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Employed and unemployed job seekers and the business cycle

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Non-Technical Summary

During periods of low labour demand, competition for jobs is fierce as an unemployed person has to compete not only with a larger pool of other unemployed people but also with the employed who are looking for a better job. Job search theory suggests that employed workers look for jobs that pay a higher wage than their current job, while the unemployed look for jobs that offer wages exceeding their reservation wage (the wage at which the unemployed are indifferent between accepting the job offer and rejecting the offer in favour of continued job search). Most models assume that employed and unemployed job seekers are the same, differing only in their labour force status and in the intensity and effectiveness of their search. Empirically however there is little evidence that employed and unemployed job seekers have similar characteristics. If this is not the case, then it prompts the question of whether they compete for the same jobs. Our focus in this paper is to compare the characteristics and behaviour of employed and unemployed job seekers, and hence the nature of the competition between them, and how these vary over the business cycle.

We combine data from the British Labour Force Survey from 1984 to 2009 and the British Household Panel Survey from 1993 to 2007 to identify: (1) differences in observable characteristics between employed people who search for another job and those who do not; (2) the extent to which employed and unemployed job seekers have similar individual characteristics, work histories, preferences over working hours and job search strategies; and (3) the extent to which this varies over the business cycle. If employed and unemployed job seekers are observationally different, or if they apply to different kinds of jobs, then in contrast to the assumptions made in the theoretical literature we cannot conclude that they are in direct competition for the same vacancies or that the experience and decisions of one group will influence the outcomes of the other.

Our results indicate that employed people who engage in on-the-job search tend to be in worse jobs than employed individuals who are not searching. We find some evidence that unemployed job seekers apply to – or accept – worse jobs than employed job seekers, but continue to search for better opportunities when employed. We also find significant differences in the characteristics of employed and unemployed job seekers, which persist when also taking into account differences in (un)employment histories and unobserved characteristics. Employed and unemployed job seekers differ in their preferences in terms of working hours and search methods used, although differences are larger among the more highly educated. Such differences persist over the business cycle.

Therefore in contrast to what is typically assumed in the literature, our evidence suggests that employed and unemployed job seekers are systematically different and are unlikely to directly compete for the same vacancies. Consequently the job search activities of employed people should not affect the outcomes of unemployed job seekers.

Employed and unemployed job seekers and the business cycle*

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Abstract:
The job search literature suggests that on-the-job search reduces the probability of unemployed people finding a job. However, there is little evidence that employed and unemployed job seekers are similar or apply for the same jobs. We compare employed and unemployed job seekers in terms of their individual characteristics, preferences over working hours, job-search strategies and employment histories, and identify how any differences vary over the business cycle. We find systematic differences which persist over the business cycle. Our results are consistent with a segmented labour market in which employed and unemployed job seekers are unlikely to directly compete with each other for jobs.

JEL Classification: J29, J60
Keywords: On-the-job search, unemployment, employment histories, panel data

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I. Introduction

As the UK economy struggles to emerge from recession, the unemployment rate is at its highest level for 16 years at 8.4% while about 70% of the UK working age population is in work (ONS 2012a). These headline rates, however, disguise churning in the labour market as workers move into and out of work and from job to job in an attempt to find a suitable employer and maximise their wages. For example, even during the current economic stagnation, data from the Labour Force Survey suggest that more than 400,000 working age people moved from employment to unemployment while 600,000 moved in the opposite direction between October and December 2011 (ONS 2012b). During periods of low labour demand, competition for jobs is fierce as an unemployed person has to compete not only with a larger pool of other unemployed people but also with employed job seekers who are looking for either a better worker-firm match or higher wages. Our focus in this paper is to compare the characteristics and behaviour of employed and unemployed job seekers, and hence the likely nature of the competition between them, and how these vary over the business cycle. This is important given that the composition of each group is likely to differ in periods of growth and recession (Burgess 1993).

According to job search theory, employed workers seek higher paying jobs while the unemployed seek jobs that offer wages exceeding their reservation wage (Burdett and Mortensen 1998). In models such as Burdett and Mortensen (1998) and van den Berg and Ridder (1998), both employed and unemployed job seekers apply for the same jobs. Job seekers are homogeneous, with employed and unemployed job seekers differing only in their labour market status, search intensity and effectiveness. As potential employers cannot observe the productivity of job applicants, they may interpret previous or current unemployment as a signal of low productivity. Hence, when receiving applications from employed and unemployed job seekers, employers prefer job applicants who are employed (Eriksson and Gottfries 2005). Consequently the presence of employed job seekers should reduce the chances of unemployed people finding work (Rogerson et al. 2005; Eckstein and van den Berg 2007). However empirical evidence on the similarities and differences between employed and unemployed job seekers is scarce, prompting the question of the extent to which they compete for the same jobs. Our contribution to the literature is to compare the characteristics and behaviour of employed and unemployed job seekers over the business cycle. If they are observationally different, then we cannot conclude that they directly compete with each other for the same job vacancies, or that the experience and decisions of

one group will influence the outcomes of the other. In this case we would conclude that the labour market is segmented, with the unemployed and employed operating in different labour markets. Such segmentation may be more binding in periods of economic growth when unemployment is low and labour demand is high than in periods of recession when most job seekers are likely to be unemployed.

We address three research questions. First, we investigate the similarity of employed and unemployed job seekers in terms of their observed characteristics. Previous literature, such as Pissarides and Wadsworth (1994), has modelled the sequential decision of whether to search for a job, followed by the decision of whether to search while employed or unemployed. Although they compare employed people who search and who do not search, they do not compare employed and unemployed job seekers and thus implicitly neglect the possibility that there might be substantial differences between them.

The extent to which employed job seekers affect the outcomes of the unemployed will depend on the extent to which they search for the same types of job. Ideally any such comparison should use information on the vacancies to which job seekers apply. However, this information is rarely available. The assumption that employed and unemployed job seekers search for a job in the same occupation than the current (for employed) or previous job (for unemployed) is rather strong since recent literature has shown substantial occupational mobility among both employed and unemployed job seekers (Kambourov and Manovskii 2008; Longhi and Brynin 2010; Longhi and Taylor 2012). There is also evidence that employed and unemployed job seekers use different search methods with different chances of success (Van Ours 1995; Gorter et al. 1993; Lindeboom et al. 1994; Weber and Mahringer 2008). We explore the extent to which employed and unemployed job seekers search for similar types of jobs and use similar search methods and how this varies over the business cycle.

Our second research question investigates the similarity of employed and unemployed job seekers in terms of their job and employment histories, also taking into account unobserved individual heterogeneity. By focusing on employers' perceptions of their job applicants, the recruiting literature suggests that there might be important differences between unemployed and employed job applicants in terms of experience (e.g. Atkinson et al. 1996; Rosholm and Svarer 2004). Furthermore, there is evidence of a strong causal relationship between past and current unemployment, which suggests that the unemployed will be more likely than the employed to have experienced unemployment in the past (Arulampalam et al. 2000; Böheim and Taylor 2002; Gregg 2001; Stewart 2007).

If employers prefer hiring applicants who are already in work (Eckstein and van den Berg 2007; Andrews et al. 2001), the presence of employed job seekers should reduce the chances of unemployed people finding a job (e.g. Rogerson et al. 2005). In this case we might expect the level of competition between employed and unemployed job seekers to also vary over the business cycle. Empirical research tends to assume that on-the-job search falls during recessions, and competition for jobs is more likely to come from the unemployed in economic downturns than during periods of economic growth (Burgess 1993; Pissarides 1994). However, if employed and unemployed job seekers are different, there is no reason to assume that unemployed people will be more negatively affected by the presence of employed job seekers in periods of growth than in downturns. Our third research question asks whether differences between employed and unemployed job seekers vary over the business cycle and whether there are differences over the business cycle in the impact that on-the-job search has on unemployed job seekers.

No single dataset allows these three questions to be addressed. The quarterly Labour Force Survey (LFS) directly identifies employed workers engaging in on-the-job search, but has a very limited panel dimension. The British Household Panel Survey (BHPS) contains a long panel element but does not ask questions about on-the-job search activities. We use the quarterly LFS to identify (1) observable factors associated with the probability that employees engage in on-the-job search; and (2) whether employed and unemployed job seekers have similar individual characteristics, preferences over working hours, and job-search strategies. We then combine the quarterly LFS with the BHPS to identify (3) the impact of differences in past employment histories on the employment status of job seekers accounting for unobserved individual-specific heterogeneity. Finally, we combine the quarterly and annual LFS to provide a sufficiently long time-series to analyse (4) differences between unemployed and employed job seekers over the business cycle.

We find that unemployed and employed job seekers differ significantly in their individual characteristics, past employment histories, preferences over working hours, and job-search strategies, and that such differences persist over the business cycle. These systematic differences suggest that the unemployed are unlikely to directly compete with employed job seekers. Our results are consistent with a segmented labour market and with a no-pay low-pay cycle, where workers become locked in a sequence of unemployment and low quality jobs.

II. Theoretical background

While many theoretical models of job search assume that employed and unemployed job seekers are substitutes and apply to the same vacancies (e.g. Burdett and Mortensen 1998; van den Berg and Ridder 1998), other theories indirectly suggest otherwise. For example Pissarides (1994) characterises the labour market by 'good' and 'bad' jobs, where employed job seekers only apply for and accept jobs that are better than their current one. The unemployed are more likely to be hired in 'bad' jobs and to engage in on-the-job search after accepting the 'bad' job. Consequently 'good' jobs should be filled by employed people who do not engage in on-the-job search, 'bad' jobs should be filled by employed people looking for a 'good' job, and the unemployed should mostly apply to 'bad' jobs. As they apply to different types of jobs, employed and unemployed job seekers do not directly compete with each other.

There are other reasons why employed and unemployed job seekers may not directly compete with each other. Unemployment is higher among people with low rather than high education, and the probability of on-the-job search also varies with education (Pissarides and Wadsworth 1994). If employed job seekers have high levels of education and the unemployed have low levels of education, they are unlikely to apply to the same vacancies. Furthermore, the literature on unemployment persistence suggests that current employment is strongly related to past unemployment (e.g. Arulampalam et al. 2000; Gregg 2001), even when allowing for observed and unobserved differences between individuals. Hence, the unemployed and employed are also likely to have very different job and employment histories. Furthermore, employed and unemployed job seekers may differ in other unobservable ways, for example in terms of their motivation, reservation wages and the types of jobs they find acceptable.

