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## ABSTRACT

### Job Tenure: Does History Matter?\*

This paper uses the retrospective work history data from the British Household Panel Survey to examine patterns of job mobility and job tenure for men and women over the twentieth century. British men and women hold an average of five jobs over their lifetimes, and one-half of all lifetime job changes occur in the first ten years. For both men and women, the separation hazard is increasing in the first few months of a job, and declines thereafter. History is found to affect job tenure in two important respects. Individuals entering the labour market earlier in the twentieth century are characterized by different tenure patterns than later cohorts: job tenure is typically longer for earlier cohorts, and there are more pronounced gender differences. Individual history also matters: job accumulation is associated with longer job tenure and, as

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## NON-TECHNICAL SUMMARY

One of the aims of this paper is to contribute to the debate on labour market flexibility by providing some stylized facts on job mobility and job tenure for men and women in twentieth-century Britain. In particular, we wish to chart changes in job mobility and to ascertain the extent to which history matters. Do people entering the labour market towards the end of the twentieth century have different patterns of labour mobility to earlier entry cohorts? Are there gender differences in patterns of job mobility and job tenure, and how have these patterns evolved over the twentieth century? Does individual history matter? To what extent does past individual job mobility and tenure affect later mobility and tenure decisions?

Previous British studies of patterns of job tenure have used cross-sectional data. In our paper we exploit a new data source – the British Household Panel Survey (BHPS) – which contains retrospective information (collected at Wave 3) on all jobs held since individual entry into the labour market. We thus have an almost complete work history, which allows us to identify tenure of consecutive jobs, and to control for state dependence in job mobility and job tenure that helps reduce problems of worker heterogeneity. In addition, these data are sufficiently rich to allow us to examine the mode of entry into the labour market, and document patterns of job tenure for full-time and part-time employees, and for the self-employed. We are also able to disaggregate job tenure by form of termination – quits, layoffs, or for other reasons. Our principal findings from the cross-tabulations are as follows. Job tenure increases with the number of jobs for both men and women, and for all labour market-entry cohorts. For each job held over an individual's working life, tenure declines with the date of entry into the labour market, with more recent cohorts exhibiting shorter tenure patterns. While there are distinct gender patterns of job tenure for earlier labour market entry cohorts, male and female job tenure patterns exhibit convergence for later cohorts. For both men and women the average number of jobs held is five; one-half of these are held in the first ten years of working life. The proportions of men in self-employment and women in part-time employment increase with the number of jobs. The proportion of layoffs increases with the number of jobs, for both men and women.

Job quitting behaviour is more pronounced for men, while leaving a job for 'other reasons' (such as family care) is more common for women. Job separation hazards are typically non-monotonic for both men and women: separations are increasingly likely within the first few months of a job, but

decline thereafter. Our competing risks multivariate models analyse the determinants of job tenure in the first and the fifth job. The first and fifth job were chosen in order to capture some of the main variation in job tenure at two different stages of labour market experience (since the cross-tabulations show that changes in tenure patterns occurred principally over the first four jobs). The most interesting findings from the competing risks hazard models are as follows. The date of entry into the labour market is a significant determinant for all forms of job termination for men and women. The more recent is the labour market entrant, the more likely is the first job to end. Personal history of job mobility and job tenure also plays a part; but for the fifth job we found that the most recent history affects current tenure more than the entire history of job mobility.

Other significant determinants of the hazards of leaving a job are age and unemployment rates. Quits were found to move procyclically while layoffs moved counter-cyclically. While job attributes (as measured by industry and occupation) significantly affect termination of the first job, their impact has lost importance by the fifth job. Overall, our results show that history matters in two important respects – date of entry into the labour market and personal labour market history. Individuals entering the labour market earlier in the twentieth century are characterized by different patterns of job tenure than later cohorts: tenure is typically longer for earlier cohorts, lending some credibility to the hypothesis of increasing instability (or flexibility) in the labour market. Moreover, there are more pronounced gender differences for earlier cohorts. We also find that individual history matters: as jobs accumulate, job tenure increases, and women are more likely to shift into part-time employment while men are more likely to shift into self-employment.

## I. INTRODUCTION

Policy makers have increasingly been emphasizing the importance of job mobility in enhancing labour market flexibility and thereby contributing to economic growth (see for example OECD, 1995). Others have suggested that only new entrants to the labour market or part-time workers are experiencing an increase in job mobility and a decline in job duration (Gregg and Wadsworth, 1995). The recent literature on job creation and job destruction has also directed attention to labour turnover, albeit from an establishment perspective.<sup>1</sup> It has become evident that while there is a great deal of turbulence in jobs created and destroyed at the firm level, nonetheless a good many individuals' jobs last a long time.

An aim of this paper is to contribute to the debate on labour market flexibility by providing some stylized facts on job mobility and job tenure for men and women in twentieth century Britain. In particular, we wish to chart changes in job mobility and to ascertain the extent to which history matters. Do people entering the labour market towards the end of the twentieth century have different patterns of labour mobility to earlier entry cohorts? Are there gender differences in patterns of job mobility and job tenure, and how have these patterns evolved over the twentieth century? Does *individual* history matter? To what extent does past individual job mobility and tenure affect later mobility and tenure decisions?

Previous studies of patterns of British job tenure have used retrospective recall data from cross-sectional surveys, and have therefore been unable to look at accumulated job tenure and mobility patterns. Our paper differs from these studies in that it exploits an important new data source - the British Household Panel Survey (BHPS) - which contains retrospective information on all jobs held since individual entry into the labour market up to September 1990. These data provide an almost complete work history, allowing us to look at the accumulation of jobs over an individual's working life, and to identify the mode of entry into a job and the reason for exit.

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<sup>1</sup> See *inter alia* Davis and Haltiwanger (1992) for the US and Blanchflower and Burgess (1996) for Britain.

We find that British men and women hold an average of five jobs over their lifetimes, and half of all lifetime job changes occur in the first ten years. For both men and women, the separation hazard is increasing in the first few months of a job, and declines thereafter. While our results must be interpreted with some caution because of the possibility of recall bias, we nonetheless find that history affects job tenure in two important respects. Individuals entering the labour market earlier in the twentieth century are characterized by different tenure patterns than later cohorts: job tenure is typically longer for earlier cohorts, and there are more pronounced gender differences. Personal labour market history also matters: job accumulation is associated with longer job tenure and, as jobs accumulate, women are more likely to shift into part-time employment while men are more likely to shift into self-employment.

The remainder of the paper is set out as follows. Section II provides the background to our analysis of job tenure and job mobility, while Section III describes the data, and presents and discusses the main patterns emerging from cross-tabulations and life-table estimates. Section IV presents the estimates of proportional hazard competing risks models of job tenure. Separate models are estimated for tenure in the first job and the fifth job. Throughout, the analysis is carried out separately for men and women. The final section concludes.

## II. BACKGROUND

A number of previous studies have investigated patterns of British job tenure.<sup>2</sup> All these studies use cross-sectional data with retrospective information on job tenure. For example, Stern (1982) examines the completed job tenures of a sample of the inflow into unemployment, while Main (1981) uses the 1976 New Earnings Survey to examine interrupted job tenures. Time series data constructed from a number of cross-sections have been employed more recently by Gregg and Wadsworth (1995) and Burgess and Rees

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<sup>2</sup> Empirical studies for the US include Hall (1982) and Ureta (1992), who each use a time series of cross sections, and Farber (1994) who uses panel data.



(1996). Gregg and Wadsworth (1995), using Labour Force Survey (LFS) data for 1975, 1984, 1989 and 1993, find a fall in average male tenure and an increase in female tenure over the period 1975-1993. They also find that over half of all job changes occur before the age of 30. Burgess and Rees (1996) use 18 years of annual cross-sections from the General Household Survey (GHS) from 1975 to 1992. They find that there has been a fall in elapsed tenure of about 10%, and that there has been a decline in job tenure amongst the lowest paid men.<sup>3</sup>

The data we use in the present study come from Wave 3 of the BHPS, containing retrospective information on all jobs held since individual entry into the labour market up to September 1990. Thus we have an almost complete work history, allowing us to identify tenure of consecutive jobs, and to control for state dependence in job mobility and tenure that helps reduce problems of worker heterogeneity (Farber, 1994). The data are sufficiently rich to allow us to disaggregate job tenure by job number, mode of entry into a job, form of job separation, and labour market entry cohort. In addition to providing a static representation of the data through cross-tabulations, we also perform a dynamic analysis by estimating job duration using life-table methods and competing risk hazard models. Our competing risks models analyze the determinants of job tenure in the first and the fifth jobs. The first and fifth jobs were chosen in order to capture some of the main variation in job tenure at two different stages of labour market experience, since the cross-tabulations show that changes in tenure patterns occurred principally over the first four jobs.

According to the BHPS, British men and women hold on average a total of five jobs, and half of all lifetime job changes occur in the first ten years. It is striking

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<sup>3</sup> Both the GHS and the LFS report current job tenure as a duration, which is banded with an open-ended top band. These data, as with any retrospective information, may suffer from problems of recall (Dex, 1995). The fact that tenures are reported as banded durations means that they may also suffer from measurement error due to rounding (since the year of job start is not requested). Moreover, cross-sectional surveys may underestimate short job spells; for example, at the survey date, an individual experiencing short spells will report only one spell. An individual who has been in one job all his or her life will also only report one spell. Hence longer spells will be over-represented in the data.

that the average number of jobs held by British men and women is so similar. The average number of jobs for US men is, in contrast, considerably higher:<sup>4</sup> Hall (1982) estimates that two thirds of the ten lifetime jobs experienced in the US occur in the first ten years, while Topel and Ward (1992) show that half of young men hold six or more jobs over the first ten years of their working lives. The fact that British men and women exhibit substantially fewer job changes than men in the US reinforces the conventional wisdom that the British labour market was less flexible than that of the US, at least for our sample period up to September 1990. British job tenure appears to be closer to the German pattern than the US; for example, Winkelmann (1994) finds that German men hold only four jobs over their lifetime, and half of all job changes occur in the first ten years.

