

Krueger, Alan B.; Mueller, Andreas

Working Paper

The lot of the unemployed: a time use perspective

IZA Discussion Papers, No. 3490

Provided in Cooperation with:

IZA – Institute of Labor Economics

Suggested Citation: Krueger, Alan B.; Mueller, Andreas (2008) : The lot of the unemployed: a time use perspective, IZA Discussion Papers, No. 3490, Institute for the Study of Labor (IZA), Bonn, <https://nbn-resolving.de/urn:nbn:de:101:1-20080527107>

This Version is available at:

<https://hdl.handle.net/10419/35162>

Standard-Nutzungsbedingungen:

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

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

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

Terms of use:

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

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

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

IZA DP No. 3490

The Lot of the Unemployed: A Time Use Perspective

Alan B. Krueger
Andreas Mueller

May 2008

The Lot of the Unemployed: A Time Use Perspective

Alan B. Krueger

*Princeton University,
NBER and IZA*

Andreas Mueller

*Stockholm University
and Princeton University*

Discussion Paper No. 3490

May 2008

IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0

Fax: +49-228-3894-180

E-mail: iza@iza.org

Any opinions expressed here are those of the author(s) and not those of IZA. Research published in this series may include views on policy, but the institute itself takes no institutional policy positions.

The Institute for the Study of Labor (IZA) in Bonn is a local and virtual international research center and a place of communication between science, politics and business. IZA is an independent nonprofit organization supported by Deutsche Post World Net. The center is associated with the University of Bonn and offers a stimulating research environment through its international network, workshops and conferences, data service, project support, research visits and doctoral program. IZA engages in (i) original and internationally competitive research in all fields of labor economics, (ii) development of policy concepts, and (iii) dissemination of research results and concepts to the interested public.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

ABSTRACT

The Lot of the Unemployed: A Time Use Perspective^{*}

This paper provides new evidence on time use and subjective well-being of employed and unemployed individuals in 14 countries. We devote particular attention to characterizing and modeling job search intensity, measured by the amount of time devoted to searching for a new job. Job search intensity varies considerably across countries, and is higher in countries that have higher wage dispersion. We also examine the relationship between unemployment benefits and job search.

JEL Classification: J64, J65

Keywords: unemployment, job search, time use, unemployment benefits, inequality

Corresponding author:

Alan B. Krueger
Industrial Relations Section
Princeton University
Princeton, NJ 08540
USA
E-mail: akrueger@princeton.edu

^{*} We have benefited from helpful discussions with Hank Farber, Per Krusell, Bruce Meyer, Joachim Möller and the Princeton macro dinner group. This paper was prepared for the LoWER conference, "Institutions, Markets and European Unemployment Revisited," dedicated to the memory of Andrew Glyn. Alan Krueger was the Leon Levy member of the Institute for Advanced Study at Princeton when the paper was written.

1. Introduction

Economists have long debated the causes and consequences of unemployment. To some, unemployment is a sign of market failure that causes some workers to be involuntarily prevented from working. To others, unemployment is a form of disguised leisure, a period when labor is voluntarily reallocated to more efficient uses. Time use and subjective well-being data provide a new window on the lives of the unemployed. How much time do unemployed workers spend searching for a job? How much time do they spend in leisure activities and home production? How do they feel about their daily activities and their lives? Is the lot of the unemployed very different from that of the employed?

In this paper, we analyze the lives of the unemployed using time-use data for 14 countries. A new purchase on the experience of unemployment is made possible by the accumulation of comparable time-use data on large representative samples for several countries. In time-use surveys, individuals keep track and report their activities over a day or a longer period. We acquired time-use data from several sources, including government statistical agencies, the Multinational Time Use Study (MTUS) data from Oxford University's Center for Time Use Research, and the Harmonized European Time Use Survey (HETUS). Section 2 describes and briefly evaluates the data that we use.

In Section 3 we summarize how unemployed and employed individuals allot their time. In all of the regions for which we have data, the unemployed sleep nearly an hour more per day on weekdays than the employed. The unemployed also spend considerably more time engaged in home production, caring for others, watching TV and socializing.

The difference in circumstances and daily activities of the unemployed affect their subjective well-being. Previous research (e.g. Björklund, 1985; Clark and Oswald, 1994; Oswald, 1997; Winkelmann and Winkelmann, 1998) has found that the unemployed report lower levels of life satisfaction and other indicators of psychological well-being than do the employed in Europe. We confirm and extend this finding with data from the U.S. in Section 4. Using data on subjective well-being collected in tandem with time-use data, we probe how specific emotional experiences, such as feeling sad, happy or tired, vary with labor force status. We also examine how the emotional experiences associated with various activities differ between the employed and unemployed. We find, for example, that the unemployed report feeling less tired, more sad, and less happy than the employed over the course of the day. Watching television and searching for a job are associated with notably intense feelings of sadness for the unemployed. The patterns that emerge from this analysis suggest that the emotional experiences associated with unemployment are not entirely due to personality traits.

The amount of time devoted to searching for a new job is of central interest in search theory and an important determinant of unemployment, yet it has rarely been studied directly.¹ Section 5 provides a descriptive analysis of time devoted to job search. Key findings are: 1) The percentage of unemployed workers who search for a job on any given day varies from a low of 5 percent in Finland to 20 percent in the U.S. 2) Conditional on searching, the average search time ranges from 40 minutes in Slovenia to over 3 hours in Canada. 3) The unemployed spend considerably more time searching for a new job than do the employed and those who are classified as out of the labor force,

¹ An exception is Holzer (1987), who finds that youth who devote more time to job search are more likely to find a job.

which suggests that conventional labor force categories represent meaningfully different states. 4) Men, higher educated and younger workers (except in North America) tend to devote more time to job search than other groups.

The unemployed in the U.S. and Canada spend more than twice as much time searching for a new job than do the unemployed in Western Europe and Eastern Europe, and eight times more time than in the Nordic countries. Understanding variability in job search time across countries is important for understanding national differences in the unemployment rate and duration of unemployment. Thus in Section 6 we use our sample of 14 countries to model the job search time as a function of country's unemployment system, wage dispersion and other variables. Although conclusions are highly speculative with such a small sample of countries, we find that income variability and the escalation of unemployment benefits are the most robust and strongest predictors of job search intensity. The finding that the unemployed devote more time to searching for a new job in countries where wage dispersion is higher, conditional on unemployment benefits, suggests that the potential gain from finding a higher paying job is an important motivator of search intensity.

2. Data Sources

We draw on data from 16 time-use surveys conducted in 14 countries between 1991 and 2006. Combined, the surveys represent 190,731 employed and 14,883 unemployed diary days. The sources are:

- Original micro time-use data files from the government statistical agencies of Austria, France, Germany, Italy, Spain, U.K. and the U.S.A.

- The Multinational Time Use Study (MTUS) from Oxford University’s Center for Time Use Research. The MTUS consists of a multitude of time-use surveys conducted in 20 countries from 1961 to 2003. Activity codes were harmonized to a common set of 41 activities. We use data after 1991.
- The Harmonized European Time Use Survey (HETUS), which is a collection of time-use surveys conducted in 15 European countries, starting in the mid-1990s. There are 49 harmonized activity codes, in comparable format to the MTUS. HETUS does not grant access to the original micro data files, but we made use of the dynamic web application (<https://www.testh2.scb.se/tus/tus/>), which produces estimated average minutes spent in various activities and participation rates for selected subsamples.

We limit our analyses to the subset of surveys that contain job search activities. For our cross-country comparisons of the time use of the employed and unemployed we harmonized the activity codes from MTUS, HETUS and the original survey files to produce comparable estimates.

Measuring unemployment and job search in time-use surveys

The definition of unemployment that we employ requires that the individual did not work in the previous week, actively looked for work in the previous 4 weeks, and was available to start work (last week or in the next two weeks, depending on the survey).² In addition, in the U.S. individuals on layoff who expect to be recalled to their previous employer are classified as unemployed regardless of whether they searched or were

² For Canada, we do not have access to the original micro data and therefore we use unemployment status such as defined in MTUS (self-reported unemployed). In the German surveys, the respondents were not asked the questions listed above and therefore we also use the self-reported unemployment status.

available for work. This definition corresponds closely to the definition of unemployment in national labor force surveys. We restrict our sample to people age 20-65 to abstract from issues related to youth unemployment or retirement. For all surveys (except Germany 1991-92), the sample unemployment rate is slightly lower than the official unemployment rate, which is primarily due to our age restrictions. The correlation (weighted by number of job searchers) between the sample unemployment rate and the official unemployment rate in the corresponding year is 0.93.

