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HOUSING TENURE, JOB MOBILITY AND UNEMPLOYMENT IN THE UK*

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This article examines the effects of housing tenure on individuals' job and unemployment durations in the UK. We examine job to job transitions and transitions from unemployment. We take account of whether or not the arrival of a job was synonymous with a non-local residential move, tenure endogeneity and unobserved heterogeneity. We find that home-ownership is a constraint for the employed and public renting is more of a constraint for the unemployed. Employed home-owners have a lower transition into employment with a distant move and unemployed public renters have a lower probability of gaining employment in more distant labour markets.

The nature of housing tenure has long been blamed for discouraging spatial mobility and thereby having an impact upon labour market outcomes. In the early 1980s in the UK the main culprit was deemed to be local authority housing (McCormick, 1983). Hughes and McCormick (1981; 1987) examined the longer distance migration rates of those in local authority housing and found that they had lower longer distance migration rates compared to both owner-occupiers and those in private rented accommodation. Although, the latest research suggests that these effects may have lessened (Hughes and McCormick, 2000), the relative immobility of public renters may stem from public housing rents being below market rates, the restricted transferability within public housing, high waiting lists and security of tenure. Public renters are then 'locked in' and face higher costs if they accept a job that involves a long distance move.

More recently, the blame has been pinned on private home-ownership. Oswald (1996; 1999) in a series of papers, using macro time series and cross-section data for OECD countries and regions within a number of those countries, has argued that home-ownership causes unemployment. One explanation revolves around the reduced mobility of home-owners relative to private renters owing to the costs of buying and selling homes. Subsequent and arguably more sophisticated micro-econometric tests have placed doubt upon the alleged relationship. Coulson and Fisher (2002) for the US, find that unemployment duration is shorter for home-owners relative to renters, though neither is unobserved heterogeneity nor the endogenous nature of housing tenure accounted for. Van Leuvensteijn and Koning (2004) do account for the endogeneity of home-ownership and find using Dutch data that employed home-owners are less likely to become unemployed relative to employed renters. More recently, Munch *et al.* (2006*a*) using Danish data find shorter unemployment spells amongst home-owners compared to renters, after controlling for the endogeneity of home-ownership.

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This article assesses the impact of housing tenure on individual unemployment and job mobility in the UK and makes two key contributions to the literature. First, we examine the effects of both home-ownership and public renting relative to private renting and ascertain whether the old culprit of public housing is still having an effect, given the decline in public renting and the evidence of rising migration rates of public tenants (Hughes and McCormick, 2000). Recent papers do not examine the impact of public renting (Van Leuvensteijn and Koning, 2004; Munch *et al.*, 2006*a,b*).[1] Second, by considering job mobility as well as unemployment, we are able to explore the potential differential impacts of housing tenure across socio-economic class. This further links this article to the previous literature which showed large differences in the UK in the migration patterns of manual and non-manual workers (Hughes and McCormick, 1994; McCormick 1997). We use an approach similar to that of Munch *et al.* (2006*a*) and make a distinction between local and non-local jobs with the latter involving a residential move. The basic argument here is that home-owners and public tenants have a lower reservation wage in local areas compared to other regions and are more likely to accept a local job and less likely to take employment in distant areas (Barcelo, 2001). Though this distinction has been made in the UK (Hughes and McCormick, 2000) the empirical research in the UK has made no explicit allowance for this.

In order to explore the impact of housing tenure on unemployment and job mobility, we estimate competing risk duration models for exits from unemployment (and the current job) to a new job to two destinations: to a job which occurs with a residential move across a Local Authority District (LAD) boundary; to a job which does not occur with such a 'long distance' move. In this framework, the Oswald hypothesis may be interpreted as the implication that the impact of home-ownership (relative to private renting) on the overall hazard rate across both destinations for transitions out of unemployment is negative. We expect that being a public tenant would have similar effects relative to being a private renter.

In the empirical model we control for the endogeneity of housing tenure types, and allow for correlated unobserved heterogeneity effects. To identify the model we follow Munch *et al.* (2006*a*) where identification of the tenure status on job and unemployment duration is achieved by having multiple spells on individuals and having a subset of individuals going through different housing tenures within the sample (Abbring and Van Den Berg, 2003; Van den Berg, 2001).

The article has the following structure. In the next Section we provide an overview of the data set we utilise. In Section 2 we set out very briefly the essence of the econometric model that we estimate. Section 3 provides our results and the final section concludes.

1. The Data

The data set employed is the British Household Panel Survey (BHPS). This is a nationally representative longitudinal dataset with 10,000 individuals in 5,500 households per year and commenced in 1991. This data set is rich and includes a wide range

[1] In non-UK studies, a focus on public renting is less warranted. For example, in the case of Denmark an emphasis on rent controls is more meaningful. Svarer *et al.* (2005) examine the effects of Danish rent controls on unemployment duration and find that the net effect of rent controls is to raise unemployment duration.

of information about individual and household demographics, labour force status, employment and housing tenure. The data on job duration and unemployment spells are drawn from waves 1 to 13 (1991 to 2003). Only participants aged 16 to 65 are included in the sample. Participants are interviewed annually, with the first wave of the survey conducted in 1991. At each interview, respondents are asked detailed information on employment since the last interview.