Less is known about the characteristics of the jobs sought, or the search methods used. Van Ours (1995) argues that employers introduce competition between employed and unemployed job seekers by using different recruitment channels for the same vacancy, while Gorter et al. (1993) and Lindeboom et al. (1994) find that the use of particular recruitment channels reduces the probability that the vacancy is filled by an unemployed job applicant. Weber and Mahringer (2008) find self-selection among job seekers in terms of search methods and that the effectiveness of different methods is related to the labour market status of the job seeker.

Even when applying for the same jobs, if employed job seekers are preferred to the unemployed because of, for example, more occupation-specific human capital (Rosholm and Svarer 2004), differences in the quality of jobs obtained may be partly due to differences in previous experience. Employers may interpret unemployment as a negative signal and consequently unemployed job seekers may often be recruited into low quality jobs with a high rate of destruction, resulting in unstable employment trajectories and repeated spells of unemployment (Böheim and Taylor 2002; Stewart 2007). However, there is more scope to discriminate against the unemployed in periods of growth when unemployment is low, while discrimination is harder in periods of recession when most job seekers are unemployed. Also high-quality workers may lose their job during recessions, raising the average quality of the pool of unemployed job seekers. If so we expect differences between employed and unemployed job seekers to fall, and competition between them to increase, in periods of recession. But if only employed job seekers with the highest probability of finding a job search during a recession, the average quality of the pool of employed job seekers will increase, and differences between employed and unemployed job seekers will persist over the business cycle. This would suggest that employed and unemployed job seekers are unlikely to directly compete with each other.

We contribute to the literature by comparing employed and unemployed job seekers in terms of their individual characteristics, employment histories, job search strategies, and preferences in terms of job characteristics. We also analyse whether differences between employed and unemployed job seekers vary over the business cycle to shed light on whether employed and unemployed job seekers directly compete for jobs.

III. Data and Descriptive Statistics

To accurately identify whether employed and unemployed job seekers are in direct competition requires data on the extent to which they apply for the same jobs. However such data are not available. Instead we compare the characteristics and behaviour of employed and unemployed job seekers and identify differences and similarities, and draw inferences from these. We use data from the LFS and the BHPS, each of which have strengths and weaknesses. The LFS collects detailed information on job search behaviour by the employed and unemployed, while the BHPS is a panel dataset that collects information on employment histories.

The LFS is a nationally representative household survey which collects data on a range of individual and household characteristics, focussing in particular on employment status, education, and job characteristics. It has been collected biannually between 1975 and 1983, annually from 1984 to 1991 and quarterly since 1992. We use data from 1984 to 2009 (as prior to 1984 unemployment was not defined according to the ILO standard). The advantage of the LFS is that it asks questions on job search to both employed and unemployed respondents. This allows us to compare the characteristics of employees who do and do not search for a new job, as well as of employed and unemployed job seekers. Although there are comparability issues between the annual and quarterly data, the questions on job search activities were similar over time. However, fewer details about the type of job sought were asked before 1992.

We define job seekers in the LFS as those who: (1) are looking for paid employment; (2) have looked for work in the last four weeks; and (3) mention at least one method of job search. We focus on men and women of working age (16–59/64) who are either employed or unemployed. The self-employed, people in government training programs, unpaid family workers and inactive people (about 6% of all job seekers) and the small proportion (less than 1%) of unemployed people who do not satisfy the three conditions are excluded from our analysis. The quarterly LFS has a rotating panel structure in which people are interviewed for up to five successive quarters. To avoid repeated observations per individual, in most models we use data from the first interview within the quarterly panel structure; the exception is in models analysing the determinants of on-the-job search for which we only use data from the fifth interview (when questions are asked on wages).

The BHPS is a nationally representative panel of households in the UK, in which each household member is interviewed annually. The survey started in 1991 and the most recent wave available to date refers to 2007. Our BHPS analysis also focuses on people of working age (16–59/64) who are employed or unemployed. The BHPS has two advantages over the LFS. Firstly it collects job and employment histories, allowing us to identify differences in previous employment experiences between employed and unemployed job seekers. It collects retrospective information on job and (un)employment spells that individuals experience between two waves of data (or in the previous 12 months). We use this to identify previous changes in occupation and unemployment and inactivity spells. Secondly the BHPS is a panel dataset, allowing us to account for unobserved differences across individuals in estimation. Although it includes a large quantity of information on individual, household and job

characteristics, like many datasets the BHPS collects data on job search activity only from people who are currently unemployed.

As we do not directly observe job search among the employed in the BHPS, we use information in the quarterly LFS to construct a model of on-the-job search which we then use to predict job search among employees in the BHPS. This step only uses job characteristics that are available in both datasets. Current wages are likely to be key determinants of engaging in on-the-job search and this is only available in the LFS from 1993 onwards. Therefore this part of our analysis is restricted to the period 1993–2007.

We first use LFS data to summarise job search status of LFS respondents (Table 1). The quarterly and annual series are broadly consistent and show that about 6% of employed workers look for a job, with no difference between men and women. Most job seekers are unemployed, although they are more equally distributed between unemployment and employment among women.

Table 1 Proportion of people searching for a job, LFS 1984–2009; 1992-2009

Quarterly Data (1992–2009)	Men		Women	
	(1)	(2)	(1)	(2)
Employed not searching	94.22		94.36	
Employed searching	5.78	43.09	5.64	49.98
Unemployed		56.91		50.02
Total	100.00	100.00	100.00	100.00
Annual Data (1984–2009)				
Employed not searching	94.09		93.67	
Employed searching	5.91	40.49	6.33	48.03
Unemployed		59.51		51.97
Total	100.00	100.00	100.00	100.00

Columns (1) are percentages of those who are or are not searching for a job; Columns (2) are percentages of those who are employed and unemployed, conditional on searching for a job

Figure 1 shows how the proportion of employees in the LFS who are looking for a job varies over the business cycle. The right panel shows the quarterly data, and the left shows the annual series, in which the 1992-2009 quarters are aggregated by calendar year. In a given year or quarter, between 5% and 7.5% of employees engage in on-the-job search, consistent with Pissarides and Wadsworth (1994). While there is some evidence that this proportion varies in a procyclical manner, the variation over the business cycle is perhaps smaller than suggested by previous theoretical models (e.g. Mumford and Smith 1999; Anderson and Burgess 2000).

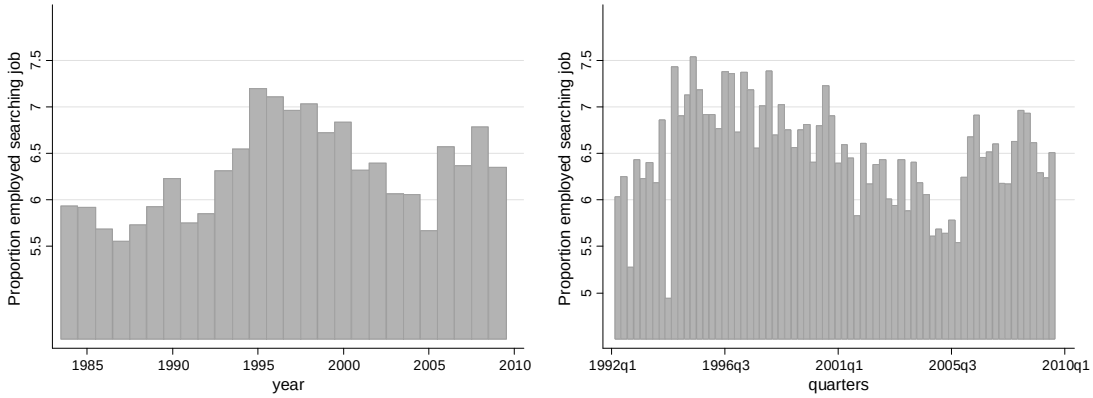

Figure1: Proportion of employed people looking for a job: LFS 1984–2009; 1992-2009

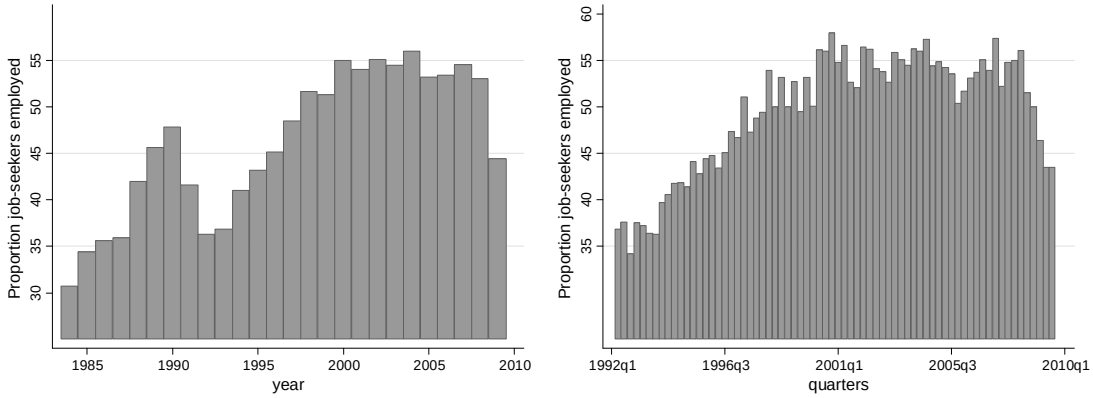

Figure 2: Proportion of job seekers who are employed: LFS 1984–2009; 1992-2009

Figure 2 shows the proportion of job seekers who are employed. This varies from 30% to more than 55% and more clearly follows variations in the business cycle: a larger proportion of job seekers are employed in periods of economic growth. As Figure 1 suggests that the proportion of employed people engaging in on-the-job search varies relatively little over time, changes in the proportion of job seekers who are employed are mostly due to changes in unemployment.