Job search activities are defined in similar ways across surveys and typically include calling or visiting a labor office/agency, reading and replying to job advertisements and job interviewing/visiting a possible employer (see the Appendix Table for more details). Table 1 lists the various surveys for which we were able to identify time spent in job search activities. The MTUS does not have an activity code identifying job search activities. However, for a number of countries in the MTUS we were able to identify job search activities because the code “time in paid work at home” (AV2) exclusively contains time allocated to job search for the unemployed. In HETUS, job search activities are included in the code “activities related to employment”, which also contains lunch breaks at work and time spent at the workplace before and after work. The unemployed should not engage in activities related to employment except job search and thus we use this activity code in our cross country comparisons.

We assess the accuracy of the HETUS tabulations by comparing our own estimates of job search time with those from HETUS for the subset of countries where we have access to the underlying micro data files. This enables us to check whether activities related to employment represent job search time in the HETUS. Table 2 shows

that we closely reproduce the HETUS estimates of average minutes of job search and the proportion participating in job search on the diary day. The small differences for France and Spain are mainly due to the fact that we use a different definition of unemployed than HETUS. HETUS slightly overestimates job search for the UK. For countries where we have more than one source of data we use the original micro data file when that is available. If we do not have access to the original micro data, we use tabulations from HETUS or the MTUS harmonized data files, whichever is available.

PATS

We utilized the Princeton Affect and Time Survey (PATS) to analyze subjective well-being and time use. PATS is patterned on the American Time Use Survey (ATUS), and was conducted by the Gallup Organization on behalf of Princeton University from May through August, 2006. The sample consists of nearly 4,000 individuals who were contacted using a random-digit dialing procedure. One person was randomly selected per household. The survey response rate was 37 percent (AAPOR Method No. 3). Sample weights were developed based on the Current Population Survey to make the weighted sample representative of the population based on geographic region, gender, age and race.

In the survey the ATUS instrument was used to collect information from respondents regarding labor force status and their activities over the preceding day. After the time diary was collected, three 15-minute intervals were randomly selected from the non-sleeping portion of the day, and respondents were reminded of the activity they said they participated in at those times. Respondents were then asked the extent to which they experienced six different feelings (pain, happy, tired, stressed, sad, and interested) during each interval, on a scale from 0 to 6, and instructed that “a 0 means you did not

experience this feeling at all and a 6 means the feeling was very strong.” The order in which the feelings were presented was randomly assigned to respondents from six different permutations. Questions about life satisfaction and demographics followed the affect questions. The pattern of time use across activities in PATS and ATUS for the same period closely matched.

3. Time Use Patterns of the Unemployed and Employed

Table 3 summarizes the number of minutes per day that employed and unemployed individuals spend in various activities for five geographic regions. Results are shown separately for weekdays, weekends and pooled over the entire week. The standard errors are quite small, so they are not reported.³ Not surprisingly, more pronounced differences between the employed and unemployed arise on weekdays, when most of the employed work.

In each region, the unemployed sleep substantially more than the employed. Sleep is notably high for unemployed Americans, who average just over 9 hours of sleep a night – almost as much as teenagers.⁴ Large differences in time use between the unemployed and employed are also evident for time spent in home production and taking care of others. The unemployed spend from 0.7 hours to 1.7 hours more than the employed engaged in home production and caring activities across the regions. More time is spent on personal care, eating and drinking by the employed in some regions and

³ For the employed, the standard errors are usually around 1 or 2 minutes for each activity; for the unemployed they are larger, but usually no more than 5 minutes for most activities and most countries.

⁴ Note that in the ATUS the sleep category includes time spent sleeping, tossing and turning, lying awake and insomnia. All but a few minutes of sleep are classified in the first category. The younger average age of the unemployed does not account for much of the difference in sleep between employed and unemployed individuals.

by the unemployed in others. The unemployed spend considerably more time than the employed in leisure and social activities.⁵ A large share of this difference is due to TV watching, which absorbs almost a quarter of the awake time of the unemployed in the U.S. The amount of time the unemployed spend socializing rises by over 10 percent on the weekends, possibly because it is easier to coordinate social activities with employed individuals on the weekend. In the Nordic countries, the employed spend more time in home production than in other regions, perhaps because taxes are high there and home production is not taxed. Curiously, the unemployed in the Nordic region spend less time on home production than their counterparts in most other countries. The unemployed-employed gap in time spent on child care is lower in the Nordic countries, probably because child care services are more widely available from public services.

As expected from labor force surveys of work hours, the time use data indicate that Americans and Canadians spend more time engaged in work related activities than workers in Western Europe and the Nordic countries.⁶ (The unemployed spend a small amount of time at work because in some of the surveys work includes related activities and because of classification errors.) The average unemployed worker spends about half an hour searching for a job on any given day in the U.S. or Canada, and substantially less in Europe. The unemployed spend almost as much time traveling as do the employed, which suggests that they are not sedentary.

The high sleep hours by the unemployed could result from depression or be a behavioral response to having a low opportunity cost of time. The greater time devoted

⁵ Freeman and Schetkatt (2005; Table 7) find a qualitatively similar pattern using broader activity categories for 7 countries.

⁶ In the time use data, Americans spend less time at work than Canadians, which is an interesting discrepancy from the pattern in labor force surveys of weekly work hours.

to home production and caring for others by the unemployed than the employed is also consistent with the unemployed having a lower opportunity cost of time.

4. Subjective Well-Being and Time Use

Studies of panel data find that global evaluations of well-being tend to decline when people become unemployed (Clark, et al. 2003). Subjective well-being tends to remain depressed even after the unemployed obtain new employment. Evidently, unemployment is resistant to the psychological phenomenon of adaptation. We can examine subjective well-being of the unemployed in connection with their time use with the PATS data.

Toward the end of the PATS questionnaire, respondents were asked a conventional life satisfaction question. As the following tabulation indicates, the unemployed in the U.S. report considerably lower life satisfaction than the employed, as has been found previously.

“Taking all things together, how satisfied are you with your life as a whole these days?”

	<u>Employed</u>	<u>Unemployed</u>
Not at all satisfied	1.4%	5.1%
Not very satisfied	7.7%	21.4%
Satisfied	45.5%	48.4%
Very Satisfied	45.4%	25.2%

Source: PATS data. Sample size is 1,961 employed and 114 unemployed. Chi-sq for test of independence is 58.9 (p-value=.000). Weighted percentages. Sample age 20-65.

The PATS data permit an analysis of specific emotional experiences at random moments of the day. Table 4 reports the average of various emotions over the course of

the day for the unemployed and employed, and the difference between the two groups. The pattern of differences is not uniform. The unemployed report feeling more sadness, stress and pain, and lower levels of happiness. There is no detectable difference in how interested the two groups say they are in their daily activities. Interestingly, the unemployed report significantly lower values for feeling tired, consistent with the previously noted finding from the ATUS that the unemployed sleep almost an hour more than the employed, on average. These results provide mixed evidence concerning whether the unemployed are depressed. On the one hand, fatigue and lack of interest are common symptoms of depression, and the unemployed are less tired and no less interested than the employed. On the other hand, the higher level of sadness reported by the unemployed may be a sign of depression.

Table 5 shows the average rating of sadness while individuals engaged in various activities. We focus on sadness for this analysis because that emotion exhibited the greatest difference between the employed and unemployed over the entire day. The set of activities is limited to those with at least 10 sampled episodes for the unemployed. Even so, the samples for some activities are small (e.g., there are few episodes of job search for the employed and not many for the unemployed), and caution is needed in generalizing from the results. Nonetheless, some suggestive patterns emerge. The unemployed express particularly high feelings of sadness during episodes involving job search. In addition, feeling stressed is high during job search and feeling happy is low. The apparent emotional costs of job search are overlooked in economic models.

We also find elevated levels of sadness for the unemployed during periods of watching television, an activity that we already noted consumes a great deal of their time.

It is possible that the unemployed watch so much television that they have long passed the point of diminishing marginal utility, or that television viewing is a time when the unemployed reflect on their predicament, evoking feelings of sadness, especially if they watch shows about the rich and famous.

5. Job Search: A Descriptive Analysis

How much time do the unemployed devote to searching for work? Table 6 reports the proportion of individuals who search for a job on any given day, called the participation rate, and the (unconditional) average duration of job search by labor force status, for all countries in our sample. As previously noted, average search time is highest in the U.S.A., at 31.8 minutes per day, closely followed by Canada. Europeans search much less, but there is considerable variation across countries. In France the unemployed search around 20 minutes a day compared with 3 minutes in Finland.

The proportion participating in job search, which we consider the extensive margin, is highly correlated with the average duration of job search; the weighted correlation is 0.91.⁷ The U.S.A. has the highest participation rate in job search at 19.8%, compared with a low of 5% in Finland.

The American unemployed also search more on the intensive margin -- for those who engage in job search activities on a given day, the average duration of job search is 160.4 minutes in the U.S., compared to 103.9 minutes in all the other countries in our data set. The weighted correlation between the overall average job search and average job

⁷ The weights are the number of job searchers in each country's time-use data set.

search among participants is 0.80, which suggests that the extensive margin does a somewhat better job predicting cross-country differences in average search time.