There are a number of theories relevant to job mobility and job duration which inform our specification of the competing risks hazard models and guide our interpretation of the findings. For example, in an uncertain world, information about individual ability or preferences can be learned through sampling a variety of jobs (Stigler, 1962). Moreover, the quality of a worker-firm match may be regarded as an "experience good" (Jovanovic, 1979): workers and employers may learn about the match quality over time. Poor quality matches are more likely to be terminated in the first few months of a job, thereby increasing the initial separation hazard. Only the satisfactory job matches will survive, and thus after a time the separation hazard will decline.

Other theories are also consistent with non-monotonic or declining hazard rates. If trade unions improve working conditions and provide a voice for worker dissatisfaction, then union presence may be associated with better matches, fewer quits and longer job tenure (Freeman, 1980). Specific human capital theory predicts that worker-firm pairs will share investments in firm-specific training in order to reduce turnover of trained labour (Becker, 1962; Parsons, 1972; Hashimoto, 1981). If time on-

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<sup>4</sup> To our knowledge there is no evidence on job tenure for women in the US.

the-job proxies acquisition of job-specific skills, then the probability that an individual changes jobs will decline with tenure. To the extent that these models allow any uncertainty about match quality to decline with tenure, then they too will be associated with an initial increase in the separation hazard as knowledge is acquired, followed by a decline in the hazard as more information is revealed with experience.<sup>5</sup>

Of course pure heterogeneity in a statistical sense also implies a hazard declining monotonically with tenure (Blumen, Kogen and McCarthy, 1955; Farber, 1994). Suppose a sample comprises workers of two types, those with a high quitting propensity and those with a low quitting propensity. Then the sample of workers observed in the same job over consecutive periods will comprise a disproportionate number of low quitting propensity workers, and the hazard will decline monotonically with tenure.

These theories are, with our data set, observationally equivalent, and it is not possible for us to discriminate between them in this paper (see also Topel and Ward, 1992). Moreover, without exception, they are theories of wage determination as well as job mobility and tenure. Unfortunately, while the BHPS provides a complete work history, it does not provide retrospective wages data for each of the jobs in the work histories. We are therefore unable to estimate any structural models of job tenure and job mobility. Nonetheless we are able to sketch out a picture of male and female job tenure in twentieth century Britain, which has not been done before. Moreover, the fact that 86 percent of our sample of job spells are completed allows us to link measured job tenure more precisely to economic theory than is possible with retrospective cross-sectional data (which typically reports only uncompleted job spells).

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<sup>5</sup> For a discussion, see Jovanovic (1984), who points out that the "inspection good" job matching models yielding declining hazard rates assume no gradual learning about the match. But if there is gradual learning about match-quality, then the separation hazard will be non-monotonic. See also Mortensen (1978),

### III. THE DATA

#### III.1 The Data Source

The data source is the retrospective work history data collected at Wave 3 (in 1993) of the British Household Panel Survey (BHPS). The work history data provide information on all employment spells from the time the respondent left full-time education up to September 1990.<sup>6</sup> The sample used in this paper consists of all individuals aged 16 and above in September 1990. The BHPS is a nationally representative survey of some 5,500 households (covering approaching 10,000 individuals) randomly selected south of the Caledonian Canal.<sup>7</sup>

The job tenure information is obtained from the Wave 3 "Supplement Life Time Job History Grid", which requested detailed information about each job spell. The precise form of the questions is given in Appendix A. The variables that we use from the retrospective work history files include some personal characteristics, spell-related characteristics, and information about job duration. The personal characteristics are sex, ethnic origin, date of birth, and school leaving age. The spell-related characteristics include the job spell number, the type of employment (full-time, part-time, self-employment), contract type (permanent or temporary), occupation, industry, and the reason for leaving the job.<sup>8</sup> Information on job duration covers either the month or the season in which the spell began or ended, and the year. Throughout, the term "job" refers to employment at a particular firm; the data do not allow us to distinguish between different jobs at the same employer.

Although there are missing cases for many of the variables used in the analysis, we have attempted to maximize our sample size by performing several adjustments. First,

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<sup>6</sup> The retrospective work history data file has been merged with the main panel data files to obtain some additional information about personal characteristics.

<sup>7</sup> Thus the north of Scotland is excluded. The first wave of the BHPS was collected from September to December 1991, with subsequent waves collected annually thereafter. The same individuals were re-interviewed at successive waves, plus any adult members of new households formed by original sample members.

<sup>8</sup> Industry and occupational cross-tabulations of job tenure are reported in Booth *et al* (1996).

in the various cross-tabulations discussed below, we have deleted only the missing cases for the variables under interest. For example in Table 1, which cross-tabulates job number and birth cohorts separately for men and women, we have included in the sub-sample cases with missing information on variables that are not relevant to this table. To construct Table 2 we return to the full sample size and then delete cases with missing information on mode of entry to a job and job order. Thus the number of cases varies across the tables. Only for the multivariate duration analysis discussed in Section III do we delete all cases with missing information for all the variables.

Secondly, for the job duration data, we have carried out a number of imputations. For individuals who do not report the month of entry or exit, but only the season, we have consistently translated winter as January, spring as April, summer as July, and autumn as October. For individuals who report neither month nor season, we use only the year. If the date of job ending is missing, we substitute the date of the next job starting.<sup>9</sup> Just under 14 percent of all 32,773 job spells are uncompleted. The maximum number of jobs in the sample was 21. Between 97 and 98 percent of all BHPS job spells were accounted for by the first ten jobs.

The advantages of the BHPS work history data have already been outlined. The main disadvantage of the data is that the information is retrospective. Individuals may suffer problems of recall, and may remember only the more significant earlier spells, in spite of the fact that the BHPS work history questionnaire was carefully designed to minimize such problems. For example, respondents were asked first about marriage and fertility histories (since marriage and birth dates are unlikely to be forgotten) and then asked about their work histories.<sup>10</sup> A chronological ordering of personal job histories was developed, in which individuals were asked to report starting and end

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<sup>9</sup> We also carried out all the cross-tabulations and life-table estimates on a sub-sample of spells excluding those with missing information on job-termination date. The results are consistently similar to those reported here.

<sup>10</sup> Peters (1988) compares *marital* histories using both panel and retrospective data from the National Longitudinal Survey, and finds that there is substantial agreement about the date of the event.

dates of each job held with a particular employer.<sup>11</sup> Nonetheless, even with such prompting, individuals may not remember precisely the details of employment spells experienced many years ago. The number of employment spells may therefore be a report of longer spells that are more easily recalled. We find that the mean duration of job tenure calculated over jobs is 6 years for men and 4.4 years for women, while the mean duration calculated over individuals in employment is 15.6 years for men and 14.7 years for women. This compares with the Burgess and Rees (1996) estimates of mean duration of completed tenure (calculated over individuals in employment) of approximately 20 years for men and nearly 14 years for women.

### III.2 Cross-tabulations of the Raw Data

Table 1 presents the distribution of jobs in the sample by individual birth cohort and gender. Just under 94 percent of all men and women have held at least one job. On average, both men and women have held five jobs. The 1941-50 birth cohort (the generation entering the labour market between the mid-1950s and the time of the first oil price shock in the early 1970s) contains a larger proportion of individuals who have ever had a job, and proportionately more of this cohort experience multiple jobs. This finding is unsurprising when comparison is made with younger birth cohorts, since the 1941-50 cohort has had longer exposure to the labour market. It is unclear why the oldest birth cohort - individuals born before 1941 - should exhibit lower employment participation and should experience fewer jobs over their working lifetimes than the

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<sup>11</sup> Preliminary work on unemployment spells from the life history files reported in Elias (1996) finds that unemployment is under-reported in a comparison of the work history BHPS data with the LFS over the 1980s. Paull (1996) examines recall and attrition in the BHPS panel; this requests, at each interview date, information on labour market status at the interview date and in the previous September. Thus it is possible to compare the information reported at the interview date with the information reported retrospectively one year hence. Were there no recall bias, these figures should be the same. Paull (1996) finds, however, that they are not: unemployment is typically under-reported using the retrospective information. She finds that recall error associated with reporting employment is much smaller. Of course, generalizations about recall in the work history cannot be made from the panel comparisons, since the questionnaires for each are differently structured and the time span over which individuals report their jobs differ substantially.

1941-50 cohort. It may be that the oldest birth cohort has systematically under-reported the number of jobs, or that their jobs lasted longer.<sup>12</sup>

Table 2a shows the distribution of jobs by gender and by *mode of entry into an employment spell* (full-time employee status, part-time employee status, or self-employment). While the main mode of entry into a job is through full-time employee status, its prominence declines as jobs accumulate. As jobs accumulate, women are more likely to shift into part-time employment while men are more likely to shift into self-employment. Just 2 percent of men begin their first job as self-employed, as compared with 16 percent of men in their tenth job. For women, part-time employee status becomes increasingly important, growing from 6 percent of women in first jobs to 47 percent of women in tenth jobs. For both men and women, these changes occur principally in the first four jobs.