The top panel of Table 2 shows differences between employed and unemployed job seekers in their preferences over working hours, while the bottom panel shows differences in terms of job search methods. There are clear differences between types of job seekers in terms of preferences over working hours. For example 77% of employed job seekers prefer a full-time job (30+ hours per week), 18% prefer a part-time job (less than 30 hours per week) and less than 5% have no preference. A larger proportion of the unemployed than employed

prefer a part-time job (25%), while 57% prefer a full-time job and 18% are indifferent between the two.

Table 2: Preferences over working hours by employment status, LFS 1992–2009

Preference for:	Employed job seeker	Unemployed	All
Full-time (%)	77.38	56.73	66.26
Part-time (%)	18.10	24.85	21.73
No preference (%)	4.52	18.42	12.01
Observations	38,756	45,235	83,991
Job search method:			
Job centre, careers office, job club	14.21	33.53	24.61
Advertising, answering ads in newspapers	63.97	44.77	53.63
Direct approach to employers	8.38	10.27	9.4
Ask friends and relatives	8.45	8.79	8.64
Do anything else	4.99	2.65	3.73
Observations	38,759	45,240	83,999

Column percentages

Job seekers also differ in terms of the main job search method used. The majority of employed job seekers (64%) use responding to advertisements as their main method of job search, compared with 45% of unemployed job seekers. Unemployed job seekers are twice as likely as on-the-job searchers to use job centres, career offices and job clubs (34% compared with 14%). Between 8-10% of employed and unemployed seekers approach employers directly and use friends and relatives.These descriptive statistics indicate differences between employed and unemployed job seekers in terms of the type of job sought and search methods used, which we now investigate more rigorously.

IV. Estimation

Our research questions relate to differences between employed and unemployed job seekers, to examine the extent to which they are similar and so likely to compete for the same jobs and how this varies over the business cycle. Our strategy involves five steps. The first identifies differences between employees who do and do not engage in on-the-job search. This is important to identify whether any differences between employed and unemployed job seekers merely reflect differences between the employed and unemployed. The second examines differences between employed and unemployed job seekers. If they are systematically different then we cannot conclude that they directly compete with each other for the same job

vacancies or that the decisions of one group will influence the outcomes of the other. In the third step we identify whether, other things equal, employed and unemployed job seekers look for the same types of job (part- or full-time) and use the same main method of search. If employed and unemployed job seekers who are observationally similar search for different types of jobs and/or use different job search methods, then this casts doubts on the extent to which they compete for the same jobs. These models are estimated using the quarterly series of the LFS from 1992 to 2009.

We then identify whether any differences in observable characteristics between unemployed and employed job seekers persist after controlling for employment histories and unobserved individual-specific characteristics, which involves combining the BHPS and LFS. Unobserved characteristics are likely to be important if, for example, more motivated or inherently able job seekers remain employed while engaging in job search, while previous research indicates that the employed and unemployed have different employment histories. If these are correlated with other observables, or are perceived by potential employers as signals of worker productivity, then this will bias estimated coefficients. Therefore having identified employed job seekers in the BHPS from models estimated using LFS data, the fourth step is to estimate models of the employment status of job seekers which incorporate both employment histories and unobserved individual-specific characteristics.

In the fifth step we examine whether or not differences between employed and unemployed job seekers, and hence the nature of the potential competition between them, vary over the business cycle by combining the annual and quarterly LFS. There may be smaller differences in unobservable characteristics of employed and unemployed job seekers during economic downturns when higher quality workers enter unemployment, raising the average quality of the pool of unemployed job seekers. If so we expect differences between employed and unemployed job seekers to fall, and competition between them to increase, in periods of recession. However if only employed job seekers with the highest probability of finding a job search during a recession, the average quality of the pool of employed job seekers will increase, and differences between employed and unemployed job seekers will persist over the business cycle. We describe our approach to estimating each of these steps below.

Who searches on the job?

We first examine factors associated with employees engaging in on-the-job search. Pissarides (1994) suggests that workers who engage in on-the-job search are in worse jobs, with lower

wages and in less permanent positions than those who do not search. If so then differences between employed and unemployed job seekers do not merely reflect differences between employed and unemployed people in general. We estimate a probit model *conditional on being employed*, where the dependent variable y_i equals one if the employed worker (i) is searching for a job and zero if not searching. The model is specified as:

$$y_i^* = X_i'\beta_1 + W_i'\beta_2 + \beta_3 NE_i + \beta_4 PE_i + \varepsilon_i \quad (1)$$

where y_i^* denotes the unobservable propensity for the employed worker to search for a new job. Explanatory variables include both individual (X_i) and job-related (W_i) characteristics. Individual characteristics include age, household structure and education. Job characteristics include employment type (temporary or permanent), sector (private or public), occupation, job tenure, wages and hours worked. The models also include two variables aggregated at the regional level: the quarterly change in the number of employees in the region (NE_i), and the proportion of job seekers that are employed in the quarter and region (PE_i).[1] These capture regional labour market conditions which we expect to influence the decision to engage in on-the-job search. Region, year and quarter identifiers are also included.

Differences between employed and unemployed job seekers

We identify factors associated with being an employed rather than an unemployed job seeker using a probit model *conditional on job search*. Here the dependent variable z_i equals one if the job seeker is employed, and zero if unemployed. The model is specified as:

$$z_i^* = X_i'\alpha_1 + \alpha_2 NE_i + \xi_i \quad (2)$$

where z_i^* denotes the unobservable propensity for a job seeker to be employed. Explanatory variables include individual characteristics (including the length of job search), and the quarterly change in the number of employees in the region.[2]

Preferences and search behaviour of employed and unemployed job seekers

If employed and unemployed job seekers have different job preferences they are unlikely to directly compete for the same jobs. We investigate whether they have similar preferences in

[1] Regional variations are important: Robson (2001) suggests that regional differences in the outflow from unemployment are mostly due to differences in the relative competitiveness of unemployed job seekers rather than in regional variations in hirings. Because of lack of data availability on smaller geographical areas, and similar to Pissarides and Wadsworth (1994), we use the nine Government Office Regions for England, plus Wales, Scotland and Northern Ireland.

[2] Since we are not interested in the outcome of the search, search intensity is not relevant in this context.

terms of working hours using a multinomial probit model in which the dependent variable distinguishes between three states (j): 1 = preference for a full-time job, 2 = preference for a part-time job, or 3 = no preference, via the latent variable $pref_i^*$:

$$pref_i^* = X_i'\gamma_{1j} + \gamma_{2j}E_i + \eta_{ij} \quad (3)$$

where η_{ij} are i.i.d. and follow a multivariate normal distribution. The probability of observing individual i having preference j is the probability that $pref_{ij} > pref_{iq}$ for each $j \neq q$. Differences between job seekers are captured using a binary variable identifying whether a job seeker is employed (E_i) with unemployed being the reference group. The explanatory variables are the same as in equation (2).

A similar model is used to identify whether employed and unemployed job seekers use the same search methods. As previously discussed, if employed and unemployed job seekers use different methods which have different levels of effectiveness, those using the least effective method will be disadvantaged in their job search. If different types of jobs are advertised using different methods, the choice of search method might be related to the type of job sought, and if employed and unemployed job seekers use different methods of search it suggests that they are not applying for the same jobs.

Our dependent variable in this case distinguishes between five search methods: job centre, careers office or private employment agency; direct approach to employers; ask friends and relatives; do anything else; with advertising and answering adverts in newspapers etc. as the reference group.[3]

The impact of employment histories on job search

We next incorporate employment histories and individual-specific unobserved effects into our analysis. Both are likely to be important given that employed and unemployed job seekers are likely to differ in unobservables (such as motivation, ability etc), and have experienced different work trajectories. Models that do not take these into account are likely to yield biased coefficients and we do so using BHPS data.

Employed job seekers are not directly identifiable in the BHPS. Therefore we predict who among employed BHPS respondents are most likely to engage in on-the-job search using models estimated on LFS data. Given the random, nationally representative nature of both data sets, it seems reasonable to assume that the relationship between on-the-job search

[3] Using the internet to search for a job is not one of the possible options. It is likely that people using the internet classify this as 'advertising and answering adverts in newspapers' or 'do anything else', which is the residual category in the LFS questionnaire.

and job characteristics estimated using the LFS sample can also be applied to respondents in the BHPS sample. We estimate a probit model for engaging in on-the-job search similar to equation (1) using the LFS sample. The dependent variable distinguishes between employed people not searching and employed people searching for a new job. Explanatory variables that are available and comparable in both datasets include whether the job is temporary, part-time, in the public sector, occupation dummies, job tenure, weekly earnings, and hours of work.[4] The model also includes the proportion of job seekers who are employed by quarter and region to capture regional labour market conditions.

We use estimates from this model to predict the probability that each employed respondent in the BHPS engages in on-the-job search. As shown in Figure 1, on average about 6% of employees in the LFS engage in on-the-job search and this varies between 5 and 7.5% over the business cycle. Therefore for each year we identify employed job seekers in the BHPS as those 6% of respondents with the highest probability of engaging in on-the-job search. We compare the characteristics of those identified as engaging in employed search in the BHPS with those of employed job seekers in the LFS in the results section.

Having identified the group of employed job seekers in the BHPS, we next examine the impact of past employment histories on the probability of being an employed rather than an unemployed job seeker. We account for individual unobserved heterogeneity by estimating a random effects logit model, and relax the typical (and restrictive) assumption of independence between observed characteristics and unobservables by including within-individual means of the time-varying covariates (Mundlak 1978).[5] We model the probability that the job seeker *i* is employed (E=1) rather than unemployed (E=0) at time *t* via the latent variable E_{it}^{*}:

$$E_{it}^{*} = x'_{it}\,\beta + \bar{x}'_{i}\,\gamma + u_i + v_{it} \tag{4}$$

where E_{it}^{*} denotes the unobservable propensity for the job seeker to be employed at time *t*, and *x* is a vector of observable characteristics that influence E_{it}^{*}. A job seeker is observed in employment when his/her propensity to be employed is greater than zero. $\bar{x}_i$ refers to the vector of individual means of time-varying covariates over time, u_i denotes the individual-

[4] Sensitivity analyses show that excluding individual characteristics from the model does not reduce its predictive power. While job tenure is likely to be endogenous, we use this purely to identify BHPS respondents most likely to engage in on-the-job search rather than to identify causal effects.

