

**Department for Work and Pensions**

**Research Report No 296**

# **Labour market transitions among the over-50s**

**Lorenzo Cappellari, Richard Dorsett and Getinet Haile**

A report of research carried out by the Policy Studies Institute in conjunction with Università Cattolica, Milan on behalf of the Department for Work and Pensions

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# Abbreviations and acronyms

<b>BOND</b>	Building on New Deal
<b>DWP</b>	Department for Work and Pensions
<b>LFS</b>	Labour Force Survey
<b>LLFS</b>	Longitudinal Labour Force Survey
<b>NVQ</b>	National Vocational Qualification
<b>NDDP</b>	New Deal for Disabled People
<b>NDP</b>	New Deal for Partners
<b>SPA</b>	State Pension Age
<b>UK</b>	United Kingdom



# Summary

This report uses longitudinal survey data on 26,000 men and women aged between 50 and State Pension Age (SPA) over the period 1993-2003 to describe the characteristics of the over-50s and to examine their transitions between employment, unemployment and types of inactivity using econometric techniques. We focus on four labour market states:

- employment;
- unemployment;
- type 1 inactivity (inactive but with some desire to work);
- type 2 inactivity (inactive and with no desire to work).

These categories can be interpreted as a measure of distance to the labour market: employment is closest, type 2 inactivity furthest away. Some attention is also given to the issue of part-time work.

## Characteristics of the over-50s

### **Size of the over-50s population**

By summer 2003, there were approximately 8.8 million individuals aged 50-SPA ('over-50s', for short). The data show that, since 1993, there has been an upward trend in the size of the over-50s population. The population is also very predominantly white and the majority live with their partner. There are few cases of dependent children in the family and even fewer below the age of 11. Most individuals either own their property outright or are in the process of buying it through a mortgage. Over-50s men tend to be more highly qualified than women who are much more likely to hold no formal qualifications. This is partly explained by the greater tendency for men to have successfully undergone a recognised trade apprenticeship.

See Sections 3.1 and 3.2.

## Health

With an older population, issues of health become increasingly relevant and roughly 40-45 per cent of the population suffered from a health problem for a year or longer. This was slightly more common among men than women. Most common problems were musculo-skeletal, circulatory and respiratory. Approximately a quarter of men and women received benefits.

See Section 3.2.

## Labour market status

About two-thirds of men and slightly fewer women were working. Unemployment is low in this population. More significant is inactivity: 29 per cent of men and 35 per cent of women. Type 1 inactivity is less common than type 2 inactivity. In about half of these cases, the reason for type 1 inactivity is health-related for both men and women. Within type 2 inactivity, health problems are again a common reason for men and women. However, women are more likely than men to cite domestic or caring responsibilities while men are more likely than women to have retired early.

See Section 3.3.

## Changes over time

For both men and women, there has been an increase in the employment rate over the period 1993-2003. For men, this was mainly fuelled by a fall in unemployment while for women there was a corresponding reduction in type 2 inactivity. Overall, unemployment is a short-lived status for both men and women. Employment tends to have the longest duration for men while type 2 inactivity appears to be the most enduring status for women.

See Section 3.7.

## Characteristics of current and previous employment

Most people in employment usually work between 25 and 40 hours per week (64 and 55 per cent of male and female jobs respectively). Most working men who do not fall into this category usually work more than 40 hours per week while most working women who do not fall into this category usually work fewer hours per week. Men receive higher pay on average than women. Of those looking for work, most sought work as an employee. Sixty-two and 31 per cent of men and women respectively were explicitly looking for full-time work. The corresponding levels for part-time work were 13 and 49 per cent. Previous jobs for those unemployed people who had worked in the past were more often manual than for those currently working. Previous jobs were also more commonly in manufacturing than is true of current jobs. There is also an indication that current jobs are less likely than previous jobs to be in low-skill occupations. This highlights the potential importance of re-skilling for those who wish to enter the labour market.

See Sections 3.4 and 3.5.

### **Reasons for leaving work**

Among both men and women, poor health was most often given as the reason for leaving their previous job. Men were much more likely than women to take early retirement. Women, on the other hand, were much more likely to cite family or personal reasons or simply to state that they had resigned.

See Section 3.5.

### **Transitions between economic states**

#### **Relative stability of economic states**

Employment is the most stable status for both men and women; most transitions are to type 2 inactivity (often retirement). Unemployment is usually short-term, especially for women. Those leaving unemployment are split evenly between those finding work and those becoming inactive. Type 1 inactivity is also an unstable status. Most of those leaving type 1 inactivity move into type 2 inactivity. Type 2 inactivity is a very stable state. Transitions from type 2 inactivity are mainly to type 1 inactivity.

See Section 3.8.

#### **Characteristics associated with labour market states**

A number of factors are associated with being in a given labour market state for the over-50s. Men and women become less likely to be employed and most likely to be inactive the older they are. This is particularly marked for those close to SPA. With regard to qualifications, the most highly qualified individuals are the least likely to be employed and most likely to be type 2 inactive. There is some indication that men with a managerial occupation are less likely to be employed and more likely to be type 2 inactive than men with other occupations. Interestingly, the opposite is true for women. Another interesting finding is that there appears to be no difference between men and women in the effect of dependent children in the household. Dependent children are associated with lower inactivity and greater employment. The same is true of having a partner. When the partner is working, the probability of inactivity is dramatically lower and that of employment is dramatically higher. Relative to those who owned their accommodation, those paying off a mortgage were less likely to be inactive and more likely to be employed. There appears to be something of a north-south divide for men, with those living in the north (including Wales) more likely to be type 2 inactive and less likely to be employed. No such pattern was found for women.

See Section 4.2.

#### **Modelling transitions between economic states**

When considering transitions over time, the importance of personal characteristics is outweighed by the effects of previous labour market status. The results for both men and women are suggestive of the presence of substantial persistence in labour market state. That is, the probability of being in a given state is larger for individuals

already observed in that state in the previous quarter than for anyone else. This is known as 'state dependence'. Entering employment is most common among unemployed people, followed by type 1 inactive people and lastly the type 2 inactive people.

See Section 4.3.

### **Part-time work as a 'bridge'**

Drawing a distinction between part-time and full-time employment, it seems that, for men, part-time work operates as a bridge between non-employment and full-time employment. This bridge operates in both directions. That is, part-time work can operate as an intermediate step for those out of work who wish to work full-time and for those working full-time who partially withdraw from the labour market. For women, on the other hand, there is no evidence of part-time work operating as a bridge to full employment. Part-time work appears to function more as a stable long-term state. However, the results still support the idea that part-time work may act as a bridge for women wishing to reduce the extent of their engagement with the labour market.

See Section 4.4.1.

## Modelling spell durations

There was strong evidence of duration dependence. That is, the likelihood of making a transition from a state declines the longer the individual stays in the starting state. Roughly, transitions appear to be concentrated in the first three years of a spell. Individuals who remain beyond this point, remain for a much longer period after that.

### **Leaving type 2 inactivity**

Older men and women are slower to leave type 2 inactivity and those close to SPA are even less likely to leave. Men with a temporary health problem or disability leave more quickly. Not owning one's house outright and having dependent children both speed transitions from type 2 inactivity. Considering just those who were not retired when first observed there are three notable findings. First, there are clear differences between men and women: non-retired women leave type 2 inactivity more slowly than non-retired men. Second, transitions are not concentrated so heavily towards the start of the spell but are spread over a longer period. Third, fewer transitions occur than for type 2 inactive men and women as a whole. That is, type 2 inactivity appears more permanent for those men and women with a reason other than retirement for not wanting to work.

See Sections 5.3.4 and 5.3.5.

### **Leaving type 1 inactivity**

For men, activity and type 2 inactivity are equally important destinations upon leaving type 1 inactivity while, for women, type 2 inactivity is found to be the more important destination. The speed of transition from type 1 inactivity was affected by age, level of qualification, disability, accommodation tenure type, partnership status (especially the economic status of the partner), industry, occupation and region.

See Section 5.3.3.

### **Leaving unemployment**

The main characteristics affecting the speed with which men left unemployment were age, type of accommodation, tenure and region. For women, there were too few observations to consider transitions from unemployment.

See Section 5.3.2.

### **Leaving employment**

Older men and women in the sample are likely to leave employment more quickly than those who are younger. Those closest to SPA leave employment faster. No effect of qualification or occupation is found for men or women, nor is there an effect of having a dependent child. Having a mortgage reduces the time taken to leave employment. Having a working partner slows transitions from employment.

See Section 5.3.1.

## **Conclusion**

To be effective, policy must be tailored to the specific needs of the over-50s. The policy objective of extending working lives is most likely to have an impact by concentrating on the twin aims of encouraging those in work to remain longer in employment while, at the same time, trying to develop an interest in work among those with no such interest.

The analysis has shown evidence of both state dependence and duration dependence. This implies there is the potential for any individual to become trapped in inactivity and, ideally, policy should intervene as soon as an individual experiences a period of non-employment. In view of the stability of employment status among the over-50s, the deadweight costs associated with this should not be too great. However, the combination of state dependence and duration dependence also suggests there is scope for policy to exert a long-lasting and beneficial effect, particularly if support is offered on a sustained basis for those helped into work. This could operate through policy vehicles that address disabled people and partners.

The potential role of part-time employment in extending working lives is also apparent. It offers an intermediate step for those wishing to reduce the level of their engagement with the labour market. For men, it also appears to offer a bridge from non-employment to full-time work. For women, it is less of a bridge to full-time work but more of a long-term employment status.





# 1 Introduction

## 1.1 Background

This report considers transitions between employment, unemployment and inactivity for men and women aged 50 to State Pension Age (SPA). Using a longitudinal dataset constructed from the Labour Force Survey (LFS), econometric models are used to examine the extent and timing of transitions.

## 1.2 Policy context

The population of the United Kingdom (UK) is ageing. According to the most recent census in 2001, the number of people in the UK over the age of 60 outnumbered those who were under 16 for the first time. By 2020, it is expected that a third of the population will be over the age of 50 (Dean, 2003). In recognition of these trends, there is policy interest in encouraging older individuals towards paid employment. This is clearly set out in the Pensions Green Paper 'Simplicity, security and choice: working and saving for retirement' (DWP, 2002a) in which the Government states its determination to increase employment among those aged 50 and over. Other relevant policy statements include 'Pathways to Work' Green paper (DWP, 2002b) and, more recently, consultation document 'Opportunity Age: meeting the challenges of ageing in the 21<sup>st</sup> century' (DWP, 2005b).

The employment rate of individuals aged 50 to SPA has been on an upward trend for the past ten years and in autumn 2004 stood at a level of 71 per cent (DWP, 2005a). This is below that for those aged 25-49 (82 per cent) but higher than that for those aged 16-24 (62 per cent). The majority of those not working are economically inactive rather than unemployed. Despite the fact that there has been a decline over the past ten years, the level of inactivity among this age group stood at 27 per cent in autumn 2004, compared with 16 per cent for those aged 25-49 years. Slightly less than half of this inactivity is for reasons of sickness, disability or injury.

These headline statistics indicate the uniqueness of the over-50s client group and demonstrate the need to understand the nature of their transitions between economic states if policy is to be successful in influencing these. The Government has introduced a wide range of policies designed either to prevent early employment exits or to overcome barriers to labour market re-engagement.

Broadly speaking, provision has focused on four key areas; training, age discrimination, financial incentives and job search encouragement/assistance. These reflect the main barriers to labour market participation among this age group which include skill obsolescence, ill-health, caring responsibilities, age discrimination, resistance to career change and unrealistic wage expectations (DWP, 2003).

Since 1997, measures introduced to bring employment rates among the over 50s to levels commensurate with the rest of the population have been numerous and diverse. Distinct programmes exist for different older client groups reflecting their distance from the labour market. The main sources of help for the unemployed are Jobcentre back-to-work programmes. For the inactive, modifications to Incapacity Benefit (IB) eligibility criteria function to prevent the slide from unemployment to inactivity and are combined with an increasingly work-focused regime for those that remain. In addition to specific measures aimed at promoting work re-entry, steps have also been taken to prevent premature exit by changing the legal and business context in which labour market opportunities and individual decisions are formed.

In recognition of the role that flexible employment can play in preventing early labour market exit, reforms to pension access rules have also recently been announced. These reforms, scheduled for implementation in April 2006, will permit pension claims while still employed without the need to change employer (DWP, 2005b). Prior to the Inland Revenue changes, regulations stipulated that access to a pension was only allowed upon departure from an employing organization with which the pension resided. This could give rise to the perverse situation of an individual leaving a job, collecting their pension and then becoming re-employed by the same organisation on a contractual/consultancy basis, or leaving work altogether.

Anti-discrimination measures are also a critical component of the Welfare to Work strategy. The Government is currently seeking to tackle age discrimination by means of an Age Positive campaign and through the non-statutory Code of Practice on Age Diversity in Employment. By December 2006, anti-discrimination legislation relating to age will be implemented with a Commission for Equality and Human Rights established to oversee the new rights.

### 1.3 Aims of the analysis and summary of the methodology used

The overall aim of the analysis is to achieve a better understanding of transitions between employment, unemployment and types of inactivity for the over-50s. There are a number of aspects to this. To start with, it is of interest to know the extent of such transitions. This can be explored by a simple descriptive analysis. Deeper questions require an econometric analysis. A key question is whether transitions are 'state dependent'. State dependence describes the situation whereby the extent to which the probability of being, say, unemployed in a given period is influenced by the experience of unemployment in an earlier period. A policy implication of state dependence is that anybody experiencing an adverse labour market state is at risk of becoming trapped in that state. Another key question is whether transitions are 'duration dependent'. Duration dependence describes the situation whereby the extent to which the rate of, say, leaving unemployment depends on how long the individual has been unemployed. A policy implication of duration dependence is that the longer an individual experiences an adverse labour market state, the more difficult it becomes to help that person move closer to the labour market. This points to the desirability of early intervention. Lastly, it is helpful to explore the extent to which transitions are associated with particular characteristics. This is possible in econometric models in a straightforward way.

The econometric analysis is based on two approaches to modelling transitions: Markov modelling and duration modelling. Details on these approaches are provided in the Appendix. For convenience, the key distinctive characteristics of the two approaches are summarised in Table 1.1 below:

**Table 1.1 Key characteristics of Markov models and duration models**

<b>Markov models</b>	<b>Duration models</b>
Estimate the probability of a transition over a given period of time	Estimate the time taken until a transition
Take no account of the length of time in the starting state	Take full account of the length of time in the starting state
Consider all starting states simultaneously	Consider a single starting state
Allow examination of 'state dependence'	Allow examination of 'duration dependence'

It should also be noted that the range of variables considered in the econometric models (and indeed the descriptive analysis) is constrained by what is available in the data. It may be that there are other important variables not captured in the data that, therefore, cannot be included in the analysis. For those variables that are included in the econometric models, there is also the possibility that their effects may interact. This is mostly not considered in the analyses that follow.

## 1.4 Structure of this report

The remainder of this report is organised as follows. Chapter 2 gives a description of the data on which the analyses are based. This is followed in Chapter 3 by a detailed description of the population of interest. In Chapter 4, the results of modelling transitions between economic states are presented. In Chapter 5, the length of spells is considered and the results of modelling the time taken until moving from a particular labour market state are presented. Chapter 6 draws together the key findings from the previous chapters to offer some broad policy conclusions.

## 2 Defining the sample

The analysis in this report is based on the Labour Force Survey (LFS). The LFS is a quarterly survey of 60,000 households in the United Kingdom (UK) with a focus on those characteristics related to the labour market. It is carried out as a rotating panel with one-fifth of the respondents being replaced each quarter. Hence, each (fully-participating) household is interviewed five times over a period spanning 12 months. All adult household members at a given address are interviewed, although information on unavailable members of the household is collected by means of proxy interview. It is the address rather than the household that is the sampling unit. This means that households leaving or moving to a new address will not be observed for the full year.<sup>1</sup>

A subset of the variables in the LFS is made available in the Longitudinal LFS (LLFS). The LLFS links the quarterly surveys in the LFS so that it becomes possible to observe changes over time for households, families and individuals. Two versions of the LLFS are available: one includes households who respond to interviews in two adjacent quarters; the other includes households who respond to interviews in all five quarters. It is the latter version that is used in the analyses in this report since it allows transitions to be observed over the longest period of time possible. It should be noted that the sample is provided with weights that address the issue of nonresponse and attrition in the data; these weights are applied in all the analyses in this report.

As noted, each LLFS spans the period of a single year. To maximise the sample size, the dataset has been built by combining as many LLFSs as possible such that there is no overlap in the periods of time covered by any of the LLFSs.<sup>2</sup> In the event, the final dataset used LLFSs from summer 1993 – summer 1994. In view of the fact that the analysis is restricted to individuals aged 50 or over but below state pensionable age, only men who were aged 50-64 when first observed and women who were aged 50-59 when first observed were selected.

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<sup>1</sup> In contrast, the British Household Panel Survey (BHPS) tracks movers and those who leave the household. However, the sample size of the BHPS is too small for the purposes of this report.

<sup>2</sup> Overlaps were avoided to prevent double-counting of individuals and complicating the survey weights.

The number of observations available for analysis in the resulting dataset is shown in Table 2.1. To summarise, observations on approximately 26,000 individuals are available.

**Table 2.1** Number of observations available for analysis

<b>Starting season</b>	<b>Observations</b>
Summer 1993	2,832
Autumn 1994	2,965
Winter 1995	3,001
Spring 1997	2,988
Summer 1998	3,029
Autumn 1999	3,040
Winter 2000	2,819
Spring 2002	2,874
Summer 2003	2,483
All LLFSs	26,031

## 3 Characteristics of the over-50s

This chapter presents a descriptive account of the characteristics of the over-50s.<sup>3</sup> It is important to note at this stage that the term 'over-50s' is a convenient shorthand to indicate those individuals aged 50 or over but at least a year below the State Pension Age (SPA).<sup>4</sup>

### 3.1 Size of the over-50s population

Table 3.1 shows that, for both men and women, there has been a noticeable increase in the number of over-50s such that by summer 2003, there were approximately 8.8 million such individuals. The smaller numbers of women observed in the table reflect their younger SPA.

**Table 3.1 Number of men aged 50-64 and women aged 50-59 (thousands)**

	Male	Female
Summer 1993	4,219	3,025
Autumn 1994	4,282	3,059
Winter 1995	4,495	3,168
Spring 1997	4,594	3,311
Summer 1998	4,747	3,458
Autumn 1999	4,933	3,574
Winter 2000	4,966	3,696
Spring 2002	5,035	3,817
Summer 2003	5,038	3,755

<sup>3</sup> Many of these characteristics were included in the models presented in Chapters 4 and 5.

<sup>4</sup> The reason for this definition of the age group is provided in Chapter 2.

### 3.2 Personal and household characteristics

Most of the remainder of the analysis in this chapter is based on the first interview for a pooled sample of individuals across all years available.<sup>5</sup> The consequence of this is that the characteristics as summarised here are those of the population over the period 1993-2003<sup>6</sup> rather than the population of the over-50s as it currently stands. This allows for a comparability of the descriptive results with the modelling results that appear later in the report. Furthermore, it allows us to investigate some characteristics for which there would be too few observations to describe were we to rely on just the latest available data (summer 2003).

This age structure of the population is summarised in Table 3.2. This shows clearly the effect of the lower SPA for women. Overall, it appears that there is some tendency for the size of the population to decline with age, for both men and women.

**Table 3.2 Age bands by gender (col %)**

	Male	Female
50-54	38	53
55-59	32	47
60-64	29	0
<i>Base</i>	14,857	11,174

The population is predominantly white. This is unsurprising given the younger age profile of those from minority ethnic groups. Only those who are Asian or Asian British register as comprising more than half a per cent of cases. Inevitably, this reduces the scope for consideration of ethnicity in the analysis that follows.

The majority of the population are living with a partner. It is worth bearing in mind the differences in age when considering Table 3.3. In particular, the difference between men and women in terms of the proportion widowed highlights the greater longevity of women.

<sup>5</sup> The exception to this is the final section on transitions. This is based on the same pooled sample but uses information from both the first interview and the fifth interview.

<sup>6</sup> Although in some cases, the results will relate to a shorter period. This is due to the fact that there are some changes over time in which variables are available; information on certain aspects of potential interest was simply not collected in some years.



**Table 3.3 Marital status by gender (col %)**

	Male	Female
Single	7	4
Married/cohabiting	82	77
Separated	2	2
Divorced	6	10
Widowed	3	6
<i>Base</i>	<i>14,857</i>	<i>11,174</i>

It is unsurprising in view of the population we are considering that there are few cases of dependent children living in the family (Table 3.4). Furthermore, where dependent children are present in the household, they are almost all of school age and the majority are 11 or more years old. This reduces the extent to which the presence of children in the household acts as a constraint on labour supply.

**Table 3.4 Children in the family by gender (col %)**

	Male	Female
<b>Dependent children in the household</b>		
Yes	14	10
No	86	90
<i>Base</i>	<i>14,846</i>	<i>11,167</i>
<b>Age of youngest child for households with dependent children</b>		
0-2 years	2.1	0.2
3-5 years	4.9	1.2
6-10 years	14.9	8.4
11-15 years	47.5	50.7
16-19 years	30.5	39.5
<i>Base</i>	<i>2,045</i>	<i>1,144</i>

Table 3.5 shows that most individuals either own their property outright or are in the process of buying it through a mortgage. There are no real differences here between men and women. Those who are renting or are living rent-free account for about a fifth of the population. In terms of region of residence, this is very similar for men and women. Nearly one-third of the population lives in London and the South East.

**Table 3.5 Housing tenure type by gender (col %)**

	Male	Female
Owned outright	36	37
Mortgage	42	42
Rent/rent free	22	21
<i>Base</i>	14,852	11,171

From Table 3.6, it appears that the men in this population tend to be more highly qualified than the women. Women are much more likely to hold no formal qualifications than men. At the other extreme, men are more likely to hold the equivalent of a level 5 NVQ or higher; that is, to have completed higher education. Perhaps the most striking difference is at the NVQ 3 level. It is much more common for this to be the highest qualification of men than it is for women. While it is not straightforward to describe what a level 3 NVQ equates to, in academic terms it roughly corresponds to A-level standard.

**Table 3.6 Highest qualification (NVQ equivalent) and apprenticeships by gender (col %)**

	Male	Female
<b>Qualifications:</b>		
None	26	39
Other qualifications	13	11
NVQ 1	1	6
NVQ 2	9	16
NVQ 3	31	9
NVQ 4	7	11
NVQ 5/6	13	7
<i>Base</i>	12,946	9,776
<b>Recognised trade apprenticeship:</b>		
Yes	32	5
No	68	95
<i>Base</i>	14,783	11,144

A little more insight into this disparity is provided by considering the issue of trade apprenticeships. This shows that it was much more common among men than among women to have a recognised trade apprenticeship. Since having a trade apprenticeship would be viewed as equivalent to a level 3 NVQ, this offers some explanation for the differences between men and women at this level.

With an older population, issues of health become increasingly relevant. Table 3.7 shows that roughly 40-45 per cent of the population suffered from a health problem for a year or longer. This was slightly more common among men than women. Those who reported having a long-term health problem were asked to describe the nature of the problem or problems. The most common problems were musculo-skeletal, circulatory and respiratory.

**Table 3.7 Health problems (for those who report a problem) by gender (cell %)**

	Male	Female
<b>Health problem lasting more than a year:</b>		
Yes	45	41
No	55	59
<i>Base</i>	9,745	7,468
<b>If yes, nature of the problem:</b>		
Problems with arms, hands	21	29
Problems with legs or feet	29	32
Problems with back or neck	29	35
Difficulty in seeing	4	3
Difficulty in hearing	8	4
Speech impediment	1	0
Skin conditions, allergies	3	4
Chest, breathing problems	12	13
Heart, blood, pressure, circulation	30	20
Stomach, liver, kidney, digestion	7	7
Diabetes	7	4
Depression, bad nerves	4	6
Epilepsy	1	1
Learning difficulties	0	0
Mental illness, phobia, panics	2	2
Progressive illness not elsewhere specified	3	3
Other problems, disabilities	6	10
<i>Base</i>	4,743	3,241

Approximately a quarter of men and women received benefits. Table 3.8 describes which benefits were received by those who claimed in summer 2003 (and who could provide information on which benefit they claimed).<sup>7</sup> For men, sickness and disability benefits were most commonly received, while about a quarter of men

<sup>7</sup> This analysis is restricted to the most recent data since the Labour Force Survey (LFS) benefit information is not consistent over time.

claimed Income Support (IS) or Housing Benefit (HB)/Council Tax Benefit (CTB). For women, sickness and disability benefits were also important but receipt of Child Benefit (ChB) was also reported by two-fifths of the women.

**Table 3.8 Benefit received in summer 2003 for those on benefits excluding 'missing' by gender (cell %)**

	Male	Female
Unemployment benefit, National Insurance (NI) credits	11	3
IS (not as unemployed)	28	12
Sickness or disability (exc. tax credits)	72	40
State pension	1	12
Family related benefits (exc. ChB and tax credits)	1	0
ChB	3	41
HB/CTB	25	16
Tax credits	3	4
<i>Base</i>	<i>209</i>	<i>216</i>

### 3.3 Economic status

Table 3.9 describes the economic status of individuals when first interviewed. To concentrate on the main groups, only those accounting for at least a half of one per cent of cases are included in the table. It can be seen that about half the men and slightly more of the women were employed when first interviewed. Self-employment is much more common among men than women with the result that overall about two-thirds of men and slightly fewer women can be viewed as working. Unemployment is low in this population. More significant is inactivity; this accounts for about 29 per cent of men and 35 per cent of women.<sup>8</sup>

Table 3.9 draws a distinction between those inactive people who would like to work and those who would not like to work. Within each of these groupings, there is a variety of reasons for inactivity making it difficult to capture the diversity of these groups with a single label. Hence, for convenience, inactive people who would like to work are referred to as type 1 inactive (or, simply, inactive 1) in the remainder of this report while those who would not like to work are referred to as type 2 inactive (or inactive 2).