Table 2b shows the distribution of jobs by gender and by *job-exit reason*. Following McLaughlin (1991), we define quits as worker-initiated separations, and layoffs as firm-initiated separations. *Quits* include changes to either better or different jobs, *layoffs* include dismissals and redundancies,<sup>13</sup> and *other reasons* cover termination of contract, bad health, retirement, pregnancy, family care, national service, or fulltime education. The self-employed do not report any reason for termination of a spell, and hence are not included in this table.<sup>14</sup> For both men and women, the main reason for leaving the first job is quitting. Quitting remains the

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<sup>12</sup> As the number of jobs increases, the sub-sample shrinks. To control for possible sample selection, we performed a number of checks at each stage of the analysis (available from the authors on request). For example, the distributions in Tables 1 and 2 were also calculated for restricted sub-samples of movers. Selection on the basis of experiencing higher job orders does not change the results for adjacent jobs. But if we jump ahead in the sequence by more than two jobs, the results start to alter from those reported in the tables, suggesting some sample-selection.

<sup>13</sup> Over all jobs, 14 percent of all male layoffs are accounted for by dismissals, compared with 11 percent of all female layoffs.

<sup>14</sup> The BHPS retrospective work history data indicates whether or not a job was a fixed term contract. We conducted our entire analysis with and without jobs that represented fixed term contracts, but found that this made very little difference to the results. We report the results with the *inclusion* of jobs involving a fixed contract length, since this increases the sample size. There are 1124 spells involving a fixed term contract (representing 4 percent of all spells of employment).

principal category for all subsequent job terminations for men, but the most important cause for women leaving the second to seventh job is "other reasons" (the most common "other reasons" for women are pregnancy and/or family care). For men, layoffs become increasingly important as a reason for job termination as the number of jobs grows, with roughly 20 percent of fifth to tenth jobs being terminated by this means.<sup>15</sup> This may reflect increasing selection, with possibly lower "quality" workers (or workers with obsolescent skills) being forced to change jobs through redundancy or dismissal.

### III.3 Life-table Estimates

While Tables 1 and 2 provide a concise description of the data, they do not control for individual exposure to risk of job termination nor for the type of job status. To draw out this additional information, we now apply life-table methods to the raw data in order to take into account exposure risks. Our analysis is based on a non-parametric estimator, the product-limit (or Kaplan-Meier) estimator of the survivor function (see Kalbfleisch and Prentice (1980) and Cox and Oakes (1984)). The results are reported in Tables 3 to 5.

Table 3 presents estimates of job tenure by gender and job order; each element of each row (job) reports the surviving percentage. Thus of male first jobs, 95 percent of men are still in the job after 3 months, but only 13 percent are still there after 10 years. For female first jobs, 96 percent of women are still in the job after 3 months, while just 9 percent are still there after 10 years. Table 3 shows that, for both men and women, job tenure increases as jobs accumulate, particularly up to the fifth job for men and the sixth job for women. For men, the median job tenure increases from about 36 to 48 months between the first and fifth jobs. For women, the median job tenure is approximately six months less, but follows a similar pattern.<sup>16</sup>

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<sup>15</sup> We also computed tabulations disaggregated by birth cohort and cohort of labour-market entry. We found that younger cohorts of male workers are more likely to be laid-off from their jobs than older cohorts, while younger women (or younger cohorts of female entrants) tend to quit rather than exit for other reasons.

<sup>16</sup> To investigate sample-selection, we also computed surviving percentages for the sub-



There are several alternative explanations for the finding that job tenure increases as jobs accumulate. First, the quality of a worker-firm match may be regarded as an "experience good": workers and employers learn about the match quality over time, and only the satisfactory job matches survive. Conditional on not finding a good match early on, workers may find higher quality matches as they sample more jobs, and hence job tenure increases with the number of jobs held. Second, individuals acquire more skills as they experience a range of jobs. This accumulated human capital may be used in subsequent jobs to command higher wages and better working conditions, thereby reducing the probability in later jobs that workers and firms will want to separate.

Tables 4a and 5a report the *distribution of job tenure* of first to fifth jobs, while Tables 4b and 5b report just one statistic of the distribution of job tenure - the *median*, in order to focus on labour-market-entry cohorts.<sup>17</sup> Table 4 shows the distribution of tenure by mode of entry, while Table 5 shows the distribution of tenure by form of exit.

From Table 4a, it can be seen that job tenure is longer for both men and women if the reported *mode of entry to a job spell* is through self-employment. For men, 100 percent of those starting self-employment in the first job are still there 3 months later, as compared with 96 percent of men starting their first job as full-time employees. Ten years later, 21 percent of these self-employed men are still in their first job, as compared with 12 percent of full-time men. This finding of longer tenure if the reported mode of entry to a job spell is through self-employment holds for all jobs, for both men and women (see also Taylor, 1996). Tenure in jobs where individuals

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sample of men and women who held at least five jobs. Tenure patterns are fairly similar in the first 12 months, but thereafter, we find that tenure in the first job computed on the new sample is shorter. This is not surprising, because workers experiencing at least 5 jobs are likely to leave their first job more quickly than is the sample of *all* individuals observed in their first job. The sample of all workers will include younger workers who have not yet had opportunity to change jobs as frequently, and "attached" workers who are less likely to change jobs *ceteris paribus*.

<sup>17</sup> The principal reason for reporting median values is that the median is a robust measure of centre, since it is unaffected by extreme values. For this reason, it is preferred to the mean.

are full-time employees is longer for men than for women. But part-time employment for women is associated with long job tenure. Indeed, after the first job, female tenure in part-time jobs is longer than in full-time employment. For example, 24 percent of women who began their fourth job as part-time employees are still there ten years later, as compared with 16 percent of women who began their fourth job as full-time employees, and 37 percent who began as self-employed. For men, an increasing part-time attachment is observed from the first to the fourth jobs (although only 3 per cent of male employees work part-time).

Table 4b shows median job tenure for the first five jobs, by date of entry into the labour market and *mode of entry into each job*. For men and women entering the first to the fifth jobs as full-time employees, median job tenures decline across date of entry into the labour market; cohorts entering the labour market earlier in the twentieth century had longer full-time jobs. Female full-time jobs are typically shorter than male full-time jobs across all jobs and birth cohorts (with the exception of the first job of entrants into the labour market before 1951). For women, part-time jobs become longer as jobs accumulate, and are longest for the earlier cohorts. For men, tenure in self-employment is typically longer for the earlier cohorts. Full-time tenure for men and women becomes more similar for more recent entrants to the labour market.

We now consider job tenure disaggregated by *reason for job termination*. Table 5a (showing tenure by gender, reason of exit, and job order) reveals that quits are typically responsible for the shortest tenure across the first to the fifth jobs. This is consistent with individuals seeking a better match if they are dissatisfied early in the job. After their first job, women typically terminate subsequent jobs for "other reasons", including family care and pregnancy.<sup>18</sup> Table 5b (showing median tenure by

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<sup>18</sup> We also examined tenure disaggregated by three broad industrial headings - *manufacturing, private services, and the public sector* - and found that the longest jobs are found in manufacturing for both men and women in their first job (see Booth *et al*, 1996). However, for the second and subsequent jobs, the longest jobs are found in the public sector. Jobs in private services are always the shortest. This is consistent with US evidence in Anderson and Meyer (1994).

gender, exit reason, job order and labour-market-entry cohort) indicates again that median job tenure decreases for later entrants to the labour market. For all job termination reasons, male and female job tenure patterns become more similar for recent cohorts.

Figures 1 and 2 plot the empirical hazard functions by gender for the first and fifth jobs. The empirical hazards are non-monotonic across all forms of separation. As suggested in Jovanovic (1984), the finding of non-monotonic hazards lends some support to both the "experience good" job-matching model (in which learning occurs with experience) and the "inspection good" job-matching model (in which gradual accumulation of firm-specific human capital over job tenure is combined with some uncertainty about the quality of the match).

Figure 1 shows that, for the first job, male and female separation hazards for quits peak at 7 months, while separations for "other reasons" peak at 13 months. For male layoffs, the peak is at 7 months, while for females it is 13 months. Separations decline after these peaks. Figure 2 shows that for the fifth job, male quits reach their highest point at 14 months, while female quits do not peak until 25 months. For both men and women, layoffs from the fifth job peak at around 24 months; this may be due to the statutory requirement for redundancy pay after two continuous years of service, introduced in 1965 in the Redundancy Payments Act. For men, separations from the fifth job for "other reasons" reach a maximum at 13 months, while for women the peak is at 22 months.<sup>19</sup> These findings suggest that learning about match quality occurs in the first few months of a job, during which time unsatisfactory matches are terminated. It is not clear why such learning should be spread over a longer period in the fifth job than the first.

In summary, the life-tables reveal that history matters in the two senses

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<sup>19</sup> Non-monotonic separation hazards were also found by Sicherman (1996) using the personnel records of a large US insurance company of over 23,000 individuals over the period 1971-1980. He finds that the likelihood of departure increases in the first two months of tenure for both men and women, then declines at a decreasing rate. Farber (1994: Figure 2) also finds evidence of non-monotonic separation hazards for the US.

identified earlier in the paper - date of entry into the labour market and personal labour market history. Individuals entering the labour market earlier in the twentieth century are characterized by somewhat different patterns in job tenure, as shown in Tables 4b and 5b. (In the following section, we hazard some reasons as to why this might be the case.) Tenure is typically longer for earlier cohorts, and there are more pronounced gender differences. We also find that *individual* history matters: job accumulation is associated with longer job tenure.

### III.4 Summary of Findings

The cross-tabulations and life-table estimates indicate, first, that the proportions of men in self-employment and women in part-time employment increase with the number of jobs. Second, the proportion of layoffs increases with the number of jobs, for both men and women. Job quitting behaviour is more pronounced for men, while leaving a job for "other reasons" (such as family care) is more common for women. Job tenure increases with the number of jobs for both men and women, and for all labour market-entry cohorts. Third, for each job held over an individual's working life, tenure declines with the date of entry into the labour market, with more recent cohorts exhibiting shorter tenure patterns. Fourth, while there are distinct gender patterns of job tenure for earlier labour market entry cohorts, male and female job tenure patterns exhibit convergence for later cohorts. Fifth, job separation hazards are typically non-monotonic for both men and women: separations are increasingly likely within the first few months of a job, but decline thereafter.