[5] We prefer random effects to fixed effects estimation for two reasons. Firstly a fixed effects model would be identified by individuals who participated in both employed and unemployed job search over the period, which would substantially reduce the effective sample size. Secondly, one of our key explanatory variables is education level which is time invariant and its effect would not be directly estimated in fixed effects estimation.

specific unobservable effects and *v* is random error, which is i.i.d. and follows a logistic distribution. Explanatory variables in *x* include age, household structure, education, region and year identifiers, plus variables summarising the previous (un)employment and job history of the job seeker. These capture whether or not the job seeker had an unemployment or inactivity spell in the previous 12 months (distinguishing between spells lasting less and more than 3 months), variables capturing earlier unemployment or inactivity spells that lasted more than three months and recent and earlier occupational change.

We identify BHPS respondents engaging in on-the-job search with error. At the extreme none of the employees we identify as job seekers will engage in on-the-job search, and our models would compare employment histories of employed and unemployed people. Therefore differences between employed and unemployed job seekers may be overestimated if employed job seekers are more similar than the employed who do not search to unemployed people. We check the robustness of our results to different definitions of employed job seekers, one of which identifies job seekers within the BHPS as people who move from job to job within the following 12 months without an intervening employment interruption (and who are therefore likely to have engaged in on-the-job search).

Differences over the business cycle

Finally, we estimate whether differences between employed and unemployed job seekers vary over the business cycle. We combine the annual and the quarterly series of the LFS by grouping the quarterly data into years and keeping one observation per individual. We then re-estimate models of job search behaviour (equation 2) and method of job search (equation 3) separately for periods when unemployment rates were increasing and decreasing. This allows us to identify whether the unemployed are more similar to employed job seekers in economic downtowns than in periods of economic growth. Periods of increasing unemployment include 1984, 1991, 1992, 1993, and between 2005 and 2009; all other years are classified as periods of falling unemployment.[6] Model specifications differ slightly from those described previously because of inconsistencies over time in data availability.

[6] We have also estimated the models separately for periods with high or low – rather than increasing or decreasing – unemployment. If we use as a threshold an unemployment rate of 7%, then we classify the years between 1998 and 2008 as periods of low unemployment, and the remaining years as periods of high unemployment. The results are not sensitive to such changes in the definition of business cycles, or to focussing on data from 1994 onwards (and so capturing the recent recession only).

V. Results

Determinants of on-the-job search

Table 3 presents marginal effects from models of the determinants of participating in on-the-job search conditional on employment (equation 1), estimated separately for men and women using LFS data from 1993 to 2009. Consistent with the literature, the probability of engaging in on-the-job search falls with wages and job tenure. Earning £10 more per hour is associated with a two percentage point lower probability of engaging in on-the-job search. Ten more years of job tenure reduces the probability by three percentage points for men and two percentage points for women. On-the-job search is also more likely among older workers. Married women are two percentage points less likely than single women to search on-the-job, but marriage only reduces the probability by 0.5 percentage points for men. Dependent children reduce on-the-job search but only for women. For both men and women, the probability of searching on-the-job increases with education, such that having a university degree is associated with a 5 percentage point higher probability of engaging in on-the-job search relative to having no qualifications.

Having a temporary job increases the probability of searching on-the-job by between four and five percentage points relative to a permanent job as does working in a part-time rather than full-time job among men (see also Pissarides and Wadsworth 1994). This suggests that the part-time job is unsatisfactory in terms of labour supply preferences, and is consistent with non-standard forms of employment such as part-time and temporary jobs being 'bad' jobs (McGovern et al. 2004). Workers may accept part-time jobs to escape unemployment, even though they preferred a full-time job.[7]

Our estimates suggest that the probability of on-the-job search is independent of total employment, although men are more likely to engage in on-the-job search when a larger proportion of job seekers are employed.

These results suggest that, consistent with theory, workers engaging in on-the-job search are in different (possibly worse) jobs than those not searching. For example, they have

[7] Descriptive statistics from the LFS are consistent with this: 18% of unemployed people who were looking for a full-time job accepted a part-time job, while 12% of those looking for a part-time job accepted a full-time job. Less than 10% of job-to-job movers were looking for full-time work but accepted a part-time job, while 19% of those looking for a part-time job accepted a full-time job.

lower wages and are more likely to be in temporary or part-time work.[8] We next investigate the determinants of being an employed rather than unemployed job seeker.

Table 3: Determinants of on-the-job search, LFS 1993–2009

	Men	Women
Age / 10	0.063*	0.034*
	(0.005)	(0.006)
Age square / 100	0.009*	0.005*
	(0.001)	(0.001)
Married/cohabiting	-0.005*	-0.023*
	(0.002)	(0.002)
Whether dependent children	-0.002	-0.004+
	(0.002)	(0.002)
University degree or higher	0.050*	0.049*
	(0.004)	(0.004)
Other higher	0.026*	0.031*
	(0.004)	(0.004)
GCSE, A levels	0.024*	0.022*
	(0.004)	(0.004)
Other qualifications	0.016*	0.017*
	(0.004)	(0.004)
Job temporary	0.049*	0.046*
	(0.003)	(0.003)
Part-time	0.031*	0.003
	(0.004)	(0.003)
Gross hourly wage £/10	-0.021*	-0.020*
	(0.002)	(0.002)
Job tenure years / 10	-0.033*	-0.023*
	(0.003)	(0.004)
Job tenure square years / 100	0.001	0.001
	(0.001)	(0.002)
Public sector	-0.003	-0.003
	(0.002)	(0.002)
Usual hours / 10	0.002+	0.002
	(0.001)	(0.001)
Quarter-to-quarter change in the number of employees in the region	-0.019	-0.105
	(0.068)	(0.090)
Proportion job seekers who are employed (%)	0.001*	0.000
	(0.000)	(0.000)
Log likelihood	-25856	-20764
Observations	122,707	97,336

Marginal effects from a probit model where the dependent variable is 1 if an employee searches for a job and 0 if she does not; Standard errors, clustered by years/quarters x regions, in parentheses. All models also include occupation, region, year, and quarter dummies.
* statistically significant at 1%; + statistically significant at 5%.

[8] Results in Table 3 are robust to changes in model specification. For example excluding job tenure (which is potentially endogenous) has only a small impact on the estimated coefficients. Using a one quarter lag of the proportion of job seekers who are employed, or excluding the variable altogether, has no impact on the estimates.

The determinants of being an employed rather than unemployed job seeker

Table 4 presents marginal effects from models of being an employed rather than an unemployed job seeker (equation 2). These show that the probability of being an employed job seeker increases with age for both men and women, although the relationship is non-linear. The probability of being an employed rather than an unemployed job seeker is higher if married (by 17 percentage points for men and 6 percentage points for women), and increases with education. For example, having a degree increases the probability of being an employed job seeker by 36-38 percentage points relative to having no qualifications. This is consistent with studies of recruitment behaviour, which find that one of the reasons why the unemployed do not get a particular job is that they do not meet the job requirements in terms of qualification and experience levels (e.g. Gorter et al. 1993; Behrenz 2001). Dependent children reduce the probability of being an employed job seeker by 13 percentage points for women and 3 percentage points for men.

Table 4: Determinants of being an employed job seeker, LFS 1992–2009

	Men	Women
Age	0.036*	0.034*
	(0.001)	(0.001)
Age square	-0.001*	0.000*
	(0.000)	(0.000)
Married/cohabiting	0.173*	0.064*
	(0.006)	(0.006)
Whether dependent children	-0.035*	-0.134*
	(0.005)	(0.005)
University degree or higher	0.377*	0.358*
	(0.007)	(0.008)
Other higher	0.263*	0.259*
	(0.007)	(0.009)
GCSE, A levels	0.213*	0.203*
	(0.007)	(0.007)
Other qualifications	0.153*	0.130*
	(0.008)	(0.008)
Searching for 3-12 months	-0.056*	-0.046*
	(0.005)	(0.006)
Searching for more than 12 months	-0.134*	-0.110*
	(0.005)	(0.007)
Quarter-to-quarter change in the number of employees in region	0.769*	0.796*
	(0.242)	(0.249)
Log likelihood	-27941	-24745
Observations	47,786	39,757

Marginal effects of a probit model where the dependent variable is 1 if job seeker is employed and 0 if unemployed; Standard errors, clustered by years/quarters x regions, in parentheses. Models also include region, year and quarter dummies.

* statistically significant at 1%; + statistically significant at 5%.

We also find that the longer the length of the search spell, the less likely the respondent is to be an employed job seeker. This suggests that employed job seekers tend to search for short periods while the unemployed are more likely to search for longer and hence competition between employed and unemployed job seekers falls with the length of the search.[9] Local labour market characteristics are also important. In particular, the probability of engaging in employed rather than unemployed search increases with the increase in the number of employees in the region. This suggests that on-the-job search is pro-cyclical relative to unemployment, consistent with Figure 2. A larger proportion of job seekers are employed in periods of economic growth.

Hence we find systematic, and large, differences in the characteristics of employed and unemployed job seekers in terms of age, family status and education. This is first evidence suggesting that employed and unemployed job seekers are different and may not compete for the same jobs. We investigate this further by examining the extent to which employed and unemployed job seekers have the same working hour preferences and use the same job search methods.

Preferences in working hours and differences in job search methods

Table 5 presents marginal effects associated with being an employed rather than unemployed job seeker from models of preferences over working hours (equation 3). Since education is a major determinant of the employment status of job seekers, we estimate models of work hour preferences and of search methods used separately by education. For brevity, we only present the marginal effects on the variable of interest, which identifies whether the job seeker was employed rather than unemployed. Full sets of estimates are available from the authors on request.

