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Determinants of job separation and occupational mobility in Australia

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Determinants of job separation and occupational mobility in Australia[1]

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ABSTRACT

In the year to February 2002, one in every five of the 9.8 million people who worked in Australia experienced at least one job separation. This paper looks at the determinants of job separation within a stayer/mover framework using individual-level data for Australia. Conditional on job separation the paper also investigates the determinants of job-to-job turnover (differentiated by occupation) and job-to-joblessness turnover (unemployment and exit from the labour force). The results show the importance of the normal demographic variables (age, gender, immigrant status and place of residence) but also qualifications and other labour market variables (hours of work, reason for job separation) for explaining turnover behaviour.

Key words: Job separation, occupational mobility, multinomial logit models

JEL: C25, J24, J63

Introduction

Turnover is an important feature of a dynamic labour market. In Australia, 22 per cent of the 9.8 million people who worked in the year ending February 2002 experienced at least one job separation—left or lost their job—(ABS 2002). Job turnover in European countries ranges between 10 and 20 per cent while in the U.S. it is generally estimated to be higher (Martin 2003). Certain amount of turnover is healthy for an open economy and is needed for optimal allocation labour to jobs.

The consequences of turnover can be large for the enterprise, for the individual and for the wider economy. Firms with high turnover generally invest less in training and have less worker-to-worker transfer of firm-specific knowledge. On the other hand, for some workers, particularly those who are young, voluntary job change can increase earnings and earnings growth (Topel and Ward 1992). For other workers, such as the unskilled, joblessness after job changes can reduce earnings and skills development. Long spells of unemployment can stigmatise workers, even those who are skilled, and can lead to skill atrophy and drop in earnings.

The literature on labour turnover is quite extensive. Many studies have looked at the determinants of job turnover and have used data on individuals for the investigations (e.g. Dolton and Kidd 1998; Booth and Francesconi 2000, Lynch 1992; Lynch 1991; Greenhalgh and Mavrotas 1996; Light and Ureta 1992; Royalty 1998; Donohue 1988;Frederiksen 2008).

This study builds on the existing literature. It considers a two-stage process of job turnover in the Australian labour market. The first stage uses a binomial logit model and investigates the determinants of job separation. The states of the model are job stayers and job changers. It includes a range of personal characteristics, including rich data on migrant status, and labour market variables to explain job separation. This model is similar to the first model estimated in Frederiksen (2008) using data for Denmark.

The second stage uses a multinomial logit model and investigates the transition from a job to six possible labour market states (four employment states distinguished by occupation, unemployment and exit from the labour force) conditional on job separation. Even though this stage has two joblessness transition states, it will be referred as occupational mobility in this paper. In addition to including almost all variables included in the job separation model, this model also includes other labour market variables such duration of previous job and the reason for leaving previous job.

Frederiksen (2008) also reports an extension to the two-state model in which four destination states are defined. He however does not distinguish the job-to-job transitions by occupation and the model he estimates is an unconditional model with stayers as the reference state. Dolton and Kidd (1998) is one of few other studies in which job-to-job transitions are distinguished by occupation.

In this study, the models for job separation and occupational mobility are both estimated using individual level data from the Australian Bureau of Statistics (ABS) *Labour Mobility Survey* for 2002 (ABS 2002).[2] The unit level record data from this survey have generally been underutilised because of reasons of confidentiality. A limited access was provided through a unique arrangement with the ABS. The survey covers the whole population aged 15–69 years and asks respondents about their labour market experience over the previous 12 months.

The results highlight the importance of qualifications as a determinant of job separations for women but not men. In a way this is consistent with the findings of Royalty (1998), although in her study the differences only became evident when a distinction was made between different types of turnover. Other highly significant factors of turnover that the current study finds include hours of

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[2] The survey is representative of the Australian population and is conducted every two years. It gathers information on the labour market experience over the previous year of each individual in the survey. Remote access to the data was obtained via a unique arrangement with the ABS.

work, the reason for job separation, tenure in previous job and immigrant status. The aspects of immigrant status found to be important are the period since arrival in the country and the country of origin. The countries were divided between those that were mainly English-speaking and others. It seems that the high turnover among recent arrivals is a consequence of insufficient knowledge of the local labour market and job shopping while the country of origin is related to English language competency.

The next section summarises the main theoretical models explaining job turnover. Section 3 provides a brief description of the data. Section 4 describes the statistical models used for estimation. Section 5 discusses the modelling results and section 6 contains some conclusions.