<sup>8</sup> Note that these figures do not match those in the table. The reason for this is that the table only presents those categories accounting for at least a half of one per cent of all cases. The sum of these excluded categories fully accounts for the differences between the figures quoted and those apparent from the table.

Type 1 inactive people are less common than type 2 inactive people in this age group. In about half of these type 1 cases, the reason for inactivity is health-related. However, there are other reasons, such as domestic responsibility and the belief that no jobs are available. There appear to be few sizeable differences between men and women. Within type 2 inactivity, such differences are more noticeable. Again, health problems are commonly given as the reason for not wanting to work. However, women often state that they do not want to work since they are looking after the family or the home. Very few men give this reason. Another important group is made up those who are retired. This accounts for eight per cent of men and four per cent of women (or 37 and 15 per cent respectively of type 2 inactive men and women). Clearly, these are people who have retired early.

**Table 3.9 Economic status when first observed by gender (col %)**

	Male	Female
Employee	51	56
Self-employed	16	6
Unpaid family worker	0	1
ILO unemployed	5	3
<b>Inactive 1 – inactive but would like work</b>		
Looking after family/home	0	1
Long-term sick or disabled	4	3
Believes no job available	1	1
Not looked	1	1
<b>Inactive 2 – inactive and would not like work</b>		
Looking after family, home	1	10
Long-term sick or disabled	11	9
Not need or want job	1	3
Retired	8	4
Other reason	0	1
<i>Base</i>	14,857	11,174

Given their central role in the econometric analysis later in the report, the broad categories as just described are summarised in Table 3.10. The entry in each cell is an aggregation of the entries in Table 3.9. It should be noted that the label 'Employed' relates to employees, self-employed people, unpaid family workers and those on government employment and training programmes. We can view each of these broad categories as corresponding to points along a continuum representing distance from the labour market. At the heart of the labour market are those who are currently working. Unemployed people, although they are seeking and available for work, are at the fringe of the labour market since they are not currently working. Together, employed and unemployed people define the economically active population. The economically inactive are further away from the labour market.

However, as illustrated above, there is variation among the inactive in their disposition towards work. Type 1 inactivity is characterised by a desire to work and so can be viewed as closer to the labour market than type 2 inactivity which is defined by the absence of any such desire. Some support for this interpretation of the distance measure will be provided when presenting the modelling results.

**Table 3.10 Grouped economic status when first observed by gender (col %)**

	Male	Female
Employed	67	62
Unemployed	5	3
Inactive 1	7	6
Inactive 2	22	29
<i>Base</i>	14,857	11,174

### 3.4 Employment characteristics for those in work

There was marked variation by gender in the socio-economic group of respondents' main job. As can be seen from Table 3.11, about a quarter of men who were working when first interviewed were either employers or managers. The corresponding figure for women was 13 per cent. There was also a gender difference among professional workers. Nearly one-tenth of men were professional workers compared to fewer than two per cent of women. It was among intermediate and junior non-manual workers that women were over-represented compared to men. Half of all women's jobs fell into one of these two categories compared with just 15 per cent of men's jobs. Women were also more likely to work in personal service industries. On the other hand, men were more likely to do manual work. This accounted for 37 per cent of male jobs but only 23 per cent of female. Finally, men are more likely to work on their 'own-account' than women (12 per cent compared to four per cent of all cases).

**Table 3.11 Socio-economic group in main job for those in work by gender (col %)**

	Male	Female
Employers and managers (large establishment)	13	7
Employers and managers (small establishment)	10	6
Professional workers (self-employed)	3	0
Professional workers (employees)	6	1

Continued

**Table 3.11 Continued**

	Male	Female
Intermediate non-manual workers	10	20
Junior non-manual workers	5	30
Personal service workers	1	8
Foreman and supervisors (manual)	6	2
Skilled manual workers	16	2
Semi skilled manual workers	11	10
Unskilled manual workers	3	9
Own account workers	12	4
Farmers (employers and managers)	1	0
Farmers (own account)	1	0
Agricultural workers	1	1
Members of armed forces	0	0
<i>Base</i>	<i>9,004</i>	<i>5,469</i>

Table 3.12 considers the industry of the main job for those in work. Again there are clear differences between men and women. For men, nearly a quarter work in manufacturing industries. This is twice as large as the next most important industries: construction and 'wholesale, retail and motor trade'. A further tenth work in each of 'transport, storage and communications' and 'real estate, renting and business activities'. The most important industry for women is 'health and social work' which accounts for 22 per cent of jobs. Education and 'wholesale, retail and motor trade' account for 16 and 17 per cent respectively. The other main industries for women are manufacturing and 'real estate, renting and business activities'.

**Table 3.12 Industry of main job for those in work by gender (col %)**

	Male	Female
Agriculture, hunting and forestry	3	1
Fishing	0	0
Mining, quarrying	1	0
Manufacturing	24	10
Electricity, gas and water supply	1	0
Construction	12	2
Wholesale, retail and motor trade	12	17
Hotels and restaurants	2	4
Transport, storage and communication	10	3
Financial intermediation	2	3

Continued

**Table 3.12 Continued**

	Male	Female
Real estate, renting and business activities.	11	9
Public administration and defence	6	7
Education	6	16
Health and social work	4	22
Other community, social and personal	5	5
Private households with employed persons	0	1
Extra-territorial organisations, bodies	0	0
Workplace outside the UK	0	0
<i>Base</i>	<i>9,041</i>	<i>6,391</i>

There are also differences with regard to occupation as can be seen from Table 3.13. The most important categories for men are 'managers and administrators', 'craft and related occupations', 'plant and machine operatives' and 'professional occupations'. For women, 'clerical and secretarial occupations' is the largest category. The remaining occupations are fairly similar in terms of size, with the exceptions of 'craft and related occupations' and 'plant and machine operatives' which account for only a small minority of jobs.

**Table 3.13 Occupation of main job for those in work by gender (col %)**

	Male	Female
Managers and administrators	22	11
Professional occupations	12	10
Associate professional and technical occupations	8	10
Clerical, secretarial occupations	6	25
Craft and related occupations	20	2
Personal, protective occupations	4	14
Sales occupations	3	10
Plant and machine operatives	16	4
Other occupations	8	13
<i>Base</i>	<i>10,131</i>	<i>7,099</i>

There is evidence that most people in employment usually work between 25 and 40 hours per week (Table 3.14). This is particularly true for men (64 per cent of male jobs involve this many hours each week) but also for women (55 per cent). The key difference is that most working men who do not fall into this category usually work more than 40 hours per week while most working women who do not fall into this category usually work fewer hours per week.



**Table 3.14 Usual hours per week (exc. overtime) in main job for those in work by gender (col %)**

	Male	Female
<16 hours	3	18
16-24 hours	4	21
25-40 hours	64	55
>40 hours	29	6
<i>Base</i>	9,988	7,031

This tendency for men to work longer hours is reflected in levels of pay. Average real usual gross weekly pay for men is substantially higher than that for women. However, this cannot be explained wholly by the fact of men working longer hours. Table 3.15 shows that average real hourly pay for men is nearly £3 higher than that for women.

**Table 3.15 Employees pay (£, 2003) by gender**

	Male	Female
Mean gross weekly pay	£442	£240
<i>Base</i>	4,000	3,587
Mean gross hourly pay	£10.91	£8.02
<i>Base</i>	3,976	3,565

### 3.5 Job search and previous employment characteristics for those out of work

Table 3.16 shows the proportion of those not in work who have searched for work in the four weeks prior to the interview. The vast majority (approximately 90 per cent) of these people have not looked for work. Men are roughly twice as likely as women to have searched for work; this figure corresponds to the difference between the proportion of unemployed men and women we observed earlier.

**Table 3.16 Whether those out of work have searched in past four weeks by gender (col %)**

	Male	Female
Yes	11	6
No	89	94
<i>Base</i>	4,554	4,049

The type of work sought is shown in Table 3.17. Overall, 74 per cent of men and 85 per cent of women were seeking work as an employee. The majority of the remainder (14 and nine per cent of men and women respectively) wanted to become self-employed or had no preference. With regards to hours worked per week, 62 per cent of men and 31 per cent of women were explicitly looking for full-time work. The corresponding levels for part-time work were 13 and 49 per cent.

**Table 3.17 Type of work sought for those seeking work by gender (col %)**

	Male	Female
Self-employment	8	6
Full-time employee	53	29
Part-time employee	11	45
Employee – no preference	10	11
Full-time – no preference	10	2
Part-time – no preference	2	4
No preference – no preference	6	3
Type of employment not stated	0	0
Looking for place on government scheme	1	0
<i>Base</i>	<i>1,280</i>	<i>738</i>

It is also possible to examine duration of job search (Table 3.18). The overriding impression is that the job search process has been ongoing for a substantial period of time in most cases. This is particularly true for men, a fifth of whom have been searching for more than five years. The median length of job search for men falls into the 12-18 month category while for women it falls into the 6-12 month category.

**Table 3.18 How long those searching have been doing so by gender (col %)**

	Male	Female
Not yet started	1	1
Less than one month	9	15
One month but less than three months	12	15
Three months but less than six months	9	14
Six months but less than 12 months	14	17
12 months but less than 18 months	10	11
18 months but less than two years	7	6
Two years but less than three years	9	7
Three years but less than four years	6	5

Continued

**Table 3.18 Continued**

	Male	Female
Four years but less than five years	4	2
Five years or more	18	7
<i>Base</i>	969	524

Table 3.19 shows that nearly all those who were not working when interviewed have worked (or had a place on a scheme) at some point in the past.

**Table 3.19 Whether those not working have ever worked by gender (col %)**

	Male	Female
Yes	99	96
No	1	4
<i>Base</i>	4,715	4,067

Of those not working but who have worked in the eight years prior to interview, the experience of employment is often distant. Table 3.20 shows that for nearly half the men and 60 per cent of the women their last experience of employment was more than five years before the time of interview.

**Table 3.20 How long out of work for those not working but who have previously worked by gender (col %)**

	Male	Female
Less than three months	4	3
Three months but less than six months	4	3
Six months but less than 12 months	6	6
One year but less than two years	13	9
Two years but less than three years	10	7
Three years but less than four years	9	7
Four years but less than five years	7	6
Five years or more	47	60
<i>Base</i>	4,665	3,908

We can also examine the characteristics of the last job held for those who are not currently working (Table 3.21). Comparing this with the corresponding results for people in work reveals some interesting differences (see also Table 3.11). First, it is

clear that the jobs for those unemployed people who have previously worked<sup>9</sup> were more often manual (47 and 29 per cent for men and women respectively) than for those currently working (37 and 23 per cent). For men, own-account work was more common among current jobs than past jobs while for women the same was true of intermediate non-manual work. These comparisons perhaps give some impression of the adjustments required to successfully move from unemployment to employment: re-skilling in areas more applicable to current work opportunities will increase individuals' chances of finding work.

**Table 3.21 Socio-economic group in last job for those not in work by gender (col %)**

	Male	Female
Employers and managers (large establishment)	15	5
Employers and managers (small establishment)	8	6
Professional workers (self-employed)	1	0
Professional workers (employees)	5	1
Intermediate non-manual workers	9	15
Junior non-manual workers	6	30
Personal service workers	1	10
Foreman and supervisors (manual)	9	2
Skilled manual workers	20	2
Semi skilled manual workers	12	12
Unskilled manual workers	5	13
Own account workers	7	2
Farmers (employers and managers)	0	0
Farmers (own account)	0	0
Agricultural workers	1	0
Members of armed forces	0	0
<i>Base</i>	<i>2,807</i>	<i>1,718</i>

Comparisons with respect to industry and occupation provide analogous insights. With regard to industry (Table 3.22) the main differences are with regard to manufacturing which is less common among current jobs than past jobs and, for men, 'real estate, renting and business activities' which is more common among new jobs than old (see also Table 3.12).

<sup>9</sup> To be precise, the past job characteristics presented here for unemployed people only relate to jobs which were held at most eight years before the time of the survey interview.

**Table 3.22 Industry of last job for those not working by gender (col %)**

	Male	Female
Agriculture, hunting and forestry	2	1
Fishing	0	0
Mining, quarrying	2	0
Manufacturing	29	14
Electricity, gas and water supply	3	1
Construction	13	1
Wholesale, retail and motor trade	9	19
Hotels and restaurants	3	6
Transport, storage and communication	11	3
Financial intermediation	4	3
Real estate, renting and business activities.	6	7
Public administration and defence	7	5
Education	5	14
Health and social work	3	20
Other community, social and personal	4	5
Private households with employed persons	0	1
Extra-territorial organisations, bodies	0	0
Workplace outside the UK	0	0
<i>Base</i>	2,973	1,839

Table 3.23 gives the last occupation of those that are not in work. Comparisons with the results for those that are currently working show only one difference of any real note. Current jobs are less likely to fall under 'other occupations', a category which captures an assortment of low-skill occupations (see also Table 3.13).

**Table 3.23 Occupation of last job for those not working by gender (col %)**

	Male	Female
Managers and administrators	20	9
Professional occupations	10	8
Associate professional and technical occupations	8	7
Clerical, secretarial occupations	6	22
Craft and related occupations	21	4
Personal, protective occupations	5	16
Sales occupations	3	12
Plant and machine operatives	18	6
Other occupations	10	17
<i>Base</i>	3,402	2,103

Table 3.24 presents the reasons individuals gave for leaving their previous job. Among both men and women, the most common answer was that they left their job for health reasons. They were also quite likely to have been made redundant or taken voluntary redundancy. Men were much more likely than women to take early retirement. Some reported retiring at or after the statutory retirement age which is a puzzling result given the definition of the sample.<sup>10</sup> Women were much more likely than men to have given up work for family or personal reasons. They were also much more likely than men to have simply resigned.

**Table 3.24 Reason for leaving last job for those not working but who left a job in last eight years and those working who left a job in last three months by gender (col %)**

	Male	Female
Dismissed	1	1
Made redundant, voluntary redundancy	23	17
Temporary job ended	5	5
Resigned	3	9
Gave up work for health reasons	30	34
Took early retirement	24	11
Retired (at or after statutory retirement age)	4	1
Gave up work for family, personal reason	4	16
Left for some other reason	6	6
<i>Base</i>	<i>2,635</i>	<i>1,676</i>

### 3.6 Duration of current employment or non-employment spell

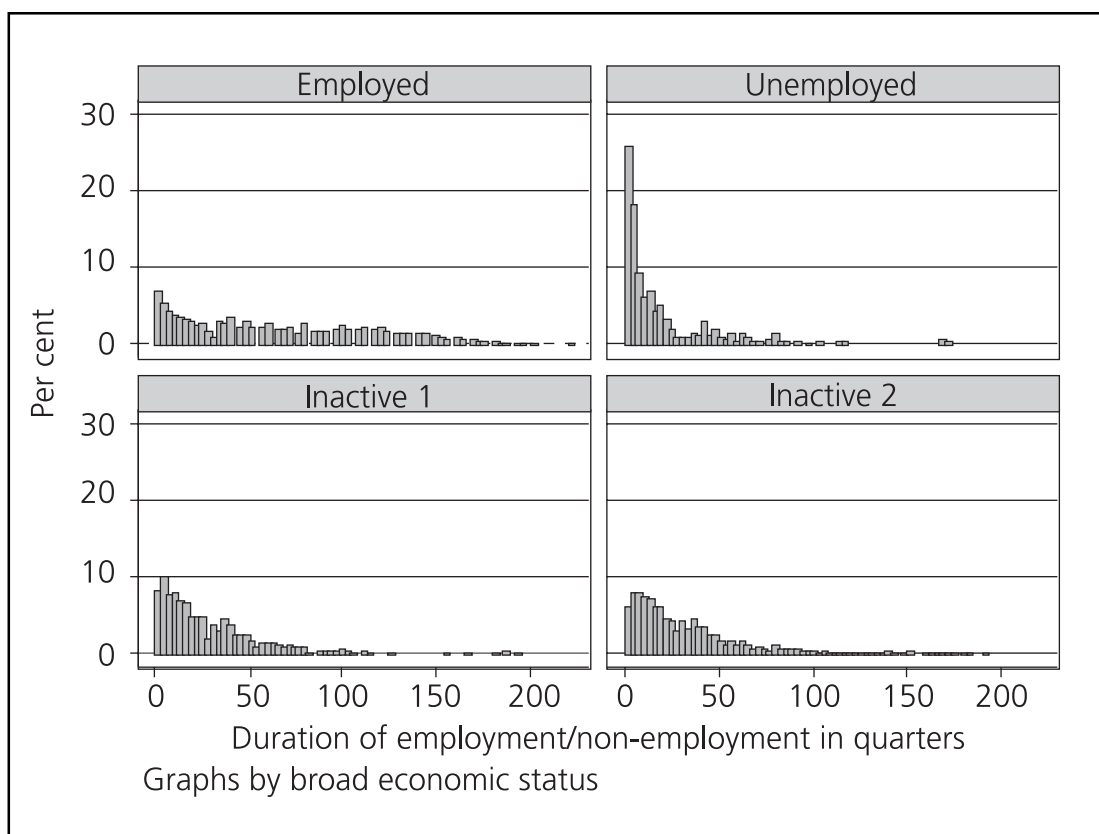
Using information collected in the survey on the date at which the current period of employment began, it is possible to calculate the length of time for which an employed individual has been in work. For a non-employed person, information on time since last employment can be used to calculate the length of time for which that individual has been non-employed.<sup>11</sup> This gives an insight into the permanence or otherwise of the four economic states that form the focus of this report. The most

<sup>10</sup> One possible explanation is that respondents interpreted 'retirement age' as being defined by an employer.

<sup>11</sup> Unfortunately, for those out of work, the data do not allow a distinction to be made between the types of non-employment. This limitation also characterises the later econometric analysis where the implicit assumption is made that the type of non-employment observed at the time of the first interview has characterised the full duration of the non-employment spell.

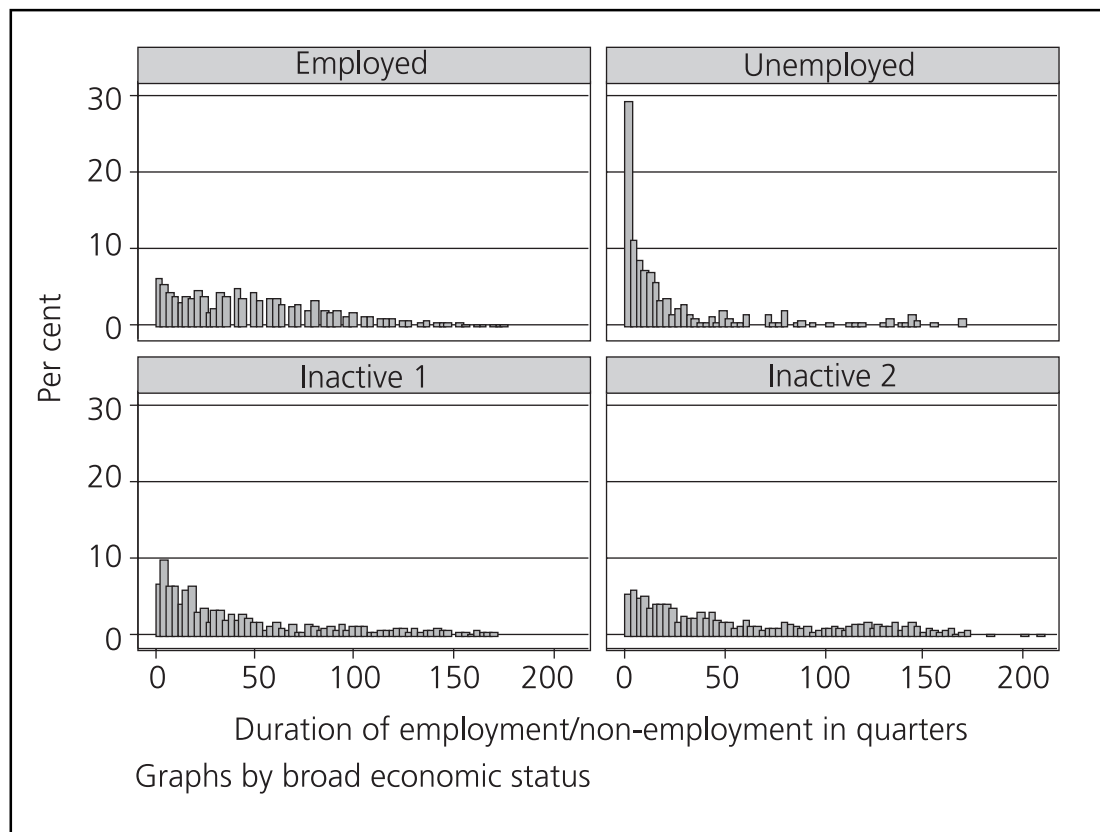
striking feature of Figure 3.1 is the tendency for unemployment to be short-lived relative to the other economic statuses for men. Employment tends to be of a longer duration (average duration of about 15 years) than unemployment (four years) or inactivity (seven years). The two types of inactivity appear fairly similar in terms of their typical duration.

**Figure 3.1 Duration of employment or non-employment spell for men, in quarters**



The picture for women is similar with regard to unemployment being much shorter in duration (5½ years) than either employment (11 years) or inactivity (See Figure 3.2). However, there appear to be differences between the types of inactivity. Type 2 inactivity is often longer in duration (average of 14 years) than type 1 inactivity (ten years) and in fact seems to be a more enduring state than employment. However, these differences are not marked. The question of the duration will be examined in detail later in this report.

**Figure 3.2 Duration of employment or non-employment spell for womens, in quarters**



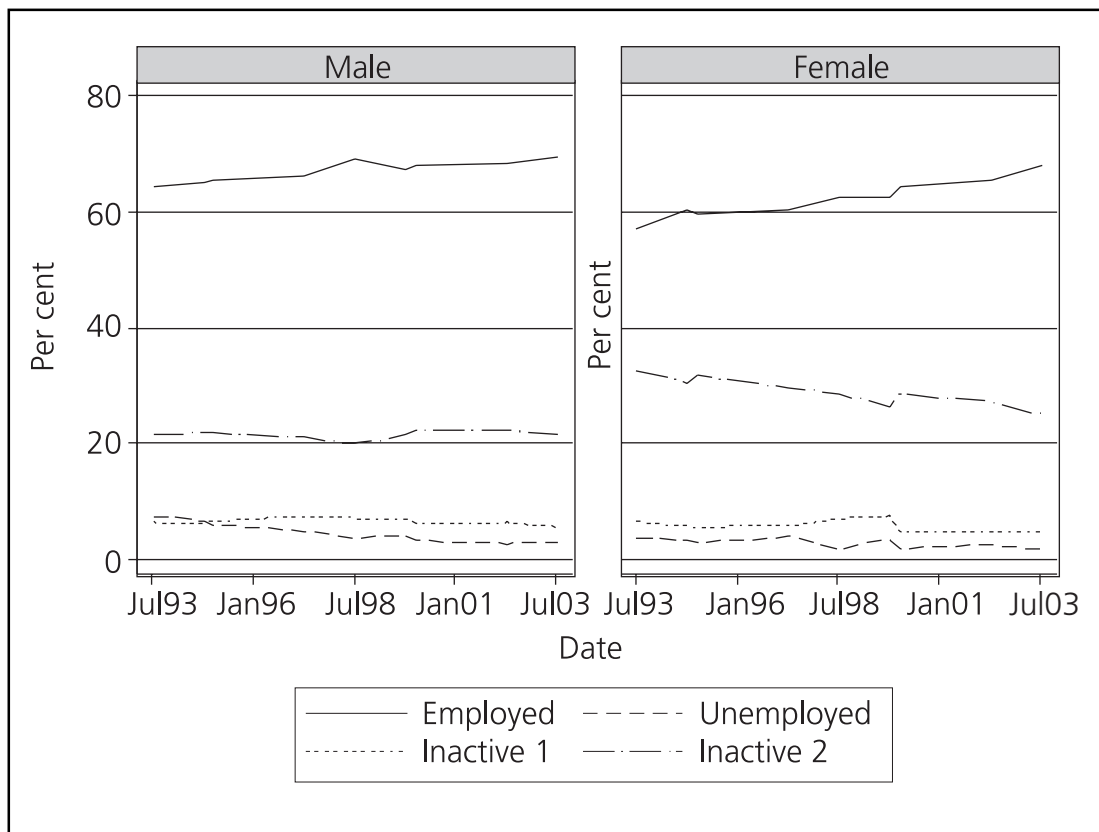
### 3.7 Changes over time

Using the information on economic status when first observed we can examine how the profile of the population has changed with regard to economic status over the period covered by the sample. Figure 3.3 illustrates this graphically. As an overall comment, the situation for men appears more stable than for women. In particular, there is little change in the level of either type of inactivity. There has been a notable increase in the employment rate (from 64 per cent to 70 per cent) which appears to be largely offset by a reduction in unemployment (from eight per cent to three per cent). For women, there has been a more marked increase in employment (from 57 per cent to 68 per cent) and a corresponding reduction in type 2 inactivity (from 32 per cent to 25 per cent).<sup>12</sup>

<sup>12</sup> These trends are presented purely as background information. The results of estimating the econometric models also include year indicators. However, these cannot be regarded as indicative of the effect of interventions targeting the over-50s. Such an interpretation would require a formal causal analysis that is not the intended aim of this report.