Estimates indicate that employed job seekers are significantly more likely than the unemployed to prefer full-time jobs. For example, among men employed job seekers are between 10 and 13 percentage points more likely than the unemployed to prefer a full-time job, while among women they are between 18 and 25 percentage points more likely. Among men educated to below GCSE level, employed job seekers have a higher probability than the otherwise similar unemployed of also preferring a part-time job (by 1-2 percentage points).

[9] This finding is confirmed by estimates from a multinomial model in which the dependent variable distinguishes between employed job seekers, the short term unemployed and long-term unemployed. Employed job seekers are more similar to the short-term unemployed than to longer-term unemployed, but differences similar to those described here still emerge.

However among more highly qualified men, employed job seekers are up to 3 percentage points less likely than the unemployed to prefer a part-time job. This suggests that the low educated unemployed have no preference between full- and part-time jobs and are less restrictive than employed job seekers in terms of jobs that they find acceptable.[10] This is further, suggestive, evidence that employed and unemployed job seekers may not directly compete for the same jobs.

Table 5: The impact of being an employed rather than unemployed job seeker on preferences over working hours, LFS 1992–2009

		Men	Women
University degree or higher	N =	9,929	9,136
Looking for full-time job		0.098*	0.193*
		(0.006)	(0.009)
Looking for part-time job		-0.015*	-0.093*
		(0.004)	(0.009)
Other higher	N =	10,435	6,544
Looking for full-time job		0.132*	0.248*
		(0.008)	(0.011)
Looking for part-time job		-0.031*	-0.147*
		(0.006)	(0.011)
GCSE, A levels	N =	12,694	13,830
Looking for full-time job		0.129*	0.224*
		(0.008)	(0.007)
Looking for part-time job		-0.006	-0.108*
		(0.005)	(0.008)
Other qualifications	N =	6,709	5,231
Looking for full-time job		0.118*	0.234*
		(0.010)	(0.012)
Looking for part-time job		0.012+	-0.091*
		(0.006)	(0.012)
No qualifications	N =	10,319	6,961
Looking for full-time job		0.132*	0.187*
		(0.012)	(0.013)
Looking for part-time job		0.018*	-0.071*
		(0.006)	(0.013)

Marginal effects associated with being an employed rather than unemployed job seeker, estimated from multinomial probit models where the dependent variable is 1 if job seeker prefers a full-time job, 2 if prefers a part-time job, and 3 if has no preference (reference category). Standard errors, clustered by years/quarters x regions in parentheses. All models also include age, dummies for marital status, presence of dependent children in the household, for length of search, region, year and quarter.
* statistically significant at 1%; + statistically significant at 5%.

[10] We have investigated if these differences vary with length of search. Adding interaction terms between search duration and the employment status of the job seeker shows no clear pattern. (These results are available from the authors on request.) These are cross-sectional data and so we are unable to disentangle whether differences between people who search for different lengths of time are due to adaptation to circumstances or are the results of self-selection.

Descriptive statistics on labour market transitions from the quarterly LFS provide further support for this conclusion. The unemployed are more likely than job-to-job movers to enter a temporary or a part-time job (34% enter a temporary job and 41% enter a part-time job compared with 23% and 26% of job-to-job movers). They are also more likely to engage in on-the-job search in the new job (15% compared with 8%). This is in line with Booth et al. (2002) who find that, though undesirable, temporary jobs are stepping stones to better jobs.

Table 6 presents marginal effects associated with being an employed rather than an unemployed job seeker with main search method used as the dependent variable, again estimated separately by education level. These indicate that employed job seekers are less likely than the otherwise similar unemployed to use job centres, career offices or job clubs across all education levels for both men and women. However these differences are smaller for more highly educated than for less educated job seekers. Among the more highly educated, employed job seekers are also less likely than the unemployed to directly approach employers. Employed job seekers are more likely to do anything else and, among those with low qualifications, to ask friends and relatives. This suggests that the unemployed rely more than employed job seekers on employment agencies and more formal job search channels, rather than engaging in proactive (or informal) job search behaviour. If different types of job vacancies are filled via different channels, as indicated by the literature (Gorter et al. 1993; Lindeboom et eal. 1994), then this again suggests that employed and unemployed job seekers may not directly compete for the same jobs. However our estimates also suggest that differences in search methods used by employed and unemployed job seekers are smaller for women than for men, which may indicate that competition between employed and unemployed job seekers is higher for women than men.

Table 6: The impact of being an employed rather than unemployed job seeker on main job search method used, LFS 1992–2009

		Men	Women
University degree or higher	N =	9,929	9,139
Job centre, careers office, job club		-0.107*	-0.082*
		(0.008)	(0.007)
Direct approach to employers		-0.017*	-0.011
		(0.006)	(0.007)
Ask friends and relatives		-0.002	0.003
		(0.006)	(0.006)
Do anything else		0.034*	0.027*
		(0.007)	(0.007)
Other higher	N =	10,438	6,545
Job centre, careers office, job club		-0.190*	-0.124*
		(0.008)	(0.009)
Direct approach to employers		-0.027*	-0.034*
		(0.006)	(0.007)
Ask friends and relatives		0.005	-0.008
		(0.006)	(0.006)
Do anything else		0.025*	0.027*
		(0.004)	(0.006)
GCSE, A levels	N =	12,696	13,833
Job centre, careers office, job club		-0.238*	-0.147*
		(0.008)	(0.007)
Direct approach to employers		0.003	-0.010
		(0.005)	(0.005)
Ask friends and relatives		0.024*	0.014*
		(0.005)	(0.004)
Do anything else		0.036*	0.026*
		(0.004)	(0.004)
Other qualifications	N =	6,711	5,235
Job centre, careers office, job club		-0.273*	-0.159*
		(0.012)	(0.012)
Direct approach to employers		0.000	-0.012
		(0.008)	(0.007)
Ask friends and relatives		0.022+	0.022*
		(0.009)	(0.008)
Do anything else		0.027*	0.025*
		(0.005)	(0.006)
No qualifications	N =	10,320	6,962
Job centre, careers office, job club		-0.298*	-0.160*
		(0.012)	(0.012)
Direct approach to employers		0.002	-0.001
		(0.007)	(0.007)
Ask friends and relatives		0.046*	0.027*
		(0.008)	(0.008)
Do anything else		0.018*	0.017*
		(0.004)	(0.005)

Marginal effects associated with being an employed rather than unemployed job seeker, estimated using multinomial probit models where the dependent variable is 1 if main method of job search is using a job centre etc, 2 if uses direct approach to employers, 3 if asks friends/relatives, 4 if does anything else, and 5 if responds to adverts in newspapers (reference category). Standard errors, clustered by years/quarters x regions, in parentheses. All models also include age, dummies marital status, presence of dependent children in the household, dummies for the length of search, region, year and quarter.

* statistically significant at 1%; + statistically significant at 5%.

Introducing employment histories and unobserved individual-specific effects

Thus far, all models have ignored potential unobserved differences between employed and unemployed job seekers, and any differences in previous employment histories. We now extend the analysis to introduce previous employment experiences and unobserved individual-specific effects. The first stage in this process is to identify employed job seekers in the BHPS by estimating models of on-the-job search using LFS data and applying the estimated coefficients to BHPS respondents. The impact of job characteristics on the probability of engaging in on the-job search estimated using the LFS are shown in Table A1 in the Appendix, and are largely consistent with those in Table 3.[11]

We use these estimated coefficients to predict who among employed BHPS respondents are most likely to engage in on-the-job search. The individual probability of engaging in on-the-job search varies over time, not only because of potential changes in the characteristics of the job but also because of the macroeconomic climate, captured in the models by year and quarter identifiers and the proportion of job seekers who are employed by quarter and region.[12]

The predicted probabilities of BHPS respondents engaging in on-the-job search that result from these estimates range from almost zero to a maximum of 27%, with a median of 4.5% (see Figure A1 in the Appendix). Such low predicted probabilities are not surprising, given that the LFS data indicate that on average only 6% of employed people engage in on-the-job search. For each year of BHPS data we rank employees according to their predicted probability of being an employed job seeker, and categorise as employed job seekers those 6% with the highest probability. Hence the threshold probability used to identify employed job seekers varies by year, and ranges from about 9% to 11.5%. Table A2 in the Appendix shows how the threshold probability varies over time, and the corresponding BHPS sample sizes.

The average characteristics of men and women identified as employed job seekers and non-seekers in the BHPS are similar to those in each status in the LFS (see Table A3 in the

[11] The only notable difference between Tables 3 and A1 is that the impact of part-time shifts from positive to zero for men and from zero to negative for women. The estimates in Table 3 use data from 1992 to 2009, while for comparability with the BHPS sample those in Table A1 use data from 1993 to 2007 and do not include individual characteristics among the explanatory variables.

[12] Almost 95% of those who do not search are correctly classified while 5% of them are incorrectly classified as searching. The model correctly classifies 15% of those who search on-the-job. While this is relatively low, we argue that the model is successful in distinguishing between employees who do and do not search, as evidenced by descriptive statistics presented in Table A3 and estimates presented in Table A4. These are discussed later in the paper.

Appendix). The table also shows differences between employed people who search and those who do not search. For example employed job seekers are on average younger than non-seekers and are less likely to be married. They are also more highly educated. Furthermore, the BHPS data suggest that those identified as employed job seekers are more likely than those identified as not searching to have experienced unemployment or inactivity spells in the previous 12 months and these spells have also been longer.[13] Those identified as employed job seekers are also more likely than those identified as not searching to have had occupational changes in the past, perhaps indicating a less stable employment trajectory.

For comparison, Table A3 also shows the characteristics of unemployed people in the BHPS. The unemployed are more likely than the employed to have experienced earlier unemployment spells, less likely to have experienced previous occupational changes, and have employment histories that are between those identified as employed people not searching and employed people searching for a new job.

We use the BHPS to investigate the role of unobserved individual heterogeneity and past employment histories in shaping differences between employed and unemployed job seekers by initially estimating a logit model pooling observations over the years. Table 7 presents odds ratios, so that an estimated effect of less than (more than) one indicates that the characteristics reduces (increases) the probability of a job seeker being employed. The estimates, shown in column (i), are consistent with our previous analysis of factors associated with being an employed or unemployed job seeker (Table 4). Married people are more likely than single people to be employed rather than unemployed job seekers. The probability of being an employed rather than unemployed job seeker is larger for the more highly educated.