Figure 1 summarizes the distribution of job search times for those who searched on the diary day in a series of box plot diagrams for six countries for which we had access to micro data. The width of the box is drawn in proportion to the fraction of unemployed who searched on the diary day in each country. The median search time among those who searched in the U.S.A. and Canada is 120 minutes, but just as high in Spain and nearly as high (110 minutes) in Italy. Note, however, that there is a potential selection issue: countries with low search participation rates such as Italy might have highly motivated searchers, whereas in countries with high participation rates like the U.S.A. or Canada, more marginal searchers are included. The figure reinforces the impression that the main factor that distinguishes countries in terms of job search intensity is the proportion of unemployed individuals who searched on any given day, not the length of time that they searched.

One important feature to bear in mind is that job search is concentrated on weekdays. For the U.S., for example, participation in job search for those unemployed who are not on temporary layoff is 27.2% during weekdays and the (unconditional) average search time is 44.6 minutes, compared with 7.8% and 9.9 minutes, respectively, during weekends. In the other countries, job search during the weekend is lower as well. In Spain, for example, the unemployed search on average 21.9 minutes during the week and 6.1 minutes during the weekend.

Table 6 also shows the average duration of job search and participation rates for the employed and those classified as out of the labor force. For both categories, average

duration of job search is no more than one minute in all the countries in our sample (note that HETUS rounds to the nearest integer). Moreover, participation in job search is equal or below 1%, except for Sweden⁸. Even if we limit the sample in the U.S. to those who were classified as unemployed according to the CPS three months prior to the ATUS survey and classified as out of the labor force in the ATUS, average search time is only 1.8 minutes. Together, these results suggest that the unemployed spend considerably more time searching for a new job than do individuals who are classified as employed or out of the labor force. We interpret these results as evidence that the conventional labor force categories represent meaningfully different states and behavior patterns.⁹

So far, we have only analyzed data on job search for one day. An open question is whether the unemployed who engage in job search on one day are more likely to engage in job search on another day during the same week. Most of the surveys in our sample only collect information on one diary day (or, if two diary days are collected, one is typically a weekend day). The German 2001-02 time-use survey is the only survey which included two weekday diaries for respondents. The following tabulation indicates that there is a high dependence of daily participation in job search: conditional on spending some time searching on day 1, the chance of searching on day 2 is 41 percent, whereas conditional on not searching on day 1, the fraction of unemployed searching on day 2 is only 5 percent. This high dependence suggests that our inferences would not be very different if diary data for more than one day were collected.

⁸ In Sweden, students have high participation rates in job search and tend to search almost as much as the unemployed. They are not counted as unemployed because they are not available for work.

⁹ Corroborating evidence from job finding rates is in Flinn and Heckman (1983); see Jones and Riddell (1999) for conflicting evidence.

Cross tabulation of participants and non-participants on two weekdays:

<u>Search on day 1</u>	<u>Search on day 2</u>		<u>Total</u>
	<u>No</u>	<u>Yes</u>	
No	329	19	348
Yes	26	18	44
Total	355	37	392

Source: German Time Use Survey, 2001-02. Weighted frequencies. Sample consists of respondents with two weekday diaries. Chi-sq test of independence is 52.25 (p-value=.000).

Descriptive job search regressions

What are the major predictors of job search? To answer this question, we model the likelihood that an unemployed workers searches for a job on any given day as well as the amount of time spent searching, conditional on searching at all, as a function of age, education, gender and marital status. We have comparable micro data for the following six countries: the U.S.A., Canada, France, Germany, Spain and Italy.¹⁰ Because participation in job search is low (ranging from 7.5% in Germany to 19.8% in the U.S.A.), we think it is important to analyze participation and time allocated to job search separately.

Table 7a reports the results of linear probability models where the dependent variable equals one if the unemployed individual searched for a job on the reference day, and zero if he or she did not. Several regularities are apparent. First note that the quadratic term in age seems to matter. Although not significant by conventional standards for all countries, the probability of participating in job search decreases with age at an

¹⁰ The three education dummies were defined as uncompleted secondary education, completed secondary education and tertiary education (completed and uncompleted). When information was available on whether a respondent was cohabiting with a partner, we defined them as married (USA, Canada 1998, France, Germany).

increasing rate. (We return to the effects of age on time spent searching for a job below.)

Second, education is also an important predictor of participation in job search. In the U.S.A., for example, those with some college education or more have a 13.8 percentage point higher probability of engaging in job search on any given day than those without a high school degree. Education is associated with a greater likelihood of job search in Canada, France and Germany, but not in Spain or Italy. One possible explanation for the generally higher search time among the higher educated is that they reap greater returns to search (higher wages). Additionally, the job search process may be more time consuming in the jobs that higher educated individuals apply for.

A third observation is that women have a much lower probability of engaging in job search, and this is especially the case for married women. Moreover, there are interesting cross-country differences in the effect of marriage and gender: the interaction term of married and female is an important determinant of job search for countries with traditionally low female labor supply. In Spain a married women's probability of search is 17.7 percentage points lower than a married man's and Italy the difference is 21.6 points.

Finally, in all countries participation is significantly lower on weekends. Comparing the coefficient on the weekend dummy variable to the average probability of searching for a job on any day, it appears that job search almost shuts down on the weekends.

Duration Conditional on Search

To examine whether the same variables explain search on the intensive margin, we estimate a linear regression of time allocated to search (in minutes), for those who

engaged in job search on the reference day. Table 7b summarizes the results. Note that the samples are small since we exclude all of those who did not search from the regression.

As with engaging in job search, the higher educated unemployed tend to search more minutes (except in Spain) and women search less intensively, although the coefficients are statistically significant in only some countries. No clear pattern emerges regarding age from the regressions. Notice also that the F-tests of the joint significance of all variables cannot reject the null hypothesis at the 5% level for the U.S.A. and Canada. Overall we conclude that it is mainly the decision of whether to participate in job search on any given day that drives differences in time allocated to job search across different population groups.

Age Profile of Job Search

To examine the effect of age on total time spent searching for a job, we computed marginal effects on time allocated to job search, including non-participants. Specifically, the expectation of job search conditional on a set of characteristics, x , can be decomposed as $E(s|x) = P(s>0|x) * E(s|s>0,x)$. Using the chain rule we obtain the marginal effect $dE(s|x)/dx_i = (dP(s>0|x)/dx_i) * E(s|s>0,x) + P(s>0|x) * (dE(s|s>0,x)/dx_i)$. From our regressions in Table 7a and 7b, we can substitute the coefficients for $dP(s>0|x)/dx_i$ and $dE(s>0|s>0,x)/dx_i$, and we evaluate $P(s>0|x)$ and $E(s|s>0,x)$ at the average x . Figure 2 shows the full effect of age on the duration of job search. For Canada and the U.S.A. search time is increasing in age at early stages of life but decreasing after the 40s (Canada) or 50s (U.S.A.). For France, Spain and Germany, time allocated to job search is decreasing over almost the entire age range. This finding is consistent with a life cycle

model of job search, which predicts that the value of finding a high-paying job decreases with a worker's expected remaining years of work.

The U.S.A. and Canada show a distinct pattern. One possible explanation for the inverse-U shaped age-search patterns in these countries is that Americans and Canadians tend to retire at older ages than do workers in Western Europe.

6. Institutional Factors and Job Search

What explains the large cross-country differences in the amount of time the unemployed devote to job search? Although we have data for only 14 countries, understanding differences in search effort is critical to understanding differences in unemployment across countries. Here we provide an initial analysis of two main factors: features of the Unemployment Insurance (UI) system and inequality. As time-use data become available for more countries, this analysis can be extended.

We start with some simple scatter diagrams. Figure 3 shows average job search time (including those who did not search at all) on the y-axis and an indicator of the generosity of social benefits for the unemployed on the x-axis. The size of the circles is proportional to the number of observations on unemployed individuals from the time-use survey. The benefit indicator that we use is the net replacement rate (NRR), which is the after-tax value of UI benefits, social assistance, family benefits, food stamps and housing benefits relative to after-tax earnings.¹¹ Because benefits vary over the spell of

¹¹ Source: OECD, Net replacement rates (NRR) during the initial phase of unemployment 2001-2004 (latest update available on the webpage of the OECD, March 2006). Specifically, we took the average of the net replacement rate for two earnings levels (the average annual wage and 67% of the average annual wage) by six family types (single, with dependent spouse, with working spouse, and those three with 2 children). Note that for Slovenia we produced our own estimate of the NRR, with information from a country chapter provided by the OECD.

unemployment in most countries, we take the benefits available at the beginning of a spell. The bivariate relationship between job search and unemployment benefits is statistically insignificant but downward sloping, as predicted by theory (e.g., Mortensen, 1977).