## IV. MODELLING THE DETERMINANTS OF JOB TENURE

This section presents the results of multivariate analyses of job tenure in the *first* and *fifth* jobs, in order to capture some of the main variations in job tenure at two different stages of labour market experience (since changes in tenure patterns

occurred principally over the first four jobs). The determinants of job tenure are estimated using the Cox proportional hazard model with competing risks of exit through quits  $q$ , layoffs  $l$ , or "other reasons"  $o$ .<sup>20</sup> The cause-specific hazard rate of exit from a job can be written as

$$h_{ei}(t, X_i) = \lambda_e(t) \exp(\alpha_e + X_i' \beta_e) \quad (1)$$

where  $h_{ei}(t, X)$  denotes the hazard rate of exit for reason  $e=q, l, o$ ;  $\lambda_e(t)$  is the baseline hazard which does not need any parametric specification;  $\alpha_e$  is the intercept term;  $X_i$  is the vector of observable characteristics for individual  $i$ ; and  $\beta_e$  is the vector of coefficients to be estimated. The overall hazard function is  $h_i = \sum_e h_{ei}$ .

Our choice of explanatory variables used in estimating the hazards of leaving the first and the fifth jobs is informed by the theory outlined in Section II, and includes personal characteristics (age at job entry, race and gender); spell-related attributes (occupation, industry, employment status); date of first entry into the labour market; and the aggregate unemployment rate applying at the end of the employment spell.<sup>21</sup> The unemployment rate was included as a control, because workers are more likely to be laid off when demand is low (and unemployment high), and are more likely to quit when there are plenty of jobs available (unemployment is low). A number of theoretical and empirical papers show that quits are procyclical and layoffs are countercyclical (see *inter alia* McLaughlin (1991) for the US; Burda and Wyplosz (1994) for a comparison of industrialized countries; and Wadsworth (1989), Burgess (1994), Gregg and Wadsworth (1995), and Burgess and Rees (1996) for Britain).

Additional regressors included in estimation of the hazard of leaving the fifth job are accumulated measures from the individual's complete job history (total number of previous quits and layoffs, total number of previous part-time jobs), plus information

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<sup>20</sup> We chose the Cox proportional hazard model (rather than models making explicit parametric assumptions about the distribution of job durations) because of its flexibility in allowing the data to determine the form of the hazard.

<sup>21</sup> The aggregate unemployment rate was obtained from Labour Market Trends, January 1996, Volume 104, No. 1, Central Statistical Office pp 6-7.

from the individual's fourth job (job duration, whether the job terminated as a quit or a layoff, and time elapsed from the end of the fourth job to the start of the fifth job). The summary statistics of the variables used in the analysis are given in Table A1 in the Appendix.

The determinants of leaving the first job and the fifth job are reported in Tables 6a and 6b respectively. Before discussing these results, we consider the testing procedure used to discriminate between alternative models and specifications.

#### IV.1 Testing the Competing Risks Model

Following the procedure described in Narendranathan and Stewart (1991:334-5), we carry out a likelihood ratio (LR) test to see if the ratios of hazards are independent of  $t$  and the same for all  $i$ , that is, to test for the equality of all parameters except the intercepts across exit categories. The LR test statistic is computed as  $-2[(L_s + Q) - L_c] - \chi^2(p)$ , where  $L_s$  is the maximized log-likelihood of the single risk model,  $Q = \sum_j [N_j \ln(N_j / \sum_k N_k)]$ ,  $L_c$  is maximized log-likelihood of the unrestricted competing risks model, and  $p$  denotes the number of parameters excluding the intercept. The test statistic is 482 for men and 395 for women in the first job, and 119 for men and 44 for women in the fifth job. The critical value is  $\chi_{0.95}^2(23) = 35.2$  for the first job, and  $\chi_{0.95}^2(30) = 43.8$  for the fifth job. Thus the null hypothesis (of the equality of all parameters except the intercepts across exit categories) is rejected, albeit only just for women in their fifth job. We therefore report in Tables 6a and 6b only the competing risks model with three exit states.

#### IV.2 Determinants of Tenure in the First Job

The determinants of leaving the first job are reported in Table 6a. The principal findings are as follows. The date of entry into the labour market is a significant determinant for all forms of job termination for men and women (the base group is entrants before 1951). The magnitude of the coefficients increases for more recent

entrants for men and women: the more recent the entrant, the more likely is the first job to end. It is interesting to compare the male odds of being laid off relative to quitting for, say, the 1951-1960 entry cohort, given by equation (2) (in which the subscript  $i$  has been dropped for notational simplicity):

$$h_l(t,X)/h_q(t,X) = [\lambda_l(t)/\lambda_q(t)] \exp[(\beta_l - \beta_q)z] \quad (2)$$

where  $z=1$  if the date of first entry occurred in 1951-1960, and  $z=0$  otherwise.<sup>22</sup> From Table 6a,  $(\beta_l - \beta_q) = 0.563 - 0.076 = 0.487$ , which suggests that entry into the labour market in the 1950s for men increases the odds of being laid off relative to quitting. This difference increases considerably for men entering the labour market in the 1980s, for whom  $(\beta_l - \beta_q) = 1.224$ . This reflects the increased job instability for men in recent years. A similar effect is found for women.

Secondly, consider the impact of other individual characteristics. Age at first job is a significant determinant of exit rates by "other reasons". Working part-time significantly increases the odds of quitting for men but not for women. While nonwhite men are significantly less likely to quit their first job, nonwhite women are significantly more likely to leave for other reasons.

Thirdly, certain industries significantly affect male job termination, but industry has no effect on female terminations. Light manufacturing, construction and distribution are associated with a greater male layoff hazards as compared with the base category (primary industry).

Fourthly, occupation plays an important role in explaining quit and layoff

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<sup>22</sup> The proportional effect of a small change in any variable  $x$  on the conditional probability of layoffs relative to quits is given by

$$\frac{\partial \ln (h_l - h_q)}{\partial x} = (\beta_l - \beta_q)$$

which is independent of  $t$ .

behaviour of men in particular. Male quits and layoffs, and female layoffs, are significantly lower for professionals and managers than for the base group (plant and machine operatives and other manual unskilled workers). For professional and managerial men  $(\beta_l - \beta_q) = -0.800$ , indicating a relatively higher odds of quitting relative to being laid off.

Finally, a higher unemployment rate reduces the hazards of quitting the first job or leaving for other reasons, but increases the hazard of being laid off. This finding is consistent with evidence cited earlier that quits are procyclical and layoffs are countercyclical.<sup>23</sup>

### IV.3 Determinants of Tenure in the Fifth Job

The estimates of the hazards of leaving the fifth job are presented in Table 6b. In addition to the explanatory variables included in Table 6a, Table 6b also contains work history variables. Reasons for inclusion of variables proxying experience are that they affect current tenure indirectly by affecting the wage rate in the fifth job (which we do not observe). They also affect individual's search effectiveness and the extent of networking, which assists job seeking, job mobility and employment. But past history also shapes individual preferences, which are affected not only by observable characteristics such as age or sex, but may also be modified over time with unobserved heterogeneous job mobility and tenure (Farber, 1994). In addition, individuals may extrapolate from past history their expectations about the future, which may also affect current job change decisions.

The principal findings from the Cox proportional hazards estimates of the determinants of tenure in the fifth job are as follows. First, we find that the date of first entry into the labour market remains important: a recent entry increases the odds

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<sup>23</sup> As a check on sample-selection, we also estimated job tenure for the first job using the sub-sample of individuals who reported tenure in a fifth job. Most of the findings remain unchanged (*viz.* the effects of labour market entry cohort, age at first job, working part-time, and occupation), suggesting that our main implications remain robust in spite of sample-selection into the fifth job.



of termination by any means, and the odds of being laid off relative to quitting increase by a greater extent for more recent entry cohorts. Secondly, the older are men and women at the start of their fifth job, the more likely are they to be laid off. They are also more likely to leave for other reasons. Being nonwhite now has an insignificant effect on the exit rates for any reason. Thirdly, job attributes, as measured by industry and occupation, have lost importance by the fifth job. For men, only craft and personal services workers exhibit a significantly lower risk of layoff. Fourthly, the business cycle as proxied by the aggregate unemployment rate is a significant determinant of tenure. A higher unemployment rate reduces the hazard of quitting, suggesting again that quits are procyclical. But unemployment now has a negative effect in the layoff equation; however, a higher unemployment rate increases the odds of being laid off relative to quitting (for men,  $(\beta_l - \beta_q) = 0.106$ , while for women  $(\beta_l - \beta_q) = 0.065$ ). This upholds the view that layoffs are more countercyclical than quits. A comparison of the point estimates in first and fifth jobs suggests that in bad times (high unemployment) layoffs are more likely to be experienced by individuals at the start of their working lives (in their first jobs) than later in their careers (in their fifth jobs). In bad times, quits are less likely to occur at any time in the career path, as represented by this simple comparison.

Finally, Table 6b also presents some interesting estimates of the impact of individual's past history on the hazards of leaving the fifth job. Variables proxying *total past history* (number of quits and layoffs) typically have no effect on the hazards of leaving the fifth job, although a higher number of previous quits increases the layoff hazard for women. The various disaggregated proxies of past history have differing gender impacts. For men a layoff in the fourth job has a significantly positive impact on the layoff hazard in the fifth job. Men and women who were laid off or who quit their fourth job were less likely to leave their fifth job for other reasons. Longer durations of nonemployment between the fourth and fifth jobs reduce the

hazard of leaving the fifth job for other reasons.<sup>24</sup>

#### IV.4 Summary of Results of Duration Models

In this subsection we list the main findings from the multivariate analysis, and link them to the existing literature. The most interesting findings from the competing risks hazard models of job tenure can be summarized as follows. First, the baseline hazard is non-monotonic, a finding that is consistent with matching models in which learning about match quality occurs with time in the job (see for example Jovanovic, 1984), and which is also in line with our previous estimates of the empirical hazard functions.