Theoretical models explaining job turnover

A number of different theoretical models have been put forward to explain turnover, e.g. human capital, job matching and job search. These models are not mutually exclusive and explanations for various types of turnover are often provided by a combination of them.

The reasons for job separation can be voluntary or involuntary. Workers voluntarily leave jobs to change careers, to retire, for family reasons or because of ill health. Involuntary separation is generally a result of retrenchment which is more likely when there is a downturn in the economy or when a firm restructures.

In the classical human capital model it is argued that firm-specific skills, usually acquired on the job, are likely to be associated with lower turnover because employers and workers share the cost of firm-specific human capital and that the sharing arrangement reduces the likelihood of either party terminating the relationship (Becker 1974; Mincer 1962). Studies of new entrants to the U.S. labour market show training (on- and off-the-job) has a significant effect on job separation rates (Lynch 1991; Lynch 1992). While formal on-the-job training reduced the likelihood of job separation, particularly for young women, off-the-job training tended to increase the likelihood.

Apprenticeship training, which by definition is general though occupation-specific, has however been found to be associated with lower job mobility (Booth and Satchell 1994; Winkelmann 1996). The reason for this may be related to the fact that on-the-job component of apprenticeship training contains significant firm-specific elements.

Job separation has also been explained in the context of job matching (Johnson 1978; Jovanovic 1979a; Jovanovic 1979b; Jovanovic 1984; Viscusi 1980; Miller 1984). In this case the productivity of a particular worker-firm or worker-job match is the key feature of an employment relationship. The quality of this match varies and is only observable after the event and, therefore, the prior probabilities of the match quality for both the worker and the firm are updated over time as a Bayesian learning process. Early in the job the uncertainty in the match quality is likely to be high, but terminating the employment relationship is costly. At this stage, even if there are early signals of a poor match, the chances of job separation are low because the probability of a match turning out to be good is still high. Later as the uncertainty about the updated beliefs on match quality reduces, bad matches are terminated and separation rates increase. What remains then are high quality matches with low separation rates (Farber 1999).

In the job search model, a worker's job search activity involves sampling wage offers from a given distribution (Burdett 1978). The optimal choice is made by comparing the current wage with the 'reservation' wage. The higher is their current wage, the more likely they are to remain in their current job and not embark on a job search. This means that their tendency to separate from a job will decline with age because generally people move up the wage distribution during their working life.

Data description

The *Labour Mobility Survey* in Australia is restricted to individuals who worked at some time in the twelve months prior to the interview. At the interview information is collected about the person's current job, their job twelve months earlier and also about the last job that they ceased working in during the year. Data are also collected about the person's characteristics and about the characteristics of the jobs they held during this period. Data on wages, employers and training are however not collected.

Using these data each person can be classified a stayer, a mover or a new entrant. Persons who have been in their current job for at least a year are considered stayers, while those who have had at least one job separation (either left or lost their job) in the previous year are considered movers. All others are classified as new entrants (including re-entrants). In other words new entrants are those who are in their current job for less than 12 months and the job they currently hold is the only job they have had in the year. The following tables in this section contain description of the data based on population estimates.

Table 1 shows the numbers of male and female movers, stayers and new entrants among persons who held a job in Australia in the year ending February 2002. While the overall job separation rate (percentage of movers) was 21.4 per cent, the rate for females was higher at 22.4 per cent. The actual job separation rates are likely to be higher than these because only one job separation is counted for each person during this period. When making international comparisons of job separation rates one needs to be careful that the basis of the calculations is similar. For example, Frederiksen (2008) reports job separation rates in Denmark at about 30 per cent in 1999 but these rates were for people in the who worked in the private sector of the economy.

Table 1   Stayers, movers and new entrants by sex, persons who worked at sometime in the year to February 2002, Australia

	Stayers		Movers		New entrants		All	
	'000	%	'000	%	'000	%	'000	%
Males	3,997	73.4	1,124	20.6	326	6.0	5,447	100
Females	3,071	69.6	988	22.4	350	7.9	4,409	100
All	7,068	71.7	2,113	21.4	676	6.9	9,856	100

Source: ABS (2002)

Table 2 shows the age distribution of stayers, movers and new entrants. It shows that after an initial increase, the job separation rate declines with age. Surprisingly, there is little difference between the rates for 45–54 year-olds and 55–69 year-olds. One would have expected the rate for the older age group to be higher because of more retirements.