We next incorporate time invariant unobserved individual heterogeneity into the specifications by estimating random effect logit models, shown in column (ii). We might expect employed and unemployed job seekers to differ in terms of, for example, their unobserved motivation or ability, and this may bias estimates from cross-sectional models. Our models relax the restrictive assumption that the unobserved individual-specific effects are uncorrelated with observable characteristics by including the individual means of the time-varying covariates over time (Mundlak 1978). Although some of the individual characteristics (such as marital status) lose their explanatory power in this specification, the impact of the level of education remains large and statistically significant. Therefore education affects the probability of being an employed rather than unemployed job seeker

[13] Although note that the unemployed here includes a small proportion of long-term unemployed who cannot have had another recent spell of unemployment or economic inactivity.

even when accounting for unobserved individual characteristics. Given the strong correlation between past and current unemployment (Arulampalam et al 2000; Gregg 2001), this could be related to the lower probability of highly qualified people experiencing unemployment in the past. We examine this in column (iii), where we add information on employment histories. However the estimates on the education variables in column (iii) are very similar to those in column (ii), indicating that the impact of education on the employment status of job seekers is not related to differences in employment histories of people with different educational outcomes. It is clear that education still plays a statistically – and economically – significant role. For example, a man with a university degree is six times more likely than an otherwise similar man with no qualifications to be an employed rather than unemployed job seeker.

The coefficients on the previous labour market experience variables are also revealing. For example past experiences of unemployment increase the probability that the job seeker is employed rather than unemployed: those who had an unemployment spell in the past are more likely to be currently employed and seeking a new job. This is consistent with the idea that there is some turnover in unemployment and that the unemployed on average are recruited into low quality jobs. They find a job, but then keep searching for a better job while employed. The table also shows that – especially for women – the impact on the status of job seekers of longer unemployment spells is larger than the impact of shorter unemployment spells, and that earlier spells are less important than recent ones. This is consistent with a no-pay low-pay cycle. Those who suffered recent unemployment spells are more likely than those who did not to be searching on-the-job, while women who experience unemployment more than one year previously are just as likely to be an employed as an unemployed job seeker. A recent inactivity spell reduces the probability that a male job seeker is employed rather than unemployed. This may indicate that men move from economic inactivity into unemployment and then from unemployment into a (bad) job in which they keep searching for a new (good) job. Earlier spells of inactivity have positive effects for both men and women: people who had an inactivity spell more than one year ago are more likely to be employed job seekers rather than unemployed job seekers, consistent with the story that people move from economic inactivity to unemployment and then into a job from which they continue to search. Occupational changes seem to reduce the probability that the job seeker is

employed rather than unemployed, suggesting an unstable career history, although the odds ratios are not statistically significant.[14]

The validity of our results relies crucially on our ability to accurately identify employed people in the BHPS who engage in on-the-job search. Failure to do so results in models that simply compare the unemployed with the employed. As robustness checks, we compare results using different strategies to identify on-the-job search (see Table A4 in the Appendix). Column (i) reproduces the estimates from Table 7 where employed job seekers are identified as the 6% of BHPS respondents each year with the highest predicted probability of being an employed job seeker. Column (ii) presents estimates when employed job seekers are identified as the 15% of BHPS respondents each year with the highest predicted probability of being an employed job seeker, while column (iii) defines all employees in the BHPS as employed job seekers. Looking across the columns of Table A4 indicates that the coefficients on individual characteristics do change, and some gain statistical significance when comparing all employed people to the unemployed. The impact of qualifications changes less, while those of previous unemployment spells become smaller and the effects of inactivity remain. This suggests that there are identifiable differences between those classified as employed job seekers (columns (i) and (ii)) and the average employed person (column (iii)) and confirms that the group that we identify as employed job seekers differs from the whole pool of employed people. Hence these are genuine differences between unemployed and employed job seekers (rather than between employed and unemployed people), suggesting that employees searching for a new job are more similar to unemployed people than to employees who do not search. For example, they might have higher risk of losing their job and have low chances to find a 'good' job (and therefore to become an employee who does not engage in on-the-job search).

[14] As education is a key factor determining whether the job seeker is unemployed or employed, we have re-estimated the models separately by qualification level. Results confirm the main findings of Table 7. For all qualification levels previous unemployment significantly reduces the probability of being an unemployed job seeker, recent inactivity increases it, while earlier inactivity reduces it.

Table 7: Determinants of being an employed rather than unemployed job seeker, BHPS 1993–2007

	(i) Logit model		(ii) Random effect Logit model		(iii) Random effect Logit model	
	Men	Women	Men	Women	Men	Women
Age	0.975	1.009	1.627+	1.600	1.577+	1.568
	(-1.40)	(0.30)	(2.55)	(1.11)	(2.34)	(0.98)
Age square	1.000	1.000	1.000	1.002	1.000	1.002
	(1.20)	(-0.26)	(0.11)	(1.17)	(0.25)	(1.40)
Married	1.470*	1.472*	1.128	1.331	1.180	1.325
	(4.47)	(3.52)	(0.55)	(0.75)	(0.75)	(0.68)
Children 0-15	0.675*	1.221	0.629*	0.843	0.621*	0.826
	(-5.51)	(1.87)	(-2.64)	(-0.47)	(-2.66)	(-0.48)
Qualification (reference: no qualifications)						
First/higher degree	3.474*	4.493*	5.418*	9.380*	5.987*	9.628*
	(9.96)	(7.16)	(8.48)	(6.74)	(8.86)	(6.13)
Other higher	2.524*	2.373*	3.632*	3.802*	3.536*	4.096*
	(8.12)	(4.44)	(7.33)	(4.58)	(7.25)	(4.36)
GCSE, A levels	2.323*	2.461*	3.211*	3.779*	3.109*	4.278*
	(8.21)	(5.00)	(7.23)	(4.93)	(7.12)	(4.86)
Recent unemployment spell <= 3m					2.168*	2.023+
					(4.54)	(2.10)
Recent unemployment spell > 3m					2.052*	3.937*
					(4.95)	(3.60)
Recent inactivity spell <= 3m					0.519+	0.659
					(-2.31)	(-0.85)
Recent inactivity spell > 3m					0.382*	0.308*
					(-4.16)	(-2.88)
Recent occupational change					0.761	1.017
					(-1.89)	(0.05)
Earlier unemployment spell > 3m					1.525*	0.994
					(2.99)	(-0.02)
Earlier inactivity spell >3 m					1.649+	5.395*
					(2.28)	(4.05)
Earlier occupational change					0.953	0.747
					(-0.31)	(-0.90)
Log likelihood	-3720	-1454	-3491	-1403	-3397	-1354
Observations	5,980	2,307	5,980	2,307	5,980	2,307

Odds ratios from (random effects) logit models where the dependent variable is 1 if the job seeker is employed, and 0 if unemployed. T-statistics in parenthesis, standard errors are clustered by individuals in the logit model. All models also include region and year dummies and means of time-varying covariates over time.
* statistically significant at 1%; + statistically significant at 5%.

It seems reasonable to assume that employed people who move between jobs without any intervening spell of non-employment were searching while in their previous job. Therefore an alternative way to identify employed job seekers is as those who subsequently experience job-to-job moves with no intervening non-employment. Although job-to-job moves can be identified from the BHPS, this only identifies those who are successful in their search (i.e. people who subsequently experience a job-to-job move), which may be a highly selected group of all employees who engage in on-the-job search. The models comparing successful employed job seekers to the unemployed, shown in column (iv) of Table A4, are more consistent with those in column (iii) than those in columns (i) and (ii). The only difference is in the impact of previous occupational changes, which increase the probability of moving from job-to-job relative to being unemployed. Generally however the estimates suggest that job-to-job moves are not a good way to identify employed people engaging in on-the-job search; at least when interviews are one year apart.

Estimates from this analysis suggest that employed and unemployed job seekers have different levels of education and different employment histories, further evidence that they have different characteristics and are unlikely to directly compete for jobs.

Differences over the business cycle

Our final contribution is to use the combined annual and quarterly LFS to examine whether differences between employed and unemployed job seekers vary over the business cycle. This provides evidence on whether, for example, the unemployed compete more with employed job seekers during periods of economic growth than recessions. In contrast to our previous analysis, we use annual LFS data from 1984 onwards to be able to identify any effects from the recession of the early 1990s. Table 8 presents marginal effects from probit models of the determinants of being an employed job seeker, where the dependent variables take the value one if the job seeker is employed and zero if unemployed. Table 9 presents marginal effects from models of search method used. These are estimated for the whole period (1984-2009), and separately for the sub-periods of increasing and decreasing unemployment.

Table 8: Determinants of being an employed rather than unemployed job seeker over the business cycle, LFS 1984–2009

Men	All years	Decreasing unemployment	Increasing unemployment
Age	0.030*	0.031*	0.028*
	(35.00)	(31.88)	(16.67)
Age square	0.000*	0.000*	0.000*
	(-39.75)	(-36.37)	(-19.06)
Married/cohabiting	0.136*	0.140*	0.127*
	(34.58)	(29.34)	(18.57)
Degree or higher	0.389*	0.399*	0.366*
	(72.85)	(61.27)	(39.30)
Other qualifications	0.216*	0.223*	0.199*
	(59.31)	(50.95)	(31.89)
Prop. job seekers employed (%)	0.008*	0.008*	0.008*
	(28.92)	(26.16)	(15.55)
Searching for 3-12 months	-0.063*	-0.063*	-0.064*
	(-14.37)	(-11.34)	(-8.65)
Searching for more than 12 months	-0.153*	-0.162*	-0.131*
	(-30.12)	(-24.62)	(-21.01)
Log likelihood	-49329	-33660	-15631
Observations	88,294	60,435	27,859
Women			
Age	0.026*	0.028*	0.022*
	(24.97)	(22.23)	(12.35)
Age square	0.000*	0.000*	0.000*
	(-23.10)	(-20.67)	(-11.28)
Married/cohabiting	-0.007	-0.012	0.004
	(-1.31)	(-1.81)	(0.49)
Degree or higher	0.380*	0.386*	0.368*
	(57.50)	(49.85)	(29.74)
Other qualifications	0.197*	0.198*	0.193*
	(43.36)	(36.20)	(23.77)
Prop. job seekers employed (%)	0.008*	0.007*	0.009*
	(16.41)	(14.52)	(8.92)
Searching for 3-12 months	-0.063*	-0.067*	-0.053*
	(-12.40)	(-11.33)	(-5.69)
Searching for more than 12 months	-0.133*	-0.141*	-0.114*
	(-20.18)	(-17.39)	(-10.58)
Log likelihood	-45473	-31375	-14081
Observations	72,203	49,806	22,397

Marginal effects from a probit model where the dependent variable is 1 if job seeker is employed and 0 if unemployed; T-statistics in parenthesis, standard errors are clustered by year x regions. All models also include region and year dummies.