Secondly, there is a decrease in job tenure across time. The date of entry into the labour market is a significant determinant for all forms of job termination for men and women. The more recent is the labour market entrant, the more likely is the first job to end. There are a number of different hypotheses that may explain this "vintage effect". The proportion of small firms in Britain has increased since the early 1970s, and job tenure may decline simply because jobs last a shorter time in small firms.<sup>25</sup> Increasing technological change rendering skills obsolete may also have contributed to our observed vintage effects.<sup>26</sup> In addition, increasing labour market flexibility and deregulation are likely to have played a role: anti-union legislation, the reduced power of trade unions, and the weakening of employment protection have made it easier for firms to lay off workers in recent years (see Booth, 1995).

Thirdly, personal history of job mobility and job tenure plays a part in affecting job tenure. For the fifth job we found that the most recent history affects current tenure more than the entire history of job mobility (perhaps suggesting a first-order

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<sup>24</sup> Experimentation with different specifications (including the length of all spells of nonemployment) did not contribute significantly to the likelihood.

<sup>25</sup> For example, Contini *et al* (1995: Table 2.1) show that the proportion of firms with fewer than 100 employees in UK manufacturing increased from 15.5 percent in the early 1970s, to 22 percent by the mid-1980s, to 33 percent by the early 1990s.

<sup>26</sup> Farber (1996) finds, using US data, an increase in job loss over the period 1981 to 1993 due to "position or shift abolished", particularly for more educated workers.

Markov process, whereby all previous history can be summarized by the last job). The finding that tenure increases as jobs accumulate is consistent with theories of matching and specific human capital. But we also find that individual job history affects job separation behaviour differently depending on the reason for exit. For example, past history does not affect quitting behaviour in the fifth job, but the number of previous quits and being laid off in the last job are important predictors of layoff hazards in the fifth job. While past layoffs may be picking up certain undesirable traits that are unobservable to the econometrician but observable to the firm, it is not clear what could explain the significance of earlier quits on fifth job layoff hazards.

Other significant determinants of the hazards of leaving a job are age and unemployment rates. Quits were found to move procyclically while layoffs moved countercyclically (a finding also noted in McLaughlin, 1991). While job attributes (as measured by industry and occupation) significantly affect termination of the first job, their impact has lost importance by the fifth job.

## V. CONCLUSIONS

This paper uses important new retrospective work history data from the British Household Panel Survey to examine patterns of job mobility and job tenure for men and women over the twentieth century up to September 1990. Previous studies have used retrospective recall data from cross-sectional surveys, and have therefore been unable to look at accumulated job tenure and mobility patterns. However our results suggest that this aspect of labour market behaviour is important in determining job duration. We also find that British men and women hold an average of five jobs over their lifetimes, and half of all lifetime job changes occur in the first ten years. For both men and women, the separation hazard is increasing in the first few months of a job, and declines thereafter. While our results must be interpreted with some caution because of the possibility of recall bias, they nonetheless show that history affects job tenure in two important respects. Individuals entering the labour market earlier in the twentieth

century are characterized by different tenure patterns than later cohorts: job tenure is typically longer for earlier cohorts, and there are more pronounced gender differences. Individual history also matters: job accumulation is associated with longer job tenure and, as jobs accumulate, women are more likely to shift into part-time employment while men are more likely to shift into self-employment. In future work we plan to extend this analysis, by testing theoretical hypotheses about job changes in the 1990s, using the wave-on-wave information on job tenure, promotion and wages from the BHPS.

## APPENDIX A

The job tenure information is obtained from the Wave 3 "Supplement Life Time Job History Grid", which requested detailed information about each job spell, in grid-form. The questions for each spell are as follows.

L6: In your first/next job, were you self-employed, a full-time employee or a part-time employee?

L7: On what date did you begin (your first paid job/working with your next employer)? (For spells before September 1990, month and year; if month not known season code entered.)

L8: Could you give me some details of the exact job you started in (DATE at L7). Please tell me the exact job title and describe fully the sort of work you did. And what did the firm or organization you worked for actually make or do? (If more than one job, main=most hours. If equal hours then highest paid.)

L9: Did you supervise other employees? (Include self-employed.)

L10: Was this job a permanent job, seasonal job, temporary or casual job or a job done under contract for a fixed period of time?

L11: What was the date you left working for that employer?

L12: (Showcard 29): Which of the following reasons on the card best describes why you stopped doing that job? (Ten reasons were listed in the following order: left for better job (promoted); left for different job; made redundant/company bankrupt; dismissed/sacked; temporary job ended; took retirement; health reasons; left to have a baby; look after family/other; other reason (specify)).

L13: (Asked if needed): Have you had any more paid jobs since then?"

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Table 1: Distribution of Individuals over Jobs by Gender and Birth Cohort (percent)<sup>a</sup>

	Job Order										<i>N</i>
	1	2	3	4	5	6	7	8	9	10	
Men											
All	94.0	90.8	73.0	56.8	40.2	28.5	19.0	13.4	9.3	6.4	3332
Before 1941	97.1	94.3	83.5	67.7	49.0	37.5	25.3	18.0	12.6	8.6	1165
1941-1950	98.4	96.7	84.0	70.4	56.8	45.0	29.8	22.3	16.1	12.1	614
1951-1960	96.5	96.2	76.0	59.8	39.6	26.0	16.8	11.3	7.8	5.1	707
1961-on	84.5	77.0	48.1	29.2	16.5	8.5	4.4				846
Women											
All	93.4	89.0	72.5	56.0	39.9	27.1	17.9	11.3	7.5	4.9	4127
Before 1941	94.7	90.3	76.2	60.1	43.6	30.1	20.3	12.8	9.0	5.8	1503
1941-1950	98.1	96.3	86.7	72.4	56.1	40.0	28.3	19.1	13.6	9.5	807
1951-1960	96.1	94.2	78.7	63.4	46.2	30.4	19.0	11.7	7.1	4.5	793
1961-on	85.6	77.4	51.2	31.3	17.0	9.8	5.5				1024

<sup>a</sup> Percentages are computed on total number of individuals in the sample, *N*. Values for cells with less than 30 observations are not reported.

Table 2a: Distribution of Individuals over Jobs by Gender and Mode of Entry<sup>a</sup>

	Job Order									
	1	2	3	4	5	6	7	8	9	10
Men										
Full-Time Employment (%)	94.7	92.1	90.3	87.5	86.5	85.4	86.9	84.6	83.6	79.3
Part-Time Employment (%)	3.4	1.9	1.8	2.9	2.7	3.4	2.5	2.6	3.4	4.9
Self-Employment (%)	2.0	5.9	7.9	9.6	10.8	11.2	10.6	12.8	13.0	15.8
Number of Observations	3108	2930	2338	1776	1281	889	601	421	293	203
Women										
Full-Time Employment (%)	93.4	78.0	66.4	59.6	54.6	55.1	52.0	55.3	52.8	48.9
Part-Time Employment (%)	5.9	19.3	30.3	37.1	40.4	41.1	41.0	39.1	41.3	45.6
Self-Employment (%)	0.7	2.7	3.4	3.3	5.1	3.8	7.0	5.6	5.9	5.5
Number of Observations	3839	3559	2877	2181	1560	1031	681	432	288	182

<sup>a</sup> Column percentages are computed on individuals who report mode of entry only (Number of Observations). Mode of entry is self-reported. Columns may not add due to rounding.

Table 2b: Distribution of Individuals over Jobs by Gender and Reason of Exit<sup>a</sup>

	Job Order									
	1	2	3	4	5	6	7	8	9	10
Men										
Quit (%)	60.2	60.1	58.3	58.0	54.7	52.5	53.8	51.9	50.6	46.7
Layoff (%)	14.8	15.4	17.8	18.0	21.3	19.7	21.9	21.2	20.6	21.6
Other Reasons (%)	25.0	24.5	23.9	24.0	23.9	27.8	24.3	26.9	28.8	31.7
Number of Observations	3063	2539	2039	1503	1078	730	507	349	243	167
Women										
Quit (%)	50.0	41.1	38.4	37.4	41.7	40.2	39.5	47.9	44.5	48.6
Layoff (%)	6.9	7.0	7.4	8.8	8.0	10.0	9.4	9.3	11.8	8.9
Other Reasons (%)	43.1	51.9	54.2	53.8	50.2	49.9	51.0	42.8	43.7	42.5
Number of Observations	3779	3274	2581	1918	1306	862	572	355	238	146

<sup>a</sup> Column percentages are computed on individuals who report reason of exit only (Number of Observations). Self-employed are not included because information on reason of exit is not available. Quit is defined as changes to both better and different jobs. Layoff consists of dismissals and redundancies. Other reasons include termination of contract, bad health conditions, retirement, pregnancy, family care, national service, full-time education. Columns may not add due to rounding.

