0.62
Number of children (<=4 years) in household	0.8606	-3.55	1.0201	0.76
Number of children (5-14 years) in household	0.8917	-5.99	0.9589	-2.08
Number of elderly (>= 65 years) in household	0.9385	-2.17	0.9346	-1.97
<i>Employed spouse in household</i>	<i>Reference category</i>		<i>Reference category</i>	
No spouse in household	1.159	2.93	0.8534	-3.54
Inactive/unemployed spouse in household	0.8824	-3.94	0.7534	-4.63
Pseudo R ²	0.0387		0.0363	
Number of Obs.	149,809		139,331	

Source: EU-LFS, years 2006-2008, own calculations. – Notes: The table displays exponentiated coefficients that can be interpreted as effect on the odds ratio. The regression also includes a full set of country and year dummies. – Reference categories: Age 15-24, Low skilled (ISCED 0-2), Unemployment duration < 6 months, Employed spouse in household. – Regressions make use of sampling weights. t-values are based on robust standard errors, clustered at the country level. t-values greater than 1.96 (2.58) in absolute value denote statistical significance at the 5 (1) per cent level.

Table 3

Factor analysis of search methods: Proportion of total sample variance after Varimax rotation

	Factor 1	Factor 2	Factor 3
Proportion of variance	0.2426	0.2375	0.1933
Cumulative	0.2426	0.4801	0.6734

Source: EU-LFS, years 2006-2008, own calculations. – Notes: Factor analysis makes use of sampling weights.

Table 4

Factor analysis of search methods: Factor loadings after Varimax rotation

	Factor 1	Factor 2	Factor 3	Uniqueness
Public employment office	0.3295	-0.6557	0.2176	0.4142
Private employment agency	0.1342	-0.0397	0.8358	0.2818
Direct applications to employers	0.2136	0.6803	0.3857	0.3428
Asking friends, relatives, and trade unions, etc.	0.2623	0.7476	0.0547	0.3693
Inserting or answering advertisements	0.8277	-0.0893	0.2408	0.2489
Studying advertisements	0.8578	0.2539	0.0460	0.1975
Taking a test, interview or examination	0.1906	0.3700	0.6284	0.4319

Source: EU-LFS, years 2006-2008, own calculations. – Notes: Figures in bold denote factor loadings larger than 0.5 in absolute value. – Factor analysis makes use of sampling weights.

Table 5

Proportion of unemployed using specific search methods by country

in %

	Public employment office	Private employment agency	Direct applications	Friends, relatives, trade unions, etc.	Inserting/ans wering ads	Studying ads	Test, interview, or examination
AT	79	15	73	80	50	90	55
BE	69	43	31	35	24	56	11
BG	46	14	49	65	16	36	8
CY	48	2	57	77	15	63	18
CZ	90	17	78	89	21	84	34
DE	93	19	20	39	58	58	12
DK	44	3	69	53	68	85	17
EE	30	4	36	63	29	54	6
ES	43	32	74	84	31	60	24
EU-LFS	65	21	52	61	42	68	17
FI	60	15	53	40	42	87	21
FR	64	32	61	59	52	86	22
GR	63	9	87	89	29	71	20
HU	74	25	73	84	42	86	6
IE	56	30	82	85	29	93	32
IT	28	19	60	80	24	58	34
LT	53	5	45	58	14	55	3
LU	77	16	55	63	20	88	4
LV	42	6	72	91	25	86	11
NL	50	47	62	57	52	76	35
PL	75	7	65	82	36	80	15
PT	61	9	48	38	19	27	5
RO	12	6	48	56	43	64	12
SE	73	5	45	25	19	53	1
SI	71	22	79	86	75	83	57
SK	80	6	36	60	14	47	4
UK	67	24	49	50	59	82	0

Source: EU-LFS, years 2006-2008, own calculations. Notes: Based on inverse sampling probability weighted data. The method "Test, interview, or examination" is not surveyed in the UK.