From this data we construct a complete sequence of labour market spells recorded to the nearest calendar month for a balanced panel of individuals. A 'spell' is either a job, a period of unemployment, or a period out of the labour market, or a period of self-employment. Jobs are defined by the 'present position' of employees and so include job changes within existing employers. Inconsistencies in these data arise primarily from differences between what individuals recall about their employment status at the previous interview and what was actually recorded at the previous interview. Following Upward (1999) these problems are reconciled by applying the principle that information recorded closest to any particular event is the most reliable. The information on personal and household characteristics, as well as job related characteristics, is recorded annually. This information could vary within a job or unemployment spell if its length spans over two or more interviews. On the other hand a worker may go through multiple job spells in a year, and because the job characteristics of job spells that begun and ended between interviews were not collected, these shorter jobs spells have to be dropped from all estimation if we incorporate job and employer characteristics into the model. Spells where data were missing on any of the variables used in the analysis were also dropped from the sample. Finally, our sample only contains spells which started after September 1990, the date at which full information on new unemployment/jobs spells from the first interview is available, i.e. that spells that were ongoing at that point are excluded. A number of these sample restrictions require comment. Including ongoing spells would over-represent long duration spells and is non-random (Lancaster, 1990). As a result, the econometrics would have to adjust for the sample selectivity induced. Selectivity issues are also a concern with respect to the loss of short spells and associated with the balanced panel of individuals. However, these criteria are required to satisfy the conditions for a flow sample required for model estimation, to ensure that we can correctly match employment status changes with residential changes and have full information on the covariates.[2]

In order to examine the impact of housing tenure on mobility we use both the unemployment and employment spells created and (in both cases) consider two types of exit: an exit from unemployment (a job) to a new job without a residential move and an exit from unemployment (a job) with a residential move. The BHPS allows us to identify different types of moves from information recorded on whether individuals have changed address in the last twelve months and their LAD of residence and we

[2] There are 857 job spells dropped from the sample because of the lack of between interview information. Eliminating ongoing spells drops 2,412 job spells and 126 unemployment spells. Restricting the sample to spells for individuals present in all waves eliminates 3,665 job spells and increases the overall average duration of a job spell by around 2 months on average. Similarly, 1,152 unemployment spells are dropped increasing the overall unemployment duration by around 0.5 of a month.

define a move as one where the individual changed LAD.[3] Whilst LADs may be an imperfect measure of local labour markets (McCulloch, 2003), they have been widely used within the BHPS to capture moves (Boheim and Taylor, 2002, 2007; Rabe, 2006) and there is also some evidence to indicate that they do capture job related moves. For example, Buck (2000) examines the reasons for moving across three types of moves (within a LAD, moves out of a LAD but within a region and moves that cross regional boundaries) and finds that job related moves tend to be over longer distances with significantly fewer job related moves within LADs compared to the other two types of moves. The differences between the other two types of moves are small in terms of reason for moving, indicating that the key distinction is between intra-LAD and inter-LAD moves. Defining moves across 11 regional boundaries in the UK is also not wholly satisfactory, since some intra-regional but long distance moves are excluded and this also results in too few moves (the inter-regional migration rate is substantially lower). In addition, for those in public rented housing the use of LADs may be appropriate, since there are particular barriers to moves across local authority boundaries because of the operation of allocation systems.

Exits without a move include all residential moves where the local authority district has not changed.[4,5] Exits from unemployment (or an existing job) into a new job with a residential move are defined as exits where the individual moved across a LAD boundary in the 12 months preceding or the 12 months following from unemployment (job) exit. This time window of 24 months around the exits allows the timing of labour market transitions and residential changes to differ slightly, so that changes in residence can proceed or occur after the specific month of the employment change.

As reported in Table 1, using these definitions provides a basic sample of 9,237 employment spells (based on 2,773 individuals) and 1,940 unemployment spells (based on 1,170 individuals), of which 790 of the former and 177 of the latter end with a non-local move. A succinct way of summarising spell data is to consider the Kaplan-Meier estimate of the survivor functions for job and unemployment spells. These are illustrated in Figures 1 and 2 by house tenure type. Figure 1 does suggest that there are overall differences in job mobility between tenure types with house owners (with or without a mortgage) having longer job durations. For unemployment, Figure 2 indicates (before allowing for individual characteristics and mobility) that there are differences in unemployment exits with those in public housing having longer unemployment spells. Both these observations are supported by the statistical evidence with the equality of the survivor functions rejected at 1% significance in both cases using the log rank test.

Table 1 also provides information on the structure of job and unemployment spell exits and reports sample means for certain key characteristics associated with the spells. Of the uncensored job spells 15.5% end with employment outside the local area with

[3] There are 278 LADs in Britain with a population ranging between 60 and 300,000 (Boheim and Taylor, 2007).

[4] The boundary definitions for LADs follow that which were in use for the Census 1991.

[5] Those that do not move may instead widen their search space and so commuting may represent a substitute for migration. Benito and Oswald (1999) find that commuting times are higher amongst home-owners and Murphy *et al.* (2006) show that strong housing market conditions can inhibit migration and make commuting a more attractive alternative to moving.

Table 1

Summary Statistics for Job and Unemployment Spells

	Job		Unemployment	
	Count	Percentage	Count	Percentage
Exit to				
(New) Job without a non-local move	4,314	46.7 (84.5)	1,143	58.9 (86.3)
(New) Job with a non-local move	790	8.6 (15.5)	177	9.1 (13.7)
Other exits & Censored observations	4,133	44.7	620	32.0
Number of spells	9,237	100	1,940	100
Individuals	2,773		1,170	
Duration in Months	Mean	SD	Mean	SD
Job without a non-local move	21.87	22.17	6.54	8.50
Job with a non-local move	22.88	23.91	5.27	6.53
Other exits & Censored observations	33.47	34.53	12.64	16.11
Summary Statistics	Mean	SD	Mean	SD
Home-ownership	0.793	0.405	0.618	0.486
Public renter	0.114	0.318	0.263	0.440
Private renter	0.091	0.287	0.119	0.323
Age 16–24	0.077	0.267	0.174	0.379
Age 25–34	0.304	0.460	0.275	0.446
Age 35–44	0.309	0.462	0.221	0.415
Age 45 or Above	0.310	0.463	0.331	0.471
Female	0.566	0.496	0.471	0.499
Children 0–15 years	0.465	0.499	0.374	0.484
No qualifications	0.167	0.373	0.292	0.455
O Levels or equivalent	0.183	0.387	0.197	0.398
A Levels of equivalent	0.121	0.326	0.127	0.333
Nursing and other qualifications	0.303	0.460	0.240	0.427
First degree or above (incl. teaching)	0.214	0.410	0.134	0.341
Spouse works	0.620	0.485	0.434	0.496
Married	0.755	0.430	0.622	0.485
Ln (Monthly Pay)	6.928	0.842		

Calculated by Spell. See Appendix for detailed definition of characteristics.