* statistically significant at 1%; + statistically significant at 5%.

The results in Table 8 are consistent with those using quarterly data in Table 4. The probability of being an employed rather than unemployed job seeker increases with age (at a declining rate), with education and with marriage (although the effect is not statistically significant for women). Having no qualifications increases the probability of being an unemployed rather than employed job seeker. This again is suggestive of a low degree of substitution between unemployed and employed job seekers. A comparison of the estimates in periods of rising and falling unemployment suggests that education has smaller impacts in periods of increasing than in periods of decreasing unemployment, but these differences are not large.[15]

In terms of job search methods used, the results in Table 9 are consistent with those using the quarterly data (Table 6). Employed job seekers are more likely than the unemployed to answer advertisements in newspapers etc., and do anything else, and less likely to use all other methods. Estimates do vary in periods of falling and rising unemployment – differences between employed and unemployed job seekers in search method used are generally less pronounced in periods of increasing than falling unemployment. Again however such differences are small.

Results indicate that differences between employed and unemployed job seekers are smaller during recessions, suggesting that unemployed and employed job seekers become more similar during economic downturns than periods of economic growth. Nevertheless differences remain, and remain statistically significant. The persistence in differences over the business cycle suggests that the low degree of substitution between employed and unemployed of job seekers does not change substantially with economic conditions or with the stock of unemployed.[16]

[15] As a sensitivity analysis we have also included in the model the quarterly percentage change in employment in manufacturing/construction and the quarterly percentage change in employment in services. For men, the coefficients on these variables are statistically insignificant and their inclusion has no impact on the other estimated effects. For women, the coefficients are not statistically significant when looking at recessions. In periods of economic growth, only the change in employment in manufacturing/construction is statistically significant and has a negative but extremely small effect. Hence in periods of economic growth an increase in employment in manufacturing is associated with a slightly smaller probability that women are employed rather than unemployed job seekers.

[16] The comparison of consecutive quarters in the LFS suggests that the proportion of employees who start searching is similar in periods of growth and recession. However in periods of recession fewer employees stop searching (e.g. because they found a better job), and a larger proportion keep searching in both quarters. Similarly in periods of recession a smaller proportion of the unemployed move into work (from which to engage in on-the-job search) while a larger proportion remains unemployed. If only the best candidates find a suitable job, we can conclude that the average quality of employed and unemployed job seekers changes in the same direction. Both in periods of growth and recession, the unemployed are in a different market and therefore are unlikely to compete with employed job seekers.

Table 9: The impact of being an employed rather than unemployed job seeker on main job search method used over the business cycle, LFS 1984–2009

	Men			Women		
	Increasing unemployment					
Base: Advertising and answering ads in newspapers	Degree or higher N=3,708[#]	Other qualifications N=12,843	No qualifications N=5,078	Degree or higher N=3,724	Other qualifications N=11,173	No qualifications N=3,546
Job centre, careers office, job club	-0.134*	-0.281*	-0.325*	-0.113*	-0.176*	-0.184*
	(0.016)	(0.012)	(0.018)	(0.011)	(0.009)	(0.020)
Direct approach to employers	-0.007	-0.002	0.004	-0.008	-0.014*	0.003
	(0.012)	(0.005)	(0.008)	(0.009)	(0.005)	(0.009)
Ask friends and relatives	0.008	0.030*	0.043*	0.005	0.012*	0.024[+]
	(0.009)	(0.005)	(0.009)	(0.008)	(0.004)	(0.010)
Do anything else	0.038*	0.032*	0.018*	0.041*	0.033*	0.018*
	(0.010)	(0.004)	(0.005)	(0.011)	(0.004)	(0.006)
	Decreasing unemployment					
	Degree or higher N=8,555	Other qualifications N=33,189	No qualifications N=18,691	Degree or higher N=7,033	Other qualifications N=30,135	No qualifications N=12,637
Job centre, careers office, job club	-0.161*	-0.295*	-0.317*	-0.101*	-0.177*	-0.159*
	(0.011)	(0.007)	(0.009)	(0.010)	(0.006)	(0.009)
Direct approach to employers	-0.019*	0.007[+]	0.020*	-0.015[+]	-0.003	0.011*
	(0.007)	(0.003)	(0.004)	(0.007)	(0.003)	(0.004)
Ask friends and relatives	-0.007	0.008*	0.028*	-0.001	0.000	0.008
	(0.005)	(0.003)	(0.004)	(0.006)	(0.002)	(0.005)
Do anything else	0.028*	0.024*	0.012*	0.014	0.020*	0.009*
	(0.007)	(0.002)	(0.002)	(0.008)	(0.002)	(0.003)

Marginal effects associated with being an employed rather than unemployed job seeker, estimated using multinomial probit models where the dependent variable is 1 if main method of job search is using a job centre etc, 2 if uses direct approach to employers, 3 if asks friends/relatives, 4 if does anything else, and 5 if responds to adverts in newspapers (reference category). Standard errors, clustered by years/quarters x regions, in parentheses. All models also include age, dummies for marital status, presence of dependent children in the household, for the length of search, region, year and quarter. [#] Excludes Northern Ireland.

* statistically significant at 1%; + statistically significant at 5%.

VI. Conclusions

We use data from the LFS from 1984 to 2009 and from the BHPS 1991 to 2007 to investigate the extent to which employed and unemployed job seekers have similar individual characteristics (including employment histories), preferences over working hours, and job search strategies. The job search literature suggests that competition with employed job seekers reduces the job opportunities available to the otherwise similar unemployed, and assumes that both compete for the same jobs. Our aim in this paper is to investigate the assumption that employed and unemployed job seekers are similar – and therefore compete for the same jobs. We find systematic differences between employed and unemployed job seekers: in their individual characteristics, employment histories, job search strategies and preferences in terms of working hours. Our interpretation is that these results contradict the assumption that employed and unemployed job seekers compete for the same job.

Our initial analysis suggests that employed job seekers are in worse jobs than employees who do not search. There is some evidence that the unemployed apply to and accept different (worse) jobs than employed job seekers, but then keep searching for better employment opportunities once employed. We also find significant differences in the characteristics of employed and unemployed job seekers. For example, the more highly educated are much more likely to be employed rather than unemployed job seekers and, conditional on the level of education, employed and unemployed job seekers also have different preferences in terms of working hours. Employed job seekers have much stronger preferences toward full-time jobs than the unemployed. Employed and unemployed job seekers also use different search methods. These differences do not change substantially over the business cycle. This evidence is consistent with the unemployed having lower expectations in terms of job sought than employees, and suggests that employed and unemployed job seekers are different and are unlikely to apply for similar jobs.

Our estimates also indicate that employed and unemployed job seekers have different employment histories, and suggest that the unemployed transit into 'bad' jobs from which they keep looking for a 'good' job. Employed job seekers may have accepted job offers which were not ideal in order to exit unemployment, and then engage in on-the-job search. However, they tend to be in unstable jobs, with few chances to find a 'good' job and therefore to stop searching. Such people might be

locked in a low-pay no-pay cycle, while others, with comparatively worse individual characteristics, might never find a job at all.

Hence contrary to what is often assumed in the literature, we find evidence that employed and unemployed job seekers are systematically different and unlikely to directly compete with each other. This is consistent with a segmented labour market in which the job search activities of employees are unlikely to affect unemployed job seekers, even during periods of low labour demand. Our estimates indicate that the higher competition that the unemployed face in periods of recession comes from other unemployed people rather than from people engaging in on-the-job search – who tend to search for different types of jobs. This suggests that policies should focus on creating job opportunities to allow the unemployed to return to work, while ensuring that these jobs provide the platform for more stable and lasting employment. This will facilitate progression into 'good' jobs in the primary sector and minimise the risk of no pay-low pay cycles.