Table 6
Probit estimation of specific search methods by gender

	Women				Men			
	Public employment office		Friends, relatives, trade unions, etc.		Public employment office		Friends, relatives, trade unions, etc.	
	Marg. Effect	t-value	Marg. Effect	t-value	Marg. Effect	t-value	Marg. Effect	t-value
Age 15-24	Reference category		Reference category		Reference category		Reference category	
Age 25-54	0.0727	4.83	-0.0094	-0.80	0.0750	5.38	0.0028	0.38
Age 55-64	0.0427	1.47	-0.0608	-1.90	0.0436	1.69	-0.0479	-2.57
ISCED 0-2	Reference category		Reference category		Reference category		Reference category	
ISCED 3-4	0.0260	1.86	0.0231	0.95	0.0021	0.21	0.0360	1.55
ISCED 5-6	-0.0258	-1.14	0.0052	0.13	-0.0649	-2.83	0.0100	0.26
Unemployment duration < 6 months	Reference category		Reference category		Reference category		Reference category	
Unemployment duration 6-11 months	0.0195	1.10	0.0195	1.91	0.0231	0.96	-0.0039	-0.34
Unemployment duration > 11 months	0.0201	0.81	0.0028	0.23	0.0082	0.29	-0.0187	-1.93
Number of adults (15-64 years) in household	-0.0090	-0.87	0.0002	0.04	0.0002	0.04	-0.0016	-0.51
Number of children (<=4 years) in household	-0.0067	-1.08	-0.0248	-2.59	0.0130	1.31	0.0051	0.60
Number of children (5-14 years) in household	-0.0168	-1.79	-0.0032	-1.26	-0.0002	-0.04	0.0037	1.06
Number of elderly (>= 65 years) in household	0.0079	0.71	-0.0182	-1.93	0.0040	0.54	-0.0257	-2.58
Employed spouse in household	Reference category		Reference category		Reference category		Reference category	
No spouse in household	0.0223	1.32	-0.0033	-0.17	0.0144	0.50	-0.0314	-3.25
Inactive/unemployed spouse in household	-0.0569	-1.73	-0.0383	-1.65	0.0514	2.41	-0.0460	-2.27
Pseudo R ²	0.1813		0.1242		0.2178		0.1191	
Number of Obs.	149,809		149,809		139,331		139,331	

Source: EU-LFS, years 2006-2008, own calculations. – Notes: The table displays marginal effects obtained from probit regressions. The regressions also include a full set of country and year dummies. – Reference categories: Age 15-24, ISCED 0-2, Unemployment duration < 6 months, Employed spouse in household. – Regressions make use of sampling weights. *t*-values are based on robust standard errors, clustered at the country level. *t*-values greater than 1.96 (2.58) in absolute value denote statistical significance at the 5 (1) per cent level.

Table 7
Source and description of institutional variables

Variables	Source	Description
ALMP exp.: measures / GDP	Eurostat	Public expenditure on labour market policy interventions; type of action: measures; expressed as a percentage of GDP.
Gini coefficient	Eurostat	Relationship between the cumulative shares of the population arranged according to the level of equivalised disposable income and the cumulative share of the equivalised total disposable income received by them.
Unemp. benefit coverage rate	EU-SILC, own computation	Share of newly unemployed receiving unemployment benefits in total number of newly unemployed. Computed from EU-SILC data set as in RWI (2011).
Unemp. rate	Eurostat	Number of unemployed as a percentage of the active labour market population; calculated with reference to the population 15-74 years old.
EP all empl	OECD	Employment protection overall.
Minimum wage	OECD	Minimum relative to average wages of full-time workers.

Source: OECD (2011) and Eurostat (2011). – Notes: "EP" stands for employment protection, "ALMP" for active labour market policy, "Exp." for expenditure, and "EU-SILC" for EU Statistics on Income and Living Conditions. Institutional indicators are measured as mean values over the years 2006-2008. OECD data sources feature a lower number of country observations.