**Figure 3.3** Changes over time in economic status, by gender



### 3.8 Transitions between economic states

In the last section of this chapter, attention turns to the issue of transitions between economic states. It is worth making explicit the distinction between this and the changes over time described in the previous section. The crucial difference is that the results just presented are based on a changing group of individuals (the changing population of the over-50s) whereas the results on transitions consider the same individuals over a shorter period of time. To make this more explicit, the results in the previous section could have been produced using a number of cross-sections whereas the results in this section exploit the longitudinal aspect of the data. This allows us to gain an insight into areas of potential policy relevance. For example, does the growing proportion of women observed as being in work reflect individuals finding work, remaining in work and having their numbers boosted by additional long-term job entrants, or does it reflect a different (but growing) group of people finding shorter term employment?

This is perhaps best explained by considering Table 3.25 which shows transitions for men between the broad economic statuses. The labels in the left hand column denote the employment status of men at the time of their first interview. The labels in the top row denote the employment status of men at the time of their last interview, four quarters later. Hence, the figures correspond to transitions over the period of a year. Not all of the transitions actually involve a change. Such cases are

given in bold on the main diagonal of the table. Inspecting these gives an impression of the stability of a particular state over the period of a year. It is also revealing to consider the destinations for those leaving their initial state. This shows the extent to which individuals tend to move closer to or further from the labour market. Entries below the main diagonal in the table correspond to the former and entries above correspond to the latter. With this in mind, the following points are evident for the four economic statuses:

- Employment is the most stable status and most of those leaving enter type 2 inactivity. Although not shown in the table, this is mainly explained by retirement.
- Unemployment is quite short-term in many cases, with roughly half of all unemployed men having changed status within a year. A quarter finds work while the remaining 27 per cent are quite evenly divided between the two types of inactivity.
- Type 1 inactivity is similar to unemployment in terms of its level of stability. Most of those leaving exit to type 2 inactivity. This is particularly true for those who are long-term sick or disabled (the most common reason for type 1 inactivity). Those who are type 1 inactive because they believe no job is available are more likely to move to type 2 inactivity through retirement or to move to unemployment.
- Type 2 inactivity is a very stable state. Those who exit mainly move to type 1 inactivity.

**Table 3.25 Transitions over a year between broad groups for men (row %)**

When first interviewed	When last interviewed:				
	Employed	Unemployed	Inactive 1	Inactive 2	Base
Employed	<b>91</b>	2	2	5	10,154
Unemployed	25	<b>48</b>	15	12	579
Inactive 1	6	7	<b>46</b>	41	934
Inactive 2	3	1	13	<b>83</b>	3,190

For women, the situation is as shown in Table 3.26. Overall, the picture is quite similar to that for men:

- Employment is the most stable status and most of those leaving enter type 2 inactivity, predominantly to retirement.
- Unemployment is much less stable than for men. A third of unemployed women will be in work after a year. A similar proportion exit to inactivity mainly to look after the home or for health reasons but also to retire. These exits to inactivity are divided roughly evenly between the two types of inactivity.

- Type 1 inactivity is more stable than unemployment but still half of all women beginning in this state will be type 2 inactive after a year. The reason for inactivity remains constant when moving to type 2 inactivity; most commonly, these women will be looking after the home or have long-term health problems. Most of those leaving exit to type 2 inactivity. This is particularly true for those who are long-term sick or disabled (the most common reason for type 1 inactivity). Those who are type 1 inactive because they believe no job is available are more likely to move to type 2 inactivity through retirement or to move to unemployment.
- Type 2 inactivity is a very stable state. Those who exit mainly move to type 1 inactivity.

**Table 3.26 Transitions over a year between broad groups for women (row %)**

When first interviewed	When last interviewed:				
	Employed	Unemployed	Inactive 1	Inactive 2	Base
Employed	<b>90</b>	1	1	8	7,109
Unemployed	33	<b>32</b>	16	19	271
Inactive 1	6	4	<b>40</b>	50	628
Inactive 2	4	1	10	<b>85</b>	3,166



# 4 Modelling labour market transitions using Markov models

## 4.1 Introduction

This chapter presents results obtained by modelling the labour market transitions of individuals over 50 years of age using Markov models for transition probabilities. Markov models allow estimation of the probability that an individual occupies a given labour market state in a certain period in time as a function of the states occupied up to a certain point in the past. The kind of question that these models can answer is: 'by how much does the probability of being, say, unemployed at a given point in time depend on the labour market states (employed, unemployed, economically inactive) occupied by an individual in the past?' Unlike the duration models discussed in the next chapter, the time spent in a certain state (i.e. the duration of the state) plays no role in these models. A second relevant difference with respect to duration models is given by the sample used in estimation. While duration models select individuals in a given state and observe them until they leave the state (or until the sample period ends), Markov models do not need to make such a selection, and consider the whole distribution of states at a point in time, estimating by how much such a distribution depends on its past realisations.

Markov models allow assessment of the issue of state dependence, which is relevant for understanding the functioning of the labour market and for policy design. Tables 3.25 and 3.26 in the previous chapter showed that the probability of being, say, unemployed in a given year was much larger for those who were unemployed in the previous year compared to those who were either employed or inactive. In this sense, raw data exhibit 'state dependence'. That is, the experience of a state is more likely for those that already occupied that state in the past. However, such evidence is purely descriptive, and does not mean that being unemployed in the past raises, in a causal sense, the probability of current unemployment. There may exist differences

across individuals in the sample in some persistent personal attribute, say ability, that determines employability in each year, and generates the observed correlation over time. For example, if we believe that individuals differ in their innate ability even before entering the labour market and that ability is a factor determining employment, observing that unemployment last year is highly correlated with unemployment this year may simply reflect the fact that ability is a permanent personal characteristic. At the other extreme, individuals may be homogeneous before entering the labour market, and the observed correlation may be due to the causal effect of past unemployment on current unemployment, what is called 'genuine state dependence' or 'scarring'. That is to say, individuals only differ due to having experienced unemployment at a certain point, and from that point onwards the labour market paths of otherwise homogeneous individuals are altered by their experience of unemployment.

There are several reasons why state dependence may exist. Employers may use states occupied in the past as indicators of individual ability, so that unemployed individuals will receive fewer job offers than otherwise identical individuals, which will cause their unemployment to persist over time. Alternatively, unemployment may result in skills deterioration or loss of motivation. Both of these mechanisms are consistent with theoretical models of the labour market and help explain why genuine state dependence may indeed be the force that generates persistence.

Besides its analytical relevance, understanding state dependence is also crucial for policy. There are three key implications of state dependence:

- even individuals with favourable labour market characteristics are at risk of becoming trapped in unemployment once they experience it;
- the distinction between short-term and long-term unemployment is less relevant than commonly believed since all unemployed people are at risk of becoming long-term unemployed;
- targeting policies according to personal attributes (e.g. training schemes for the unemployed with low qualifications) may not suffice in reducing unemployment persistence.

According to the discussion above, distinguishing between heterogeneity and state dependence as causes of persistence is crucial for policy analysis. Markov models allow us to estimate transition probabilities while controlling for those personal attributes observed in the Labour Force survey (LFS), thus providing an estimate of the extent to which the probability of transition is reliant simply on individuals' employment state.

Before discussing the details of results on transitions, Section 4.2 provides evidence about the personal characteristics associated with individual assignment to labour market states in a given point in time, without considering the dynamics, thereby providing a snapshot of the labour force status for older workers. Section 4.3 discusses the results obtained on labour market transitions for men and women,

while Section 4.4 considers alternative definitions of the states (namely, with and without allowing for part time employment as a separate state) and various sub-samples of interest. Summary and conclusions follow. Technical details are given in the Appendix, along with full results.

## 4.2 Characteristics associated with labour market states

This section takes into account the personal characteristics associated with the probability of labour market states at a given point in time. The relevant research question is, therefore, who is in what state, rather than who moves across states over time. The interest of considering this type of analysis before moving onto the consideration of dynamics is twofold. First it provides a portrait of individuals in various states in the labour market. Second, results can be used as a benchmark to evaluate the relevance of moving from a static framework to a dynamic one.

Throughout the chapter, use will be made of an ordered probit model. This is based on the assumption of an ordering of the labour market states, as described in Section 3.3. To re-cap, we regard the state occupied at a given point in time as reflecting some underlying 'distance from the labour market' or propensity to be employed. Therefore, the assumption underpinning our use of the ordered probit model is that individual behaviour in the labour market is driven by such propensity: the larger the propensity, the closer an individual will be to employment. Consistent with the previous chapter, states have been grouped into four categories: employed, unemployed, inactive with some desire to work (inactive type 1) and inactive with no desire to work (inactive type 2).

According to the hypothesis discussed above, labour market states are realisations of a single variable, the underlying distance from the labour market or, alternatively, the propensity to be employed. Reasoning in terms of the propensity, the hypothesis implies that when this is very low, the individual will be observed as being type 2 Inactive; as the propensity grows, individuals will be observed as type 1 inactive, unemployed or employed.<sup>13</sup>

Results on the associations between the probabilities of being in a given labour market state and personal attributes are provided in Tables A.2 and A.3 in the Appendix for men and women separately. Results are presented in terms of 'marginal effects'. Loosely speaking, these 'marginal effects' measure the impacts of personal attributes on the events analysed. That is, they show the change (relative to a reference case) in the probability of being in a given state (unemployment, for example) that results from having a particular characteristic. Each effect is accompanied by its absolute z-ratio to help assess its statistical significance. Z-scores of 1.96 or higher indicate significant effects at the conventional level.

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<sup>13</sup> See the Appendix for the technical aspects of the model.

We start by looking at results for men. Considering age first, men become less likely to be employed and more likely to be inactive the older they are. This is particularly noticeable when considering those within a year of State Pension Age (SPA). In particular, a man aged 64 to 65 is much more likely to be type 2 inactive than 50-53 year olds: the difference is in the order of 39 percentage points. Correspondingly, men of this age are 42 percentage points less likely to be employed than men aged 50-53. These are expected results that could be explained by a number of factors: an increased tendency to retire as men approach SPA; a growing likelihood of health problems among older individuals; a greater degree of age discrimination against older workers, perhaps.

With regard to qualifications, it is among the most highly qualified that the strongest associations are found. Those with qualifications equivalent to NVQ level 4 or higher are less likely to be employed and more likely to be type 2 inactive. This result may capture the fact that better qualified individuals are more likely to be able to afford to retire early while those with fewer qualifications need to remain active in the labour market. The effect of having a recognised trade apprenticeship can perhaps be interpreted analogously, since this would typically not be associated with high-income employment.

The presence of dependent children and partner are associated with lower inactivity and greater employability, possibly reflecting the impact of family responsibilities. The greatest effect of having a partner is seen when the partner is employed. In this case, the probability of inactivity is dramatically lower and that of employment is dramatically higher (12 percentage points and 17 percentage points respectively). This suggests that the labour supplies of household members are complements rather than substitutes. It suggests that employment of one partner encourages that of the other. Another possible interpretation is that of assortative mating; that couples were formed from individuals with similar characteristics including, perhaps, their disposition towards employment.

The type of accommodation also exerts an effect. Relative to those who owned their accommodation, men who were paying off a mortgage were less likely to be inactive and more likely to be employed. This perhaps indicates the financial need to remain in work for those who still need to repay the loans with which their accommodation was purchased.

There is some evidence of variation according to industry. In particular, inactivity seems to be more common for men whose occupation would be in the electricity, gas and water or financial sector, whereas employment is larger in agriculture and real estate.

Regional effects are also evident. In particular, there seems to be something of a north-south divide. Living in the north (including Wales) is generally associated with an increased probability of being type 2 inactive and a reduced probability of being employed relative to living in central London. This is especially true in the more urban northern areas. The opposite is true of living in the south.



Finally, there is some evidence of a trend. Inactivity (especially type 2 inactivity) becomes less common over the period covered by the data while employment becomes more common.

The second part of Table A.3 of the Appendix illustrates results obtained for women. As an overall comment, the evidence tends to conform to that for men. Employment declines with age and with qualifications, whereas it increases where there is an employed partner. It is interesting that the effect of dependent children in the household is very similar to that found for men. This supports the view that, for women of this age, childcare responsibilities do not feature as a significant obstacle to employment. One difference with men emerges regarding the role of occupations, which seem to be strongly associated with labour market status. In particular, the probability of being employed is higher among managers. The other notable difference for women is that there is much less evidence of a regional pattern. The few regional effects that are significant are very small in size.

### 4.3 Results from Markov models of labour market transitions

The ordered probit model of the last section can now be utilised for estimating transition probabilities across labour market states. This can be done by relating the states occupied at a given point in time, with indicators of states occupied up to a certain point in the past, thence moving from the analysis of state probabilities to the analysis of transition probabilities. Operationally, the model of the last section is augmented by including among regressors indicators for past states.

The discussion in the Appendix shows that the labour market dynamics of older men and women can be adequately captured by considering dependence between states in a given survey quarter and states in the quarter before it, without the need to look further back in the past. In this section, therefore, results from such models of transition probabilities will be presented.

The fact that we consider transitions from one quarter to the next implies that each individual can contribute to estimation with observations on four transitions, given that each individual is observed at five points in time. The models take this feature of the sample into account, by utilising Longitudinal Labour Force Survey (LLFS) weights and an estimator that is robust to the presence of repeated observations on the same person over time.<sup>14</sup>

Results are presented in Tables A.4 and A.5 in the Appendix in terms of marginal effects of each characteristic on the probabilities of occupying a given labour market state at the date of interview. Covariates indicating the states occupied in the previous quarter capture the effects of dynamics. In particular, these states have

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<sup>14</sup> The so-called BHHH variance estimator.

been characterised by including dummies for being unemployed, type 1 inactive or type 2 inactive in the previous quarter. This means that the effects of the previous labour market state are expressed relative to someone who was employed in the quarter prior to interview. The baseline for these models is the same as the one used in Section 4.2, and was employed in the previous quarter. The effects estimated for the indicators of previous labour market states can be considered as capturing the genuine state dependence effects discussed in the introductory section, i.e. they show by how much the probability of labour market states in the interview quarter is influenced by the states in the previous quarter, after controlling for variation across the sample in observed characteristics.

Before starting our discussion of the dynamics, it is worth noting how the effects of observable attributes vary if one compares the static models of Tables A.2 and A.3 with the dynamic ones in Tables A.4 and A.5 (see Appendix). For the sake of interpretation, it should be borne in mind that while the former are the effects associated with the probability of being in a given state at a certain point in time (**state probabilities**), the latter convey information on the probability of moving from employment in the last quarter (employment is the reference category for dummies describing the past) to a given state in the quarter of interview (**transition probabilities**). It can be noticed that personal attributes are much less relevant in the dynamic model than they were in the static model. Some of the effects identified as statistically significant in Tables A.2 and A.3 now no longer appear significant. Other effects remain significant but their magnitude tends to be negligible. This fact highlights the importance of analysing dynamics: the associations singled out by static models may simply pick up the fact that both labour market states and personal attributes tend to persist over time, so that they in fact reflect the omission from the model of indicators of previous labour market states. In other words, the state occupied in the past is more relevant than other personal attributes in determining current states, so that the effect of attributes mostly washes out once allowance is made for the past.

Another relevant change in results relative to the static models is the goodness of fit, which is now considerably larger. This indicates that the new variables included in the model (i.e. the past states) are extremely relevant in explaining the phenomena under investigation.

The results for men are suggestive of the presence of substantial persistence in labour market state. That is, the probability of being in a given state at the date of interview is (much) larger for individuals already observed in that state in the previous quarter than for anyone else. For example, the probability that a man is type 2 inactive is almost 69 percentage points greater if the individual was already in that state in the quarter prior to interview than if he was employed at the same date. If instead the individual was type 1 inactive, the differential in the probability of being type 2 inactive at the date of interview, relative to someone who was employed, is 34 percentage points. This implies a substantial difference (35 percentage points) in the probability of being type 2 inactive between someone who was already type 2 inactive and someone who was type 1 inactive. So, not only is persistence evident

when employment is used as the benchmark, but even within types of inactivity the differential is substantial. A similar reasoning can be applied for those who were unemployed in the quarter prior to interview. With regard to the probability of transition into employment, this is largest among those who were already employed in the quarter prior to interview. In fact, the signs of the effects associated with the three non-employment states in the previous quarters are all negative, implying that all these three categories have employment probabilities that are lower compared to someone who already was employed. Becoming employed from non-employment is (in comparative terms) most common among unemployed people, followed by type 1 inactive men and, lastly, the type 2 inactive men. The difference in transition probabilities between the two latter groups is substantial.

This evidence, besides being informative of the degree of persistence, is also supportive of the analysis of labour market states as discrete realisations of an underlying distance from the labour market. It is also of interest to see that transition probabilities into the two intermediate states (type 1 inactivity and unemployment) are much less well-defined and precisely-estimated than are the ones for the two states at the extremes of the distance measure. In particular, entering these states from type 2 inactivity is not statistically distinct from entering it from employment, as signalled by the low z-statistics associated with being type 2 inactive in the second and third column of Tables A.4 and A.5. On the other hand, becoming type 1 inactive is more likely for someone who was unemployed rather than employed or type 2 inactive, while becoming unemployed is more likely for someone who was type 1 inactive than for anyone else.

These figures suggest that genuine state dependence is dominant in driving labour market transitions. More than personal attributes, it is the state occupied prior to interview that is a powerful predictor of the state occupied at the interview date. One implication of this is that being able to stimulate labour market activity at a point in time may have a long-term impact on individuals' later labour market experiences since, by acting through channels like human capital acquisition, signals or morale, activity at one point would translate into activity in future points in time, activating a sort of virtuous circle. The reverse would obviously be true in terms of inactivity, pointing towards the need for policies that avoid entries into inactivity due to, for example, labour market shocks.

Evidence for women tends, to some extent, to reproduce the results seen for men. Covariates lose their explanatory power when moving from the static model of Tables A.2 and A.3 to the dynamic one in Tables A.4 and A.5, labour market states are highly persistent and the size of the correlations are remarkably similar to those for men. Also, the probability of entering type 1 inactivity or unemployment is similar for women who were type 2 inactive compared to those who were employed. The same probability is significantly larger for those women that already occupied one of the two intermediate states in the quarter prior to interview. Remarks about the prevalence of state dependence effects apply also in the case of women.

## 4.4 Sensitivity analysis

Having characterised the labour market transitions of older workers in the previous sections by means of (first order) Markov models, the aim in this section is to subject those results to a sensitivity analysis by relaxing some of the assumptions on which they were based, or by considering alternative specifications of the model of interest.

### 4.4.1 Accounting for part-time employment

So far we have considered employment as a uniform labour market state; thereby treating individuals employed full- or part-time in the same way. Such an assumption may not be satisfactory, as long as part-time workers behave differently from full-time employees in the labour market. Therefore, it seems appropriate to see how results change when part-time work is treated as a separate labour market state. To achieve this, individuals in employment have been divided into two groups (part-time and full-time) so that overall we now have five labour market states, and part-time employment has been treated as an intermediate state between unemployment and full-time employment. Assignment to the part-time category has been carried out on the basis of the number of hours worked: women and men working fewer than 30 hours per week have been considered part-time workers. This threshold has been identified on the basis of the observed distribution of hours worked per week.

Results based on such a categorisation of labour market states are provided in Table A.6 in the Appendix. For the sake of brevity, the table only provides the estimates of the effect related to labour market dynamics.

For men, the probability of being employed part-time is very similar for those who already were working part-time and for those who were unemployed in the quarter prior to interview. Part-time employment therefore seems to be a viable exit from unemployment for men. Moreover, the probability of entering full-time employment is larger for those formerly part-time employed, relative to those formerly not employed. Therefore, part-time work facilitates exits from unemployment and entries into full-time employment. In this sense, it acts as a bridge between non-employment and employment. It should be noted that this can also operate in the opposite direction. To be more precise, the fact that men working part-time are more likely than men working full-time to become type 2 inactive or unemployed points to the role that part-time work plays as a bridge for those reducing their degree of engagement with the labour market.

Some interesting dissimilarities emerge if we consider results for women. In particular, entries into full-time employment do not differ much according to the previous labour market status. Women working part-time have a similar probability to those of unemployed or inactive women of entering full-time work. This implies that women working part-time tend to stay working part-time and do not move into full-time employment, a fact that, especially considering the particular characteristics of the population under investigation, may well reflect individuals' labour market

decisions. The interpretation of part-time employment as a bridge between non-employment and full-time employment, therefore, is not supported by the data in the case of women. However, part-time work does seem to offer a bridge for women wanting to reduce their degree of engagement with the labour market. This is evidenced by the fact that women working part-time are more likely to move to inactivity than women working full-time and also that part-time and full-time working women are equally likely to work part-time when next observed.

#### **4.4.2 The impact of disability**

Having a disability is, in general, a factor that affects labour market behaviour and it is plausible to believe that its relevance is greater in the population of older workers compared to the labour force as a whole. The information collected in the LFS on disability has only been asked in its current form since spring 1997. For this reason, disability indicators were not included in the main model: having done that would have amounted to discarding a large number of observations from the analysis, resulting in a loss of information. The preferred solution was therefore to perform the main analysis on the 1993-2003 sample, and to assess the sensitivity of results to the inclusion of disability indicators on the restricted sample (1997-2003).

The effect of disability was considered by including variables indicating whether the individual had a disability that impedes day-to-activities, that limits their working activities or that affects both. Results are collected in Table A.7 of the Appendix, which shows the marginal effects associated with disabilities (the reference being someone without disabilities) together with those representing transition probabilities. The two things to look at in this table will therefore be the size and significance of marginal effects for disability dummies, and how transition probabilities are affected by their introduction, compared to the main models of Section 4.4.

For men, disabilities affecting both daily activities and working capacity are associated with a larger probability of entering type 2 inactivity and a lower probability of remaining employed. However, these effects are rather small, especially when compared with those for previous labour market statuses. Accordingly, the latter estimates are rather similar to the ones obtained without controlling for disability indicators.

The apparent irrelevance of disabilities in shaping labour market transitions is even more evident in the case of women, where associated marginal effects hardly attract any statistically significant estimate. Overall, we can conclude that for men and women, disability status is not a major factor affecting the labour market transitions of older workers, especially when compared to the effect of state dependence: once controlling for past states, their transition probabilities do not statistically differ from those of individuals without disabilities.

## 4.5 Summary and conclusion

This chapter has studied labour market transitions of older workers using Markov models for transition probabilities. Results have shown that while the impact of personal attributes on the probabilities of being in a certain state at a given point in time are well identified, the same attributes exert a limited impact on the probability that individuals move across those states over time. The best predictor of such movements, instead, are the labour market states themselves. In other words, the transitions seem to be characterised by marked persistence and state dependence; that is, transitions largely depend upon the starting point. The latter remark suggests that labour market policies that stimulate economic activity may have a long run impact, as individuals enter a virtuous circle that keeps them away from inactivity.

# 5 Modelling labour market transitions using duration analysis

## 5.1 Introduction

This chapter focuses on the results obtained from modelling the timing of labour market transition for individuals over 50 years of age. It has four sections. Section 5.2 gives an account of the modelling framework used and the different types of models estimated. Section 5.3 is devoted to the discussion of estimation results based on the sample of all individuals over 50 years of age included in our study sample. This includes a consideration of transitions from type 2 inactivity for those who are not retired when first observed. The final section summarises the previous sections (5.4).

## 5.2 An overview of the duration models<sup>15</sup>

The econometric technique used to model spell length is called 'duration analysis'.<sup>16</sup> This allows the researcher to examine the characteristics that are associated with the length of a spell. An equivalent way of phrasing this is to say that it allows the researcher to examine the characteristics that are associated with the length of time taken until transition from an initial state. This makes it perfectly suited to the consideration of the timing of transitions from one employment state to another.

Models which consider transitions from the initial state without considering the type of destination states are called 'single risk' models. This reflects the fact that the only risk that individuals face is that of moving out of their original state. An example of this would be if we are interested in how long workers keep their jobs and the only

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<sup>15</sup> A further account of the modelling strategy used is provided in the Appendix.

<sup>16</sup> Duration analysis is also known as survival analysis or hazard regression.

outcome of interest is whether they are working or not working. In other cases, we may be interested in the destination to which the individual moves. For example, we might be interested in modelling the length of time taken to move from unemployment to employment rather than inactivity. In this case, there are two competing states (employment and inactivity) into which an individual transiting from unemployment might move. Such models are called 'competing risks' models. In the analyses that follow, we use either single risk or competing risks models to characterise the transition behaviour of older people in our sample, depending on the specific research problem at hand.

The advantage of duration models over simple descriptive analyses of the sort provided in Chapter 3 is that they enable us to specifically identify the role that different demographic, labour market, regional and economy-wide characteristics play in determining the labour market transition behaviour of older people.<sup>17</sup> They allow us to model the probability that an individual, having been in a particular state (say, unemployment) until a certain period, transits from the state in the next period. In addition, duration analysis takes into account the possibility that subjects may or may not experience a transition over a particular period. That is, an individual may either experience a transition or stay in the same state over the entire period.<sup>18</sup>

Duration analysis offers important guidance for policy since it identifies those characteristics that are associated with labour market transitions. Particularly important is the issue of duration dependence. This is said to exist if the chances of leaving, say, unemployment change as the unemployment spell lengthens (due, perhaps, to loss of relevant skills or the negative signal to potential employers of an individual who has been long-term unemployed). Individuals may find it more and more difficult to leave an adverse labour market state the longer they remain in that state. The implication of this is that there needs to be an early intervention to reduce the scarring effect of being in an adverse labour market state.