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Appendix

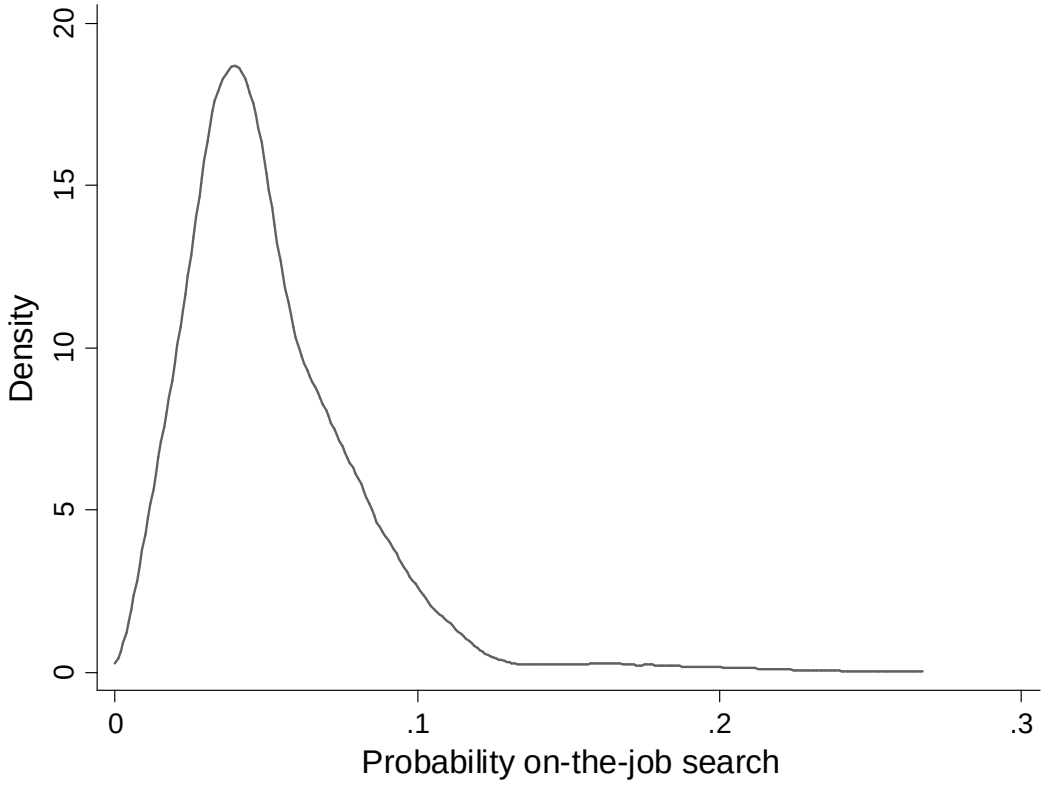

Figure A1: Distribution of the probability of engaging in on-the-job search: BHPS 1993–2007

Table A1: Determinants of on-the-job search, LFS 1993–2007

	(1) Men	(2) Women
	Marginal effects	Marginal effects
Temporary job	0.049	0.045
	(0.003)	(0.003)
Part-time	0.007	-0.007
	(0.004)	(0.003)
Gross weekly pay (hundreds)	-0.005	-0.005
	(0.000)	(0.001)
Job tenure (years/10)	-0.029	-0.034
	(0.003)	(0.003)
Job tenure squared (years/10)	-0.002	0.002
	(0.001)	(0.001)
Public sector	-0.001	-0.003
	(0.002)	(0.002)
Usual hours per week / 10	0.001	0.008
	(0.001)	(0.001)
Proportion job seekers who are employed (%)	0.001	0.001
	(0.000)	(0.000)
Log likelihood	-25504	-19628
Observations	121,589	95,622

Estimates from a probit model where the dependent variable is 1 if the employee is searching for a new job, and 0 if not searching. T-statistics in parenthesis, standard errors are clustered by years/quarters x regions. Models also include dummies for occupation, regions, year, and quarter.
* statistically significant at 1%; + statistically significant at 5%.

Table A2: Threshold probability of engaging in on-the-job search, BHPS 1993–2007

Year	Threshold Probability (%)	Employed not searching (observations)	Employed searching (observations)	Unemployed (observations)
1993	0.090	3,838	246	546
1994	0.100	3,919	251	508
1995	0.106	3,878	248	392
1996	0.112	4,081	261	393
1997	0.115	4,654	298	408
1998	0.106	4,650	297	365
1999	0.103	6,388	408	588
2000	0.110	6,362	407	568
2001	0.098	6,352	406	514
2002	0.102	5,637	360	424
2003	0.097	5,514	353	458
2004	0.099	5,343	342	371
2005	0.089	5,284	338	407
2006	0.104	5,368	343	409
2007	0.095	5,121	327	322

Table A3: Individual characteristics, BHPS and LFS 1993–2007

Dataset:	LFS	BHPS	Diff.	LFS	BHPS	Diff.	BHPS	LFS	BHPS	Diff.	LFS	BHPS	Diff.	BHPS
	Employed men not searching			Employed men searching			Unempl. men	Employed Women not searching			Employed Women searching			Unempl. women
Age	39.10	38.68	*0.42*	34.13	30.90	*3.23*	34.12	38.03	37.94	*0.09*	33.64	31.04	*2.60*	33.33
Married	0.608	0.749	*-0.141*	0.476	0.463	*0.013*	0.486	0.582	0.718	*-0.136*	0.405	0.516	*-0.110*	0.419
Children 0-15	0.382	0.400	*-0.019*	0.378	0.302	*0.076*	0.391	0.399	0.404	*-0.006*	0.377	0.393	*-0.016*	0.409
Degree	0.276	0.174	*0.102*	0.334	0.181	*0.153*	0.088	0.269	0.163	*0.107*	0.339	0.219	*0.119*	0.094
Other higher	0.268	0.337	*-0.069*	0.247	0.249	*-0.002*	0.186	0.162	0.298	*-0.136*	0.182	0.217	*-0.035*	0.181
GCSE, A levels	0.243	0.380	*-0.138*	0.247	0.487	*-0.239*	0.431	0.328	0.427	*-0.098*	0.313	0.494	*-0.181*	0.478
Other/no qualification	0.213	0.108	*0.105*	0.172	0.083	*0.088*	0.296	0.240	0.112	*0.128*	0.167	0.070	*0.097*	0.247
Recent unempl. spell <= 3m		0.019			0.122		0.053		0.019			0.145		0.053
Recent unempl. spell > 3m		0.018			0.113		0.096		0.016			0.101		0.058
Recent inact. spell <= 3m		0.005			0.025		0.023		0.009			0.068		0.027
Recent inact. spell > 3m		0.017			0.112		0.092		0.053			0.263		0.123
Recent occup. change		0.055			0.186		0.086		0.062			0.203		0.083
Earlier unempl. spell > 3m		0.037			0.116		0.149		0.027			0.059		0.084
Earlier inact. spell > 3m		0.033			0.178		0.131		0.094			0.357		0.174
Earlier occupational change		0.093			0.175		0.084		0.095			0.127		0.081

These descriptive statistics refer to the samples only and are therefore unweighted

Table A4: Determinants of being an employed rather than unemployed job seeker; sensitivity analysis, BHPS 1993–2007

	(i) 6% with highest probability on-the-job search		(ii) 15% with highest probability on-the-job search		(iii) All employed people (100%)		(iv) Job-to-job moves (BHPS)	
	Men	Women	Men	Women	Men	Women	Men	Women
Age	1.577+	1.568	1.295	0.981	1.432*	1.522*	1.521*	1.524*
	(2.34)	(0.98)	(1.90)	(-0.08)	(3.18)	(3.07)	(10.76)	(10.13)
Age square	1.000	1.002	0.999	1.001	0.997*	0.997*	0.999+	0.998*
	(0.25)	(1.40)	(-1.79)	(0.73)	(-6.13)	(-5.85)	(-2.02)	(-4.06)
Married	1.180	1.325	1.309	1.437	1.392*	1.421*	1.385+	1.447*
	(0.75)	(0.68)	(1.74)	(1.48)	(2.65)	(2.76)	(2.20)	(2.75)
Children 0-15	0.621*	0.826	0.720*	1.464	0.899	1.078	0.768+	1.291+
	(-2.66)	(-0.48)	(-2.58)	(1.63)	(-1.05)	(0.64)	(-2.16)	(2.10)
Qualification (reference: no qualifications)								
First or higher degree	5.987*	9.628*	6.065*	6.692*	4.071*	2.991*	3.408*	2.370*
	(8.86)	(6.13)	(11.52)	(8.97)	(9.94)	(7.48)	(8.52)	(5.73)
Other higher	3.536*	4.096*	3.914*	2.864*	3.127*	2.365*	2.631*	1.901*
	(7.25)	(4.36)	(10.30)	(5.75)	(9.77)	(6.89)	(7.99)	(4.94)
GCSE, A levels	3.109*	4.278*	2.980*	2.000*	2.431*	1.934*	2.164*	1.568*
	(7.12)	(4.86)	(8.97)	(4.12)	(8.31)	(5.79)	(7.07)	(3.82)
Recent unemployment spell <= 3m	2.168*	2.023+	1.904*	1.213	1.332+	0.773	1.454+	0.998
	(4.54)	(2.10)	(4.72)	(0.83)	(2.28)	(-1.71)	(2.56)	(-0.02)
Recent unemployment spell > 3m	2.052*	3.937*	2.174*	2.123*	1.526*	2.018*	1.444*	1.550+
	(4.95)	(3.60)	(6.77)	(3.24)	(4.06)	(4.45)	(2.84)	(2.57)
Recent inactivity spell <= 3m	0.519+	0.659	0.501*	0.583	0.424*	0.481*	0.547+	0.503*
	(-2.31)	(-0.85)	(-3.03)	(-1.52)	(-4.12)	(-3.42)	(-2.39)	(-3.02)
Recent inactivity spell > 3m	0.382*	0.308*	0.384*	0.384*	0.325*	0.369*	0.212*	0.265*
	(-4.16)	(-2.88)	(-5.29)	(-3.53)	(-6.68)	(-6.10)	(-7.28)	(-7.12)
Recent occupational change	0.761	1.017	0.744*	0.726	0.591*	0.639*	0.513*	0.475*
	(-1.89)	(0.05)	(-2.70)	(-1.54)	(-5.40)	(-3.89)	(-5.87)	(-6.05)

Earlier unemployment spell > 3m	1.525*	0.994	1.594*	1.251	1.456*	1.819*	2.343*	2.284*
	(2.99)	(-0.02)	(4.34)	(0.92)	(3.93)	(4.17)	(6.64)	(4.91)
Earlier inactivity spell > 3m	1.649+	5.395*	1.309	2.318*	1.201	1.617*	1.106	1.673*
	(2.28)	(4.05)	(1.55)	(3.23)	(1.13)	(3.01)	(0.51)	(2.89)
Earlier occupational change	0.953	0.747	1.031	0.805	1.084	0.973	0.746+	0.570*
	(-0.31)	(-0.90)	(0.27)	(-1.05)	(0.81)	(-0.23)	(-2.44)	(-4.29)
Log likelihood	-3397	-1354	-5096	-2552	-6585	-4938	-4392	-3325
Observations	5,980	2,307	14,588	5,066	43,659	43,871	11,966	10,536

Odds ratios from random effects logit models where the dependent variable is 1 if job seeker is employed and 0 if unemployed. T-statistics in parenthesis. All models also include dummies for region and year and means of time-varying covariates over time.

* statistically significant at 1%; + statistically significant at 5%.