Figure 4 shows a stronger relationship between job search time by the unemployed and wage dispersion, as measured by the country's 90-10 wage ratio.¹² We expect wage inequality to positively influence job search time because the gain from searching for a higher paying job is greater in countries that have greater wage variability. Consistent with our expectation, the correlation between job search time and income inequality is positive and substantial (0.69).

Of course, it is possible that income inequality is picking up the effect of factors other than the variability in wages that workers are confronted with in their potential job offer distribution. For this reason, we estimate multiple regressions to explain job search time using data at the country level in Table 8. In addition to the 90-10 wage ratio and NRR, the explanatory variables include a measure of rate at which benefits increase or decrease over time (called benefit escalation) and average years of schooling from the Barro and Lee (2001) data set. The benefit escalation rate is measured by the ratio of the gross replacement rate in months 7-24 of an unemployment spell to the gross replacement rate in months 1-6.¹³ Again, with only 14 countries, more than the usual grain of salt is required.

¹² The data on the 90-10 wage ratio for OECD countries are from OECD Earnings Inequality Database and for Bulgaria and Slovenia the data are from Rutkowski (2001). We found a somewhat weaker correlation using the Gini coefficient from *The World Income Inequality Database*, produced by UNU-Wider (2007).

¹³ In all countries in the sample, UI benefits decline over time. The underlying gross replacement rate data were provided in a correspondence with Tatiana Gordine of the OECD. For Bulgaria and Slovenia, we used data from UNECE's *Economic Survey of Europe* (2003, No. 1).

Notwithstanding this caution, the 90-10 wage ratio has a relatively robust and sizable effect in the Table 8 regressions. Going from the least to the most unequal country, the 90-10 ratio increases by about 248 percentage points. Using the coefficient in the model in column 6, this large a change in inequality is predicted to increase job search time by 28 minutes per day, which is twice as large as the average amount of job search time in the average country. The NRR is never statistically significant and its sign flips from negative to positive when other variables are included in the model, but its standard error is large and the point estimate is nontrivial. In column 1, for example, the job search-NRR elasticity is around -1 at the mean. A higher escalation of benefits is associated with less time spent searching for a job, on average, but the effect is statistically insignificant and wrong-signed if the 90-10 wage differential is included in the model.

In results not presented here, we experimented with including the maximum duration of benefits as an explanatory variable, but it generally had a statistically insignificant and small effect. We also estimated the specifications including the country-level unemployment rate, which had a negative coefficient but was not statistically significant.¹⁴ Because of concerns about simultaneous causation – a high unemployment rate could cause fewer people to search for a job and could be caused by low job search intensity – we excluded it from the models in Table 8. However, it is reassuring that none of the variables of interest had a qualitatively different effect if the unemployment rate was included in the equation.

¹⁴ See Shimer (2004) for an analysis of how search intensity varies with the business cycle.

Lastly, we analyze the effects of NRR, benefit escalation and wage dispersion using micro data for 8 countries. The micro data allow us to simultaneously control for differences in individual characteristics across countries, such as age and gender, as well as the country-level variables. The dependent variable in Table 9 is the amount of time an unemployed individual spent searching for a job on the diary day (including 0s). Standard errors are adjusted for correlated errors within countries and are robust to heteroskedasticity. In general, the pattern of results is similar to what we found at the country level. Most importantly, the 90-10 wage differential has an effect similar to what we found in the country-level analyses in Table 8.

7. Conclusion

We have documented patterns in the amount of time devoted to searching for a new job, and in the subjective well-being of unemployed and employed individuals. Job search does not take up a huge amount of time for the average unemployed person on any given day, but those who do search for a job devote considerable time to it. Compared with the employed, the unemployed tend to spend a high proportion of time sleeping, watching television, socializing, caring for others and working around the house. This pattern of activities could be explained by a mixture of lethargy and having a low opportunity cost of time.¹⁵

Like many other studies, we also find that life satisfaction is low for the unemployed. The pattern of results for affect displayed in the PATS data suggests, however, that the unemployed do not report lower life satisfaction simply because they

¹⁵ In some respects, this conclusion was anticipated by Jahoda, Lazarsfeld and Zeisel's (1933) study of unemployed individuals in Marienthal, Austria in the early 1930s.

have personalities that predispose them to express negative attitudes. If this were the case, we would expect their negative disposition to cut across all emotions and activities of the day. Yet we find that the unemployed are sadder during some activities than others, and no less interested in what they are doing than the employed. It is likely that the experience of unemployment profoundly affects individuals' hedonic well-being, which is consistent with findings from longitudinal studies.

Although the sample of episodes in PATS is very small, time spent searching for a job appears to coincide with particularly unpleasant emotional experiences. This finding is worth exploring further with larger samples, perhaps surveys targeted at the unemployed. Assuming it can be replicated, one implication is that job search assistance programs may be successful because they help people overcome the inhibition to search for a new job associated with the unpleasantness of the endeavor.¹⁶ In addition, assuming the finding can be replicated, it is worth building in psychological costs of job search in economic models.

Finally, at a national level we did not find much evidence that parameters of a country's unemployment benefit system affect the amount of time devoted to job search, although our sample of countries is small and we cannot rule out some economically significant effect. Another consideration is that our data include both those eligible for UI benefits and those ineligible. The UI system likely has contrasting effects on the two groups of job seekers, as the prospect of qualifying for more generous benefits should make employment more attractive for those currently ineligible for benefits (see Mortensen, 1977, and Levine, 1993).

¹⁶ See Meyer (1995) and Blundell, et al. (2000) for evidence on the remarkable success of job search assistance programs.

We do find, however, that inequality is a strong predictor of the amount of time the unemployed devote to job search. While it is possible that this finding is emblematic of a tendency for lower job search in countries with a strong social welfare state and compressed wages, the fact that controlling for unemployment benefits does not attenuate the effect of the 90-10 wage differential on job search suggests that inequality *per se* matters. Our tentative interpretation of this finding is that job search has a higher payoff in labor markets with greater wage dispersion. If the potential wage offer distribution for an individual is compressed, the worker might as well accept the first job offer he or she receives, as the next is not likely to be much better. But if there is high variance in the potential wage offer distribution, then there is a benefit for searching for a high paying job.¹⁷ Notice that this interpretation requires that wage dispersion is not fully explained by personal differences in ability, as a given individual must have a chance of being offered a high paying job for inequality to affect his or her job search. In any event, the relationship between job search and inequality, which has not previously been documented, deserves further scrutiny and attention.

¹⁷ Ljungqvist and Sargent (1995) make a similar observation concerning the effect of progressive taxation on job search and unemployment. See Stigler (1962) for a seminal discussion of how wage dispersion affects the payoff from search effort.

References

- Barro, Robert and Jong-Wha Lee. 2000. "International Data on Educational Attainment: Updates and Implications." CID Working Paper No. 42 (Appendix tables), Cambridge, MA.
- Björklund, Anders. 1985. "Unemployment and Mental Health: Some Evidence from Panel Data." *Journal of Human Resources* 20(4): 469-483.
- Blundell, Richard, Monica Dias, Costas Meghir and John van Reenen. 2004. "Evaluating the Employment Impact of a Mandatory Job Search Assistance Program." *Journal of the European Economic Association* 2(4): 569-606.
- Clark, Andrew, Ed Diener, Yannis Georgellis and Richard Lucas. 2003. "Lags and Leads in Life Satisfaction: A Test of the Baseline Hypothesis." Working Paper 2003-14, Delta.
- Clark, Andrew and Andrew Oswald. 1994. "Unhappiness and Unemployment." *The Economic Journal* 104(424): 648-659.
- Flinn, Christopher and James Heckman. 1983. "Are unemployment and out of the labor force behaviorally distinct states?" *Journal of Labor Economics* 1(1): 28-42.
- Freeman, Richard and Ronald Schettkat. 2005. "Marketization of Household Production and the EU-US gap in work." *Economic Policy* 41(1): 6-50.
- Holzer, Harry. 1987. "Job Search by Employed and Unemployed Youth." *Industrial and Labor Relations Review* 40(4): 601-611.
- Jahoda, Marie, Paul Lazarsfeld and Hans Zeisel. 1933. *Die Arbeitslosen von Marienthal. Ein soziographischer Versuch über die Wirkungen langandauernder Arbeitslosigkeit.* Hirzel, Leipzig, Germany.
- Jones, Stephen R.G. and W. Craig Riddell. 1999. "The Measurement of Unemployment: An Empirical Approach," *Econometrica* 67 (1), pp. 147-61.
- Levine, Phillip. 1993. "Spillover Effects Between the Insured and Uninsured Unemployed." *Industrial and Labor Relations Review* 47(1): 73-86.
- Ljungqvist, Lars and Thomas Sargent. 1995. "Welfare States and Unemployment". *Economic Theory* 6(1): 143-160.
- Meyer, Bruce. 1995. "Lessons from the U.S. Unemployment Insurance Experiments." *Journal of Economic Literature* 33(1): 91-131.