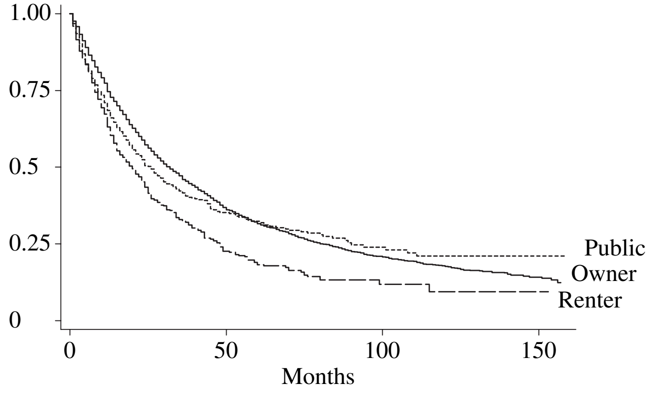

Fig. 1. *Kaplan-Meier Estimates of the Job Tenure Survival Function by House Tenure*

the remainder (84.5%) ending with a new job locally. In terms of typical characteristics, Table 1 reveals that 79.3% of the job spells are associated with home-owners (either owned outright or with a mortgage). This is significantly higher than a previous

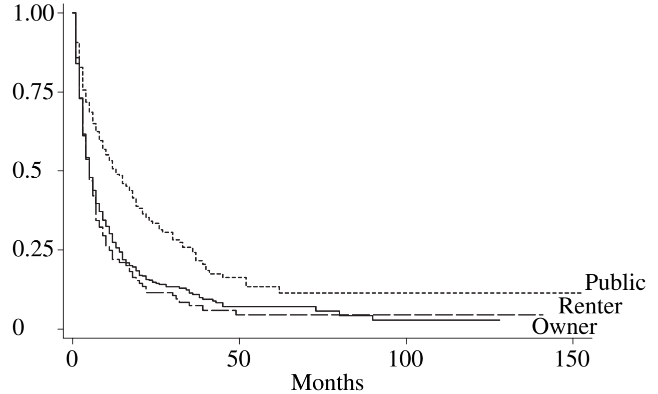

Fig. 2. *Kaplan-Meier Estimates of the Unemployment Survival Function by House Tenure*

estimate of 69% as reported in a European-wide study (Norris and Shiels, 2004), a figure generated by the Office of National Statistics using the General Household Survey 2003[6] and higher than a range of European countries including the Netherlands (54%), Denmark (51%) and France (56%) (Norris and Shiels, 2004). A number of factors contribute to the high percentage of home-owners in our job duration sample. First, in spells where the housing tenure stays unchanged, the average spell length of home-owners is almost a year longer than those of tenants (27.9 months as against 18.5 months). Second, the sample is restricted to cover only employed individuals and employed individuals are more likely to own a home. Finally, restricting the sample to a balanced panel also increases the home-ownership share by around 3% points. In terms of other characteristics around half of the job spells are taken up by people who are educated to post-secondary levels. The mean natural log of monthly earnings is 6.928, which is equal to a value of £1020.45 at 2005 prices. The majority of the workers in the sample are from dual-earning households, with 62% of the job spells associated with workers whose spouses are also working. An even larger percentage (75.5%) of the job spells is associated with workers who are married.

Turning briefly to the unemployment spells we see that somewhat more than 10% end with a job outside the local area but as with job mobility the vast majority (86%) end with employment locally. In this sample, unsurprisingly around 62% are home-owners, significantly lower than the job duration sample. The unemployed sample also tends to be largely male, more likely to be unmarried and with a significant number (30%) possessing no qualifications. Less than half (43%) have a spouse that is in employment (compared to 62% of those in employment).

2. Empirical Specification

The empirical approach employed builds on that used by Munch *et al.* (2006*a*). For both the job and unemployment duration models to capture the impact of housing tenure we need to distinguish between two types of transition: into a new local job and

[6] This estimate only covers the household reference person, i.e. the head of the household.

into a new job with non-local residential move. Hence the basic specification is an underlying competing risks model with these two exit types. It is particularly important to account for unobserved differences or heterogeneity; otherwise any estimates of the effects of duration or duration dependence are likely to be biased (Heckman, 1981). In our model unobserved heterogeneity is incorporated in the model by using the mass-point approach introduced by Heckman and Singer (1984) assuming a mixed proportional hazard model (Lancaster, 1990). Finally, housing tenure is potentially endogeneous. For example, an individual may only make the decision (or have access to a mortgage) to become a home-owner when they are in stable employment so that the observed correlation between ownership and unemployment might be negative. Here we allow for this possibility by simultaneously modelling the probability of being a home-owner, or a public or private renter, using a multinomial logit with mass points which are allowed to be correlated with the unobserved heterogeneity in the two exit types.

2.1. *Model*

In both unemployment and job models each person is assumed to exit to one of two states $r = 1 \ldots 2$. For any period t, define the hazard to state r, $h_r(t)$. The influence of observed covariates and unobserved heterogeneity are captured by modelling each exit type using a mixed proportional hazard model, i.e.

$$h_r(t|z_{1t}, z_{2t}, \mathbf{x}', v_r) = h_{r0}(t)\exp(z_{1t}\lambda_{1r} + z_{2t}\lambda_{2r} + \mathbf{x}'\boldsymbol{\beta}_r + v_r) \tag{1}$$

where $h_{r0}(t)$ is the baseline transition intensity or hazard for the exit type, v_r is a random variable capturing unobserved heterogeneity, z_{1t},z_{2t} dummy variables capturing whether the individual is a home-owner or public renter respectively, and $\mathbf{x}$ is the vector of other covariates assumed to influence the exit hazard. Specifically, the vector of covariates $\mathbf{x}$ included age, gender, children under 16, marital status, whether there is a working partner present, plus a set of regional and time dummies. In addition, for the job duration model, the vector of covariates contains a set of dummies to control for occupational status and industry plus regional and time dummy variables.