### 5.3 Estimation results

As stated above, the specific models we have estimated in this study involve both single and competing risks models. We carried out the modelling separately for men and women, which is appropriate considering the difference in the labour market behaviour of men and women. The models estimated are as follows:<sup>19</sup>

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<sup>17</sup> This is because regression analysis keeps all other factors/variables, excepting the one under consideration, as constant, i.e. the '*ceteris paribus*' assumption.

<sup>18</sup> The first type of spell is what is called a completed spell while the second type of spell is what is called a (right) censored spell.

<sup>19</sup> The possible range of models that could be considered was constrained by the level of observed transitions in the data.



- for all men over 50 years of age:
  - for employed men: time until transition into non-employment (single risk);
  - for unemployed men: time until transition into employment or inactivity (competing risk);
  - for type 1 inactive men: time until transition into activity or type 2 inactivity (competing risk);
  - for type 2 inactive men: time until transition into non-type 2 inactivity (single risk);
- for all women over 50 years of age:
  - for employed women: as for men above;
  - for unemployed women: no estimation was possible due to small sample size;
  - for type 1 inactive women: as for men above;
  - for type 2 inactive women: as for men above.

A key concept in duration analysis is that of the 'hazard' rate, or 'hazard'. The hazard tells us about the probability of a transition happening at a certain time given that there has been no transition before this time. This will be referred to in the discussion of the results that follow. In particular, the discussion has two main components. For each model, we first discuss results relating to the baseline hazard of transition to the different labour market states of interest. The baseline hazard shows the patterns of transition over time, after controlling for differences in individual characteristics. It allows us to see whether the patterns of transition show signs of duration dependence. The second part of the discussion of results focuses on the effect that differences in individual characteristics have on the hazard rate. We do this by computing the marginal effect<sup>20</sup> of a particular characteristic on the hazard rate.

### **5.3.1 Employed men and women: time until transition into non-employment**

The first two models relate to the transition behaviour of men and women from employment into non-employment. Figure 5.1 depicts the observed transition patterns of men and women from employment to non-employment.<sup>21</sup> The figure shows the probability that men and women over 50 years old who were in employment when first observed would remain in employment as their spell lengthens. It shows a similar pattern for men and women: the transitions from

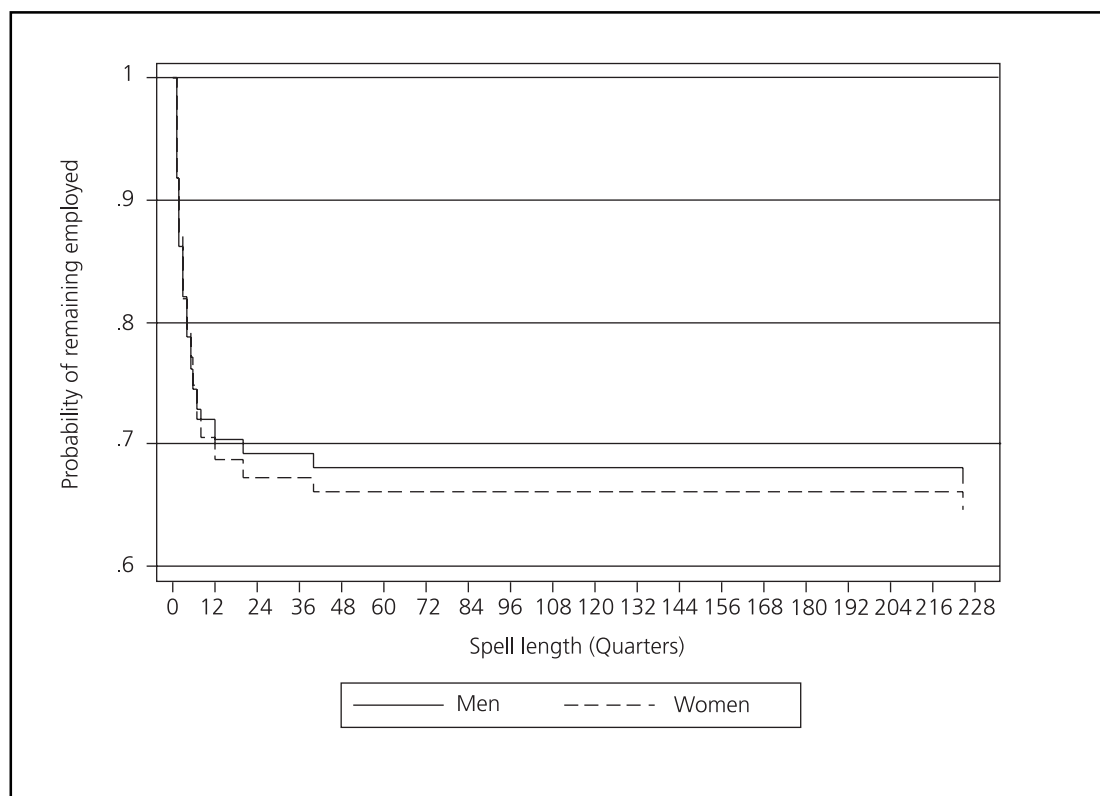
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<sup>20</sup> In this part of the analysis, the marginal effect of a characteristic is the change in the hazard associated with having that characteristic rather than not having it. This is explained more fully in the Appendix.

<sup>21</sup> Since the basic unit of time used in the analysis is a quarter, all the charts show the length of spell in quarters.

employment are concentrated in the relatively early stages of the spell. Roughly, it is the first three years of the employment spell during which most of the transitions occur. Individuals who remain in work for longer than this tend to continue to work for a much longer period after that.

**Figure 5.1** Probability of remaining employed, over time



The pattern of transition from employment that is depicted in Figure 5.1 is in line with expectations. A person who has stayed in employment for a certain (minimum) period is more likely to carry on in employment for an even longer period *vis-à-vis* those with a short employment history. The different labour market theories lend some support in favour of the observed survival patterns in employment. Human capital theory, for example, predicts that someone with a longer work experience is less likely to experience involuntary job loss. In other words, a worker with a long employment history and work experience is more likely to stay in employment even longer. Similarly, search and matching theory would suggest that workers that happen to be in a good match are more likely to retain such a good match and carry on working in that job.

Tables A.8 and A.9 in the Appendix present the effects of different characteristics on the hazard of leaving employment. The results are more or less comparable for the men and women samples with regards to:

- demographic characteristics;
- partner economic status;

- hours of work;
- regional characteristics.

In contrast, industry of employment is found to be relevant to the characterisation of the transition behaviour of men only.

In terms of the specifics of these findings, older men, especially those close to State Pension Age (SPA), are quicker to leave employment than those between 50 and 53 years of age. For women, this result was a little less marked although still very evident for those close to SPA. This is most likely capturing a retirement effect.

We find no significant effect of qualification on the hazard of leaving employment. This may have to do with the nature of the sample used in this analysis which focuses on older people. Educational qualification is less likely to play a significant role in the labour market transition behaviour of older individuals with an established career history (or lack of one). The same can be said regarding the lack of a significant effect of having a recognised trade apprenticeship.

The lack of a child effect is perhaps unsurprising given the population in question. Older people of the sort we are studying are more likely to have a settled family life with grown-up or older children so that their labour market transition behaviour is less likely to be influenced by whether or not they have dependent children.

Compared with those with outright ownership of a house, those with a mortgage are slower to leave employment. This finding too is in line with expectations given the likely positive effect that owning one's property might have on the (early) retirement decision of individuals.

Whether or not an individual worker has a partner and the economic status of the partner are factors found to be important. Women with a partner are found to be significantly slower to leave employment while partner status is not found to have a significant effect on the transition behaviour of men. In terms of partners' economic status, both men and women with a non-working partner are found to be quicker to leave employment. This particular finding is contrary to what is called the 'added worker effect'<sup>22</sup> that one would expect with regard to the labour supply decision of individuals with non-working partners. However, it is consistent with much empirical work that fails to find an added worker effect. This is often rationalised as being due to factors such as partners having complementary tastes for leisure, shared unobserved characteristics or shared environmental characteristics which might include such things as poor local economic conditions. It may also have to do with what is called in the literature the 'discouraged worker' effect.<sup>23</sup>

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<sup>22</sup> The 'added worker effect' predicts an increase in the labour supply of an individual in response to the individual's partner not being at work.

<sup>23</sup> The term 'discouraged worker' refers to a jobless individual who has given up on the prospect of getting a job to the extent of withdrawing herself or himself from the labour market.

We find no significant effect of occupation on the hazard of leaving employment. This, again, may not be a surprising result given the labour market transition behaviour of established workers which is less likely to be influenced by the type of occupation they have.<sup>24</sup>

With regard to industry of employment, some variation was found in the hazard of transition from employment. Men working in agriculture, fishing and mining appear slower to leave employment than those in other industries. For women, no significant effect of industry or sector of employment was found.

In terms of region, there is some evidence of a north-south divide. Those in the North, Yorkshire and Humberside, Scotland, Wales and Northern Ireland tended to leave employment more quickly than those living elsewhere.

### **5.3.2 Unemployed men: time until transition into employment or inactivity**

The third model we have estimated relates to the labour market transition behaviour of unemployed men in terms of their transition from unemployment into either employment or inactivity. As such, it differs from the models presented in the previous sub-section for it involves the estimation of a competing risks rather than a single risk model.<sup>25</sup> Figure 5.2 shows three different lines characterising the exit patterns of individuals into the two destination states, job or inactivity, or remaining in the original state of unemployment. The plots show that the probability of remaining in unemployment declines sharply with the length of spell and then stabilises. As with the transitions from employment most of the transitions here occur in the first three years of the spell. Correspondingly, the probabilities of transition into employment or inactivity increase sharply to begin with and then stabilise, with most of the transitions taking place in the first three years. The figure shows the importance of employment, compared with inactivity, in terms of where men that we first observed to be in unemployment may end up. Thus, in the early stages of an unemployment spell, men tend to move into employment rather than inactivity. However, beyond a certain point, transitions are relatively rare, as can be seen from the flat region of the curves in Figure 5.2. In other words, there is some evidence in support of negative duration dependence in the transition pattern of unemployed men in our sample – the longer they are unemployed, the less likely men are to exit from unemployment.

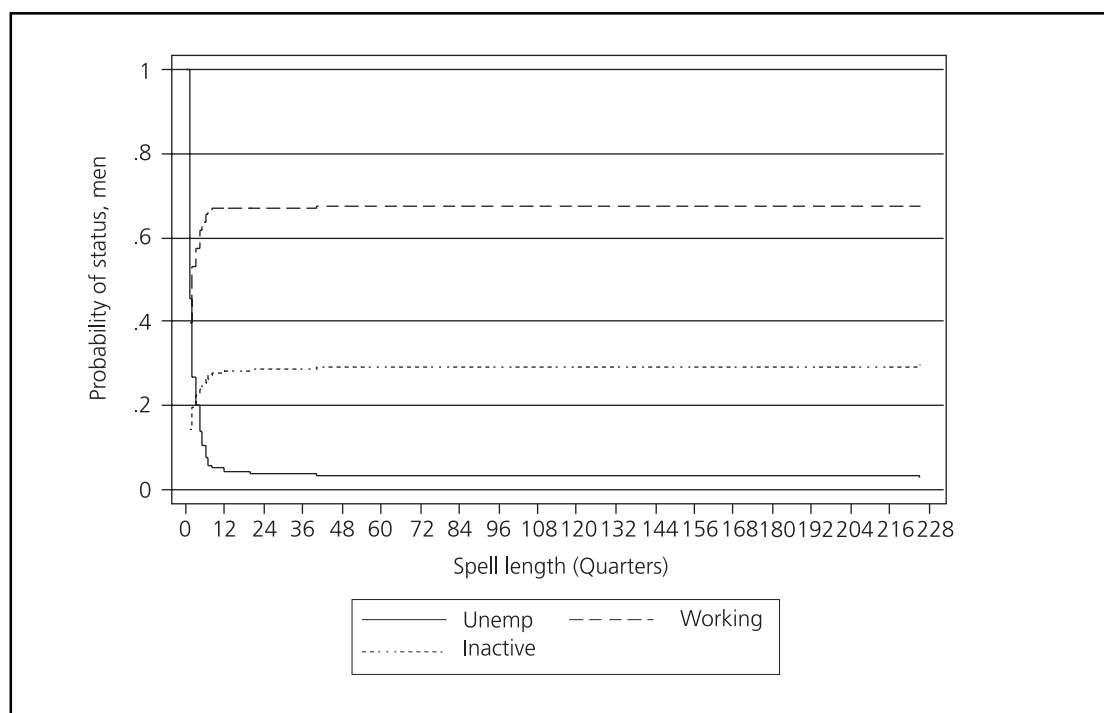
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<sup>24</sup> In contrast, for example, to the effect that occupation would have in the study of earnings patterns.

<sup>25</sup> In contrast to the model in the previous sub-section, this model is also based on a relatively small number of cases. Moreover, that we have multiple destination states means that the relatively small number of cases in this sample have to be thinly spread across these states. The findings we have in this sub-section and the conclusions that stem from them have to be viewed in the light of the small sample size.

Table A.10 in the Appendix gives the estimated effects of individual characteristics on the hazard of transition from unemployment into employment or inactivity. As already noted, we have estimated this model for men only since the sample size for women is too small. Table A.10 shows few characteristics with significant marginal effects on the hazard of transition via employment or inactivity. This may be due, at least in part, to the small sample size for this model. The only exceptions are age, type of accommodation and region of residence. Accordingly, being over 60 years of age has a significantly negative effect on the hazard of transition from unemployment to employment. This is not surprising given the difficulty that older unemployed individuals face in finding employment. For those within a year of SPA, this effect is even more marked. With regard to the effect of accommodation on the hazard of transition from unemployment, our findings suggest that, compared with those unemployed individuals with their own house, those that have a mortgage move much quicker from unemployment to employment. This may have to do with the financing of mortgages. In contrast, unemployed men residing in rented and/or rent-free accommodation are found to transit less quickly into inactivity. The other characteristic with a significant effect is region of residence. Men residing in the North West of England or Northern Ireland are found to be significantly less likely to transit unemployment via employment *vis-à-vis* their counterparts residing in the North of England.

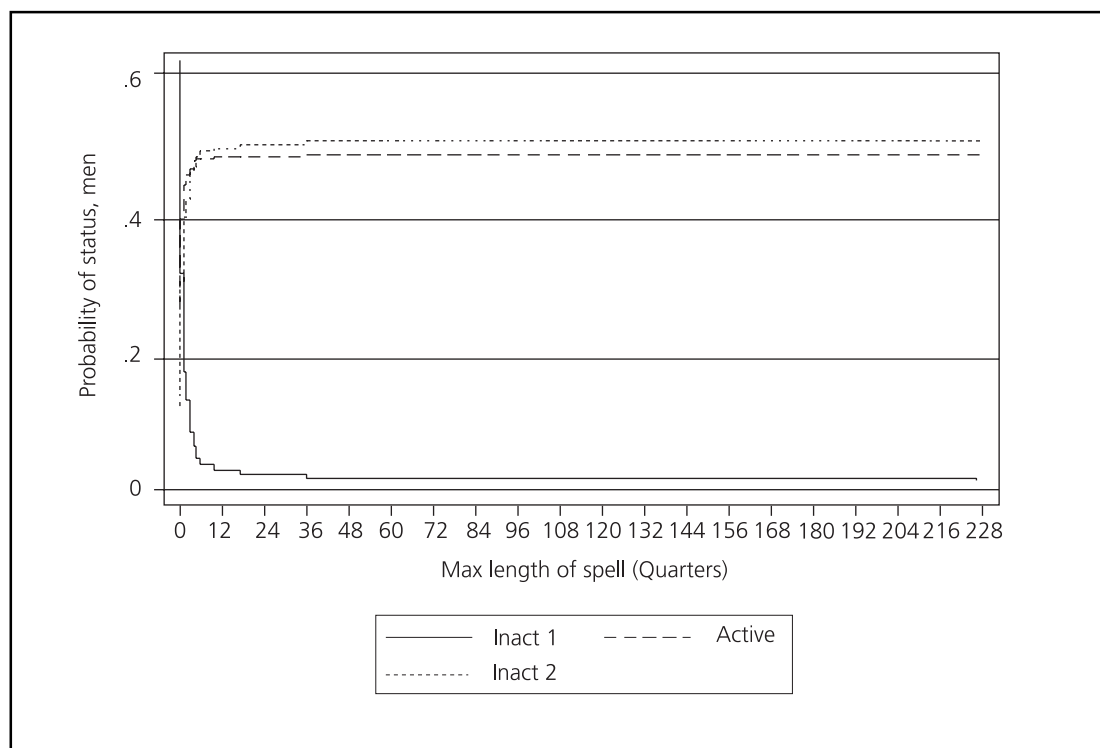
**Figure 5.2** Probability of remaining unemployed or moving from unemployment to employment or inactivity for men, over time



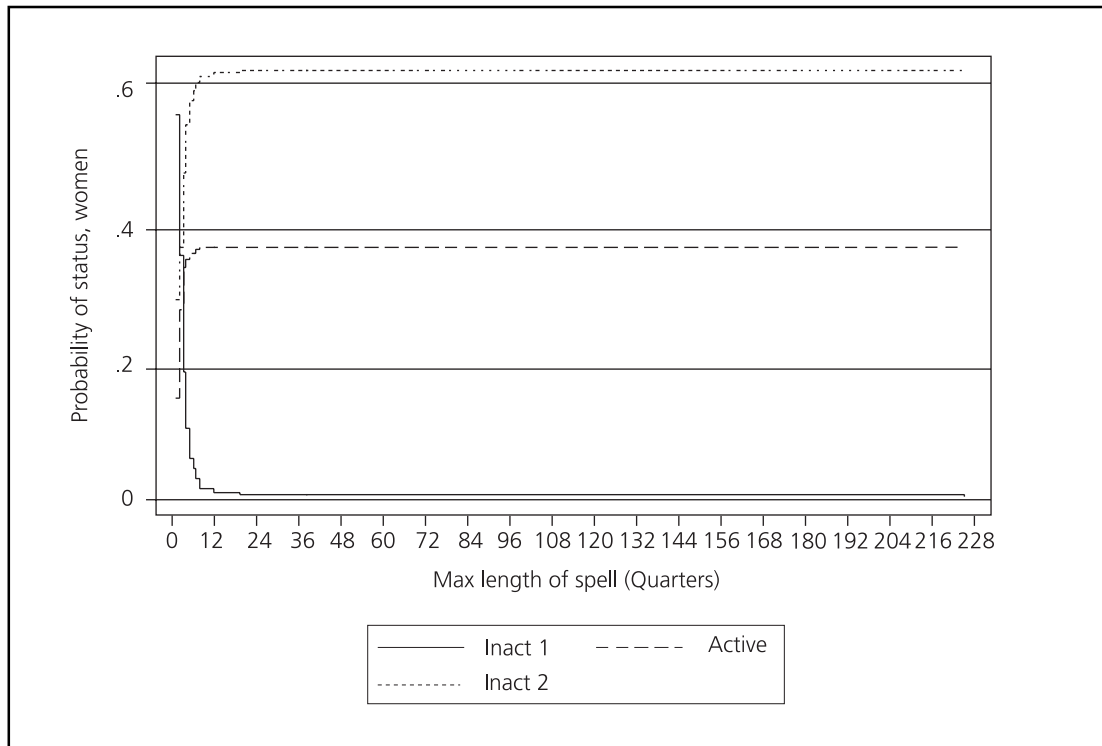
### 5.3.3 Type 1 inactive men and women: time until transition into activity or type 2 inactivity

The fourth model relates to moves from type 1 inactivity into either activity or type 2 inactivity. As with the consideration of transitions from unemployment, there are two possible destination states here so a competing risks model is appropriate. Figures 5.3 and 5.4 depict the transition probabilities for men and women respectively. An interesting difference is apparent. For men, activity and type 2 inactivity are more or less equally important destinations. For women, however, type 2 inactivity is found to be a more important destination than activity. As was the case with the figures discussed earlier, Figures 5.3 and 5.4 indicate that the exits from type 1 inactivity are concentrated towards the start of the spell and tail off thereafter. As before, most transitions occur within the first three years of starting a spell of type 1 inactivity.

**Figure 5.3** Probability of remaining type 1 inactive or moving from type 1 inactivity to activity or type 2 inactivity for men, over time



**Figure 5.4** Probability of remaining type 1 inactive or moving from type 1 inactivity to activity or type 2 inactivity for women, over time



The effects of characteristics are given in Tables A.11 and A.12 in the Appendix for men and women, respectively. For a number of covariates, these effects are significant:

- age;
- disability status;
- type of accommodation;
- whether or not there are dependent children;
- partnership status and economic status of partner;
- type of occupation;
- industry of employment; and
- region.

Looking at the effect of each of these characteristics, we find that men who are over 60 years of age are found to move from type 1 inactivity into activity much less quickly compared with their counterparts who are between 50 and 53 years of age. This is particularly the case for men who are between 61 and 63 years of age for whom the effect is found to be statistically significant. Although not statistically

significant, there is some evidence that women between 59 and 60 years of age also leave type 1 inactivity for activity rather less quickly. As before, this finding is in line with what one would expect.

With regard to the disability status of individuals, those with permanent disability are significantly less likely to transit from type 1 inactivity to activity. This is true for both men and women. This result is in line with what would be expected given the adverse effect of having a (permanent) disability in securing employment and/or in being active in general.

The hazard of transition also varies with accommodation. Men in rented and/or rent free houses are significantly less likely to move into type 2 inactivity than those who own their property outright. For women, there was no such effect on transitions to type 2 inactivity but living in rented or rent-free accommodation significantly reduced the hazard of transition to activity.

Movements into activity were generally slower for those with a partner. For women, this was statistically significant. Interestingly, the partner's economic status was only significant for men. Specifically, men with a non-working partner were slower to become economically active. For women, the presence of dependent children in the household increases the chances of becoming active and reduces transitions to type 2 inactivity. This result is possibly capturing those women returning to the labour force after a period of bringing up their children (and perhaps also needing to finance their children's higher education).

The type of occupation individuals had when last in work is another factor worthy of note. Men who used to be in professional occupations, craft and related occupations as well as plant and machine operatives are less likely to become economically active than those previously working as managers and administrators. For women, less variation is visible, although there is some indication that those who had previously held a clerical or secretarial occupation tended to move into activity more quickly than those in other occupations.

In terms of industry of employment, men who were in the electricity, gas, water; hotel and restaurant; real estate and educational industries previously are significantly more likely to transit from type 1 inactivity via activity compared with their counterparts who were in the agricultural, fishery and mining industries.

Finally, men in the North West or Northern Ireland are less likely than those living in the North to become economically active. In fact, those in Northern Ireland are most likely to remain type 1 inactive.

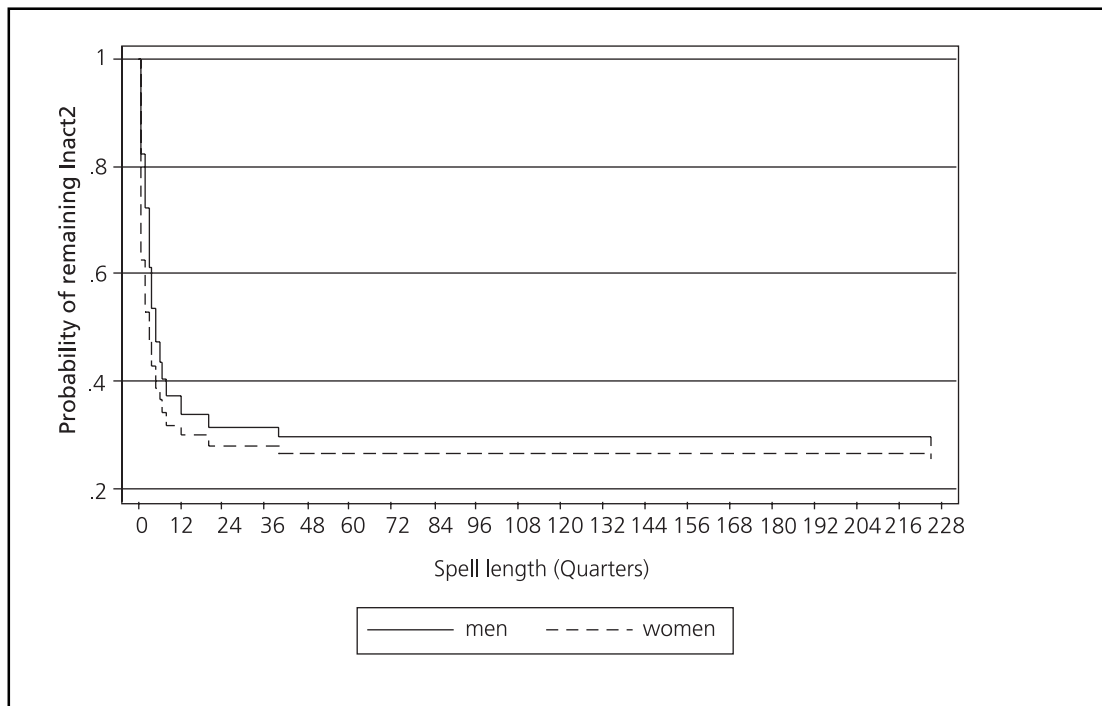
#### **5.3.4 Type 2 inactive men and women: time until transition into non-type 2 inactivity**

The final model considers movements away from type 2 inactivity. Figure 5.5 depicts the probabilities of remaining type 2 inactive over time. We observe that there is a more or less similar pattern for men and women. As with the other results, most



transitions are concentrated in the first three years of the spell. Beyond this point, individuals are less likely to leave type 2 inactivity. This is in line with what one would expect; if individuals are inactive for a long while with no desire to work, the chances that they will return to activity are reduced.