Mortensen, Dale. 1977. "Unemployment Insurance and Job Search Decisions." *Industrial and Labor Relations Review* 30(4): 505-517.

Rutkowski, Jan. 2001. "Earnings Inequality in Transition Economies of Central Europe Trends and Patterns During the 1990s." Social Protection Discussion Paper Series No. 0117, The World Bank.

Shimer, Robert. 2004. "Search Intensity," mimeo., University of Chicago, Chicago, IL.

Stigler, George. 1962. "Information in the Labor Market." *Journal of Political Economy* 70 (5), Part 2: 94-105.

Winkelmann, Liliana and Rainer Winkelmann. 1998. "Why Are the Unemployed So Unhappy? Evidence from Panel Data." *Economica* 65(257): 1-15.

Appendix Table. Definition and examples of job search activities for selected surveys

American Time Use Survey (ATUS) 2003-06

Job search activities (050401), e.g.:

contacting employer
making phone calls to prospective employer
sending out resumes
asking former employers to provide references
auditioning for acting role (non-volunteer)
auditioning for band/symphony (non-volunteer)
placing/answering ads
researching details about a job
filling out job application
asking about job openings
reading ads in paper/on Internet
checking vacancies
researching an employer
submitting applications

writing/updating resume
meeting with headhunter/temp agency
picking up job application

Interviewing (050403), e.g.:

interviewing by phone or in person
scheduling/canceling interview (for self)
preparing for interview

Other activities related to job search, e.g.:

waiting associated with job search interview (050404)
security procedures rel. to job search/interviewing (050405)
travel related to job search (180504)
job search activities, not elsewhere specified (050499)

UK 2000-01

Activities related to job seeking (1391)

Definition: Activities connected with seeking job for oneself

Examples:

calling or visiting a labor office or agency
job interviews
updating CV
reading and replying to job advertisements
working on portfolio

Germany 2001-02

Activities connected with seeking job for oneself

Job search activities, not defined (150)
Calling or visiting labor office or agency (151)
Job search activities (152), e.g.:
reading and replying to job advertisements
reading ads in internet
interviewing and visiting at a new employer
Other specified job search activities (159)

Canada 1998

Job search; looking for work, including visits to employment agencies, phone calls to prospective employers, answering want ads. (022), e.g.:
picked up job applications
distributing resumes
working on resume
interview with prospective employer
attended job fair at school

Harmonized European Time Use Survey (HETUS)

Activities related to employment (13) such as lunch break at work and time spent at work place before and after starting work and **activities connected with job seeking**, e.g.:
calling or visiting a labour office or agency
reading and replying to job advertisements
presentation at the new employer

Table 1. Summary statistics of the time-use surveys

Country	Survey	Source: Original	Source: HETUS	Source: MTUS	# diary days	# diary days employed	# diary days unemployed
Austria	1992	x		x*	1	10,965	155
Belgium	1998-2000		x		2	6,674	464
Bulgaria	2001-02		x		2	5,596	923
Canada	1992			x*	1	4,608	305
Canada	1998			x*	1	4,813	220
Finland	1999-2000		x		2	5,470	407
France	1998-99	x			1	7,404	787
Germany	1991-92	x*		x*	2	12,776	1,164
Germany	2001-02	x*	x*		3	15,761	1,224
Italy	2002-03	x	x		3	20,546	1,793
Poland	2003-04		x		2	18,868	2,699
Slovenia	2000-01		x		2	6,388	408
Spain	2002-03	x	x		1	19,849	2,061
Sweden	2000-01		x		2	6,037	204
UK	2000-01	x	x		2	9,259	245
USA	2003-06	x			1	35,717	1,824

* Unemployed defined as self-reported unemployed; elsewhere unemployed defined as not working, actively seeking work and available for work.

Sources:

- Multinational Time Use Study, version 5.5.2 (October 2005). Center for Time Use Research, Oxford University.
<http://www.timeuse.org/mtus/>

- Harmonised European Time Use Survey, online database version 2.0 (2005-2007). Statistics Finland and Statistics Sweden.
<https://www.testh2.scb.se/tus/tus/>

- We obtained the original micro data files from the government statistical agencies of Austria (through the institute WISDOM), Germany, Italy, France (through the Centre Maurice Halbwachs) and Spain. The micro data files for the UK Time Use Survey were provided by the UK Data archive and for the American Time Use Survey (ATUS) by the Bureau of Labor Statistics.

Table 2. Comparison of estimates from HETUS and original survey data

Country	Survey	Source	# diary days	# diary days employed	# diary days unemployed	Unemployment rate (sample)	Average job search, in min	Participation rate in job search
France	1998-99	Original	1	7,404	787	9.6%	20	19%
France	1998-99	HETUS*	1	7,441	909	10.9%	18	17%
Spain	2002-03	Original	1	19,849	2,061	9.4%	17	10%
Spain	2002-03	HETUS**	1	19,849	2,605	11.6%	15	9%
UK	2000-01	Original	2	9,259	245	2.6%	6	10%
UK	2000-01	HETUS	2	9,246	245	2.6%	8	14%
Germany	2001-02	Original*	3	15,761	1,224	7.2%	7	8%
Germany	2001-02	HETUS*	3	16,031	1,224	7.1%	7	8%
Italy	2002-03	Original	3	20,546	1,793	8.0%	10	8%
Italy	2002-03	HETUS	3	20,546	1,793	8.0%	10	8%

* Unemployed defined as self-reported unemployed.

** The survey questions to define unemployed differ between HETUS (currently looking for work) and our estimates from the original survey data (actively seeking work in the last 4 weeks).

Table 3. Average minutes by activity, region, employment status and day of the week

(Western Europe: Austria, Belgium, France, Germany, Italy, Spain, UK; Eastern Europe: Bulgaria, Slovenia, Poland; Nordic: Finland, Sweden)

	Employed, Weekday					Unemployed, Weekday				
	US	Canada	Western Europe	Eastern Europe	Nordic	US	Canada	Western Europe	Eastern Europe	Nordic
Sleep	473	458	470	467	463	544	508	520	540	505
Personal care	47	44	48	47	42	44	44	52	47	42
Eating	63	56	87	80	78	51	74	102	105	86
Work	408	443	395	408	363	13	51	19	10	51
Job search	1	0	0	n.a.	n.a.	40	36	14	14	5
Education	11	7	7	10	10	25	8	25	17	52
Home production and care of others	112	111	120	145	136	226	173	224	273	210
<i>of which: childcare</i>	27	21	20	23	23	43	41	26	36	28
Shopping and services	23	25	22	19	25	37	62	43	33	31
Voluntary, religious and civic activities	8	7	6	3	6	18	8	9	3	6
Sport	14	18	17	11	22	16	38	33	25	37
Leisure and socializing	190	183	179	176	205	343	359	313	295	319
<i>of which: TV</i>	109	91	89	105	92	201	166	149	161	147
Travel	84	89	86	74	85	72	78	80	71	74
Other	6	0	3	5	6	11	0	4	5	21
	Employed, Weekend					Unemployed, Weekend				
	US	Canada	Western Europe	Eastern Europe	Nordic	US	Canada	Western Europe	Eastern Europe	Nordic
Sleep	547	519	539	526	539	566	532	548	555	552
Personal care	42	40	51	52	47	41	37	55	52	49
Eating	72	71	120	110	101	66	62	120	115	97
Work	112	128	99	142	75	5	7	7	3	12
Job search	0	0	0	n.a.	n.a.	9	2	3	2	1
Education	7	7	5	9	5	11	0	11	14	7
Home production and care of others	173	178	169	189	194	206	153	180	226	181
<i>of which: childcare</i>	26	29	22	28	23	39	15	22	28	25
Shopping and services	42	41	29	16	24	34	19	30	15	23
Voluntary, religious and civic activities	27	14	12	20	8	24	5	11	17	8
Sport	25	39	41	31	39	26	56	45	38	36
Leisure and socializing	302	319	289	271	316	376	479	348	330	379
<i>of which: TV</i>	162	127	121	149	127	209	183	157	175	173
Travel	84	85	83	71	85	65	88	77	68	78
Other	8	0	3	4	7	10	0	4	5	17
	Employed					Unemployed				
	US	Canada	Western Europe	Eastern Europe	Nordic	US	Canada	Western Europe	Eastern Europe	Nordic
Sleep	494	475	490	484	485	550	515	528	544	518
Personal care	46	43	49	48	44	43	42	53	48	44
Eating	66	60	96	89	84	55	71	107	108	89
Work	323	353	310	332	281	11	38	16	8	40
Job search	1	0	0	n.a.	n.a.	32	27	11	11	4
Education	10	7	6	6	9	21	6	21	16	39
Home production and care of others	129	130	134	158	152	220	167	211	260	202
<i>of which: childcare</i>	27	23	20	24	23	42	34	25	34	27
Shopping and services	28	30	24	18	25	36	50	40	28	29
Voluntary, religious and civic activities	13	9	8	8	6	20	7	10	7	7
Sport	17	24	23	16	27	19	43	37	29	37
Leisure and socializing	222	222	211	203	237	352	393	323	305	336
<i>of which: TV</i>	124	101	98	118	102	203	171	151	165	155
Travel	84	88	85	73	85	70	81	79	71	75
Other	7	0	3	5	6	11	0	4	5	20

Notes: Survey weights were used to compute country averages. Region averages are weighted by the size of the labor force of each country. Universe: Labor force, age 20-65.