Table 3: Job Tenure by Gender and Job Order (surviving percent)<sup>a</sup>

Job Order	Duration (months)											N
	3	6	12	18	24	30	36	42	48	60	120	
MEN												
1	95	89	78	67	61	54	49	43	39	30	13	3132
2	97	92	83	72	65	57	53	47	44	38	22	3024
3	97	92	84	73	68	60	56	51	47	40	25	2433
4	97	92	84	74	69	61	57	52	50	42	28	1891
5	98	93	85	74	69	61	57	52	49	43	26	1340
6	97	92	84	73	67	59	56	51	48	42	28	948
7	96	90	82	71	66	56	52	46	44	38	24	634
8	97	92	81	71	64	58	53	48	45	38	22	447
9	95	89	77	64	55	47	45	42	38	33	21	311
10	94	85	77	67	61	53	50	44	39	35	21	213
WOMEN												
1	96	90	78	65	59	49	45	39	35	28	9	3854
2	97	90	80	69	61	51	46	39	35	28	13	3674
3	96	90	80	70	62	53	47	42	39	31	16	2993
4	96	91	82	71	65	55	50	45	41	35	20	2311
5	97	91	80	70	64	55	51	45	42	36	19	1646
6	97	91	82	72	65	57	53	49	45	37	20	1117
7	96	89	80	68	62	53	50	46	43	38	19	740
8	95	89	79	69	64	56	52	46	43	34	15	466
9	96	90	81	69	63	55	51	44	42	36	14	311
10	96	84	77	68	65	56	52	46	43	36	19	203

<sup>a</sup> Obtained from life table estimates. Values report the product-limit estimates of the survivor function as obtained from life tables for survival data in STATA (see Appendix B).

Table 4a: Job Tenure by Gender and Mode of Entry (surviving percent)<sup>a</sup>

Job Order and Mode of Entry	Duration (months)										
	3	6	12	18	24	30	36	42	48	60	120
MEN											
1st Job											
Full-Time	96	89	79	68	62	54	50	44	39	31	12
Part-Time	86	65	49	38	33	25	24	22	20	17	10
Self-Employed	100	95	84	75	66	64	56	49	49	38	21
2nd Job											
Full-Time	97	92	83	71	64	56	51	46	43	36	21
Part-Time	95	88	77	58	52	38	34	32	30	25	12
Self-Employed	99	96	90	85	81	75	71	69	66	59	46
3rd Job											
Full-Time	97	91	83	72	66	58	54	48	45	37	22
Part-Time	95	88	80	59	54	43	42	41	29	18	14
Self-Employed	98	95	90	86	84	79	77	73	71	67	54
4th Job											
Full-Time	97	91	83	72	67	57	53	48	46	39	25
Part-Time	96	86	81	68	64	63	55	52	50	45	35
Self-Employed	99	96	92	86	83	80	78	74	72	63	50
5th Job											
Full-Time	98	93	84	72	67	59	55	50	47	41	25
Part-Time	97	86	74	60	59	57	54	51	46	45	24
Self-Employed	99	90	89	82	77	72	66	62	59	53	35
WOMEN											
1st Job											
Full-Time	96	90	80	67	60	50	46	39	36	28	9
Part-Time	90	77	59	45	40	31	28	25	23	20	13
Self-Employed											
2nd Job											
Full-Time	97	90	80	67	59	48	43	36	32	24	9
Part-Time	96	89	79	70	63	55	51	44	41	35	22
Self-Employed	100	94	92	84	78	71	69	63	60	55	40
3rd Job											
Full-Time	95	89	78	66	58	49	42	36	33	26	13
Part-Time	97	91	83	75	67	57	53	49	45	37	21
Self-Employed	100	95	89	88	84	75	69	66	64	56	30
4th Job											
Full-Time	97	91	81	68	61	50	45	39	35	29	16
Part-Time	96	90	81	72	66	58	54	49	46	39	24
Self-Employed	100	99	97	94	90	88	82	73	70	62	37
5th Job											
Full-Time	96	89	76	63	56	47	43	38	34	29	15
Part-Time	97	91	83	74	69	60	55	50	47	40	21
Self-Employed	99	99	94	85	81	77	70	64	63	55	40

Table 4b: Median Job Tenure by Gender, Job Order, Date of First Entry into the Labour Market and Mode of Entry (months)<sup>a</sup>

Job Order and Date of First Entry	Mode of Entry					
	Full-Time		Part-Time		Self-Empl	
	M	W	M	W	M	W
1st Job						
Before 1951	40	43		36		
1951-60	42	34				
1961-70	41	32				
1971-80	33	25		10		
1981-90	22	20	8	12	34	
2nd Job						
Before 1951	46	37		53	169	
1951-60	42	27		44		
1961-70	32	25		36	188	
1971-80	34	25		29	55	
1981-90	26	24		16	45	
3rd Job						
Before 1951	51	43		48	205	
1951-60	47	25		52	206	
1961-70	35	24		47		
1971-80	30	24		24	68	
1981-90	26	22		24		
4th Job						
Before 1951	60	42		60	159	
1951-60	42	36		47	83	
1961-70	32	26		35	74	
1971-80	31	24		25	91	
1981-90	18	19		37		
5th Job						
Before 1951	60	36		61	75	
1951-60	40	37		36		
1961-70	38	25		36	45	
1971-80	34	22		35	45	
1981-90	31	16				

<sup>a</sup> See footnote of Table 3. Median values for cells with less than 30 observations are not reported.

Table 5a: Job Tenure by Gender and Reason of Exit (surviving percent)<sup>a</sup>

Job Order and Reason of Exit	Duration (months)										
	3	6	12	18	24	30	36	42	48	60	120
MEN											
1st Job											
Quit	95	88	76	64	57	49	44	38	35	27	10
Layoff	96	92	81	72	65	57	53	48	44	36	17
Other	96	88	80	71	67	60	55	47	41	30	11
2nd Job											
Quit	97	91	80	66	57	48	43	37	33	26	9
Layoff	97	91	80	66	60	49	43	38	36	30	19
Other	97	91	81	70	65	56	52	48	45	37	23
3rd Job											
Quit	96	91	80	66	60	50	45	39	35	25	9
Layoff	98	92	84	74	67	61	56	49	46	40	23
Other	94	89	84	70	65	58	54	50	46	40	29
4th Job											
Quit	96	90	78	63	57	47	42	36	33	24	9
Layoff	97	93	84	75	68	57	52	48	44	37	17
Other	96	89	83	75	71	63	58	54	51	48	37
5th Job											
Quit	97	91	78	64	58	48	43	37	33	25	10
Layoff	97	94	87	73	67	57	52	48	44	39	21
Other	98	92	82	73	67	61	58	54	51	46	30
WOMEN											
1st Job											
Quit	96	89	75	58	49	38	32	25	22	15	3
Layoff	92	82	71	57	50	39	37	31	28	24	11
Other	97	91	84	74	70	63	59	54	50	41	12
2nd Job											
Quit	97	88	76	59	50	37	31	23	20	13	4
Layoff	95	90	75	65	58	48	43	38	35	29	12
Other	96	90	81	71	63	54	48	42	37	28	11
3rd Job											
Quit	95	87	74	60	54	41	34	28	25	18	5
Layoff	95	91	81	72	60	52	44	39	36	28	13
Other	96	90	80	69	60	50	44	39	36	28	13
4th Job											
Quit	96	89	77	60	53	41	37	30	27	20	6
Layoff	97	92	87	78	72	60	55	47	45	36	16
Other	96	89	78	67	60	50	44	38	34	28	16
5th Job											
Quit	95	89	74	58	52	40	37	30	27	19	4
Layoff	98	93	88	77	74	64	60	56	51	46	17
Other	96	87	74	64	56	46	41	35	32	27	14

Table 5b: Median Job Tenure by Gender, Job Order, Date of First Entry into the Labour Market and Reason of Exit (months)<sup>a</sup>

Job Order and Date of First Entry	Reason of Exit					
	Quit		Layoff		Other	
	M	W	M	W	M	W
1st Job						
Before 1951	25	25	39	30	51	72
1951-60	34	24	75		45	58
1961-70	40	21	51	17	34	51
1971-80	31	21	45	24	23	37
1981-90	19	17	24	16	11	15
2nd Job						
Before 1951	37	29	44	58	56	54
1951-60	34	25	58	29	49	34
1961-70	27	23	28	30	26	30
1971-80	25	22	29	26	18	24
1981-90	18	14	15	15	12	14
3rd Job						
Before 1951	40	33	103	34	120	52
1951-60	40	25	77	76	49	31
1961-70	25	24	58	34	23	25
1971-80	24	19	23	22	22	21
1981-90	15	14	14	16	12	12
4th Job						
Before 1951	38	31	50	73	151	59
1951-60	33	28	61	55	43	35
1961-70	24	24	32	31	25	24
1971-80	22	17	32	27	11	19
1981-90	15	12				10
5th Job						
Before 1951	38	27	45	72	97	48
1951-60	32	25	49		39	27
1961-70	24	23	38			21
1971-80	23	18	21			18
1981-90	10	11				9

<sup>a</sup> See footnote of Table 3. Self-employed are excluded because information on reason of exit is not available. Median values for cells with less than 30 observations are not reported.