**Figure 5.5** Probability of remaining type 2 inactive, over time



The effects of covariates for both men and women are given, respectively, in Tables A.13 and A.14 in the Appendix. These estimated effects are found to be significant with respect to the following characteristics:

- age;
- disability status;
- type of accommodation;
- whether or not there are dependent children;
- the economic status of a partner; and
- region.

With regards to the effects of each of these covariates, our findings indicate that men and women are slower to leave type 2 inactivity the older they are and that this is particularly marked for those close to SPA. These findings are quite intuitive in that the older a person gets, the chances are that the person finds it more difficult (or possibly less attractive) to leave type 2 inactivity.

Men who are type 2 inactive due to a temporary sickness or disability are much quicker to leave type 2 inactivity than men who are type 2 inactive for another reason. Curiously, men with a permanent sickness or disability are also quicker to leave type 2 inactivity, although the size of this effect is much smaller than when considering temporary disability. Type 2 inactive women who are sick or disabled are also more likely to exit type 2 inactivity, although this effect is small.

As well as the marginal effect of disability, our findings also suggest that individuals who do not own their house and those with dependent children are more likely to leave type 2 inactivity. Our findings suggest that men with a non-working partner are significantly less likely to leave type 2 inactivity. For women, having a partner increases the chances of leaving type 2 inactivity, but this effect is removed when the partner is not working. Another characteristic that we find to have a significant effect on the hazard of transition via non-type 2 inactivity is the region of residence. Accordingly, men and women who live in Northern Ireland are found to be significantly less likely to transit type 2 inactivity compared with their counterparts in the North of England.<sup>26</sup>

It is interesting to note that occupation and industry of previous employment appear not to be significantly associated with leaving type 2 inactivity. This is true for both men and women.

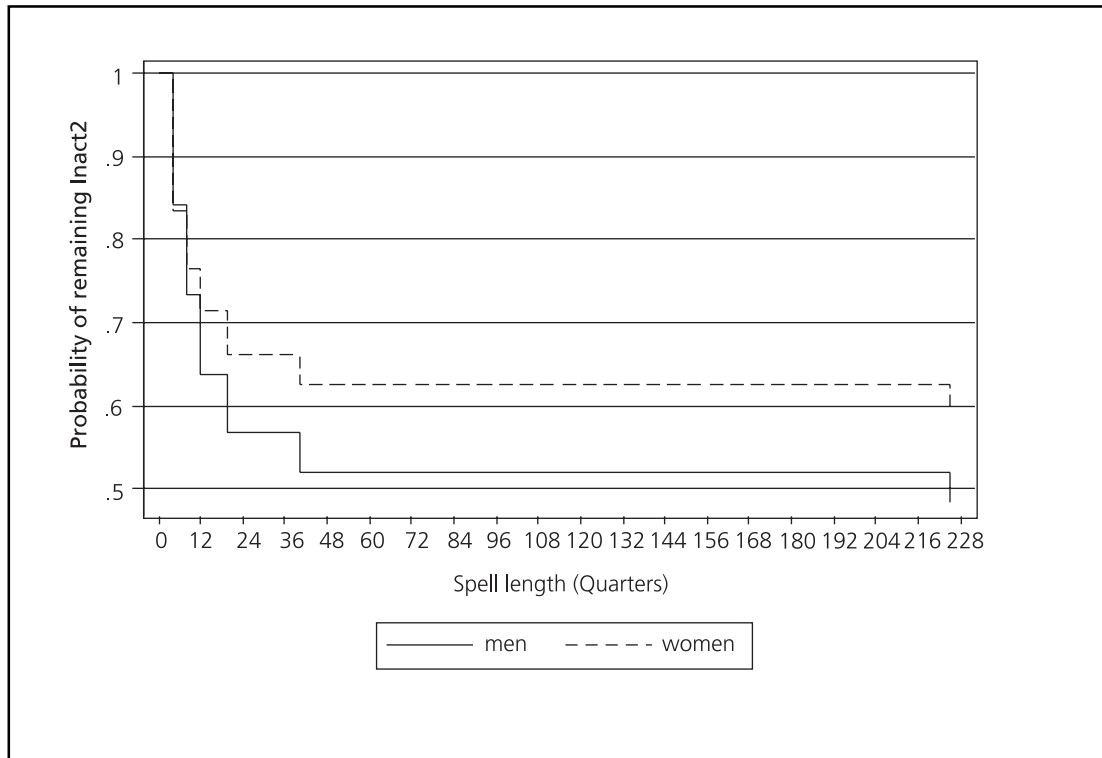
### **5.3.5 Non-retired men and women: time until transition into non-type 2 inactivity**

As stated in the introduction to this chapter, we also modelled the transition behaviour of type 2 inactive men and women after excluding retired individuals from our sample. Figure 5.6 shows the patterns of these transitions. There are three notable differences from the results already discussed for the type 2 inactive men and women as a whole. First, there are clear differences between men and women: non-retired women leave type 2 inactivity more slowly than non-retired men. Second, transitions are not concentrated so heavily towards the start of the spell but are spread over a longer period. Third, fewer transitions occur than for type 2 inactive men and women as a whole. That is, type 2 inactivity appears more permanent for those men and women with a reason other than retirement for not wanting to work. Retired type 2 inactive individuals, some of whom might have retired early, are more likely to leave type 2 inactivity than those who joined type 2 inactivity for reasons other than retirement.

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<sup>26</sup> It should be noted that the quarterly Labour Force Survey (LFS) for Northern Ireland is only available from winter 1994/05 onwards.

**Figure 5.6** Probability of remaining type 2 inactive for non-retired men and women, over time



The effects of covariates are given for both men and women in Tables A.15 and A.16, respectively, in the Appendix. The results show the following characteristics to be significant:

- age;
- disability status;
- type of accommodation;
- whether or not there are dependent children;
- the economic status of a partner;
- industry;
- region.

The results are mostly similar to those for the full sample of type 2 inactive people. However, there are some differences. Men with a temporary disability were quicker to leave type 2 inactivity than those with no disability. Unlike type 2 inactive men as a whole, having a permanent disability was not significantly associated with leaving type 2 inactivity. The results for non-retired type 2 inactive women were more similar to those for type 2 inactive women as a whole, although the effect of temporary disability does not quite attain statistical significance at the conventional level.

The effect of partnership status is also different for non-retired type 2 inactive women. Specifically, results for type 2 inactive women as a whole showed those with a partner to be more likely to leave type 2 inactivity but those with a non-working partner to be no more likely to leave, for non-retired women, these effects are insignificant.

Finally, while the industry of previous employment appeared not to be significantly associated with leaving type 2 inactivity for the sample of type 2 inactive men and women as a whole, for non-retired type 2 inactive men, some significant effects are evident. Those previously employed in the public administration, education and 'other' industries are quicker to leave type 2 inactivity compared with those in the reference category of agriculture, fishing and mining.

## 5.4 Summary and conclusion

In this chapter we have estimated duration models to examine the timing of labour market transitions of older men and women. We have shown the associations between individual characteristics and the rate of exit from the initial state. The results show that most transitions take place early in the spell and that remaining in the initial state reduces the likelihood of exit. The existence of such duration dependence implies that individuals remaining in an adverse labour market state will become more difficult to help, but that where an individual can be helped into employment, this may have long-lasting benefits.

In terms of characteristics that are important in determining the transition behaviour of older workers, our findings indicate, variously, to the importance of age, disability status of older workers, the type of accommodation that older workers reside in, whether or not older workers have dependent children, whether or not older workers have partners and the economic status of partners, industry of employment as well as region of residence of older workers. A closer look at the effect of each of these characteristics discussed in the preceding section is important, for the direction of these effects depends on the specific type of transition considered.

## 6 Conclusion

This report has presented a detailed account of the characteristics of the over-50s population and an assessment of their transitions between different employment states. In this final chapter, we attempt to draw together the key findings to identify possible implications for the development of policy.

As stated in *Opportunity for All: Sixth Annual report 2004*, there is a policy commitment to increasing the choices and opportunities available for people aged 50 and over to remain in, or rejoin, the labour market. Specific measures intended to increase the employment rate of the over-50s include:

- providing better back-to-work help such as personal advice, training, work trials, volunteering opportunities and an in-work Training Grant, all delivered through the New Deal 50 plus programme;
- piloting, as part of the intensive activity period, a more intensive job search which aims to increase the motivation of clients with low self-esteem and confidence;
- piloting measures to help recipients of incapacity benefits return to work;
- treating men and women between 60 and 64 as active participants in the labour market, as women's State Pension Age (SPA) rises towards 65 from 2010;
- increasing further the financial rewards for working beyond SPA;
- ensuring tax rules allow individuals to continue work while drawing their occupational pension;
- introducing legislation against age discrimination in October 2006;
- encouraging employers to adopt non-ageist employment practices.

The results in this analysis, while not focused on any of these specific initiatives, provide a useful context within which to understand the general nature of transitions among the over-50s. As such, they provide some clues as to the likely success of interventions that aim to encourage them into work.

To be effective, policy must be tailored to the specific needs of the over-50s client group. The descriptive account of the over 50s has highlighted some distinct features of the population. For example, they are predominantly white, partnered and without dependent children. Health concerns and problems are common and constitute the primary mechanism sorting individuals between employment and economic inactivity with no desire to work. This is particularly true for men; their only other likely reason for inactivity is retirement. For women, the other main reason for inactivity is looking after the family or home. It is unsurprising that indications of traditional gender roles are to be found within this population more than a younger group of people.

Whatever the reason, the end result is that the over-50s are mostly accounted for by those in work and those out of work with no desire for work. This is a key difference from younger age groups where the issue of retirement is not relevant and also health problems are less of a consideration. Consequently, the policy objective of extending working lives is most likely to have an impact by concentrating on the twin aims of encouraging those in work to remain longer in employment while, at the same time, trying to develop an interest in work among those with no such interest. The question is how to achieve this.

The results of the econometric analysis in this report provide some clues as to how to proceed. A key finding is that transitions are both state dependent and duration dependent. State dependence implies that, should an individual experience a period of inactivity, this, more than anything else, will influence whether that individual will be inactive when next observed. In other words, there is the potential for any individual to become trapped in inactivity. This potential problem is compounded by the duration dependence that has been identified. This means that the longer an individual remains inactive, the more entrenched in inactivity that individual will become, and the harder it will be to encourage any desire to engage with the labour market. This may be for a number of reasons such as skill deterioration, reduced morale or the establishment of a pattern of daily life that does not accommodate paid work.

Taking these two points together, the implication is that policy should intervene as soon as an individual experiences a period of inactivity since to delay things risks hardening that individual's attitude towards the idea of work. Clearly, there are exchequer costs associated with such an approach of early intervention. Specifically, there could be an argument that early intervention is uneconomical since it means that money is directed to people who may not have needed it to move from inactivity to activity. By waiting until the period of inactivity has reached a certain duration (for example, the results in this report suggest most exits take place within the first three years of a spell starting), it is more certain that those targeted will actually be in need of help. The drawback to this is that, by this time, inactive individuals will require more help to return to work. But perhaps the key argument in favour of early intervention is that the economic status of the over-50s tends to be fairly stable. Notably, we have seen that the average length of non-employment for inactive

individuals with no desire to work is seven years for men and 14 years for women. In view of this and the fact that there are relatively few cases of inactivity of short duration, consideration of the deadweight resulting from directing resources to those with no real need for it becomes rather academic.

A more optimistic implication of the findings is that the combination of state dependence and duration dependence can also work to beneficial effect. In particular, if it is possible to intervene such that an individual moves into employment, the chances of being in employment at a later point in time are greatly increased and the longer the period of employment, the less likely becomes a return to inactivity. Hence, there is a positive role for policy both in encouraging movements into work and supporting individuals who have entered work. Again, the results provide some indication of the likely required duration of such support; most exits from employment take place within the first three years of starting the employment spell.

There is a practical question of how to reach individuals to encourage them to find work or to remain in work. For those helped into work, personal advisers could offer a period of support, as in the New Deal for Disabled People (NDDP). In fact, since health considerations are the main reason given for inactivity, NDDP is perhaps the existing policy instrument most appropriate for many of the over-50s who are economically inactive. This has become increasingly relevant as the piloted reforms to incapacity benefits are extended to apply to a greater proportion of the country. It is worth noting that approximately 90 per cent of those inactive for health reasons are claiming an incapacity benefit.

For those already in work, the results of the analysis point to the potential of part-time employment as a bridge between full-time work and non-employment. This is true for both men and women. One way of extending the working-life would be to encourage individuals to consider working part-time rather than withdrawing from the labour market entirely. While potentially promising, it is important to note that working part-time might involve a substantial cultural adjustment for men. Whereas part-time work is commonplace among women and in many cases appears to be the working arrangement of choice and consequently a stable position, for men it is much rarer. For men, part-time work appears to function as an intermediate step between non-employment and full-time employment. Put another way, part-time work seems to operate as a two-way bridge between non-employment and full-time employment for men while for women it operates as a long-term status in its own right plus a one-way bridge for those wishing to reduce the extent of their engagement with the labour market but not to withdraw entirely. This may simply reflect the fact that it is less common for non-working women to want to work full-time than it is for non-working men. In any event, the results point to the potential of part-time work as a means of extending working lives either by encouraging transitions away from inactivity or by reducing movements away from the labour market.

The analysis has also shown the role of personal characteristics in influencing transitions. For example, older individuals are more likely to move further away from the labour market (possibly for reasons of age discrimination, skill obsolescence or retirement) and this appears to be particularly marked for those within a year of SPA. On the other hand, those with children and a mortgage are more likely to engage more fully with the labour market (possibly reflecting increased household consumption costs). Inactive individuals who want to work were less likely to become economically active if they have a permanent health problem or disability. Inactive men who do not want to work are much more likely to move closer to the labour market if the reason for their inactivity is a temporary health problem or disability rather than some other reason.

Occupation did not appear to affect the transition behaviour of those in work or of those furthest from the labour market. Men working in some industries were more likely to leave employment but no such effect was found for women or those furthest from the labour market. However, when considering non-retired men furthest from the labour market, those who had previously worked in particular industries (such as public administration, education and 'other' industries) were slower to move closer to the labour market.

It is interesting to consider the role of qualifications. These were not found to have an important effect on the length of time spent in a particular economic state. This suggests that policies that aim to improve the qualifications of the over-50s may not be effective in encouraging job retention or movement closer to the labour market.

One characteristic deserves special mention: the economic status of the partner. Those with a working partner are more likely to be closer to the labour market. The reasons for this are not clear. It may, for example, be due to shared characteristics (including attitude to work) or that the appeal of increased leisure time is more attractive when it can be a shared experience. Irrespective of the reason, it highlights the relevance of taking into account the characteristics and circumstance of both partners in a couple. Seen in this light, another policy vehicle for the over-50s might be the New Deal for Partners.



# Appendix

## Methodological notes and detailed results

### A.1 Markov models

As described in the main text, labour market states are summarised by a discrete qualitative variable which assumes four values from ‘Inactivity of type 2’ to ‘Employed’. We assume that such states can be seen as realizations of a unique underlying and unobserved variable signifying the individual propensity to be in employment. Based on this assumption, the data can be analysed using models for limited dependent variable with ordinal response such as the ordered probit model.

Without considering dynamics for the time being, such a model assumes that individuals indexed by  $i$  ( $i=1\dots n$ ) observed in survey quarter  $t$  ( $t=1\dots 5$ ) are characterised by a latent propensity to be employed ( $E_{it}^*$ ) which is a function of a set of personal characteristics (the vector  $X_{it-1}$ ) and a vector of unknown coefficients to be estimated  $\beta$  plus an error term  $u_{it}$ :

$$E_{it}^* = X_{it} \beta + u_{it} \quad [1]$$

The propensity  $E_{it}^*$  is not observed in the data; rather they report the discrete labour market indicator, call it  $E_{it}$ . The model postulates that the observed indicator is a step function of the unobserved one:  $E_{it} = \tau(E_{it}^*)$ , where the mapping  $\tau$  transforms the latent propensity into the observed indicator as the former crosses a set of (latent) thresholds. The error term is assumed to be distributed according to the standard normal function which yields the possibility to derive the sample likelihood and to estimate the model by the method of maximum likelihood.

The dynamic model (first order Markov model) shares the same statistical structure as the static one; the difference is that now dummy indicators for labour market states occupied in the quarter prior to interview are included in the model:

$$E_{it}^* = X_{it-1} \beta + \delta_1 I_{1it-1} + \delta_2 I_{2it-1} + \delta_3 U_{it-1} + u_{it} \quad [2]$$

where I 1 and 2 represent inactivity statuses while U represents unemployment. Covariates are measured in the previous quarter to avoid simultaneity between changes in states and changes in covariates.

First-order Markov models are popular in economics, and assume that dynamics can be described by relating the status in a given period to the status of the previous one, without the need to take earlier periods into account. A second-order Markov model would take into account the employment status in the two previous periods. In the remainder of this section we investigate what is the appropriate order of the Markov model to be used for our sample.

As outlined in Chapter 2, the longitudinal structure of the Labour Force Survey (LFS) consists of a rotating panel of 5 quarters. This implies that it is possible to estimate a Markov model that relates states in the fifth survey quarter to states occupied at each of the first four interview dates, yielding a fourth-order model. Estimating a fourth-order model allows us to see if a lower order model (especially a first order model) can appropriately describe the labour market dynamics of older workers.

Results from such an exercise are presented in Table A.1. For simplicity, labour market states have been aggregated into two categories: Active (i.e. Employed or Unemployed) and Inactive (i.e. Inactive type 1 or 2). The models estimated include controls for the set of personal attributes available in the LFS. For the sake of brevity, the table only reports the relevant results, i.e. the coefficients associated with the indicators of activity/inactivity in quarters prior to the fifth.

**Table A.1 4th order dynamics in the probability of being economically active**

	Men		Women	
	ME	Z-stat	ME	Z-stat
Active in quarter 4	0.799	(4.81) ***	2.240	(9.26) ***
Active in quarter 3	0.223	(2.19) ***	0.642	(2.63) ***
Active in quarter 2	-0.087	(1.01) 0.068	(0.29)	
Active in quarter 1	-0.069	(0.72) 0.680	(2.29)	***

Note: the table reports the effects on the probability of being economically active in the fifth quarter of interview, induced by activity status in the first four quarters. Regression controls for the set of observables included in the regression of Tables A.2 and A.3. Heteroskedasticity robust z-statistics in parentheses. \*, \*\* and \*\*\* indicate statistical significance at the 10, 5 and one per cent level of confidence.

For men, the coefficients associated with first-order dynamics (i.e. the one for the fourth quarter) is large and very precisely estimated. The coefficients on second-order dynamics (i.e. the coefficient associated with the third quarter) is still statistically significant, but its magnitude is rather negligible compared with the first-order coefficient. Finally, coefficients for third and fourth-order dynamics are not statistically significant. Overall, the results indicate that even if from a statistical point of view one should consider second-order Markov models, from a substantive point of view focusing on the first order model can satisfactorily approximate the dynamics present in the data.

Evidence for women tends to reproduce that obtained on the male sample. The only difference is the statistically significant coefficient estimated for the fourth-order coefficient. However, also in this case the magnitude of the effect is negligible relative to the one for first-order. As was the case with men, these results suggest that the first-order Markov model can adequately describe the data.

Table A.2 The covariates of labour market states. Men (n=49,980)

State at quarter t Covariate	Inactive type 2	Inactive type 1	Unemployed	Employed
Age 54-56	0.049 (2.690)	0.008 (4.740)	0.005 (2.720)	-0.062 (3.720)
Age 57-60	0.106 (3.310)	0.016 (3.750)	0.009 (2.030)	-0.131 (5.240)
Age 61-63	0.237 (4.540)	0.025 (1.920)	0.011 (1.070)	-0.273 (9.150)
Age 64-65	0.395 (7.140)	0.023 (0.930)	0.007 (0.380)	-0.425 (24.770)
Qualification: Other	-0.027 (2.350)	-0.005 (3.320)	-0.003 (2.660)	0.036 (2.880)
Qualification: NVQ1	-0.011 (0.550)	-0.002 (0.540)	-0.001 (0.530)	0.015 (0.550)
Qualification: NVQ2	-0.011 (1.090)	-0.002 (1.090)	-0.001 (1.040)	0.014 (1.110)
Qualification: NVQ3	-0.006 (0.620)	-0.001 (0.610)	-0.001 (0.600)	0.008 (0.620)
Qualification: NVQ4	0.011 (0.850)	0.002 (0.950)	0.001 (0.950)	-0.014 (0.890)
Qualification: NVQ5/6	0.018 (1.480)	0.003 (1.910)	0.002 (1.790)	-0.024 (1.650)
Qualification: Missing	0.003 (0.570)	0.001 (0.570)	0.000 (0.570)	-0.004 (0.570)
Accommodation: Mortgage	-0.074 (2.570)	-0.017 (15.400)	-0.011 (7.580)	0.102 (3.630)
Accommodation: Rent	0.005 (0.650)	0.001 (0.720)	0.001 (0.730)	-0.007 (0.670)
Has received apprenticeship	-0.038 (2.400)	-0.008 (4.790)	-0.005 (3.660)	0.050 (3.120)
Has dependent children	-0.033 (2.440)	-0.007 (4.060)	-0.004 (3.130)	0.044 (3.120)
Has partner	-0.021 (2.310)	-0.004 (2.570)	-0.003 (2.130)	0.027 (2.650)
Has partner *Partner employed	-0.088 (2.480)	-0.021 (14.040)	-0.014 (9.790)	0.123 (3.460)
Has partner *Partner employment status missing	-0.040 (2.830)	-0.008 (5.740)	-0.005 (3.690)	0.053 (3.950)
Professional occupations	-0.007 (0.720)	-0.001 (0.710)	-0.001 (0.690)	0.009 (0.730)
Associate professional and technical occupations	-0.005 (0.480)	-0.001 (0.470)	-0.001 (0.460)	0.006 (0.480)
Clerical, secretarial occupations	-0.018 (1.550)	-0.004 (1.620)	-0.002 (1.480)	0.024 (1.640)
Craft and related occupations	0.000 (0.010)	0.000 (0.010)	0.000 (0.010)	0.000 (0.010)

Continued

Table A.2 Continued

State at quarter t Covariate	Inactive type 2	Inactive type 1	Unemployed	Employed
Personal protective occupations	0.001 (0.080)	0.000 (0.080)	0.000 (0.080)	-0.001 (0.080)
Sales occupations	-0.016 (1.020)	-0.003 (1.010)	-0.002 (0.960)	0.021 (1.040)
Plant and machine operatives	-0.009 (1.070)	-0.002 (1.030)	-0.001 (0.980)	0.012 (1.080)
Other and missing occupations	0.003 (0.320)	0.001 (0.330)	0.000 (0.340)	-0.004 (0.330)
Industry: Agriculture	-0.105 (2.360)	-0.026 (7.500)	-0.017 (7.620)	0.149 (3.170)
Industry : Electricity, gas and water	0.136 (3.080)	0.019 (2.910)	0.010 (1.700)	-0.165 (4.370)
Industry: Construction	-0.016 (1.800)	-0.003 (2.020)	-0.002 (1.800)	0.022 (1.980)
Industry: Wholesale, retail, trade	-0.049 (2.600)	-0.011 (5.920)	-0.007 (4.080)	0.066 (3.540)
Industry: Hotels and restaurants	-0.001 (0.080)	0.000 (0.080)	0.000 (0.080)	0.002 (0.080)
Industry: Transport and communication	0.006 (0.580)	0.001 (0.620)	0.001 (0.620)	-0.007 (0.600)
Industry: Financial intermediation	0.083 (2.540)	0.013 (3.540)	0.007 (2.200)	-0.103 (3.340)
Industry: Real estate	-0.076 (2.530)	-0.018 (9.230)	-0.011 (6.290)	0.105 (3.500)
Industry: Public administration	0.033 (1.950)	0.006 (2.720)	0.003 (2.220)	-0.042 (2.290)
Industry: Education	-0.035 (2.210)	-0.007 (3.020)	-0.004 (2.540)	0.046 (2.640)
Industry: Health and social work	-0.050 (2.330)	-0.011 (3.880)	-0.007 (3.190)	0.067 (2.920)
Industry: Other community, social	-0.059 (2.460)	-0.013 (5.270)	-0.008 (4.060)	0.080 (3.240)
Region: Tyne & Wear	0.119 (2.260)	0.017 (3.680)	0.009 (2.040)	-0.145 (2.980)
Region: Rest of northern region	0.042 (1.360)	0.007 (2.440)	0.004 (2.490)	-0.054 (1.570)
Region: South Yorkshire	0.062 (1.620)	0.010 (3.240)	0.006 (2.700)	-0.077 (1.950)
Region: West Yorkshire	0.002 (0.120)	0.000 (0.120)	0.000 (0.120)	-0.003 (0.120)
Region: Rest of Yorkshire and Humberside	0.026 (0.960)	0.005 (1.360)	0.003 (1.470)	-0.033 (1.050)
Region: East Midlands	-0.012 (0.800)	-0.002 (0.660)	-0.001 (0.620)	0.016 (0.760)
Region: East Anglia	-0.012 (0.740)	-0.002 (0.630)	-0.001 (0.590)	0.016 (0.710)
Region: Outer London	-0.008 (0.500)	-0.002 (0.440)	-0.001 (0.420)	0.011 (0.490)