Sources: HETUS, MTUS (Canada, Austria, Germany 1991-92, France), ATUS.

Table 4. Average of Specific Emotions Over the Day

Emotion	Employed	Unemployed	Difference
Happy	4.11	3.85	-0.27**
Tired	2.77	2.39	-0.38***
Stressed	1.63	1.91	0.27*
Sad	0.57	0.95	0.38***
Interested	3.97	4.07	0.10
Pain	0.70	0.93	0.23**

* Significant at .10 level; ** significant at .05 level, *** significant at .01 level.

Source: PATS. Sample age 20-65. Sample size is 1,961 employed individuals and 114 unemployed individuals.

Table 5. Average sadness reported during selected activities

Activity	Employed	Unemployed	Difference
Eating	0.43	0.83	0.41
Work	0.71	0.98	0.28
Job search	0.52	2.34	1.83**
Home production & care of others	0.46	0.89	0.43*
<i>of which: childcare</i>	0.28	0.30	0.02
Leisure and socializing	0.57	0.87	0.29
<i>of which: TV</i>	0.57	1.37	0.80***
Travel	0.56	1.21	0.65
All	0.57	0.95	0.38***

* Significant at .10 level; ** significant at .05 level, *** significant at .01 level.

Source: PATS. Sample age 20-65. Activities limited to those with at least 10 observations for the unemployed.

Table 6. Labor force categories and job search

Country	Survey	Average job search, in min			Participation in job search		
		Employed	Unemployed	Out of labor force	Employed	Unemployed	Out of labor force
Austria	1992	0.0	10.6	0.3	0.1%	12.9%	0.3%
Belgium	1998-2000	n.a.	6	1 *	n.a.	8%	0% *
Bulgaria	2001-02	n.a.	12	1 *	n.a.	9%	1% *
Canada	1992	0.3	32.4	0.6	0.3%	16.3%	1.0%
Canada	1998	0.2	26.5	0.7	0.3%	14.6%	0.6%
Finland	1999-2000	n.a.	3	0 *	n.a.	5%	1% *
France	1998-99	0.1	19.9	0.5	0.2%	18.6%	0.5%
Germany	1991-92	0.2	5.6	0.4	0.3%	7.4%	0.7%
Germany	2001-02	0.3	7	0.1	0.3%	7.6%	0.2%
Italy	2002-03	0.3	9.6	0.1	0.1%	8.0%	0.1%
Poland	2003-04	n.a.	11	0 *	n.a.	10%	0% *
Slovenia	2000-01	n.a.	3	0 *	n.a.	7%	1% *
Spain	2002-03	0.2	17.3	0.4	0.2%	10.1%	0.3%
Sweden	2000-01	n.a.	5	1 *	n.a.	11%	3% *
UK	2000-01	0.3	6.3	0.4	0.4%	9.8%	0.5%
USA	2003-06	0.6	31.8	0.7	0.6%	19.8%	0.6%

Note: Average search time and participation rates were computed with survey weights. Universe: Population, age 20-65.

* HETUS rounds to the nearest integer.

Table 7a. Descriptive regressions for 6 countries: linear probability model

Dependent variable: participation in job search						
	USA	Canada	France	Germany	Spain	Italy
Mean of dependent variable	0.198	0.156	0.186	0.075	0.101	0.080
Age/10	0.102 (0.066)	0.151 (0.123)	0.131 (0.083)	0.052 (0.059)	0.048 (0.044)	0.043 (0.073)
Age^2/100	-0.012 (0.008)	-0.018 (0.015)	-0.018 (0.010)*	-0.01 (0.007)	-0.01 (0.005)*	-0.006 (0.010)
Uncompleted secondary education or less	---	---	---	---	---	---
Completed secondary education	0.054 (0.035)	-0.065 (0.052)	0.06 (0.031)*	0.018 (0.016)	-0.016 (0.018)	-0.036 (0.020)*
Tertiary education	0.138 (0.034)***	0.045 (0.048)	0.201 (0.050)***	0.061 (0.023)***	0.007 (0.022)	-0.012 (0.046)
Female	-0.048 (0.040)	-0.144 (0.044)***	0.004 (0.043)	-0.045 (0.030)	-0.086 (0.022)***	-0.056 (0.027)**
Married	-0.021 (0.042)	-0.007 (0.059)	0.058 (0.046)	-0.048 (0.027)*	0.045 (0.029)	0.109 (0.061)*
Female*married	-0.058 (0.052)	0.077 (0.077)	-0.143 (0.057)**	0.013 (0.032)	-0.091 (0.031)***	-0.16 (0.059)***
Weekend	-0.174 (0.020)***	-0.218 (0.033)***	-0.248 (0.021)***	-0.079 (0.012)***	-0.102 (0.012)***	-0.076 (0.016)***
First quarter	---	---	---	---	---	---
Second quarter	0.013 (0.040)	-0.072 (0.060)	0.033 (0.044)	-0.021 (0.021)	-0.01 (0.020)	-0.062 (0.056)
Third quarter	-0.038 (0.034)	-0.03 (0.059)	0.06 (0.048)	-0.014 (0.025)	-0.034 (0.019)*	-0.085 (0.071)
Fourth quarter	-0.073 (0.036)**	-0.187 (0.051)***	0.013 (0.044)	-0.025 (0.022)	-0.022 (0.019)	-0.055 (0.070)
Constant	0.088 (0.134)	0.057 (0.234)	-0.032 (0.162)	0.117 (0.116)	0.175 (0.086)**	0.147 (0.162)
Year dummies	x	x	x	x		x
Observations	1,824	521	787	2,388	2,054	1,793
R-squared	0.09	0.14	0.13	0.07	0.08	0.08
Ftest	8.54	4.30	12.75	5.21	13.68	4.36
P-value	0.000	0.000	0.000	0.000	0.000	0.000

Robust standard errors in parentheses
 * significant at 10%; ** significant at 5%; *** significant at 1%

Note: Regressions are weighted using survey weights. Universe: Unemployed, age 20-65.

Table 7b. Descriptive linear regressions for 6 countries (participants only)

Dependent variable: time allocated to job search, in min	USA	Canada	France	Germany	Spain	Italy
Mean of dependent variable	160.4	192.1	107.1	85.2	170.5	120.4
Age	3.332 (4.972)	8.718 (12.565)	-4.65 (4.843)	-2.373 (3.480)	-3.157 (6.713)	-4.462 (10.140)
Age^2	-0.025 (0.061)	-0.138 (0.159)	0.057 (0.063)	0.036 (0.044)	0.05 (0.093)	0.075 (0.139)
Uncompleted secondary education or less	---	---	---	---	---	---
Completed secondary education	4.165 (37.102)	18.76 (54.616)	16.235 (15.063)	24.169 (14.331)*	-33.719 (30.586)	54.108 (31.597)*
Tertiary education	10.75 (33.780)	69.866 (50.586)	25.019 (17.140)	9.13 (15.865)	-60.255 (33.014)*	73.918 (40.859)*
Female	-24.636 (24.086)	-59.298 (54.632)	-46.525 (21.464)**	-7.474 (15.817)	-40.076 (24.436)	-86.877 (23.832)***
Married	-12.138 (26.797)	95.499 (58.312)	23.358 (22.772)	-3.386 (14.509)	24.875 (37.749)	2.602 (31.689)
Female*married	-23.333 (34.045)	-90.814 (77.956)	-9.315 (24.899)	-18.013 (22.357)	-94.615 (43.364)**	-5.68 (40.148)
Weekend	-37.636 (20.404)*	-60.235 (69.793)	53.972 (50.966)	-40.836 (10.918)***	50.699 (40.095)	22.515 (23.990)
First quarter	---	---	---	---	---	---
Second quarter	16.111 (25.412)	55.815 (70.354)	41.002 (13.432)***	-8.074 (13.219)	-50.022 (25.520)*	19.039 (30.231)
Third quarter	40.453 (23.359)*	14.738 (50.635)	25.287 (13.539)*	19.428 (20.237)	-47.017 (30.210)	
Fourth quarter	-15.175 (22.131)	45.001 (49.449)	95.232 (23.319)***	6.037 (15.278)	-31.85 (28.834)	68.789 (32.256)**
Constant	77.233 (83.962)	-13.831 (223.784)	146.678 (87.225)*	110.856 (65.466)*	284.27 (120.568)**	136.246 (177.917)
Year dummies	x	x	x	x		x
Observations	312	71	145	169	187	82
R-squared	0.07	0.27	0.27	0.11	0.14	0.23
Ftest	1.63	1.36	3.53	2.45	3.48	2.95
P-value	0.071	0.207	0.000	0.006	0.000	0.003

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Note: Regressions are weighted using survey weights. Universe: Unemployed, age 20-65.