Table 6a: Determinants of Job Tenure by Gender and Reason of Exit – First Job

Variable	First Job Ended by:					
	Quit		Layoff		Other	
	M	W	M	W	M	W
Age at First Job	0.004 (0.012)	-0.016 (0.010)	-0.036 (0.029)	-0.014 (0.026)	0.045* (0.017)	0.015* (0.007)
Date of First Entry into the Labour Market <sup>a</sup> :						
1951-60	0.076 (0.079)	0.129 (0.079)	0.563* (0.190)	0.384 (0.261)	-0.548* (0.113)	0.260* (0.064)
1961-70	0.400* (0.073)	0.253* (0.070)	0.870* (0.175)	0.753* (0.227)	-0.997* (0.135)	0.410* (0.078)
1971-80	0.765* (0.080)	0.365* (0.078)	1.429* (0.182)	1.443* (0.199)	-0.297* (0.132)	0.623* (0.085)
1981-90	1.084* (0.096)	0.831* (0.084)	2.308* (0.195)	1.812* (0.219)	0.753* (0.135)	1.118* (0.094)
In Part-Time Work	0.510* (0.141)	0.175 (0.115)	-0.065 (0.389)	-0.201 (0.310)	0.798* (0.182)	0.454* (0.106)
Nonwhite	-0.392* (0.179)	-0.358 (0.204)	-0.405 (0.424)	-0.403 (0.514)	0.399 (0.213)	0.504* (0.148)
Yearly Unemployment Rate <sup>b</sup>	-0.074* (0.008)	-0.026* (0.007)	0.019 (0.014)	0.041* (0.017)	-0.093* (0.012)	-0.028* (0.008)
Industry <sup>c</sup> :						
Energy	-0.893* (0.187)	0.382 (0.315)	0.054 (0.334)	-1.280 (1.106)	-0.473* (0.231)	0.039 (0.319)
Extraction	-0.088 (0.144)	-0.319 (0.315)	0.224 (0.342)	-1.437* (0.675)	-0.288 (0.222)	-0.370 (0.225)
Metal Goods	-0.043 (0.116)	0.141 (0.250)	0.540 (0.273)	-0.259 (0.512)	-0.264 (0.184)	-0.342 (0.218)
Light Manufacturing	0.138 (0.118)	0.043 (0.239)	0.708* (0.278)	0.117 (0.467)	-0.031 (0.184)	-0.386 (0.199)
Construction	-0.146 (0.130)	0.090 (0.346)	0.683* (0.285)	-0.133 (0.751)	-0.257 (0.199)	-0.417 (0.375)
Distribution	0.310* (0.116)	0.420 (0.242)	0.829* (0.278)	-0.256 (0.490)	-0.033 (0.185)	-0.347 (0.209)
Transport and Communications	-0.130 (0.145)	0.028 (0.268)	-0.451 (0.384)	-0.753 (0.606)	-0.109 (0.208)	-0.404 (0.241)
Banking and Business	0.068 (0.142)	0.154 (0.247)	-0.144 (0.371)	-0.979 (0.532)	-0.177 (0.225)	-0.331 (0.216)
Public Services	-0.007 (0.133)	0.231 (0.242)	-1.156* (0.414)	-0.984 (0.509)	0.164 (0.198)	-0.158 (0.205)

Table 6a (Continued)

Occupation <sup>d</sup> :						
Managers and Professionals	-0.260*	-0.214	-1.060*	-1.470*	-0.343	-0.119
	(0.145)	(0.140)	(0.298)	(0.553)	(0.186)	(0.126)
Technical Occupations	-0.258*	-0.093	-0.210	-0.737	-0.583*	-0.079
	(0.109)	(0.126)	(0.227)	(0.384)	(0.190)	(0.125)
Clerks and Secretaries	-0.242*	0.088	-0.388*	-0.325	0.032	-0.266*
	(0.086)	(0.082)	(0.186)	(0.201)	(0.126)	(0.088)
Craft	-0.465*	-0.182	-0.371*	-0.334	-0.383*	-0.155
	(0.068)	(0.106)	(0.123)	(0.211)	(0.106)	(0.103)
Personal Services	-0.479*	0.045	-0.755	0.177	-0.385	0.254*
	(0.138)	(0.109)	(0.390)	(0.292)	(0.202)	(0.114)
Sales	0.058	-0.020	-0.861*	-0.273	-0.361	-0.017
	(0.105)	(0.105)	(0.261)	(0.262)	(0.204)	(0.120)
Log Likelihood	-12607	-13893	-2792	-1777	-4921	-10900
Number of Observations	2980	3734	2980	3734	2980	3734
Censored Observations (%)	60.0	49.2	14.1	6.7	23.8	42.4

*Note:* Standard errors are in parentheses. Estimation excludes self-employed because no information on reason of exit is available.

\* Significantly different from zero at 0.05 level.

<sup>a</sup> Date of first entry occurred before 1951 is base category.

<sup>b</sup> Yearly average of administrative unemployment rates. Figures refer to end-of-spell dates. Source: *Labour Market Trends*, January 1996, vol. 104 No. 1, Central Statistical Office, pp. 6-7.

<sup>c</sup> Agriculture, forestry and fishing is base industry.

<sup>d</sup> Plant and machine operatives and others is base occupation.

Table 6b: Determinants of Job Tenure by Gender and Reason of Exit – Fifth Job

Variable	Fifth Job Ended by:					
	Quit		Layoff		Other	
	M	W	M	W	M	W
Age at Fifth Job	0.003 (0.009)	-0.001 (0.009)	0.068* (0.013)	0.082* (0.019)	0.058* (0.011)	0.017* (0.007)
Date of First Entry into the Labour Market <sup>a</sup> :						
1951-60	0.824* (0.132)	0.633* (0.144)	1.333* (0.241)	1.703* (0.352)	0.352 (0.218)	0.376* (0.132)
1961-70	1.212* (0.153)	1.094* (0.154)	2.155* (0.255)	2.224* (0.410)	0.290 (0.283)	0.790* (0.143)
1971-80	2.047* (0.188)	1.618* (0.193)	2.589* (0.320)	2.980* (0.513)	1.488* (0.312)	1.235* (0.177)
1981-90	1.986* (0.259)	2.037* (0.238)	3.125* (0.424)	3.910* (0.630)	2.133* (0.365)	1.663* (0.228)
In Part-Time Work	0.065 (0.404)	-0.079 (0.116)	-0.507 (0.629)	-0.174 (0.250)	0.135 (0.334)	0.041 (0.102)
Nonwhite	0.194 (0.357)	-0.173 (0.509)	-0.568 (0.538)	0.634 (1.032)	0.687 (0.425)	0.176 (0.389)
Yearly Unemployment Rate <sup>b</sup>	-0.211* (0.019)	-0.130* (0.018)	-0.105* (0.026)	-0.065* (0.038)	-0.079* (0.025)	-0.096* (0.015)
Industry <sup>c</sup> :						
Energy	-0.633 (0.371)	-1.010 (0.794)	-0.018 (0.618)	0.352 (1.454)	-0.320 (0.609)	0.194 (0.520)
Extraction	0.056 (0.294)	-0.233 (0.425)	0.142 (0.524)	-0.666 (1.242)	-0.711 (0.550)	-0.001 (0.401)
Metal Goods	-0.154 (0.264)	-0.252 (0.374)	0.299 (0.484)	0.178 (1.063)	-0.395 (0.441)	-0.149 (0.372)
Light Manufacturing	-0.250 (0.273)	-0.311 (0.373)	0.408 (0.484)	0.606 (1.043)	-0.123 (0.444)	-0.234 (0.367)
Construction	0.029 (0.273)	-0.427 (0.677)	0.567 (0.492)	1.232 (1.271)	0.204 (0.445)	0.302 (0.541)
Distribution	0.102 (0.271)	-0.001 (0.358)	0.415 (0.503)	0.188 (1.050)	-0.044 (0.452)	0.022 (0.357)
Transport and Communication	-0.088 (0.283)	-0.775 (0.467)	-0.179 (0.518)	0.207 (1.180)	-0.887 (0.477)	-0.064 (0.417)
Banking and Business	0.022 (0.304)	0.089 (0.377)	-0.132 (0.572)	0.019 (1.095)	-0.297 (0.498)	0.124 (0.378)
Public Services	-0.023 (0.285)	-0.262 (0.353)	-0.604 (0.540)	-0.813 (1.051)	-0.356 (0.443)	0.025 (0.350)

Table 6b (Continued)

Occupation <sup>d</sup> :						
Managers and Professionals	0.028 (0.164)	-0.009 (0.185)	-0.458 (0.249)	0.634 (1.032)	-0.247 (0.238)	-0.363 (0.193)
Technical Occupations	0.221 (0.213)	-0.258 (0.202)	-0.712 (0.402)	-0.588 (0.546)	-0.168 (0.316)	-0.269 (0.182)
Clerks and Secretaries	-0.005 (0.201)	-0.269 (0.144)	-0.294 (0.296)	-0.349 (0.328)	-0.102 (0.313)	-0.100 (0.129)
Craft	0.202 (0.125)	0.075 (0.245)	-0.533* (0.194)	0.437 (0.420)	-0.445* (0.205)	0.316 (0.224)
Personal Services	0.021 (0.227)	-0.031 (0.164)	-1.425* (0.613)	-0.235 (0.438)	0.698* (0.280)	0.119 (0.145)
Sales	0.281 (0.170)	-0.041 (0.182)	-0.466 (0.287)	-0.168 (0.404)	-0.640 (0.380)	0.063 (0.170)
Number of Previous Quits	0.049 (0.064)	0.099 (0.056)	-0.211 (0.109)	0.267* (0.136)	-0.162 (0.092)	-0.006 (0.049)
Quit Last Job	0.031 (0.150)	0.053 (0.131)	0.299 (0.261)	-0.524 (0.318)	-0.763* (0.213)	-0.471* (0.115)
Number of Previous Layoffs	0.098 (0.088)	-0.039 (0.115)	0.154 (0.130)	0.196 (0.257)	-0.142 (0.132)	0.019 (0.101)
Laid-off in Last Job	-0.181 (0.198)	0.236 (0.235)	0.724* (0.283)	0.083 (0.494)	-0.568* (0.271)	-0.621* (0.232)
Number of Previous Part-Time Jobs	0.356* (0.130)	-0.002 (0.066)	-0.103 (0.310)	0.066 (0.145)	0.075 (0.207)	-0.111 (0.059)
Duration of Last Job	-0.003 (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.001 (0.003)	0.0001 (0.001)	-0.002 (0.001)
Duration to Current Job	-0.002 (0.003)	0.0002 (0.001)	0.001 (0.001)	-0.002 (0.003)	-0.015* (0.006)	-0.006* (0.001)
Log Likelihood	-3107	-3167	-1128	-523	-1133	-3659
Number of Observations	968	1239	968	1239	968	1239
Censored Observations	49.3	36.9	15.6	6.1	16.2	43.5

Note: Standard errors are in parentheses. Estimation excludes self-employed because no information on reason of exit is available.