The probability of each housing tenure type is a multinomial logit model with unobserved effects, i.e.

$$P_k(\mathbf{x}_m, u_1, u_2) = \Pr(y_t = k|\mathbf{x}, u_1, u_2) = \frac{\exp(\mathbf{x}'\boldsymbol{\delta}_k + u_k)}{1 + \exp(\mathbf{x}'\boldsymbol{\delta}_1 + u_1) + \exp(\mathbf{x}'\boldsymbol{\delta}_2 + u_2)} \tag{2}$$

$k = 1,2$, where $y_t = 3 - 2z_{1t} - z_{2t}$.

2.2. *Estimation*

The estimation framework assumes that the observed data are continuous and does not explicitly allow for the grouped nature of the observed data. When time aggregation is relatively low (the employment spells case), the evidence suggests that the performance of the continuous model is at least as good as models explicitly accounting for the discrete nature of the data (Bergstrom and Edin, 1992; ter Hofstede and Wedel, 1998).

However, at higher levels of time aggregation (the unemployment spells case) ignoring grouping in the data may induce biases. To ensure robustness of the results, we estimated a discrete model accounting for the grouped nature of the data for the unemployment spells which showed that the results were not sensitive to the use of the continuous time model (Keifer, 1990).[7]

In principle, the unemployment and employment spells could have been estimated simultaneously in a multi-state duration model. However, this would have meant the estimation of a basic model with a very large number of mass points, significantly increasing computational complexity and severely limiting the extent to which the sensitivity and robustness of the model could be explored. Nevertheless, the results should be interpreted with the caveat that potential correlations in unobserved heterogeneity between unemployment and employment spells have been ignored.

A key issue in the literature is how one deals with the endogeneity of home-ownership. There are two basic approaches in the literature. The traditional approach is to use instruments or exclusion restrictions, i.e. in this case variables that influence housing tenure but not labour market outcomes. Van Leuvensteijn and Koning (2004) use the regional share of home-owners as an instrument for home-ownership, Flatau *et al.* (2003) use individuals' age and Munch *et al.*, (2006*a*) used home-ownership of parents in 1980 and the proportion of home-owners in the municipality where the individual was born.

The second approach is to use multiple spells where at least within some spells the treatment effect varies within the spell. Here we have multiple unemployment (job) spells available for a specific individual and for some their housing tenure status also varies across these spells. Abbring and Van den Berg (2003) and Van den Berg (2001) show that, under these conditions, the treatment effect is identified without the need to find any instrument and this approach has been used in a number of recent papers (Panis and Lillard, 2004; Munch *et al.* 2006*a,b*) and is used here. We have also checked the robustness of our results using an instrument/exclusion restriction approach using information from the BHPS on family background, e.g. father's occupation. The results were qualitatively similar to those found using the multiple spells approach.

The contribution of an individual to the likelihood function can be written as

$$L=\prod_{m=1}^{M}\left\{\begin{array}{c}\int\int\int\int P_1(\mathbf{x}_m,u_1,u_2)^{z_{1tm}}P_2(\mathbf{x}_m,u_1,u_2)^{z_{2tm}}\\ [1-P_1(\mathbf{x}_m,u_1,u_2)-P_2(\mathbf{x}_m,u_1,u_2)]^{1-z_{1tm}-z_{2tm}}\\ h_l(t|z_{1tm},z_{2tm},\mathbf{x}_m,v_l)^{d_{lm}}h_n(t|z_{1tm},z_{2tm},\mathbf{x}_m,v_n)^{d_{nm}}\\ \exp[-\int_0^t h_l(s|z_{1sm},z_{2sm},\mathbf{x}_m,v_l)\mathrm{d}s-\int_0^t h_n(s|z_{1sm},z_{2sm},\mathbf{x}_m,v_n)\mathrm{d}s]\end{array}\right\}\mathrm{d}G(u_1,u_2,v_l,v_n)$$

where d_{lm}, d_{nm} are indicator variables associated with exits to new jobs without and with across LAD residential moves respectively. Right censored spells $d_{im}=0$, $d_{nm}=0$, i.e. spells with any other exit type, contribute via the survivor function term. M is the number of spells for each individual and $G(u_1,u_2,v_l,v_n)$ is the joint CDF of the unobserved heterogeneity variables. The simplest specification for this joint distribution is taken allowing for 2 points for each unobservable giving a possible combination

[7] The full set of discrete results are available on request from the authors.

of 16 possible points.[8] Finally, a non-parametric baseline hazard function is used with the baseline hazards for each exit type varying across 6 different intervals.

Clearly the key to the effectiveness of this estimation strategy is the number of multiple spells per individual. In the job duration sample there are 2,773 individuals. The average number of job spells experienced by individuals in the sample is 3.33, with 80% of individuals having more than one spell. In the unemployment duration sample there are 1,169 individuals who experienced 1,940 unemployment spells. The average number of unemployment spells experienced by individuals in the sample is 1.66, with 47% of individuals having more than one spell. This is comparable with Munch *et al.* (2006*a,b*) who identify their models with 2.75 unemployment spells per individual and 1.73 employment spells per individual. Finally, in 2.94% of the unemployment spells the individual has experienced more than one type of housing tenure during the spell. The corresponding figure for job spells is 9.24%.

3. Results

Tables 2, 3 and 4 present the results of the models for unemployment and job mobility respectively. In Tables 2 and 3 we also report estimates for a simpler competing risks duration model for exits to a new job with and without a move (columns 4 and 6). These provide a basic comparator to allow us to evaluate the impact of ignoring unobserved heterogeneity and the endogeneity of housing tenure. Further evidence on whether unobserved heterogeneity should be accounted for is provided by the non-linear Wald test result for the hypothesis that all correlations between the unobserved heterogeneity components are zero. This is reported in the second panel of all the Tables. Finally, Table 4 reports the competing risk model results disaggregated by socio-economic class.