Continued

Table A.2 Continued

State at quarter t Covariate	Inactive type 2	Inactive type 1	Unemployed	Employed
Region: Rest of South East	-0.028 (2.460)	-0.006 (1.720)	-0.004 (1.440)	0.038 (2.380)
Region: South West	-0.013 (0.900)	-0.003 (0.740)	-0.002 (0.680)	0.017 (0.860)
Region: West Midlands (Met)	0.000 (0.010)	0.000 (0.010)	0.000 (0.010)	0.000 (0.010)
Region: Rest of West Midlands	-0.021 (1.460)	-0.004 (1.120)	-0.003 (0.990)	0.028 (1.380)
Region: Greater Manchester	0.017 (0.710)	0.003 (0.910)	0.002 (0.980)	-0.022 (0.760)
Region: Merseyside	0.065 (1.670)	0.011 (3.310)	0.006 (2.660)	-0.081 (2.010)
Region: Rest of North West	0.015 (0.650)	0.003 (0.810)	0.002 (0.870)	-0.020 (0.690)
Region: Wales	0.053 (1.590)	0.009 (3.310)	0.005 (2.930)	-0.067 (1.900)
Region: Strathclyde	0.069 (1.820)	0.011 (3.920)	0.006 (2.780)	-0.086 (2.250)
Region: Rest of Scotland	-0.003 (0.180)	-0.001 (0.170)	0.000 (0.170)	0.004 (0.180)
Region: Northern Ireland	0.034 (1.080)	0.006 (1.610)	0.003 (1.720)	-0.043 (1.200)
Year=1994	-0.012 (1.290)	-0.002 (1.090)	-0.001 (0.990)	0.015 (1.260)
Year=1995	-0.020 (1.840)	-0.004 (1.540)	-0.002 (1.350)	0.027 (1.850)
Year=1996	-0.021 (1.890)	-0.004 (1.630)	-0.003 (1.420)	0.028 (1.920)
Year=1997	-0.022 (1.960)	-0.004 (1.690)	-0.003 (1.470)	0.029 (2.010)
Year=1998	-0.027 (2.420)	-0.005 (2.160)	-0.003 (1.780)	0.036 (2.620)
Year=1999	-0.034 (2.730)	-0.007 (2.730)	-0.004 (2.160)	0.045 (3.190)
Year=2000	-0.026 (2.180)	-0.005 (1.950)	-0.003 (1.650)	0.035 (2.310)
Year=2001	-0.037 (2.600)	-0.008 (2.820)	-0.005 (2.250)	0.050 (3.070)
Year=2002	-0.045 (2.830)	-0.010 (3.600)	-0.006 (2.700)	0.060 (3.620)
Year=2003	-0.051 (2.880)	-0.011 (4.240)	-0.007 (3.050)	0.069 (3.860)
Year=2004	-0.053 (2.760)	-0.011 (3.820)	-0.007 (2.880)	0.071 (3.560)

Continued

Table A.2 Continued

State at quarter t Covariate	Inactive type 2	Inactive type 1	Unemployed	Employed
2 <sup>nd</sup> quarter	0.002 (1.100)	0.000 (1.220)	0.000 (1.190)	-0.003 (1.160)
3 <sup>rd</sup> quarter	-0.001 (0.630)	0.000 (0.620)	0.000 (0.610)	0.002 (0.630)
4 <sup>th</sup> quarter	-0.001 (0.400)	0.000 (0.390)	0.000 (0.380)	0.001 (0.400)

Note: The table provides the variations in the probability of labour market states in a given quarter (quarter t) induced by observable attributes, with respect to a baseline category. Heteroskedasticity robust Z statistics in parentheses. Values of the statistic larger than 1.64, 1.96 and 2.32 indicate statistical significance at the ten, five and one per cent level of confidence. The baseline was aged 50-53, had no qualifications, owned the accommodation, had no partner (for those with a partner, the partner was not employed), was in managerial occupation in manufacturing, lived in Central London, interviewed in the first quarter of 1993. Goodness of fit: Wald  $\chi^2(71) = 2,994.57$ ; Prob >  $\chi^2 = 0.0000$ ; Pseudo R<sup>2</sup> = 0.1375

Table A.3 The covariates of labour market states. Women (n= 34,907)

Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	Z-stat	ME	Z-stat	ME	Z-stat	ME	Z-stat
Age 54-56	0.048	(2.030)	0.006	(3.160)	0.003	(2.030)	-0.057	(2.640)
Age 57-58	0.104	(2.430)	0.012	(2.330)	0.005	(1.510)	-0.121	(3.410)
Age 59-60	0.174	(2.860)	0.017	(1.620)	0.006	(1.080)	-0.197	(4.340)
Qualification: Other	-0.037	(1.820)	-0.006	(3.330)	-0.003	(2.580)	0.046	(2.240)
Qualification: NVQ1	-0.018	(1.190)	-0.003	(1.310)	-0.001	(1.220)	0.022	(1.270)
Qualification: NVQ2	-0.017	(1.360)	-0.003	(1.540)	-0.001	(1.390)	0.021	(1.480)
Qualification: NVQ3	-0.010	(0.680)	-0.001	(0.660)	-0.001	(0.640)	0.012	(0.680)
Qualification: NVQ4	0.040	(1.630)	0.005	(2.430)	0.002	(1.870)	-0.048	(1.930)
Qualification: NVQ5/6	0.085	(2.140)	0.010	(2.550)	0.004	(1.670)	-0.100	(2.820)
Qualification: Missing	0.008	(1.020)	0.001	(1.110)	0.001	(1.050)	-0.010	(1.070)
Accommodation: Mortgage	-0.057	(1.880)	-0.010	(7.730)	-0.004	(4.370)	0.071	(2.420)
Accommodation: Rent	0.027	(1.510)	0.004	(2.430)	0.002	(1.970)	-0.033	(1.770)
Has received apprenticeship	-0.018	(1.010)	-0.003	(1.160)	-0.001	(1.110)	0.023	(1.070)
Has dependent children	-0.030	(1.610)	-0.005	(2.460)	-0.002	(2.100)	0.038	(1.890)
Has partner	0.000	(0.040)	0.000	(0.050)	0.000	(0.050)	-0.001	(0.040)
Has partner *Partner employed	-0.107	(1.700)	-0.021	(9.820)	-0.010	(13.49)	0.138	(2.130)
Has partner *Partner employment status missing	-0.080	(1.860)	-0.015	(9.300)	-0.007	(5.520)	0.102	(2.390)
Professional occupations	-0.007	(0.400)	-0.001	(0.380)	0.000	(0.380)	0.009	(0.400)
Associate professional and technical occupations	-0.021	(1.190)	-0.003	(1.220)	-0.001	(1.130)	0.026	(1.250)
Clerical, secretarial occupations	0.023	(1.190)	0.003	(1.780)	0.001	(1.630)	-0.028	(1.330)
Craft and related occupations	0.076	(1.670)	0.009	(2.500)	0.004	(1.760)	-0.089	(2.030)
Personal protective occupations	0.057	(1.750)	0.007	(2.660)	0.003	(1.880)	-0.068	(2.140)

Continued



Table A.3 Continued

State at quarter t Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	Z-stat	ME	Z-stat	ME	Z-stat	ME	Z-stat
Sales occupations	0.062	(1.760)	0.008	(2.590)	0.003	(1.830)	-0.073	(2.160)
Plant and machine operatives	0.062	(1.550)	0.008	(2.530)	0.003	(1.860)	-0.073	(1.850)
Other and missing occupations	0.053	(1.690)	0.007	(2.710)	0.003	(1.940)	-0.062	(2.050)
Industry: Agriculture	-0.092	(1.660)	-0.017	(3.420)	-0.008	(3.100)	0.117	(2.000)
Industry: Electricity, gas and water	0.229	(2.150)	0.019	(1.250)	0.007	(0.830)	-0.255	(2.690)
Industry: Construction	-0.002	(0.080)	0.000	(0.080)	0.000	(0.080)	0.003	(0.080)
Industry: Wholesale, retail, trade	-0.010	(0.700)	-0.002	(0.660)	-0.001	(0.630)	0.012	(0.700)
Industry: Hotels and restaurants	0.016	(0.710)	0.002	(0.840)	0.001	(0.840)	-0.019	(0.740)
Industry: Transport and communication	-0.018	(0.830)	-0.003	(0.800)	-0.001	(0.770)	0.022	(0.840)
Industry: Financial intermediation	-0.017	(0.760)	-0.003	(0.730)	-0.001	(0.700)	0.020	(0.770)
Industry: Real estate	-0.034	(1.690)	-0.006	(2.040)	-0.002	(1.740)	0.042	(1.940)
Industry: Public administration	-0.048	(1.800)	-0.008	(2.720)	-0.004	(2.230)	0.060	(2.160)
Industry: Education	-0.030	(1.570)	-0.005	(1.840)	-0.002	(1.610)	0.036	(1.760)
Industry: Health and social work	-0.038	(1.800)	-0.006	(2.560)	-0.003	(2.100)	0.047	(2.150)
Industry: Other community, social	-0.045	(1.760)	-0.008	(2.600)	-0.003	(2.160)	0.056	(2.100)
Region: Tyne & Wear	0.038	(0.870)	0.005	(1.320)	0.002	(1.330)	-0.045	(0.950)
Region: Rest of northern region	0.065	(1.300)	0.008	(2.530)	0.003	(1.990)	-0.077	(1.510)
Region: South Yorkshire	0.051	(1.080)	0.007	(1.840)	0.003	(1.700)	-0.060	(1.210)
Region: West Yorkshire	0.009	(0.310)	0.001	(0.350)	0.001	(0.360)	-0.011	(0.310)
Region: Rest of Yorkshire and Humberside	0.020	(0.580)	0.003	(0.760)	0.001	(0.790)	-0.025	(0.620)
Region: East Midlands	0.040	(1.040)	0.005	(1.910)	0.002	(1.860)	-0.048	(1.170)
Region: East Anglia	0.037	(0.940)	0.005	(1.550)	0.002	(1.560)	-0.044	(1.040)
Region: Outer London	0.026	(0.780)	0.004	(1.140)	0.002	(1.190)	-0.031	(0.840)

Continued

Table A.3 Continued

State at quarter t Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	Z-stat	ME	Z-stat	ME	Z-stat	ME	Z-stat
Region: Rest of South East	0.002	(0.090)	0.000	(0.100)	0.000	(0.100)	-0.003	(0.100)
Region: South West	0.007	(0.280)	0.001	(0.310)	0.000	(0.320)	-0.009	(0.280)
Region: West Midlands (Met)	0.023	(0.670)	0.003	(0.920)	0.001	(0.960)	-0.028	(0.710)
Region: Rest of West Midlands	0.019	(0.590)	0.003	(0.790)	0.001	(0.830)	-0.022	(0.630)
Region: Greater Manchester	0.039	(0.960)	0.005	(1.620)	0.002	(1.610)	-0.046	(1.070)
Region: Merseyside	0.067	(1.250)	0.009	(2.220)	0.004	(1.820)	-0.079	(1.440)
Region: Rest of North West	0.049	(1.120)	0.007	(2.010)	0.003	(1.840)	-0.059	(1.260)
Region: Wales	0.090	(1.560)	0.011	(2.720)	0.004	(1.810)	-0.105	(1.890)
Region: Strathclyde	0.062	(1.280)	0.008	(2.400)	0.003	(1.940)	-0.074	(1.480)
Region: Rest of Scotland	0.026	(0.760)	0.004	(1.110)	0.002	(1.160)	-0.031	(0.820)
Region: Northern Ireland	0.107	(1.610)	0.012	(2.380)	0.005	(1.590)	-0.124	(1.960)
Year=1994	-0.013	(0.890)	-0.002	(0.720)	-0.001	(0.670)	0.015	(0.870)
Year=1995	-0.033	(1.830)	-0.005	(1.540)	-0.002	(1.320)	0.041	(1.960)
Year=1996	-0.017	(1.010)	-0.003	(0.820)	-0.001	(0.750)	0.021	(0.990)
Year=1997	-0.027	(1.580)	-0.004	(1.280)	-0.002	(1.120)	0.033	(1.630)
Year=1998	-0.025	(1.520)	-0.004	(1.200)	-0.002	(1.070)	0.030	(1.540)
Year=1999	-0.026	(1.610)	-0.004	(1.280)	-0.002	(1.130)	0.032	(1.650)
Year=2000	-0.027	(1.530)	-0.004	(1.250)	-0.002	(1.100)	0.033	(1.570)
Year=2001	-0.045	(1.970)	-0.007	(2.130)	-0.003	(1.760)	0.056	(2.300)
Year=2002	-0.048	(2.050)	-0.008	(2.400)	-0.004	(1.930)	0.060	(2.470)
Year=2003	-0.055	(2.120)	-0.009	(2.840)	-0.004	(2.200)	0.069	(2.650)
Year=2004	-0.055	(2.040)	-0.009	(2.510)	-0.004	(2.010)	0.069	(2.470)

Continued

Table A.3 Continued

State at quarter t Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	Z-stat	ME	Z-stat	ME	Z-stat	ME	Z-stat
2nd quarter	0.000	(0.170)	0.000	(0.170)	0.000	(0.170)	0.000	(0.170)
3rd quarter	0.000	(0.140)	0.000	(0.140)	0.000	(0.140)	0.000	(0.140)
4th quarter	0.001	(0.300)	0.000	(0.310)	0.000	(0.320)	-0.001	(0.300)

Note: The table provides the variations in the probability of labour market states in a given quarter (quarter t) induced by observable attributes, with respect to a baseline category. Heteroskedasticity robust Z statistics in parentheses. Values of the statistic larger than 1.64, 1.96 and 2.32 indicate statistical significance at the ten, five and one per cent level of confidence. The baseline was aged 50-53, had no qualifications, owned the accommodation, had no partner (for those with a partner, the partner was not employed), was in managerial occupation in manufacturing, lived in Central London, interviewed in the first quarter of 1993. Goodness of fit: Wald  $\chi^2(70) = 1,111.01$ ; Prob >  $\chi^2 = 0.0000$ ; Pseudo R<sup>2</sup> = 0.0709

**Table A.4 The covariates of transitions across labour market states. Men (n= 39,696)**

State at quarter t Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	Z-stat	ME	Z-stat	ME	Z-stat	ME	Z-stat
Inactive type 2 t-1	0.684	(12.840)	0.053	(1.110)	-0.014	(0.470)	-0.723	(28.590)
Inactive type 1 t-1	0.344	(4.080)	0.167	(71.970)	0.084	(2.050)	-0.596	(14.470)
Unemployed t-1	0.169	(3.950)	0.123	(3.070)	0.111	(20.530)	-0.403	(5.190)
Age 54-56	0.004	(2.690)	0.000	(0.190)	0.002	(1.110)	-0.006	(1.790)
Age 57-60	0.011	(6.970)	0.001	(0.310)	0.006	(1.350)	-0.018	(2.430)
Age 61-63	0.019	(9.410)	0.003	(0.450)	0.011	(1.520)	-0.033	(2.550)
Age 64-65	0.052	(15.000)	0.022	(1.000)	0.045	(2.410)	-0.119	(2.780)
Qualification: Other	-0.004	(2.160)	0.000	(0.040)	-0.002	(1.120)	0.006	(1.890)
Qualification: NVQ1	-0.003	(0.450)	0.000	(0.070)	-0.001	(0.430)	0.004	(0.450)
Qualification: NVQ2	-0.003	(1.340)	0.000	(0.060)	-0.001	(0.980)	0.004	(1.320)
Qualification: NVQ3	-0.003	(1.050)	0.000	(0.070)	-0.001	(0.850)	0.004	(1.040)
Qualification: NVQ4	0.000	(0.090)	0.000	(0.080)	0.000	(0.090)	0.000	(0.090)
Qualification: NVQ5/6	-0.005	(2.160)	0.000	(0.020)	-0.002	(1.140)	0.008	(1.990)
Qualification: Missing	0.003	(1.050)	0.000	(0.180)	0.002	(0.800)	-0.005	(0.970)
Accommodation: Mortgage	-0.011	(6.210)	0.000	(0.090)	-0.004	(1.130)	0.015	(2.960)
Accommodation: Rent	-0.006	(3.210)	0.000	(0.010)	-0.002	(1.210)	0.008	(2.590)
Has received apprenticeship	0.000	(0.230)	0.000	(0.100)	0.000	(0.230)	0.001	(0.230)
Has dependent children	-0.004	(2.240)	0.000	(0.040)	-0.002	(1.090)	0.006	(1.850)
Has partner	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)
Has partner *Partner employed	-0.013	(6.180)	0.000	(0.130)	-0.005	(1.110)	0.017	(3.050)
Has partner *Partner employment status missing	-0.003	(1.950)	0.000	(0.060)	-0.001	(1.180)	0.005	(1.920)
Professional occupations	0.001	(0.540)	0.000	(0.130)	0.001	(0.480)	-0.002	(0.520)
Associate professional and technical occupations	0.001	(0.500)	0.000	(0.130)	0.001	(0.440)	-0.002	(0.480)

Continued

Table A.4 Continued

State at quarter t Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	Z-stat	ME	Z-stat	ME	Z-stat	ME	Z-stat
Clerical, secretarial occupations	0.003	(1.240)	0.000	(0.170)	0.002	(0.820)	-0.005	(1.060)
Craft and related occupations	-0.002	(0.820)	0.000	(0.090)	-0.001	(0.760)	0.002	(0.840)
Personal, protective occupations	-0.003	(0.980)	0.000	(0.060)	-0.001	(0.850)	0.004	(1.000)
Sales occupations	0.000	(0.050)	0.000	(0.040)	0.000	(0.050)	0.000	(0.050)
Plant and machine operatives	0.000	(0.130)	0.000	(0.100)	0.000	(0.130)	0.000	(0.130)
Other and missing occupations	0.003	(1.240)	0.000	(0.160)	0.001	(0.810)	-0.004	(1.050)
Industry: Agriculture	-0.017	(4.030)	0.001	(0.210)	-0.006	(1.040)	0.022	(2.760)
Industry: Electricity, gas and water	0.014	(3.660)	0.002	(0.370)	0.008	(1.350)	-0.024	(2.110)
Industry: Construction	-0.004	(1.990)	0.000	(0.050)	-0.001	(1.120)	0.005	(1.820)
Industry: Wholesale, retail, trade	-0.002	(1.120)	0.000	(0.080)	-0.001	(0.890)	0.003	(1.110)
Industry: Hotels and restaurants	0.001	(0.320)	0.000	(0.120)	0.001	(0.300)	-0.002	(0.310)
Industry: Transport and communication	-0.001	(0.630)	0.000	(0.090)	-0.001	(0.580)	0.002	(0.630)
Industry: Financial intermediation	0.008	(2.400)	0.001	(0.260)	0.004	(1.120)	-0.013	(1.680)
Industry: Real estate	-0.004	(1.730)	0.000	(0.040)	-0.002	(1.050)	0.006	(1.600)
Industry: Public administration	0.004	(1.710)	0.000	(0.190)	0.002	(1.000)	-0.006	(1.400)
Industry: Education	0.003	(0.930)	0.000	(0.160)	0.001	(0.720)	-0.004	(0.860)
Industry: Health and social work	0.002	(0.500)	0.000	(0.140)	0.001	(0.450)	-0.003	(0.480)
Industry: Other community, social	-0.007	(2.320)	0.000	(0.010)	-0.003	(1.110)	0.009	(2.000)
Region: Tyne & Wear	0.013	(3.210)	0.001	(0.340)	0.008	(1.150)	-0.022	(1.730)
Region: Rest of northern region	0.009	(2.580)	0.001	(0.270)	0.005	(1.020)	-0.015	(1.520)
Region: South Yorkshire	0.012	(2.960)	0.001	(0.320)	0.007	(1.110)	-0.021	(1.650)
Region: West Yorkshire	0.005	(1.350)	0.000	(0.190)	0.002	(0.770)	-0.007	(1.010)
Region: Rest of Yorkshire and Humberside	0.007	(1.830)	0.000	(0.230)	0.004	(0.900)	-0.011	(1.260)

Continued

Table A.4 Continued

State at quarter t Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	Z-stat	ME	Z-stat	ME	Z-stat	ME	Z-stat
Region: East Midlands	0.003	(1.020)	0.000	(0.160)	0.002	(0.650)	-0.005	(0.820)
Region: East Anglia	0.003	(0.760)	0.000	(0.150)	0.001	(0.550)	-0.004	(0.650)
Region: Outer London	0.004	(1.130)	0.000	(0.170)	0.002	(0.700)	-0.006	(0.900)
Region: Rest of South East	0.001	(0.510)	0.000	(0.120)	0.001	(0.400)	-0.002	(0.450)
Region: South West	0.003	(1.060)	0.000	(0.160)	0.002	(0.660)	-0.005	(0.840)
Region: West Midlands (Met)	0.003	(0.690)	0.000	(0.140)	0.001	(0.510)	-0.004	(0.600)
Region: Rest of West Midlands	0.001	(0.290)	0.000	(0.100)	0.000	(0.250)	-0.001	(0.270)
Region: Greater Manchester	0.003	(0.870)	0.000	(0.160)	0.001	(0.600)	-0.005	(0.730)
Region: Merseyside	0.009	(2.180)	0.001	(0.250)	0.005	(0.980)	-0.014	(1.400)
Region: Rest of North West	0.002	(0.510)	0.000	(0.130)	0.001	(0.410)	-0.003	(0.460)
Region: Wales	0.008	(2.500)	0.001	(0.250)	0.004	(0.990)	-0.013	(1.470)
Region: Strathclyde	0.009	(2.630)	0.001	(0.260)	0.005	(1.030)	-0.015	(1.540)
Region: Rest of Scotland	0.005	(1.370)	0.000	(0.180)	0.002	(0.780)	-0.007	(1.030)
Region: Northern Ireland	0.013	(3.340)	0.001	(0.330)	0.007	(1.120)	-0.022	(1.690)
Year=1994	0.005	(1.200)	0.000	(0.180)	0.003	(0.640)	-0.008	(0.840)
Year=1995	0.004	(0.950)	0.000	(0.160)	0.002	(0.560)	-0.006	(0.710)
Year=1996	0.001	(0.310)	0.000	(0.100)	0.001	(0.250)	-0.002	(0.280)
Year=1997	0.003	(0.800)	0.000	(0.150)	0.002	(0.510)	-0.005	(0.630)
Year=1998	0.001	(0.290)	0.000	(0.100)	0.001	(0.240)	-0.002	(0.260)
Year=1999	0.004	(0.870)	0.000	(0.150)	0.002	(0.540)	-0.006	(0.670)
Year=2000	0.001	(0.190)	0.000	(0.080)	0.000	(0.170)	-0.001	(0.180)
Year=2001	0.003	(0.710)	0.000	(0.140)	0.001	(0.480)	-0.005	(0.570)
Year=2002	-0.002	(0.330)	0.000	(0.100)	-0.001	(0.410)	0.002	(0.370)

Continued

Table A.4 Continued

State at quarter t Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	Z-stat	ME	Z-stat	ME	Z-stat	ME	Z-stat
Year=2003	0.001	(0.260)	0.000	(0.090)	0.001	(0.220)	-0.002	(0.240)
Year=2004	0.001	(0.120)	0.000	(0.070)	0.000	(0.120)	-0.001	(0.120)
2nd quarter	-0.002	(1.150)	0.000	(0.080)	-0.001	(0.930)	0.003	(1.160)
3rd quarter	-0.002	(1.320)	0.000	(0.080)	-0.001	(1.000)	0.003	(1.320)
4th quarter	-0.001	(0.850)	0.000	(0.090)	-0.001	(0.840)	0.002	(0.920)

Note: The table provides the variations in the probability of labour market states in a given quarter (quarter t) induced by states occupied in the previous quarter (t-1) and by attributes observable in the previous quarter, with respect to a baseline category. The baseline was employed in the previous quarter, was aged 50-53, had no qualifications, owned the accommodation, had no partner (for those with a partner, the partner was not employed), was in managerial occupation in manufacturing, lived in Central London, interviewed in the first quarter of 1993. Heteroskedasticity robust Z statistics in parentheses. Values of the statistic larger than 1.64, 1.96 and 2.32 indicate statistical significance at the ten, five and one per cent level of confidence. Goodness of fit: Wald  $\chi^2(74) = 11,750.08$ , Prob >  $\chi^2 = 0.0000$ , Pseudo R<sup>2</sup> = 0.5817

Table A.5 The covariates of transitions across labour market states. Women (n= 27,735)