Table 8. Cross-country regressions

Dependent variable: average job search, in min	Mean of variables	(1)	(2)	(3)	(4)	(5)	(6)
Average job search, in min	13.95						
Log(NRR - initial period)	-0.34 (0.099)	-15.602 (25.735)			0.064 (23.321)	0.001 (20.177)	-5.205 (22.248)
Benefit escalation (= GRR month 7-24 / GRR month 1-6)	0.60 (0.314)		-15.526 (6.445)**		-16.79 (7.291)**		18.204 (21.946)
90-10 wage ratio	3.48 (0.81)			7.671 (2.158)***		7.708 (2.386)***	11.236 (5.698)*
Average years of school	9.26 (1.712)						1.752 (2.386)
Constant		8.808 (9.027)	23.333 (4.363)***	-12.758 (7.699)	24.549 (10.390)**	-12.696 (9.567)	-54.214 (50.287)
Observations		15	16	16	15	15	15
R-squared		0.03	0.29	0.47	0.33	0.48	0.51

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Note: Regressions are weighted using the number of unemployed diary days as weights.

Table 9. Pooled micro-data regressions**Dependent variable: time allocated to job****search, in min**

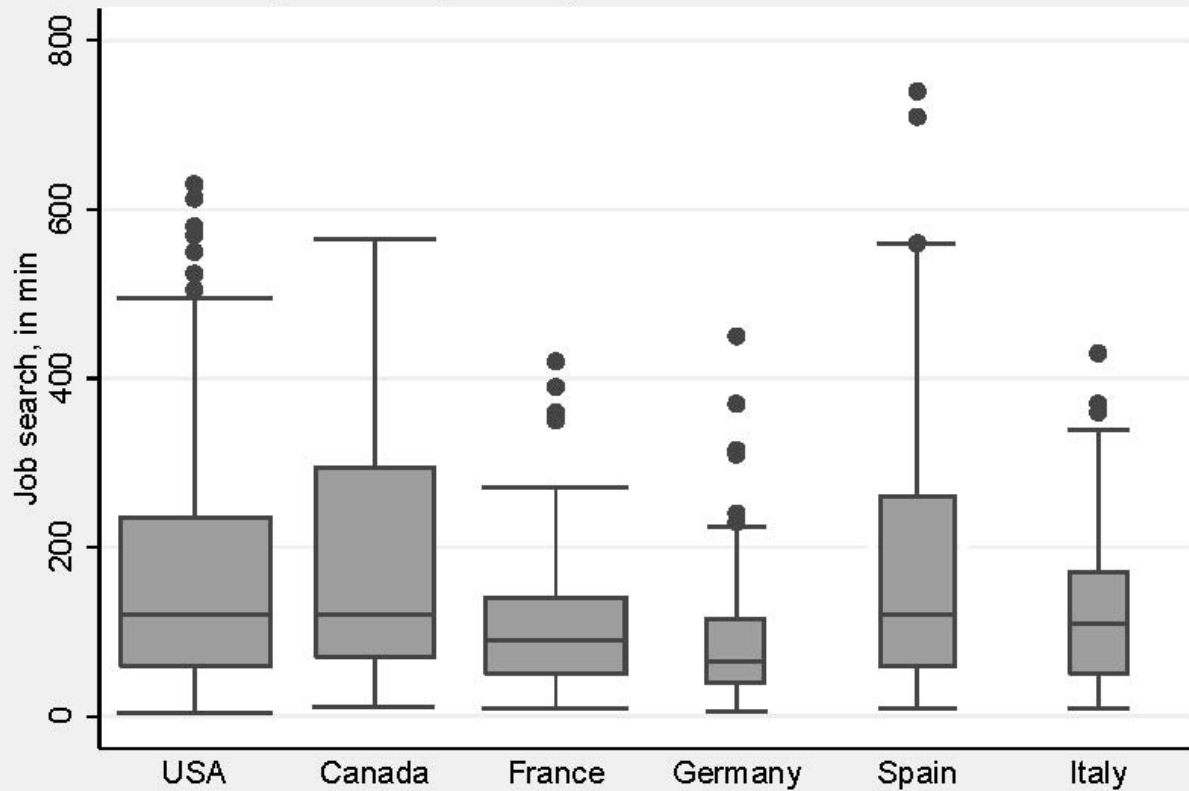
	(1)	(2)	(3)	(4)	(5)	(6)
Mean of dependent variable	16.8	16.8	16.8	16.8	16.8	16.8
Log(NRR - initial period)		-14.166 (35.262)			3.376 (21.237)	-22.433 (18.302)
Benefit escalation (= GRR month 7-24 / GRR month 1-6)			-19.271 (2.773)***		-19.543 (1.131)***	10.582 (8.574)
90-10 wage ratio				8.986 (1.387)***		12.635 (3.506)***
Age	1.516 (0.406)***	1.359 (0.319)***	1.578 (0.390)***	1.575 (0.401)***	1.577 (0.393)***	1.566 (0.403)***
Age^2	-0.019 (0.003)***	-0.018 (0.003)***	-0.022 (0.003)***	-0.022 (0.003)***	-0.022 (0.003)***	-0.021 (0.003)***
Uncompleted secondary education or less	---	---	---	---	---	---
Completed secondary education	0.086 (3.071)	2.504 (3.898)	0.221 (2.345)	-1.387 (2.883)	-0.004 (3.128)	-0.473 (2.980)
Tertiary education	7.238 (6.701)	13.723 (8.639)	8.053 (5.846)	5.953 (6.812)	7.844 (6.672)	6.743 (6.759)
Female	-12.494 (2.102)***	-12.678 (2.353)***	-11.702 (2.377)***	-11.956 (2.405)***	-11.691 (2.343)***	-12.177 (2.229)***
Married	4.023 (5.114)	5.554 (5.209)	4.248 (5.389)	3.899 (5.093)	4.191 (5.043)	4.19 (5.014)
Female*married	-12.186 (5.372)*	-12 (5.397)*	-12.095 (5.354)*	-12.046 (5.272)*	-12.069 (5.203)*	-12.189 (5.270)*
Weekend	-16.243 (4.397)***	-16.665 (4.395)***	-16.528 (4.349)***	-16.479 (4.362)***	-16.545 (4.336)***	-16.36 (4.404)***
USA	---					
Austria	-19.69 (3.393)***					
Canada 1992	-2.476 (1.150)*					
Canada 1998	-9.2 (0.935)***					
France	-9.703 (1.573)***					
Germany 1991-92	-24.439 (1.131)***					
Germany 2001-02	-24.08 (0.541)***					
Italy	-18.68 (2.712)***					
Spain	-11.7 (1.108)***					
UK	-26.966 (1.566)***					
Constant	16.528 (13.056)	-0.793 (20.460)	16.943 (10.499)	-25.878 (11.273)*	18.562 (18.878)	-54.604 (28.691)*
Dummies for each quarter	x	x	x	x	x	x
Observations	9,767	9,767	9,767	9,767	9,767	9,767
R-squared	0.06	0.05	0.06	0.06	0.06	0.06

Standard errors are clustered at country level (in parentheses)

* significant at 10%; ** significant at 5%; *** significant at 1%

Note: Regressions are weighted using survey weights. Universe: Unemployed, age 20-65.

Fig 1. Box plot of job search for 6 countries



Notes: Survey weights were used. The box plot excludes those unemployed who did not search for a job on the diary day. The width of the box is proportional to the proportion of the unemployed who searched on the diary day. The upper limit of the box represents the 75th percentile, the lower limit the 25th percentile and the median is drawn in the box. 2 surveys are used for Canada (1992, 1998) and Germany (1991/92, 2001/02).