3.1. *Unemployment Duration*

The unemployment duration model results are shown in Table 2. Coefficients and standard errors are presented and figures in italics are statistically significant at the 5% level. As stated earlier, the Oswald hypothesis may be interpreted as the implication that the impact of home-ownership (relative to private renting) on the overall hazard rate for transitions out of unemployment is negative. The results set out in Table 2 indicate that under the simple competing risks estimation (columns 4 and 6) unemployed home-owners are more likely to obtain jobs locally (without a move) and are less likely to obtain employment non-locally (with a move). The negative effect of private ownership on job attainment via spatial mobility suggests partial support at the micro-level for the Oswald hypothesis. Given that the second effect dominates there is also support for the Oswald hypothesis in aggregate terms.

However, the results from the estimation of the full competing risk model suggest that accounting for unobserved heterogeneity and the tenure endogeneity is important. The hypothesis that the correlations between unobserved components are zero is rejected, while in the full model estimation results the observed private ownership

[8] Exploratory estimations with 3 points of support for each unobservable were also conducted. It was not generally possible to identify these extra mass points.

Table 2

Housing Tenure and Unemployment Spells Results

	Homeownership		Public Renting		Exit to New Job with Move				Exit to New Job without Move			
	(1)		(2)		(3)		(4)		(5)		(6)	
Control for correlated unobserved heterogeneity	Yes		Yes		Yes		No		Yes		No	
Control for tenure endogeneity	n/a		n/a		Yes		No		Yes		No	
	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE
Home-owner					−0.112	0.326	*−1.094*	*0.182*	0.095	0.229	*0.290*	*0.103*
Public Renting					*−1.168*	*0.506*	*−1.612*	*0.279*	−0.076	0.238	−0.070	0.118
Age 25–34	0.240	0.380	0.389	0.437	−0.694	0.357	−0.406	0.219	−0.181	0.132	−0.155	0.098
Age 35–44	0.617	0.477	*1.689*	*0.519*	*−1.279*	*0.408*	*−0.962*	*0.266*	−0.203	0.142	−0.194	0.104
Age 45 or above	*1.806*	*0.415*	*1.519*	*0.503*	*−2.864*	*0.514*	*−2.101*	*0.307*	*−0.644*	*0.148*	*−0.535*	*0.105*
Female	−0.167	0.283	*−0.750*	*0.328*	−0.188	0.271	*−0.428*	*0.165*	0.083	0.081	0.091	0.063
Children Under 16	*0.844*	*0.313*	*2.325*	*0.357*	*−0.738*	*0.286*	*−0.481*	*0.192*	−0.106	0.089	−0.067	0.068
O-Levels	0.201	0.407	*−0.941*	*0.461*	0.371	0.419	0.446	0.270	0.060	0.119	0.029	0.092
A-Levels	*1.691*	*0.486*	*−1.545*	*0.579*	0.729	0.400	*0.838*	*0.286*	*0.363*	*0.137*	*0.355*	*0.104*
Nursing or Equivalent	*1.007*	*0.392*	*−0.969*	*0.447*	0.000	0.426	0.319	0.267	*0.327*	*0.109*	*0.360*	*0.087*
First degree or above	0.773	0.444	*−2.921*	*0.534*	*0.972*	*0.421*	*1.117*	*0.263*	0.233	0.147	*0.218*	*0.107*
Working Partner	*0.808*	*0.404*	*−1.693*	*0.438*	0.329	0.381	0.230	0.234	*0.603*	*0.106*	*0.519*	*0.089*
Married	0.099	0.386	0.013	0.415	*0.839*	*0.349*	*0.823*	*0.254*	−0.117	0.118	−0.086	0.095
Log likelihood*	−5652.5						−804.2				−3887.0	
H0 Unobserved heterogeneity correlations zero. (χ^2_6)	14.67** (P < 0.023)											

Figures in italics are statistically significant at 5%. *Log likelihood for the joint estimation consistent with (3). This specification allowed for unobserved heterogeneity with two mass points for each tenure and exit type generating 16 possible combinations, with probability of being in each tenure type modelled as multinomial logit. ** Wald Test of the joint hypothesis that all correlations between unobserved heterogeneity components are zero. Dummies for standard regions, industries, standard occupations and time periods are included in all estimation but results are not reported (see Appendix for definitions). All competing risk models estimated use a nonparametric baseline hazard function with the baseline hazard varying across 6 different intervals.