State at quarter t Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	SE	ME	SE	ME	SE	ME	SE
Inactive type 2 t-1	0.716	(14.310)	0.025	(0.490)	-0.007	(0.300)	-0.734	(28.230)
Inactive type 1 t-1	0.394	(3.210)	0.126	(6.390)	0.045	(1.550)	-0.565	(7.570)
Unemployed t-1	0.225	(2.480)	0.114	(4.530)	0.056	(6.870)	-0.396	(3.660)
Age 54-56	0.005	(3.200)	0.001	(0.480)	0.002	(0.970)	-0.008	(1.650)
Age 57-58	0.010	(4.700)	0.002	(0.530)	0.003	(1.060)	-0.015	(1.790)
Age 59-60	0.034	(5.830)	0.014	(0.800)	0.013	(1.480)	-0.062	(1.920)
Qualification: Other	-0.004	(1.420)	-0.001	(0.400)	-0.001	(0.820)	0.005	(1.230)
Qualification: NVQ1	-0.005	(1.630)	-0.001	(0.390)	-0.001	(0.850)	0.007	(1.390)
Qualification: NVQ2	-0.003	(1.130)	0.000	(0.400)	-0.001	(0.770)	0.004	(1.040)
Qualification: NVQ3	0.001	(0.210)	0.000	(0.180)	0.000	(0.200)	-0.001	(0.200)
Qualification: NVQ4	0.002	(0.730)	0.000	(0.390)	0.001	(0.580)	-0.003	(0.680)
Qualification: NVQ5/6	-0.003	(0.780)	0.000	(0.380)	-0.001	(0.640)	0.004	(0.760)
Qualification: Missing	0.002	(0.430)	0.000	(0.300)	0.000	(0.390)	-0.003	(0.420)
Accommodation: Mortgage	-0.009	(5.360)	-0.001	(0.350)	-0.002	(0.890)	0.013	(2.160)
Accommodation: Rent	-0.006	(2.630)	-0.001	(0.390)	-0.001	(0.930)	0.008	(1.880)
Has received apprenticeship	-0.006	(1.580)	-0.001	(0.380)	-0.001	(0.810)	0.008	(1.310)
Has dependent children	-0.006	(2.450)	-0.001	(0.370)	-0.002	(0.860)	0.009	(1.650)
Has partner	-0.001	(0.640)	0.000	(0.410)	0.000	(0.620)	0.002	(0.670)
Has partner *Partner employed	-0.011	(4.810)	-0.001	(0.330)	-0.003	(0.890)	0.015	(2.220)
Has partner *Partner employment status missing	-0.013	(4.760)	-0.001	(0.310)	-0.003	(0.880)	0.017	(2.410)
Professional occupations	0.007	(1.660)	0.002	(0.470)	0.002	(0.850)	-0.010	(1.210)
Associate professional and technical occupations	0.001	(0.170)	0.000	(0.150)	0.000	(0.160)	-0.001	(0.170)
Clerical, secretarial occupations	0.005	(1.690)	0.001	(0.450)	0.001	(0.820)	-0.007	(1.190)

Continued



Table A.5 Continued

State at quarter t Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	SE	ME	SE	ME	SE	ME	SE
Craft and related occupations	0.010	(2.290)	0.003	(0.510)	0.003	(0.940)	-0.016	(1.410)
Personal, protective occupations	0.006	(1.880)	0.001	(0.470)	0.002	(0.870)	-0.009	(1.290)
Sales occupations	0.008	(2.330)	0.002	(0.500)	0.003	(0.930)	-0.013	(1.420)
Plant and machine operatives	0.009	(2.070)	0.002	(0.480)	0.003	(0.880)	-0.013	(1.300)
Other and missing occupations	0.005	(1.580)	0.001	(0.450)	0.001	(0.810)	-0.007	(1.160)
Industry: Agriculture	-0.008	(1.160)	-0.001	(0.360)	-0.002	(0.790)	0.011	(1.140)
Industry: Electricity, gas and water	0.020	(1.370)	0.006	(0.540)	0.007	(0.840)	-0.034	(1.030)
Industry: Construction	0.013	(2.020)	0.003	(0.520)	0.004	(0.930)	-0.020	(1.310)
Industry: Wholesale, retail, trade	0.001	(0.200)	0.000	(0.170)	0.000	(0.190)	-0.001	(0.200)
Industry: Hotels and restaurants	0.009	(2.260)	0.002	(0.490)	0.003	(0.920)	-0.014	(1.380)
Industry: Transport and communication	0.001	(0.260)	0.000	(0.210)	0.000	(0.240)	-0.002	(0.250)
Industry: Financial intermediation	0.004	(0.820)	0.001	(0.390)	0.001	(0.600)	-0.006	(0.720)
Industry: Real estate	0.007	(2.090)	0.002	(0.480)	0.002	(0.900)	-0.011	(1.350)
Industry: Public administration	0.000	(0.090)	0.000	(0.080)	0.000	(0.090)	0.000	(0.090)
Industry: Education	0.002	(0.730)	0.000	(0.360)	0.001	(0.540)	-0.004	(0.650)
Industry: Health and social work	0.000	(0.090)	0.000	(0.080)	0.000	(0.080)	0.000	(0.080)
Industry: Other community, social	0.007	(1.750)	0.002	(0.460)	0.002	(0.830)	-0.010	(1.200)
Region: Tyne & Wear	0.002	(0.260)	0.000	(0.190)	0.000	(0.230)	-0.002	(0.250)
Region: Rest of northern region	0.009	(1.510)	0.002	(0.440)	0.003	(0.740)	-0.013	(1.020)
Region: South Yorkshire	-0.003	(0.430)	0.000	(0.380)	-0.001	(0.470)	0.004	(0.460)
Region: West Yorkshire	0.007	(1.190)	0.002	(0.410)	0.002	(0.670)	-0.011	(0.880)
Region: Rest of Yorkshire and Humberside	-0.004	(0.670)	-0.001	(0.420)	-0.001	(0.710)	0.006	(0.740)
Region: East Midlands	0.001	(0.160)	0.000	(0.130)	0.000	(0.150)	-0.001	(0.150)

Continued

Table A.5 Continued

State at quarter t Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	SE	ME	SE	ME	SE	ME	SE
Region: East Anglia	0.000	(0.040)	0.000	(0.040)	0.000	(0.040)	0.000	(0.040)
Region: Outer London	0.006	(1.140)	0.001	(0.390)	0.002	(0.640)	-0.009	(0.850)
Region: Rest of South East	0.000	(0.050)	0.000	(0.040)	0.000	(0.050)	0.000	(0.050)
Region: South West	0.000	(0.090)	0.000	(0.080)	0.000	(0.090)	-0.001	(0.090)
Region: West Midlands (Met)	-0.004	(0.740)	-0.001	(0.420)	-0.001	(0.750)	0.006	(0.820)
Region: Rest of West Midlands	0.002	(0.380)	0.000	(0.240)	0.001	(0.310)	-0.003	(0.350)
Region: Greater Manchester	0.002	(0.430)	0.001	(0.260)	0.001	(0.340)	-0.004	(0.390)
Region: Merseyside	-0.002	(0.360)	0.000	(0.350)	-0.001	(0.400)	0.003	(0.380)
Region: Rest of North West	0.003	(0.540)	0.001	(0.300)	0.001	(0.410)	-0.005	(0.470)
Region: Wales	0.004	(0.840)	0.001	(0.350)	0.001	(0.540)	-0.007	(0.680)
Region: Strathclyde	0.002	(0.350)	0.000	(0.230)	0.001	(0.290)	-0.003	(0.320)
Region: Rest of Scotland	0.005	(1.010)	0.001	(0.380)	0.002	(0.610)	-0.008	(0.780)
Region: Northern Ireland	0.011	(1.520)	0.003	(0.460)	0.003	(0.770)	-0.017	(1.050)
Year=1994	-0.011	(1.640)	-0.001	(0.350)	-0.003	(1.090)	0.015	(2.380)
Year=1995	-0.008	(1.160)	-0.001	(0.410)	-0.002	(1.180)	0.011	(1.630)
Year=1996	-0.007	(1.050)	-0.001	(0.430)	-0.002	(1.140)	0.010	(1.420)
Year=1997	-0.009	(1.420)	-0.001	(0.380)	-0.002	(1.120)	0.013	(1.970)
Year=1998	-0.009	(1.300)	-0.001	(0.400)	-0.002	(1.150)	0.012	(1.830)
Year=1999	-0.004	(0.620)	-0.001	(0.510)	-0.001	(0.850)	0.006	(0.760)
Year=2000	-0.012	(1.750)	-0.001	(0.330)	-0.003	(1.050)	0.017	(2.490)
Year=2001	-0.011	(1.580)	-0.001	(0.360)	-0.003	(1.090)	0.015	(2.240)
Year=2002	-0.014	(1.990)	-0.002	(0.310)	-0.003	(1.000)	0.019	(2.680)
Year=2003	-0.008	(1.240)	-0.001	(0.400)	-0.002	(1.160)	0.012	(1.730)
Year=2004	-0.011	(1.330)	-0.001	(0.360)	-0.002	(1.040)	0.014	(1.740)

Continued

Table A.5 Continued

State at quarter t Covariate	Inactive type 2		Inactive type 1		Unemployed		Employed	
	ME	SE	ME	SE	ME	SE	ME	SE
2nd quarter	0.001	(0.330)	0.000	(0.250)	0.000	(0.300)	-0.001	(0.320)
3rd quarter	-0.001	(0.660)	0.000	(0.370)	0.000	(0.570)	0.002	(0.650)
4th quarter	-0.004	(1.660)	0.000	(0.090)	-0.001	(0.940)	0.005	(1.550)

Note: The table provides the variations in the probability of labour market states in a given quarter (quarter t) induced by states occupied in the previous quarter (t-1) and by attributes observable in the previous quarter. with respect to a baseline category. The baseline was employed in the previous quarter, was aged 50-53, had no qualifications, owned the accommodation, had no partner (for those with a partner, the partner was not employed), was in managerial occupation in manufacturing, lived in Central London, interviewed in the first quarter of 1993. Heteroskedasticity robust Z statistics in parentheses. Values of the statistic larger than 1.64, 1.96 and 2.32 indicate statistical significance at the ten, five and one per cent level of confidence. Goodness of fit Wald  $\chi^2(73) = 9,825.16$  Prob >  $\chi^2 = 0.0000$  Pseudo R2 = 0.5680

**Table A.6 Marginal effects of previous labour market states (reference=employed) on the probability of current states, treating part-time as a separate labour market state**

	Inac2	Inac1	Unemployed	Part-time	Employed
<b>MEN</b>					
State at t-1					
Inac2	0.695 (13.40) ***	0.040 (0.81)	-0.011 (0.48)	-0.058 (1.92) **	-0.665 (12.83) ***
Inac1	0.382 (4.33) ***	0.144 (77.96) ***	0.076 (2.20) **	0.026 (0.38)	-0.628 (33.69) ***
Unemployed	0.212 (4.70) ***	0.105 (2.51) **	0.098 (24.73) ***	0.108 (1.99) **	-0.523 (14.15) ***
Part-time	0.133 (8.52) ***	0.053 (1.41)	0.072 (2.94) ***	0.126 (11.90) ***	-0.384 (5.72) ***
Number of obs.	39,696				
<b>WOMEN</b>					
State at t-1					
Inac2	0.756 (115.89) ***	-0.011 (0.34)	-0.015 (1.02)	-0.336 (9.03) ***	-0.394 (5.02) ***
Inac1	0.581 (11.89) ***	0.039 (2.32) **	0.010 (0.64)	-0.236 (2.51) **	-0.393 (5.09) ***
Unemployed	0.469 (11.08) ***	0.038 (16.17) ***	0.015 (2.49) **	-0.133 (1.27)	-0.389 (5.47) ***
Part-time	0.300 (7.00) ***	0.035 (2.60) ***	0.011 (1.55)	-0.005 (0.09)	-0.341 (10.56) ***
Number of obs.	27,735				

Note: The table reports the effects on the probability labour market states, induced by states in the quarter prior to interview. Regression controls for the set of observables included in the regression of Tables A.2 to A.3. Heteroskedasticity robust standard errors in italic. \*, \*\* and \*\*\* indicate statistical significance at the ten, five and one per cent level of confidence. Goodness of fit, Men Wald  $\chi^2(75) = 12,269.31$  Prob >  $\chi^2 = 0.0000$  Pseudo R2 = 0.5391; Women Wald  $\chi^2(74) = 81,1380$  Prob >  $\chi^2 = 0.0000$  Pseudo R2 = 0.5496

**Table A.7 Marginal effects of previous labour market states (reference=employed) on the probability of current states, controlling for disability**

	Inac2		Inac1		Unemployed		Employed	
<b>MEN</b>								
<b>State at t-1</b>								
Inac2	0.660	(9.030) ***	0.071	(1.260)	0.000	(0.020)	-0.731	(46.640) ***
Inac1	0.294	(3.250) ***	0.164	(15.150) ***	0.080	(2.890) ***	-0.538	(7.290) ***
Unemployed	0.169	(3.140) ***	0.125	(2.980) ***	0.087	(32.440) ***	-0.381	(4.070) ***
Dda and w-l dis.	0.018	(7.910) ***	0.004	(0.560)	0.009	(1.420)	-0.031	(2.290) **
Dda dis.	0.005	(1.750) *	0.001	(0.360)	0.002	(0.980)	-0.008	(1.390)
w-l dis.	0.005	(1.820) *	0.001	(0.360)	0.002	(0.980)	-0.008	(1.410)
Number of obs.	28,617							
<b>WOMEN</b>								
<b>State at t-1</b>								
Inac2	0.708	(9.420) ***	0.035	(0.530)	-0.002	(0.080)	-0.741	(36.340) ***
Inac1	0.378	(2.470) **	0.127	(7.220) ***	0.044	(1.530)	-0.549	(5.140) ***
Unemployed	0.219	(1.960) **	0.112	(3.480) ***	0.051	(8.040) ***	-0.381	(2.770) ***
Dda and w-l dis.	0.015	(4.840) ***	0.005	(0.520)	0.004	(0.940)	-0.024	(1.530)
Dda dis.	-0.004	-(0.960)	-0.001	(0.340)	-0.001	(0.620)	0.006	(0.870)
w-l dis.	0.011	(2.270) **	0.003	(0.470)	0.003	(0.830)	-0.017	(1.280)
Number of obs.	20,277							

Note : the table reports the effects on the probability labour market states, induced by states in the quarter prior to interview, and by disability status in that same quarter. Dda= disability in daily activities; w-1 dis=disability in working activities. Regression controls for the set of observables included in the regression of Tables A.2 and A.3. Heteroskedasticity robust standard errors in italic. \*, \*\* and \*\*\* indicate statistical significance at the ten, five and one per cent level of confidence. Goodness of fit: Men Wald chi2(72) = 7,472.21 Prob > chi2 = 0.0000 Pseudo R2 = 0.5872, Women Wald chi2(71) = 6,051.67 Prob > chi2 = 0.0000 Pseudo R2 = 0.5720

## A.2 Duration models

There are a number of ways to model the duration of spells. In this study we use discrete-time duration modelling which is a preferred approach when data is recorded on a discrete-, as opposed to continuous-, time scale.<sup>27</sup> This offers a flexible way of modelling duration since it does not require us to assume a particular pattern for the observed exit behaviour of individuals in our sample.

In a discrete-time framework, duration models can be estimated using standard techniques for dealing with a dependent variable<sup>28</sup> that is categorical in nature (Allison, 1982). The econometric results presented in Chapter 5 are based on two such models: complementary log - log regression and multinomial logistic regression. The complementary log-log model is appropriate when the dependent variable of interest is dichotomous. This will be the case when considering a single destination state, say transiting from employment into non-employment – i.e. a single-risk model. For the purposes of this research, the complementary log-log model is used to model transitions from employment and from type2 inactivity. The complementary log-log defined hazard function ( $h(x)$ ) for a transition for an individual with a set of characteristics represented by  $x$  is given by:

$$h(x) = 1 - \exp[-\exp(\beta' x + \gamma)] \quad [3]$$

where the parameter  $\gamma$  characterises the baseline hazard.<sup>29</sup>

The multinomial logit model is a generalisation of the dichotomous case but allows the dependent variable to indicate multiple destinations. This will be the case when, for example, an unemployed individual may transit into either employment or inactivity. The multinomial logit model has been used in all cases where the transition modelled involves more than one destination state – i.e. a competing risks model. In this case the hazard of transition into a particular state ( $j$ ) rather than other/ alternative states, say  $k$ , is given by:

$$h(j, x) = \frac{\exp(\beta_j' x + \gamma_j)}{1 + \sum_{k=1}^J \exp(\beta_k' x + \gamma_k)} \quad [4]$$

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<sup>27</sup> As stated in Chapter 2 of this report, the data used in this study is the LFS data which monitors the behaviour of individuals on a quarterly basis.

<sup>28</sup> The dependent variable is the variable that is to be predicted, i.e. the variable of interest.

<sup>29</sup> The 'hazard' (rate) is the probability that a transition (event) takes place at a particular point in time conditional on no such event has happened before that point.

Clearly, individuals are not observed from the start of their worklessness spell. This means that only transitions for those individuals who have remained workless up to the point of first appearing in the data can be observed. Jenkins (1995) shows that this does not pose any problems so long as the length of the spell is known. This highlights the importance of knowing the length of the worklessness spell. In this analysis, this is simply taken as the time since last employment.<sup>30</sup> For those individuals with no previous employment, the spell of worklessness is taken to begin at the time they were aged 16. This implicitly treats any post-16 education as inactivity and in so doing is consistent with the ILO definition of economic inactivity.

## **A2.2 Interpreting the estimation results**

In this section, a guide to interpretation of the model results is provided. This is for the benefit of those who are unfamiliar with such models, or with modelling terminology more generally.

The advantage of econometric models over purely descriptive accounts is that they allow the researcher to investigate the extent to which a dependent variable is simultaneously associated with a number of other variables. These other variables are often termed 'independent' or 'explanatory' variables, although one should be cautious in assuming the relationship is causal in nature. To examine the relationship, the dependent variable is 'regressed' on the independent variables with the result that a measure of the separate influence of each independent variable is obtained. An estimate of the statistical significance of the influence is also obtained. This allows the researcher to reach a view as to what are the most important correlations.

In the context of the complementary log-log and the multinomial logit models employed in this study, the effect that individual characteristics have on the 'hazard' of transition are best expressed in terms of 'marginal effects'. The 'marginal effect' of a particular variable/characteristic tells us about the effect (usually expressed in percentage terms) that having that particular characteristic (for example, having a partner) has on the relevant hazard rate of transition from one labour market state to the other, compared with a reference category of characteristics (for example, having no partner).

As can be seen from the Tables of results in the Appendix, the variables included in the different models estimated vary. This is for three different reasons. First, the nature of the specific research problem that we are attempting to address determines the covariates that we have to use. For example, the variable that monitors hours of work is relevant only to those individuals who were in employment when observed. Thus, we only find the hours of work variable in the models that study exits from employment. The second reason relates to the nature of the sample

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<sup>30</sup> Note that all spells are given as quarters. This is in line with the LFS which carries out interviews each quarter.

used for the specific modelling. For example, the women sample used in our study covers the age range 50-60 only, as opposed to the men sample which has the age range 50-65. This difference in the age of the two different samples we have used explains why the dummy variable for the age group 61-63 and 64-65 applies for men only. Finally, the size of the sample used for each of the analyses determines the number and types of variables included in the modelling. For example, variables on region are missing from the estimation results reported in Table A.12 in the Appendix. This is because we do not observe the particular transition of interest in one or more regions during the study period under consideration.

**Table A.8 Marginal effects of covariates on the hazard of transition of employed men via non-employment (Single risk)**

	<b>Men</b>
Age 54-56	-0.001 (0.32)
Age 57-60	0.006 (3.04)**
Age 61-63	0.014 (4.60)**
Age 64-65	0.080 (8.48)**
Qualification: other	-0.002 (0.82)
Qualification: NVQ1/2	-0.005 (1.65)
Qualification: NVQ3	0.000 (0.03)
Qualification: NVQ4	0.001 (0.16)
Qualification: NVQ5/6	-0.004 (1.22)
Accommodation: mortgage	-0.001 (0.48)
Accommodation: rent/rent free	-0.005 (2.68)**
Had recognised trade apprenticeship	-0.001 (0.33)
Has dependent children	-0.001 (0.48)
Has partner	-0.003 (1.18)
Partner not working	0.013 (5.31)**
Missing partner economic status	0.008 (3.93)**
Occupation: professional occupations	-0.001 (0.22)

Continued



**Table A.8 Continued**

	<b>Men</b>
Occupation: associate professional and technical occupations	-0.000 (0.05)
Occupation: clerical, secretarial occupations	0.005 (1.10)
Occupation: craft and related occupations	0.000 (0.17)
Occupation: personal, protective occupations	-0.002 (0.51)
Occupation: sales occupations	-0.006 (1.46)
Occupation: plant and machine operatives	0.002 (0.64)
Occupation: other occupations (and missing for women)	0.005 (1.35)
Occupation: missing	0.006 (0.26)
Industry: manufacturing	0.016 (2.97)**
Industry: construction	0.014 (2.39)*
Industry: electricity, gas and water; hotel and restaurant; financial intermediation	0.027 (2.74)**
Industry: wholesale, retail and motor trade	0.014 (2.39)*
Industry: transport and communication	0.014 (2.20)*
Industry: real estate	0.012 (2.09)*
Industry: public admin	0.020 (2.51)*
Industry: education	0.018 (2.33)*
Industry: health and social work	0.019 (2.25)*
Industry: other	0.007 (1.26)
Industry: missing	0.034 (2.16)*
Weekly hours: 0-16	0.024 (4.35)**
Weekly hours: 17-30	0.007 (1.98)*
Weekly hours: missing	0.021 (2.01)*

Continued

**Table A.8 Continued**

	<b>Men</b>
Region: Yorkshire and Humberside	-0.005 (1.10)
Region: East Midlands	-0.011 (2.61)**
Region: East Anglia	-0.013 (2.74)**
Region: London	-0.011 (2.52)*
Region: Rest of South East	-0.012 (3.14)**
Region: South West	-0.010 (2.49)*
Region: West Midlands	-0.014 (3.83)**
Region: North West	-0.010 (2.36)*
Region: Wales	-0.004 (0.73)
Region: Scotland	-0.004 (0.92)
Region: N Ireland	-0.006 (0.82)
Quarter1: January-March	0.003 (1.19)
Quarter2: April-June	-0.002 (0.91)
Quarter3: July-September	-0.002 (0.91)
Year=1994	-0.006 (0.75)
Year=1995	-0.003 (0.41)
Year=1996	0.001 (0.15)
Year=1997	-0.005 (0.59)
Year=1998	-0.005 (0.61)
Year=1999	-0.002 (0.19)
Year=2000	-0.011 (1.58)
Year=2001	-0.001 (0.11)
Year=2002	-0.008 (1.03)

Continued

**Table A.8 Continued**

	<b>Men</b>
Year=2003	-0.008 (1.01)
Year=2004	-0.013 (1.76)
Observations	47,458

Values in parentheses are absolute values of z statistics. The reference categories used are the following: age, 50-53; qualification, none; accommodation, outright ownership; working partner; occupation: manager and administrator; industry: agriculture, fishing and mining; region: North; quarter: quarter4 (October-December); year: 1993.

\* Significant at five per cent; \*\* significant at one per cent.