\* Significantly different from zero at 0.05 level.

<sup>a</sup> Date of first entry occurred before 1951 is base category.

<sup>b</sup> Yearly average of administrative unemployment rates. Figures refer to end-of-spell dates. Source: *Labour Market Trends*, January 1996, vol. 104 No. 1, Central Statistical Office, pp. 6-7.

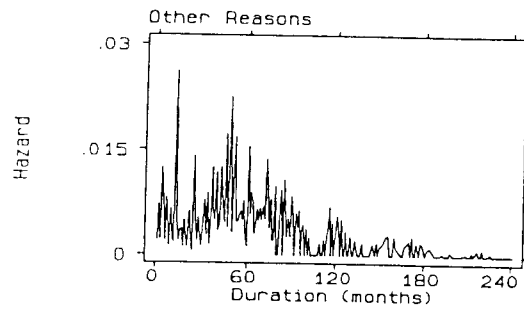
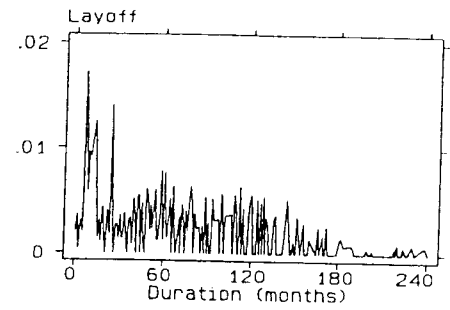
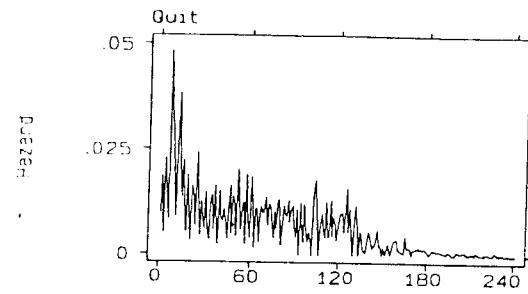
<sup>c</sup> Agriculture, forestry and fishing is base industry.

<sup>d</sup> Plant and machine operatives and others is base occupation.

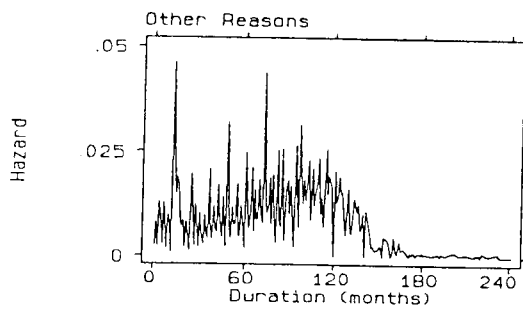
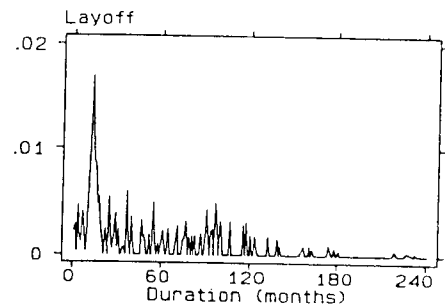
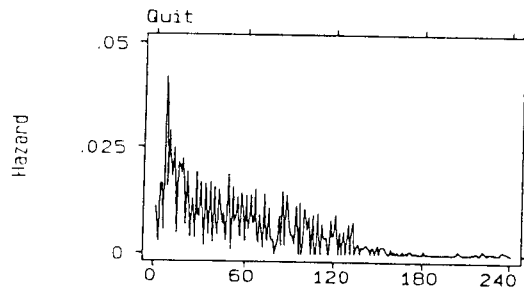
Table A1: Means (and Standard Deviations) of Variables used in Tables 6a and 6b

Variable	FIRST JOB		FIFTH JOB	
	M	W	M	W
Age at First Job	16.65 (2.67)	16.77 (3.09)		
Age at Fifth Job			30.20 (9.41)	31.62 (9.60)
Date of First Entry into the Labour Market:				
1951-60	0.153	0.137	0.199	0.174
1961-70	0.189	0.204	0.232	0.251
1971-80	0.209	0.194	0.154	0.167
1981-90	0.184	0.186	0.056	0.067
In Part-Time Work	0.033	0.056	0.028	0.405
Nonwhite	0.021	0.021	0.021	0.010
Yearly Unemployment Rate	5.79 (4.47)	5.73 (4.64)	6.29 (3.85)	6.34 (3.82)
Industry:				
Energy	0.032	0.011	0.023	0.008
Extraction	0.050	0.032	0.061	0.033
Metal Goods	0.166	0.063	0.177	0.075
Light Manufacturing	0.134	0.186	0.136	0.115
Construction	0.104	0.008	0.122	0.009
Distribution	0.215	0.255	0.166	0.278
Transport and Communications	0.053	0.034	0.080	0.025
Banking and Business	0.069	0.113	0.068	0.089
Public Services	0.116	0.283	0.134	0.354
Occupation:				
Managers and Professionals	0.078	0.058	0.154	0.089
Technical Occupations	0.065	0.061	0.057	0.080
Clerks and Secretaries	0.138	0.360	0.064	0.282
Craft	0.325	0.103	0.249	0.052
Personal Services	0.042	0.110	0.059	0.145
Sales	0.073	0.146	0.092	0.131
Number of Previous Quits			2.594 (1.08)	2.048 (1.13)
Quit Last Job			0.651	0.443
Number of Previous Layoffs			0.547 (0.78)	0.262 (0.54)
Laid-off in Last Job			0.169	0.075
Number of Previous Part-Time Jobs			0.060 (0.34)	0.625 (0.87)
Duration of Last Job (months)			43.00 (54.81)	35.39 (40.90)
Duration to Current Job (months)			4.28 (36.42)	20.84 (46.23)
Censored Observations In:				
Quit Equation (%)	60.0	49.2	49.3	36.9
Layoff Equation (%)	14.1	6.7	15.6	6.1
Other Equation (%)	23.8	42.4	16.2	43.5
Number of Observations	2980	3734	968	1239

First Job  
Men

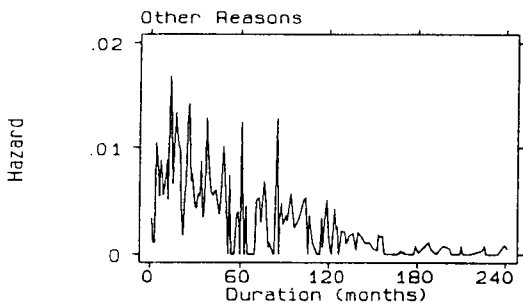
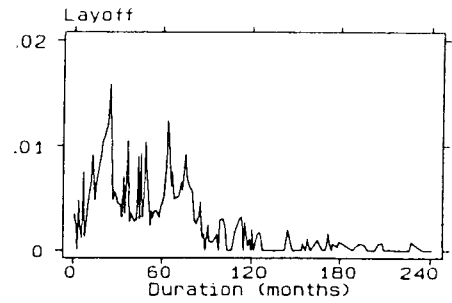
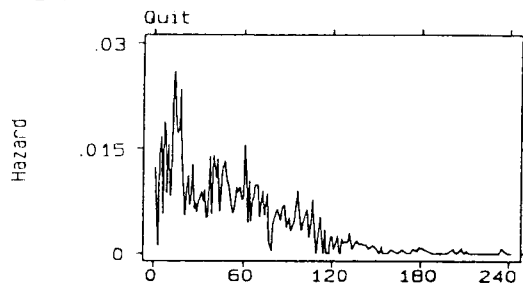


Women

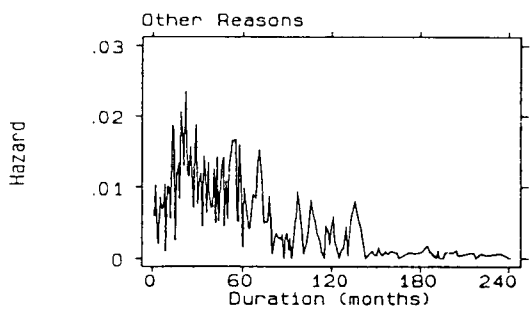
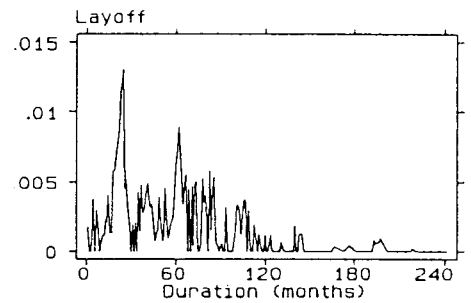
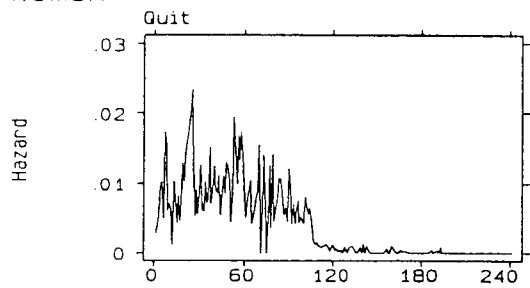


Empirical Hazard Functions  
Figure 1: Job Separation Behaviour by Gender

Fifth Job  
Men



Women



Estimated Hazard Functions  
Figure 2: Job Separation Behaviour by Gender