Table 3

Housing Tenure and Job Spells Results

	Homeownership		Public Renting		Exit to New Job with Move				Exit to New Job without Move			
	(1)		(2)		(3)		(4)		(5)		(6)	
Control for correlated unobserved heterogeneity	Yes		Yes		Yes		No		Yes		No	
Control for tenure endogeneity	n/a		n/a		Yes		No		Yes		No	
	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE
Home-owner					*−0.665*	*0.124*	*−1.131*	*0.090*	−0.109	0.090	−0.016	0.060
Public Renting					−0.260	0.205	*−0.954*	*0.160*	0.140	0.121	*0.191*	*0.075*
Age 25–34	0.138	0.128	*0.583*	*0.195*	*−0.529*	*0.146*	−0.216	0.125	*−0.593*	*0.077*	*−0.239*	*0.062*
Age 35–44	*0.748*	*0.167*	*0.775*	*0.250*	*−1.313*	*0.176*	*−0.923*	*0.146*	*−0.901*	*0.084*	*−0.283*	*0.066*
Age 45 or above	*1.136*	*0.164*	*0.632*	*0.254*	*−2.179*	*0.198*	*−1.754*	*0.162*	*−1.427*	*0.086*	*−0.629*	*0.067*
Female	−0.118	0.115	*−0.720*	*0.182*	0.067	0.114	0.048	0.083	0.066	0.047	0.007	0.038
Children Under 16	*0.463*	*0.100*	*1.102*	*0.150*	−0.073	0.100	*−0.299*	*0.085*	*0.091*	*0.039*	*0.072*	*0.034*
O-Levels	0.245	0.161	*−1.152*	*0.206*	0.327	0.180	*0.370*	*0.152*	0.086	0.058	*0.124*	*0.053*
A-Levels	*0.664*	*0.173*	*−1.518*	*0.250*	0.220	0.207	0.313	0.167	0.114	0.069	*0.235*	*0.060*
Nursing or Equivalent	0.247	0.132	*−1.233*	*0.176*	0.135	0.185	*0.353*	*0.146*	−0.090	0.055	*0.204*	*0.051*
First degree or above	0.265	0.155	*−3.373*	*0.315*	0.341	0.212	*0.616*	*0.159*	*0.227*	*0.068*	*0.478*	*0.061*
Working Partner	*0.514*	*0.126*	−0.353	0.178	*−0.247*	*0.113*	*−0.385*	*0.093*	*0.200*	*0.046*	*0.113*	*0.043*
Ln(Pay)	*0.208*	*0.080*	*−0.467*	*0.106*	*0.462*	*0.090*	*0.338*	*0.073*	*0.289*	*0.033*	*0.110*	*0.027*
Married	*0.564*	*0.110*	−0.291	0.152	−0.065	0.126	*0.208*	*0.101*	*−0.166*	*0.050*	*−0.154*	*0.048*
Log likelihood*	−30607.2						−48950.4				−214930.5	
H0 Unobserved heterogeneity correlations zero. (χ^2_6)	65.12** (P < 0.001)											

See notes to Table 2.

Table 4

Job spells Results by Socio-Economic Class

	Professional/Managerial SEC1)				Skilled Manual/Non Manual (SEC2)				Unskilled/Partly Skilled (SEC3)			
	Exit to new Job with Move		Exit to new Job without Move		Exit to new Job with Move		Exit to new Job without Move		Exit to new Job with Move		Exit to new Job without Move	
	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE
Home-owner	*−0.605*	*0.226*	−0.122	0.183	*−0.819*	*0.239*	−0.265	0.154	0.106	1.163	−0.261	0.286
Public Renting	0.420	0.793	*0.855*	*0.326*	−0.543	0.493	−0.048	0.193	−1.881	1.608	−0.185	0.282
Age 25–34	*−0.923*	*0.342*	*−0.691*	*0.160*	−0.319	0.284	*−0.600*	*0.111*	0.045	0.995	−0.325	0.244
Age 35–44	*−2.069*	*0.368*	*−1.072*	*0.165*	*−0.959*	*0.347*	*−0.796*	*0.126*	−1.312	1.084	*−0.581*	*0.256*
Age 45 or above	*−2.651*	*0.389*	*−1.508*	*0.169*	*−2.237*	*0.375*	*−1.312*	*0.127*	*−3.083*	*1.291*	*−1.180*	*0.266*
Female	0.140	0.173	0.114	0.071	0.257	0.276	0.038	0.081	−0.591	0.729	0.163	0.136
Children Under 16	0.043	0.171	0.095	0.066	−0.403	0.224	0.108	0.062	0.013	0.690	0.154	0.126
O-Levels	*1.466*	*0.524*	0.052	0.158	0.235	0.331	0.132	0.082	−1.257	0.936	−0.008	0.140
A-Levels	0.617	0.593	0.176	0.159	0.364	0.334	0.149	0.097	−0.665	1.020	0.185	0.184
Nursing or Equivalent	0.868	0.511	0.085	0.139	−0.002	0.325	−0.152	0.085	−0.709	1.025	−0.162	0.130
First degree or above	0.824	0.514	*0.346*	*0.144*	0.531	0.399	0.215	0.114	−0.986	1.868	0.287	0.247
Working Partner	−0.178	0.173	*0.183*	*0.078*	−0.335	0.252	*0.214*	*0.075*	−0.850	0.758	0.076	0.149
Ln(Pay)	*0.804*	*0.183*	*0.265*	*0.061*	*0.375*	*0.188*	*0.291*	*0.053*	−0.318	0.484	*0.295*	*0.082*
Married	−0.041	0.207	*−0.213*	*0.096*	−0.174	0.230	*−0.173*	*0.079*	0.382	1.025	0.107	0.159
Log likelihood*	−12178.9				−13273.5				−4962.8			
H0 Unobserved heterogeneity correlations zero. (χ^2_6)	28.93** (P < 0.001)				27.19** (P < 0.001)				4.63** (P < 0.591)			
Number of Exits	423		1,657		285		1,929		74		709	

Figures in italics are statistically significant at 5%. *All estimation allows for unobserved heterogeneity with two mass points for each tenure and exit type generating 16 possible combinations, with probability of being in each tenure type modelled as multinomial logit. ** Wald Test of the joint hypothesis that all correlations between unobserved heterogeneity components are zero. Dummies for standard regions, industries, standard occupations and time periods are included in all estimations but results are not reported. (See Appendix for definitions.) All competing risk models estimated use a nonparametric baseline hazard function with the baseline hazard varying across 6 different intervals.

effect dissipates (columns 3 and 5) providing no support for the Oswald hypothesis in overall terms or in terms of the specific job mobility hazard. As such these results are in line with most of the micro-econometric studies for the US (Goss and Phillips, 1997; Coulson and Fisher, 2002) and Australia (Flatau *et al.*, 2003). Our results are however weaker than the comparable Danish study by Munch *et al.* (2006*a*). They find a positive effect on the local job hazard alongside a negative effect on the mobility hazard even after controlling for unobserved heterogeneity and the endogeneity of tenure. The former dominates so they also reject the Oswald hypothesis in aggregate terms. The weakness of our results *vis-à-vis* the Danish study may reflect our smaller sample (with no attrition in Danish administrative data) and also institutional differences across the countries (for example, the UK has a much higher ownership rate, a relatively small and unregulated private rented sector and there are differences in the nature of social housing). Our results can also be contrasted with two other studies which offer broad support for the Oswald hypothesis. Brunet and Lesueur (2003) using French data find that home-ownership has a positive effect on unemployment duration though some concerns have been raised about how they deal with selection bias (Munch *et al.*, 2006*a*). Green and Hendershott (2001) have found using US data that home-ownership raises the duration of unemployment although the effects are very small.