**Table A.9 Marginal effects of covariates on the hazard of transition of employed women via non-employment (Single risk)**

	<i>Women</i>
Age 54-56	0.002 (0.95)
Age 57-58	0.005 (1.89)
Age 59-60	0.038 (6.88)**
Qualification: other	-0.003 (0.96)
Qualification: NVQ1/2	-0.002 (0.79)
Qualification: NVQ3	0.006 (1.07)
Qualification: NVQ4	0.005 (0.91)
Qualification: NVQ5/6	0.002 (0.27)
Accommodation: mortgage	-0.007 (1.78)
Accommodation: rent/rent free	-0.007 (3.47)**
Had recognised trade apprenticeship	0.001 (0.15)
Has dependent children	-0.000 (0.06)
Has partner	-0.008 (2.03)*
Partner not working	0.009 (2.50)*

Continued

**Table A.9 Continued**

	<i>Women</i>
Missing partner economic status	-0.006 (2.22)*
Occupation: professional occupations	0.003 (0.48)
Occupation: associate professional and technical occupations	-0.006 (1.54)
Occupation: clerical, secretarial occupations	-0.002 (0.51)
Occupation: craft and related occupations	0.016 (1.73)
Occupation: personal, protective occupations	-0.003 (0.59)
Occupation: sales occupations	0.000 (0.02)
Occupation: plant and machine operatives	0.005 (0.78)
Occupation: other and missing occupations	-0.004 (0.85)
Industry: manufacturing	0.020 (1.39)
Industry: construction	0.015 (1.04)
Industry: electricity, gas and water; hotel and restaurant; financial intermediate	0.028 (1.53)
Industry: wholesale, retail and motor trade	0.012 (1.11)
Industry: transport and communication	0.018 (1.24)
Industry: real estate	0.017 (1.29)
Industry: public admin	0.013 (1.12)
Industry: education	0.017 (1.29)
Industry: health and social work	0.013 (1.34)
Industry: other	0.021 (1.31)
Industry: missing	0.035 (1.22)
Weekly hours: 0-16	0.020 (5.19)**
Weekly hours: 17-30	0.004 (1.65)
Weekly hours: missing	0.062 (2.99)**

Continued

**Table A.9 Continued**

	<i>Women</i>
Region: Yorkshire and Humberside	-0.013 (2.70)**
Region: East Midlands	-0.012 (2.47)*
Region: East Anglia	-0.012 (2.20)*
Region: London	-0.003 (0.47)
Region: Rest of South East	-0.012 (2.89)**
Region: South West	-0.009 (1.80)
Region: West Midlands	-0.011 (2.21)*
Region: North West	-0.008 (1.63)
Region: Wales	-0.014 (2.53)*
Region: Scotland	-0.004 (0.68)
Region: N Ireland	-0.009 (1.11)
Quarter1: January-March	0.006 (2.06)*
Quarter2: April-June	0.002 (0.73)
Quarter3: July-September	0.004 (1.41)
Year=1994	-0.004 (0.34)
Year=1995	-0.001 (0.10)
Year=1996	0.018
Year=1997	0.005 (0.35)
Year=1998	-0.002 (0.13)
Year=1999	0.011 (0.67)
Year=2000	-0.002 (0.19)
Year=2001	0.004 (0.27)
Year=2002	0.002 (0.13)

Continued

**Table A.9 Continued**

	<i>Women</i>
Year=2003	0.004 (0.28)
Year=2004	-0.007 (0.54)
Observations	33,211

**Table A.10 Marginal effects of covariates on the hazard of transition of unemployed men via employment or inactivity (Competing risks model)**

	<b>Employment</b>	<b>Inactivity</b>
Age 54-56	-0.027 (1.20)	-0.008 (0.27)
Age 57-60	-0.041 (1.89)	0.002 (0.06)
Age 61-63	-0.097 (4.77)**	0.093 (1.67)
Age 64-65	-0.130 (5.81)**	0.211 (0.99)
Qualification: other	-0.001 (0.08)	-0.025 (0.69)
Qualification: NVQ1/2	0.039 (1.38)	-0.006 (0.13)
Qualification: NVQ3	0.045 (1.57)	0.003 (0.05)
Qualification: NVQ4	0.005 (0.15)	-0.026 (0.49)
Qualification: NVQ5/6	0.013 (0.44)	-0.019 (0.41)
Had recognised trade apprenticeship	-0.023 (1.04)	-0.007 (0.18)
Accommodation: mortgage	0.063 (2.55)*	-0.051 (1.68)
Accommodation: rent/rent free	-0.012 (0.69)	-0.081 (2.19)*
Has dependent children	-0.008 (0.36)	0.014 (0.40)
Has partner	0.052 (1.97)*	-0.010 (0.25)
Partner not working	-0.024 (1.13)	-0.011 (0.35)
Missing partner economic status	0.015 (0.68)	-0.036 (1.00)

Continued

**Table A.10** Continued

	Employment	Inactivity
Occupation: professional occupations	0.067 (1.11)	0.095 (1.38)
Occupation: associate professional and technical occupations	-0.014 (0.34)	0.060 (0.96)
Occupation: clerical, secretarial occupations	0.022 (0.41)	0.014 (0.23)
Occupation: craft and related occupations	-0.009 (0.32)	0.017 (0.43)
Occupation: personal, protective occupations	-0.014 (0.31)	0.050 (0.64)
Occupation: sales occupations	0.092 (1.24)	0.069 (0.83)
Occupation: plant and machine operatives	-0.018 (0.62)	0.000 (0.01)
Occupation: other and missing occupations	0.027 (0.85)	-0.014 (0.24)
Industry: manufacturing	-0.025 (0.74)	0.110 (1.89)
Industry: construction	0.005	0.081
Industry: electricity, gas and water; hotel and restaurant; financial intermediate	-0.030 (0.70)	0.021 (0.59)
Industry: wholesale, retail and motor trade	-0.006 (0.17)	0.078 (1.30)
Industry: transport and communication	-0.006 (0.14)	0.120 (1.34)
Industry: real estate	-0.034 (0.72)	0.125 (1.44)
Industry: public admin	-0.032 (1.06)	0.102 (1.27)
Industry: education	-0.011 (0.22)	0.057 (0.92)
Industry: health and social work	0.052 (0.56)	0.208 (1.23)
Industry: other and missing	0.017 (0.26)	0.114 (0.88)
Region: Yorkshire and Humberside	-0.006 (0.23)	-0.029 (0.66)
Region: East Midlands	0.110 (1.80)	-0.048 (1.24)
Region: East Anglia	0.030 (0.55)	0.034 (0.39)
Region: London	0.029 (0.81)	-0.008 (0.16)

Continued

**Table A.10 Continued**

	Employment	Inactivity
Region: Rest of South East	0.037 (1.04)	0.028 (0.53)
Region: South West	0.044 (0.85)	-0.023 (0.46)
Region: West Midlands	0.019 (0.60)	0.028 (0.47)
Region: North West	-0.057 (2.95)**	0.011 (0.19)
Region: Wales	0.049 (0.85)	-0.029 (0.52)
Region: Scotland	0.021 (0.63)	0.048 (0.72)
Region: N Ireland	-0.077 (2.71)**	-0.020 (0.23)
Quarter1: January-March	0.008 (0.39)	-0.014 (0.45)
Quarter2: April-June	0.025 (1.17)	0.006 (0.18)
Quarter3: July-September	0.016 (0.88)	-0.016 (0.53)
Year=1994	0.042 (0.49)	0.040 (0.28)
Year=1995	0.006 (0.09)	-0.004 (0.04)
Year=1996	0.060 (0.52)	0.049 (0.33)
Year=1997	0.065 (0.52)	0.009 (0.08)
Year=1998	0.068 (0.54)	0.049 (0.32)
Year=1999	0.027 (0.27)	0.076 (0.42)
Year=2000	0.062 (0.51)	0.025 (0.18)
Year=2001	0.058 (0.45)	0.020 (0.13)
Year=2002	-0.005 (0.06)	0.141 (0.63)
Year=2003	0.135 (0.77)	0.036 (0.25)
Year=2004	0.200 (0.75)	-0.025 (0.21)
Observations		1,690

Values in parentheses are absolute values of z statistics. For reference categories, see footnote to Table A.8. \* Significant at five per cent; \*\* significant at one per cent.



**Table A.11 Marginal effects of covariates on the hazard of transition for type 1 inactivity men via activity or type 2 inactivity (Competing risks model)**

	Activity	Type 2 inactivity
Age 54-56	-0.002 (0.14)	0.029 (0.72)
Age 57-60	-0.009 (0.53)	0.060 (1.37)
Age 61-63	-0.038 (2.40)*	0.077 (1.42)
Age 64-65	-0.031 (1.65)	0.137 (1.49)
Qualification: other	-0.012 (0.97)	-0.035 (0.66)
Qualification: NVQ1/2	0.013 (0.67)	-0.083 (1.94)
Qualification: NVQ3	0.022 (0.92)	-0.050 (0.76)
Qualification: NVQ4	0.003 (0.14)	-0.011 (0.14)
Qualification: NVQ5/6	0.003 (0.16)	-0.094 (1.87)
Had recognised trade apprenticeship	-0.007 (0.34)	0.019 (0.30)
Temporary disability	-0.011 (0.75)	-0.001 (0.01)
Permanent disability	-0.128 (7.07)**	0.011 (0.30)
Accommodation: mortgage	0.012 (0.83)	-0.056 (1.41)
Accommodation: rent/rent free	0.022 (1.60)	-0.091 (2.06)*
Has dependent children	0.013 (0.67)	-0.010 (0.20)
Has partner	-0.023 (1.81)	0.016 (0.43)
Partner not working	-0.031 (2.26)*	0.010 (0.20)
Missing partner economic status	-0.021 (1.23)	-0.038 (0.87)
Occupation: professional occupations	-0.077 (2.66)**	-0.103 (1.72)
Occupation: associate professional and technical occupations	-0.054 (1.59)	-0.060 (0.82)
Occupation: clerical, secretarial occupations	-0.041 (1.11)	0.013 (0.15)

Continued

**Table A.11 Continued**

	<b>Activity</b>	<b>Type 2 inactivity</b>
Occupation: craft and related occupations	-0.062 (2.73)**	-0.042 (0.65)
Occupation: personal, protective occupations	-0.007 (0.17)	-0.105 (1.67)
Occupation: sales occupations	-0.015 (0.27)	-0.048 (0.47)
Occupation: plant and machine operatives	-0.046 (2.01)*	-0.092 (1.57)
Occupation: other and missing occupations	-0.008 (0.42)	-0.057 (0.81)
Industry: manufacturing	0.044 (1.64)	-0.067 (0.90)
Industry: construction	0.051 (1.59)	-0.099 (1.34)
Industry: electricity, gas and water; hotel and restaurant; financial intermediate	0.105 (2.01)*	-0.045 (0.55)
Industry: wholesale, retail and motor trade	0.051 (1.32)	-0.066 (0.75)
Industry: transport and communication	0.052 (1.53)	-0.056 (0.70)
Industry: real estate	0.113 (2.02)*	-0.105 (1.52)
Industry: public admin	0.061 (1.46)	0.010 (0.12)
Industry: education	0.239 (2.39)*	0.049 (0.47)
Industry: health and social work	-0.035 (1.63)	0.027 (0.12)
Industry: other and missing	0.015 (0.90)	-0.111 (1.33)
Region: Yorkshire and Humberside	0.001 (0.04)	-0.088 (1.28)
Region: East Midlands	-0.033 (1.76)	-0.037 (0.40)
Region: East Anglia	-0.012 (0.45)	-0.036 (0.25)
Region: London	0.008 (0.29)	-0.090 (1.53)
Region: Rest of South East	-0.009 (0.41)	-0.042 (0.61)
Region: South West	-0.023 (1.15)	-0.043 (0.48)
Region: West Midlands	-0.018 (1.04)	-0.084 (1.19)

Continued

**Table A.11** Continued

	Activity	Type 2 inactivity
Region: North West	-0.032 (2.02)*	-0.018 (0.21)
Region: Wales	-0.003 (0.16)	-0.075 (0.95)
Region: Scotland	-0.008 (0.33)	-0.009 (0.11)
Region: N Ireland	-0.047 (3.64)**	-0.216 (5.45)**
Quarter1: January-March	0.004 (0.32)	0.011 (0.27)
Quarter2: April-June	0.037 (2.50)*	0.026 (0.67)
Quarter3: July-September	0.006 (0.51)	0.011 (0.28)
Observations		2,491

Values in parentheses are absolute values of z statistics. For reference categories, see footnote to Table A.8. \* Significant at five per cent; \*\* significant at one per cent.

**Table A.12** Marginal effects of covariates on the hazard of transition for type 1 inactivity women via activity or type 2 inactivity (Competing risks model)

	Activity	Type 2 inactivity
Age 54-56	0.016 (0.96)	0.030 (0.49)
Age 57-58	0.027 (1.36)	0.017 (0.28)
Age 59-60	-0.035 (1.67)	0.021 (0.16)
Had recognised trade apprenticeship	-0.030 (1.79)	-0.058 (0.62)
Accommodation: mortgage	-0.003 (0.14)	-0.064 (1.11)
Accommodation: rent/rent free	-0.042 (3.72)**	-0.044 (0.67)
Has dependent children	0.045 (2.10)*	-0.135 (2.50)*
Has partner	-0.042 (3.10)**	0.013 (0.24)
Temporary disability	0.033 (1.38)	-0.009 (0.11)

Continued

**Table A.12 Marginal effects of covariates on the hazard of transition for type 1 inactivity Women via activity or type 2 inactivity (Competing risks model)**

	Activity	Type 2 inactivity
Permanent disability	-0.085 (6.82)**	-0.055 (0.68)
Partner not working	0.027 (1.38)	0.027 (0.33)
Missing partner economic status	0.017 (1.20)	-0.057 (0.90)
Occupation: professional occupations	0.027 (0.56)	0.011 (0.11)
Occupation: associate professional and technical occupations	0.058 (1.05)	0.008 (0.06)
Occupation: clerical, secretarial occupations	0.084 (1.89)	0.031 (0.32)
Occupation: plant and mach; craft, related occupation	0.035 (0.84)	0.168 (1.01)
Occupation: personal, protective occupations	0.006 (0.18)	0.078 (0.64)
Occupation: sales occupations	0.032 (0.94)	0.033 (0.29)
Occupation: other and missing occupations	0.014 (0.82)	0.027 (0.27)
Quarter1: January-March	0.023 (1.27)	-0.060 (1.00)
Quarter2: April-June	-0.001 (0.08)	-0.016 (0.25)
Quarter3: July-September	-0.005 (0.34)	-0.039 (0.65)
Observations		1,517

Values in parentheses are absolute values of z statistics. For reference categories, see footnote to Table A.8. \* Significant at five per cent; \*\* significant at one per cent.

**Table A.13** Marginal effects of covariates on the hazard of transition of type 2 inactivity men via non-type 2 inactivity (Single risk model)

	<b>Men</b>
Age 54-56	-0.000 (0.01)
Age 57-60	-0.019 (1.90)
Age 61-63	-0.030 (3.42)**
Age 64-65	-0.054 (6.85)**
Qualification: other	0.010 (0.97)
Qualification: NVQ1/2	-0.004 (0.39)
Qualification: NVQ3	0.012 (0.91)
Qualification: NVQ4	0.002 (0.15)
Qualification: NVQ5/6	0.002 (0.13)
Had recognised trade apprenticeship	0.011 (0.96)
Temporary disability	0.192 (3.55)**
Permanent disability	0.028 (4.17)**
Accommodation: mortgage	0.020 (2.98)**
Accommodation: rent/rent free	0.033 (4.18)**
Has dependent children	0.029 (2.16)*
Has partner	0.002 (0.27)
Partner not working	-0.023 (2.84)**
Missing partner economic status	-0.018 (2.36)*
Occupation: professional occupations	-0.005 (0.46)
Occupation: associate professional and technical occupations	-0.006 (0.55)
Occupation: clerical, secretarial occupations	0.007 (0.50)

Continued

**Table A.13 Continued**

	<b>Men</b>
Occupation: craft and related occupations	0.005 (0.40)
Occupation: personal, protective occupations	0.009 (0.51)
Occupation: sales occupations	0.018 (0.79)
Occupation: plant and machine operatives	0.003 (0.31)
Occupation: other and missing occupations	0.002 (0.19)
Industry: manufacturing	-0.006 (0.44)
Industry: construction	0.017 (0.88)
Industry: electricity, gas and water; hotel and restaurant; financial intermediate	-0.014 (1.09)
Industry: wholesale, retail and motor trade	0.009 (0.48)
Industry: transport and communication	0.004 (0.24)
Industry: real estate	0.016 (0.72)
Industry: public admin	-0.020 (1.51)
Industry: education	-0.011 (0.67)
Industry: health and social work	0.031 (1.08)
Industry: missing	0.003 (0.21)
Region: Yorkshire and Humberside	-0.004 (0.36)
Region: East Midlands	0.004 (0.31)
Region: East Anglia	-0.012 (0.76)
Region: London	0.002 (0.12)
Region: Rest of South East	0.001 (0.09)
Region: South West	-0.011 (0.88)
Region: West Midlands	0.001 (0.07)

Continued

**Table A.13** Continued

	<b>Men</b>
Region: North West	0.005 (0.38)
Region: Wales	-0.002 (0.14)
Region: Scotland	-0.004 (0.29)
Region: N Ireland	-0.077 (18.36)**
Quarter1: January-March	-0.000 (0.07)
Quarter2: April-June	0.006 (0.95)
Quarter3: July-September	0.009 (1.29)
Year=1994	-0.028 (2.06)*
Year=1995	-0.037 (2.65)**
Year=1996	-0.014 (0.83)
Year=1997	0.002 (0.09)
Year=1998	0.009 (0.42)
Year=1999	-0.011 (0.67)
Year=2000	-0.030 (2.03)*
Year=2001	-0.018 (1.16)
Year=2002	0.010 (0.46)
Year=2003	-0.017 (0.98)
Year=2004	-0.054 (4.70)**
Observations	11,970

Values in parentheses are absolute values of z statistics. For reference categories, see footnote to Table A.8. \* Significant at five per cent; \*\* significant at one per cent.

**Table A.14** Marginal effects of covariates on the hazard of transition of type 2 inactivity women via non-type 2 inactivity (Single risk model)

	<b>Women</b>
Age 54-56	-0.012 (2.18)*
Age 57-58	-0.015 (2.54)*
Age 59-60	-0.027 (4.77)**
Qualification: other	0.008 (0.98)
Qualification: NVQ1/2	0.006 (1.00)
Qualification: NVQ3	0.005 (0.47)
Qualification: NVQ4	0.013 (1.11)
Qualification: NVQ5/6	0.008 (0.59)
Had recognised trade apprenticeship	0.026 (1.55)
Temporary disability	0.013 (2.27)*
Permanent disability	0.018 (2.68)**
Accommodation: mortgage	0.036 (3.14)**
Accommodation: rent/rent free	-0.013 (1.69)
Has dependent children	0.067 (2.53)*
Has partner	0.018 (3.23)**
Partner not working	-0.013 (2.36)*
Missing partner economic status	-0.012 (1.78)
Occupation: professional occupations	-0.003 (0.13)
Occupation: associate professional and technical occupations	0.006 (0.27)
Occupation: clerical, secretarial occupations	-0.001 (0.09)
Occupation: craft and related occupations	0.003 (0.12)

Continued



**Table A.14** Continued

	<b>Women</b>
Occupation: personal, protective occupations	0.023 (1.07)
Occupation: sales occupations	-0.022 (1.45)
Occupation: plant and machine operatives	0.008 (0.33)
Occupation: other and missing occupations	-0.002 (0.18)
Industry: manufacturing	-0.028 (0.82)
Industry: construction	-0.042 (1.83)
Industry: electricity, gas and water; hotel and restaurant; financial intermediate	-0.030 (0.89)
Industry: wholesale, retail and motor trade	-0.006 (0.20)
Industry: transport and communication	-0.034 (0.97)
Industry: real estate	-0.023 (0.67)
Industry: public admin	-0.029 (1.14)
Industry: education	-0.030 (0.94)
Industry: health and social work	-0.041 (1.29)
Industry: other	-0.038 (1.23)
Industry: missing	-0.023 (0.84)
Region: Yorkshire and Humberside	0.004 (0.35)
Region: East Midlands	0.012 (0.95)
Region: East Anglia	0.025 (1.49)
Region: London	-0.009 (0.94)
Region: Rest of South East	0.007 (0.69)
Region: South West	0.012 (0.92)
Region: West Midlands	0.017 (1.36)

Continued

**Table A.14** Continued

	<b>Women</b>
Region: North West	0.015 (1.25)
Region: Wales	-0.001 (0.07)
Region: Scotland	0.019 (1.40)
Region: N Ireland	-0.040 (9.24)**
Quarter1: January-March	0.002 (0.26)
Quarter2: April-June	-0.005 (0.88)
Quarter3: July-September	-0.002 (0.42)
Year=1994	-0.025 (2.25)*
Year=1995	-0.027 (2.45)*
Year=1996	-0.005 (0.31)
Year=1997	0.002 (0.10)
Year=1998	-0.005 (0.33)
Year=1999	-0.013 (0.97)
Year=2000	-0.006 (0.39)
Year=2001	-0.010 (0.73)
Year=2002	0.011 (0.62)
Year=2003	-0.020 (1.66)
Year=2004	-0.044 (4.69)**
Observations	12,538

Values in parentheses are absolute values of z statistics. For reference categories, see footnote to Table A.8. \* Significant at five per cent; \*\* significant at one per cent.

**Table A.15 Marginal effects of covariates on the hazard of transition of non-retired inactivity type 2 men via non-inactivity type 2 (Single risk model)**

	<b>Men</b>
Age 54-56	0.009 (0.66)
Age 57-60	-0.018 (1.62)
Age 61-63	-0.025 (2.31)*
Age 64-65	-0.045 (4.17)**
Qualification: other	0.009 (0.74)
Qualification: NVQ1/2	0.010 (0.61)
Qualification: NVQ3	0.019 (0.93)
Qualification: NVQ4	0.016 (0.72)
Qualification: NVQ5/6	-0.000 (0.02)
Had recognised trade apprenticeship	0.015 (0.74)
Temporary disability	0.124 (2.58)**
Permanent disability	-0.007 (0.58)
Accommodation: mortgage	0.027 (2.45)*
Accommodation: rent/rent free	0.035 (3.36)**
Has dependent children	0.029 (1.68)
Has partner	0.007 (0.64)
Partner not working	-0.031 (2.51)*
Missing partner economic status	-0.020 (1.67)
Occupation: professional occupations	0.009 (0.28)
Occupation: associate professional and technical occupations	-0.014 (0.57)
Occupation: clerical, secretarial occupations	0.003 (0.10)
Occupation: craft and related occupations	-0.011 (0.52)

Continued

**Table A.15 Continued**

	<b>Men</b>
Occupation: personal, protective occupations	-0.002 (0.08)
Occupation: sales occupations	0.042 (0.85)
Occupation: plant and machine operatives	-0.000 (0.00)
Occupation: other and missing occupations	0.003 (0.19)
Industry: manufacturing	-0.045 (1.64)
Industry: construction	-0.019 (0.60)
Industry: electricity, gas and water; hotel and restaurant; financial intermediate	-0.038 (1.23)
Industry: wholesale, retail and motor trade	-0.019 (0.60)
Industry: transport and communication	-0.056 (1.88)
Industry: real estate	-0.011 (0.27)
Industry: public admin	-0.054 (2.13)*
Industry: education	-0.075 (2.78)**
Industry: health and social work	0.024 (0.47)
Industry: other	-0.077 (2.83)**
Industry: missing	-0.038 (1.35)
Region: Yorkshire and Humberside	-0.012 (0.73)
Region: East Midlands	0.011 (0.49)
Region: East Anglia	-0.031 (1.39)
Region: London	0.010 (0.48)
Region: Rest of South East	0.008 (0.40)
Region: South West	-0.013 (0.68)
Region: West Midlands	0.014 (0.66)

Continued

**Table A.15** Continued

	<b>Men</b>
Region: North West	0.003 (0.18)
Region: Wales	-0.003 (0.14)
Region: Scotland	-0.003 (0.18)
Region: N Ireland	-0.091 (16.15)**
Quarter1: January-March	-0.006 (0.61)
Quarter2: April-June	0.010 (1.01)
Quarter3: July-September	0.006 (0.64)
Year=1994	-0.059 (3.22)**
Year=1995	-0.072 (3.97)**
Year=1996	-0.040 (1.74)
Year=1997	-0.022 (0.81)
Year=1998	-0.008 (0.27)
Year=1999	-0.038 (1.73)
Year=2000	-0.053 (2.48)*
Year=2001	-0.041 (1.79)
Year=2002	-0.002 (0.05)
Year=2003	-0.048 (2.15)*
Year=2004	-0.081 (4.84)**
Observations	7,220

Values in parentheses are absolute values of z statistics. For reference categories, see footnote to Table A.8. \* Significant at five per cent; \*\* significant at one per cent.

**Table A.16 Marginal effects of covariates on the hazard of transition of non-retired inactivity type 2 women via non-inactivity type 2 (Single risk model)**

	<b>Women</b>
Age 54-56	-0.016 (2.54)*
Age 57-58	-0.013 (1.97)*
Age 59-60	-0.019 (2.65)**
Qualification: other	0.014 (1.47)
Qualification: NVQ1/2	0.005 (0.71)
Qualification: NVQ3	0.009 (0.66)
Qualification: NVQ4	0.025 (1.67)
Qualification: NVQ5/6	0.006 (0.38)
Had recognised trade apprenticeship	0.028 (1.49)
Temporary disability	0.012 (1.82)
Permanent disability	0.015 (2.11)*
Accommodation: mortgage	0.031 (2.61)**
Accommodation: rent/rent free	-0.014 (1.57)
Has dependent children	0.068 (2.56)*
Has partner	0.012 (1.88)
Partner not working	-0.009 (1.42)
Missing partner economic status	-0.011 (1.41)
Occupation: professional occupations	-0.012 (0.43)
Occupation: associate professional and technical occupations	0.010 (0.31)
Occupation: clerical, secretarial occupations	0.002 (0.11)
Occupation: craft and related occupations	0.005 (0.16)
Occupation: personal, protective occupations	0.029 (1.07)

Continued

**Table A.16** Continued

	<b>Men</b>
Occupation: sales occupations	-0.014 (0.63)
Occupation: plant and machine operatives	0.003 (0.10)
Occupation: other and missing occupations	-0.005 (0.35)
Industry: manufacturing	-0.020 (0.48)
Industry: construction	-0.045 (1.25)
Industry: electricity, gas and water; hotel and restaurant; financial intermediate	-0.026 (0.61)
Industry: wholesale, retail and motor trade	-0.001 (0.02)
Industry: transport and communication	-0.034 (0.74)
Industry: real estate	-0.011 (0.25)
Industry: public admin	-0.035 (1.21)
Industry: education	-0.036 (0.99)
Industry: health and social work	-0.047 (1.27)
Industry: other	-0.045 (1.22)
Industry: missing	-0.015 (0.53)
Region: Yorkshire and Humberside	0.005 (0.39)
Region: East Midlands	0.008 (0.61)
Region: East Anglia	0.028 (1.42)
Region: London	-0.012 (1.12)
Region: Rest of South East	0.003 (0.27)
Region: South West	0.005 (0.38)
Region: West Midlands	0.022 (1.44)
Region: North West	0.015 (1.13)

Continued

**Table A.16** Continued

	<b>Men</b>
Region: Wales	-0.001 (0.07)
Region: Scotland	0.021 (1.37)
Region: N Ireland	-0.044 (8.79)**
Quarter1: January-March	0.005 (0.73)
Quarter2: April-June	-0.002 (0.29)
Quarter3: July-September	-0.002 (0.23)
Year=1994	-0.021 (1.67)
Year=1995	-0.026 (2.10)*
Year=1996	-0.004 (0.25)
Year=1997	0.011 (0.58)
Year=1998	0.003 (0.16)
Year=1999	-0.008 (0.52)
Year=2000	0.001 (0.05)
Year=2001	-0.000 (0.00)
Year=2002	0.029 (1.37)
Year=2003	-0.014 (0.96)
Year=2004	-0.039 (3.19)**
Observations	10,530

Values in parentheses are absolute values of z statistics. For reference categories, see footnote to Table A.8. \* Significant at five per cent; \*\* significant at one per cent.



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