Fig 2. The effect of age on job search

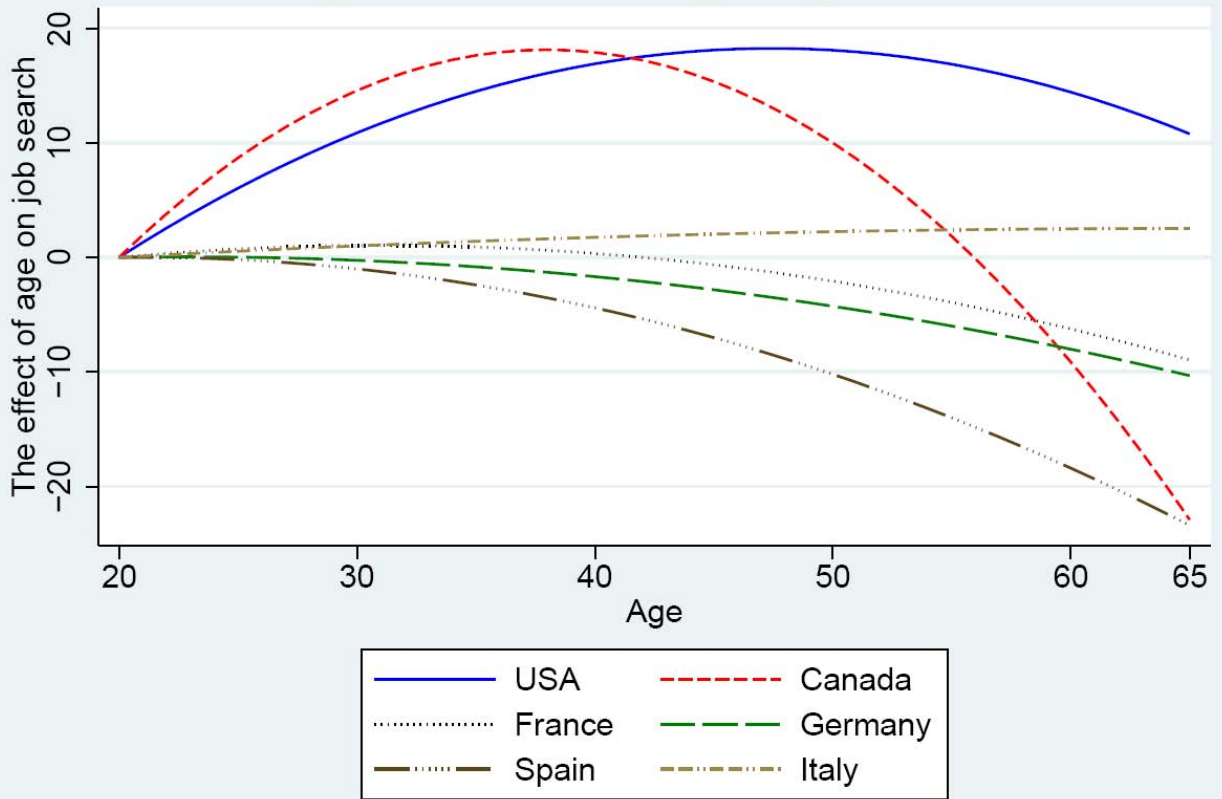
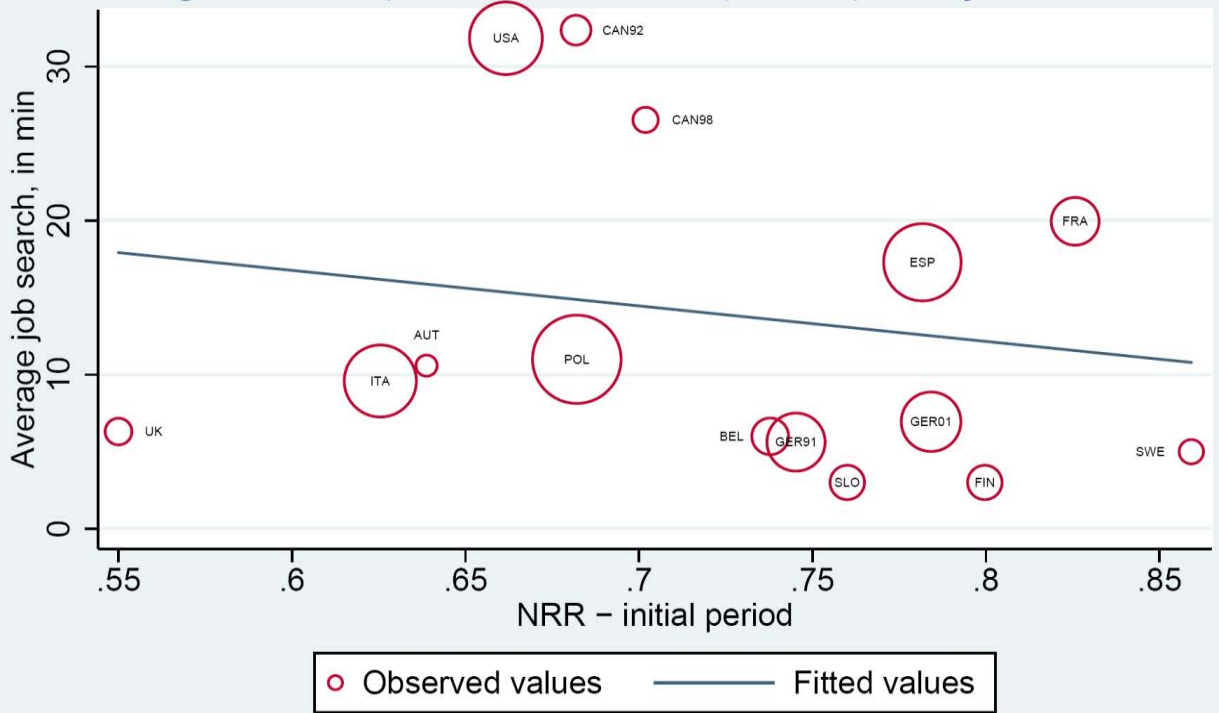
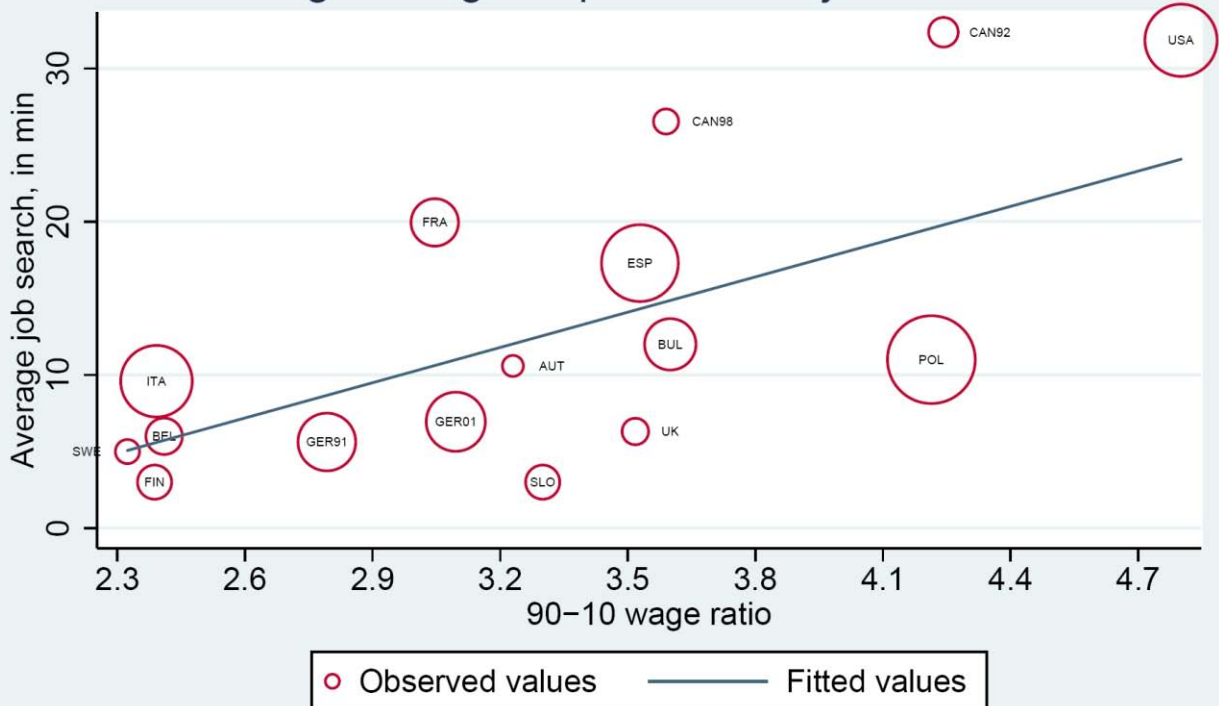


Fig 3. Net replacement rates (NRRs) and job search



Sources: Authors, OECD and UNECE.
 Linear weighted regression (s.e. in parentheses):
 $\text{Search} = 30.60(26.07) - 23.06(36.20) * \text{NRR}$. R-squared = .03.

Fig 4. Wage dispersion and job search



Sources: Authors, OECD Earnings Inequality Database and Rutkowski (2001).
 Linear weighted regression (s.e. in parentheses):
 $\text{Search} = -12.76(7.70) + 7.67(2.16) * (90-10 \text{ wage ratio})$. R-squared = .47.