In contrast to home-owners, we find that unemployed public renters are spatially constrained since they are less likely to enter employment with a move compared to private renters and this holds regardless of whether we control for unobserved heterogeneity and tenure endogeneity. No positive effect is found in terms of the transition into a local job for public-renters. In overall terms, unemployed public renters are more likely to stay unemployed and this result accords with the older UK literature on public housing (Hughes and McCormick, 1981; 1987) and indicates that, despite the rises in migration rates documented by Hughes and McCormick (2000) during the 1990s, public tenants still face difficulties in the labour market. One caveat to this result is that in estimation using a 6-month window for residential moves before and after a job change this negative public housing effect was not observed. We can speculate that this 6 month window may be too short to capture the effects of the bureaucratic procedures involved in arranging moves within the public housing sector across local authority districts, or the possibility of residential moves by the unemployed to seek work.

Let us turn our attention to the other variables. Age has a positive effect on home-ownership and has a negative effect on both the transition into employment locally or with a move (older workers find it harder to find a job whilst unemployed). One obvious argument might be that older unemployed individuals are perhaps less willing or capable of accumulating new skills and this reduces their attractiveness in the labour market and their ability to gain employment. On top of this there is evidence of a negative spatial effect whereby older unemployed individuals find it even more difficult to gain employment outside their own region. It may be that older individuals have accumulated more wealth and have become more attached to a particular spatial area and so find it more difficult to relocate to a new area for a job compared to the young (aged below 25).

Individuals with higher educational qualifications show a greater probability of being a home-owner and are less likely to be in public sector accommodation. Education could act as a proxy for wealth and lifetime earnings, making it easier to obtain a mortgage to purchase a property. Educational qualifications also raise the likelihood of gaining employment be it locally or otherwise though the effects for the latter are stronger (the educated are more willing to move, possibly because they tend to find higher paying jobs). Having a working partner has a differential effect across the two types of job entry. Though there is a positive effect on the likelihood of gaining local employment there is no such effect on the chances of gaining employment with a move. This is suggestive of a spatial constraint for dual earner couples in which one of the earners has to make a compromise in the labour market.

3.2. *Job Duration*

The job duration model results are shown in Table 3. Let us start our discussion by focusing on our housing tenure variables. With respect to home-ownership, we find a significant negative effect with respect to the transition into non-local employment in our simplest empirical estimation (column 4). In particular, we find that for employed home-owners their transition rate into employment with a move is 68% ($1-\exp[-1.131] = 0.677$) lower than that for private renters. No such effect is evident for local moves. The negative effect becomes smaller in the case of the transition to non-local employment where the selection equation for tenure is modelled simultaneously with job durations and where we control for unobserved heterogeneity (column 3). The negative transition to non-local employment effect is, however, still strong and significant: home-owners are less likely to leave their job for a job with a residential move (their non-local job transition is 49% lower compared to private renters). Our results are consistent with the view that transaction costs encourage home-owners to set higher reservation wages for more distant jobs compared to private renters. Only two other studies examine the relationship between tenure and job duration. Van Leuvensteijn and Koning (2004) find using Dutch data that employed home-owners are less likely to become unemployed compared to employed renters. Their study does not account for spatial moves so is not strictly comparable with ours. The study by Munch *et al.* (2006*b*) for Denmark does account for moves and also finds a strong and negative effect on job changes to non-local jobs though the effects are smaller than our findings. For public renters, spatial constraints are also evident with public renters more (less) likely to obtain a local (non-local) job. However, these effects dissipate once we control for tenure selection and unobserved heterogeneity (columns 3 and 5).

In general, the likelihood of being a home-owner rises with age: consistent with the suggestion that when individuals have accumulated enough wealth they switch to home-ownership. For those who are in employment, age reduces the hazard rate into both types of employment though the coefficients for non-local jobs (with moves) are larger. Older individuals have more stable jobs, and the older they get, the less likely they are to move to gain employment. The absolute size of the coefficients for the age group dummies becomes larger when we control for unobserved heterogeneity.

Being more highly educated increases the chance of being a home-owner and reduces the probability of being a public renter. Having more education also raises the likelihood of entering another job though the effect is more significant for local employment. The highly paid are more (less) likely to be home-owners (public renters) and they are also more likely to cut the current job short and take on a new one especially one involving a move. The two family related variables (married and working partner) increase home-ownership and reduce public renting. Married couples may desire greater stability and want to 'settle down' resulting in lower mobility. Reduced mobility may lead to lower annual-equivalent transaction costs in house purchases and enhance the likelihood of home-ownership. Being married also allows for the possibility of pooling income and wealth and ameliorating any wealth constraint on ownership. Having a spouse who is working again loosens the wealth constraint that single earners face when considering purchasing a home.

As per the unemployment duration estimations, the influence of these variables on employment exits is mixed. Being married has a strong negative effect on the hazard to local employment with no effect for non-local employment. A negative dual earner effect is suggested when we examine the results for having a working partner. Having a working spouse reduces the transition into distant employment but has a positive effect on local employment (columns 3 and 5). This suggests that dual earner household's mobility for jobs is reduced. Usually this is couched in gender terms with female spatial immobility reflected in what is labelled the 'tied mover hypothesis'. Here females in dual career households are more likely to be the trailing spouse. They move at the behest of their partner and in doing so experience a labour market loss. Mincer (1978) argued that families maximise total family income. Where the husband's gain outweighs the loss to the wife the family moves. With husbands typically being the primary earner, married women are characterised as tied movers in that they move for the benefit of the family and in doing so experience a loss. A significant body of research broadly confirms this hypothesis and the deleterious impact on labour market outcomes (McGoldrick and Robst, 1996; Büchel and Battu, 2003; Nivalainen, 2004).

3.3. *Job Duration by Socio-Economic Class*

Hughes and McCormick (1994) show that the migration decisions of workers vary considerably across socio-economic classes. Table 4 explores whether these type of effects also manifest themselves in the current empirical framework. For the unskilled/partly skilled group we only have 74 non-local job exits. Therefore, the results here convey little information with few variables being statistically significant and the null hypothesis that the unobserved heterogeneity components are important is not rejected. In contrast, the estimation results for the professional/managerial and skilled manual/non-manual classes are more informative. In both estimations, the hypothesis that all the correlations between unobserved components are zero is rejected, with most estimated coefficients as expected (if not always statistically significant at 5%). Most interesting, there is some evidence of a differential effect of house-ownership on exits with a residential move across LADs, with the negative impact relative to private renting greater for skilled manual/non-manual classes compared to the professional/managerial class. From a simple job search perspective any negative home ownership effect is a function of the job offer arrival rate and the difference in the probabilities of receiving a job offer above the reservation wage when a tenant and relative to when an individual is a home-owner. From this perspective, the difference in the negative home-ownership effect across groups may reflect differences in job arrival rates and/or the differences in the probabilities of acceptable offers.

4. Conclusions

This article examines the effects of housing tenure on individual job mobility in the UK using the BHPS. As such our analysis represents the first explicit micro study of the Oswald hypothesis using UK data. Beyond this our analysis is distinctive in two ways. We examine the effects of public rented as well as private home-ownership and we control for unobserved heterogeneity and endogeneity of housing tenure. We also take explicit account of spatial mobility by distinguishing between local and non-local jobs.

Despite the limitations of this study, e.g. the approximate way in which local labour markets can be captured or the difficulties in dealing with incomplete job history information, our results indicate that spatial mobility and distance matters. However, there are differential effects across tenure types and it matters whether we start with the employed or the unemployed. In general our results indicate that home-ownership is a constraint for the employed and public renting is more of a constraint for the unemployed. Employed home-owners have a lower probability of gaining employment in more distant labour markets relative to private renters and these negative effects appear larger for the skilled manual/non-manual relative to the professional/managerial socio-economic class. For the unemployed public renting seems to be the more powerful constraint; unemployed public renters appear much less likely to enter a distant job than private renters. There is no support for the Oswald hypothesis that private home-ownership raises unemployment duration.

In rejecting the basic Oswald hypothesis our results are consistent with the vast bulk of previous microeconomic studies from other countries (Munch *et al.* 2006*a*; Van Leuvensteijn and Koning, 2004; Coulson and Fisher, 2002). In contrast, our results with some caveats suggest that the impact of public renting on mobility remains a constraint for the unemployed and that home-ownership negatively impacts on overall job mobility which might induce negative aggregate losses at the macro level.

Further research needs to distinguish between those who own outright and those who own with a mortgage with the latter exhibiting varying degrees of debt. Those with weak equity (highly leveraged) may be much keener to obtain re-employment in order to maintain mortgage payments. Furthermore, our analysis says nothing about match quality across space. If there is no change in residence (no regional move) do individuals enter a lower level job that does not match their qualifications? This is the focus of future research.

Appendix: Variable Definitions

1. Home-owner. Dummy variable equals one if the home is owned (with or without mortgage) by the individual or other family member(s) in the household, zero otherwise.
2. Public renter. Dummy variable equals one if the home is rented from a local authority or housing association by the employee or other family member(s) in the household. Private-renter is the reference group.
3. Age categories with the following bands: 25 to 34, 35 to 44, and 45 plus. These are dummy variables, equal to one if the age falls within the category. The reference age group is 16 to 24.
4. Female. This equals one if the employee is female.

5 Children under 16. This is a dummy variable which equals to one if there are one or more children in the household who is aged below 16.
6 Married. This equals to one if the employee is married or cohabiting.
7 Working Partner. This equals one if the employee is married and the spouse/ partner is working where working is defined as being employed or self-employed. It equals zero in all other cases, including those who are unmarried.
8 Four indicators for highest educational qualifications in the UK. These are O-Levels or equivalent; A-Levels or equivalent; Nursing or other higher qualifications; First degree or above (university degree, teaching qualification, or higher). The reference group is having no qualifications.
9 Ln (Pay). This is monthly pay defined as the natural log of usual gross monthly pay.
10 Seven industry indicators created using the Standard Industrial Classification (SIC) 1980 identifiers. The reference group is an amalgamation of four groups: SIC 0 (Agriculture, forestry and fishing), SIC 1 (Energy and water supplies), SIC 2 (Extraction of minerals and ores other than fuels etc) and SIC 9 (Other services). The industry dummies represent the six remaining industries: SIC 3 (Metal goods, engineering and vehicles industries), SIC 4 (Other manufacturing industries), SIC 5 (Construction), SIC 6 (Distribution, hotels and catering), SIC 7 (Transport and communication) and SIC 8 (Banking, finance, insurance, business services and leasing).
11 Nine occupational categories created using the 1990 Standard Occupational Classification (SOC): SOC 1 – Managers and administrators, SOC 2 – Professional occupations, SOC 3 – Associate professional and technical, SOC 4 – Clerical and secretarial, SOC 5 – Craft and related occupations, SOC 6 – Personal and protective service occupations, SOC 7 – Sales occupations, SOC 8 – Plant and machine operatives and the reference group SOC 9 – Other occupations.
12 Seven regional dummies defined as South West, East Anglia, Midlands, North-West, Yorkshire & the North East, Scotland and Wales. The South East is the reference group.
13 Socio-economic class of current job in BHPS is defined from 3 digit standard occupational code and employment status variables. SEC 1 (Professional, managerial and technical occupations). SEC 2 (Skilled manual, Skilled non-manual). SEC 3 (partly skilled & unskilled occupations)

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