Table 2   Stayers, movers and new entrants by age, persons who worked at sometime in the year to February 2002, Australia

	Stayers		Movers		New entrants		All	
Age (years)	'000	%	'000	%	'000	%	'000	%
15–19	343	43.3	250	31.6	198	25.0	792	100
20–24	636	56.5	376	33.4	114	10.1	1,125	100
25–34	1,590	67.7	610	26.0	148	6.3	2,348	100
35–44	1,842	77.2	429	18.0	115	4.8	2,387	100
45–54	1,727	82.4	296	14.1	72	3.5	2,095	100
55–69	930	83.8	151	13.6	28	2.6	1,110	100
All	7,068	71.7	2,112	21.4	676	6.9	9,856	100

Source: ABS (2002)

Table 3 shows the distributions of stayers, movers and new entrants by occupation group. It shows job separation rates are generally higher for low-skill occupations than high-skill occupations. Low-skill occupations, in particular elementary clerical, sales and service and labourers, also tend to have

relatively higher proportion that is new entrants. Many young people's first experience is often in such occupations (e.g. students working in retail or hospitality).

Table 3   Stayers, movers and new entrants by occupation, persons who worked at sometime in the year to February 2002, Australia

Occupation group	Stayers		Movers		New entrants		All	
	'000	%	'000	%	'000	%	'000	%
Managers & administrators	597	84	105	15	8	1	710	100
Professionals	1,357	78	308	18	78	4	1,743	100
Associate professionals	865	77	210	19	56	5	1,130	100
Tradespersons	974	77	224	18	66	5	1,264	100
Advanced clerical & service	330	79	75	18	14	3	419	100
Inter. clerical, sales & service	1,143	67	430	25	132	8	1,705	100
Inter. Production & transport	606	70	196	23	59	7	861	100
Elem. clerical., sales & service	607	59	280	27	139	14	1,026	100
Labourers	590	59	285	29	122	12	997	100
All	7,068	72	2,112	21	676	7	9,856	100

Source: ABS (2002). The occupation for movers is that of the last job they stopped working in and for stayers and new entrants it is of their current job.

Movers are either job losers or job leavers. Table 4 shows the proportions in these two categories by occupation. It shows that more than a third of all movers were job losers, perhaps reflecting the tight labour market during the data collection period. While the proportion that are job losers are one third or less in most occupations, in the trades, intermediate production and transport and labourers they are nearly a half or more. Female movers are more likely to be job leavers than job losers mainly because many leave the labour force to have families or to care for elderly parents. Only 15 per cent of female movers from managers and administration occupations were job losers compared to 32 per cent of male movers. Relative to males, female movers from trade occupations are also less likely to be job losers. This may partly be due to the male-dominated culture in these occupations, which many females may find difficult to work in.

Table 4   Job losers and job leavers by occupation and sex, persons who separated from a job in the year to February 2002 (%)

Occupation of last job	Males			Females			Persons		
	Job losers	Job leavers	Total	Job losers	Job leavers	Total	Job losers	Job leavers	Total
Managers & adminnistrators	32	68	100	15	85	100	27	73	100
Professionals	35	65	100	31	69	100	33	67	100
Associate professionals	28	72	100	22	78	100	25	75	100
Tradespersons	49	51	100	31	69	100	47	53	100
Adv clerical & service	39	61	100	30	70	100	31	69	100
Inter. clerical, sales & service	35	65	100	33	67	100	33	67	100
Inter. production & transport	48	52	100	43	57	100	47	53	100
Elem. clerical., sales & service	37	63	100	32	68	100	34	66	100
Labourers	55	45	100	57	43	100	56	44	100
All	42	58	100	33	67	100	38	62	100

Source: ABS (2002)

Table 5 shows the destinations of movers. The employment destinations are defined by the relative change in occupations[3]. 'Horizontal' change is when the transition is to another occupation in the same major group; 'downward' change is when it is to another occupation in a lower major group; and 'upward' change is when it is to another occupation in a higher major group. An example of a horizontal transition is when a nurse changes jobs to become a teacher because both nurses and teachers are in the professional group. An example of an upward change is when a waiter (e.g. a student who may have been working part-time while studying) changes job to work as a lawyer because in this case the waiters' occupation is in a lower major group than that of lawyers.

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[3] The occupation is defined at the four-digit level.

Just over 60 per cent of all job separations were job-to-job transitions of which more than half were to another job in the same occupation. Most job-to-joblessness transitions were exits from the labour force.

Job-to-job transitions from higher skill occupations are generally to the same occupation. Job-to-joblessness transitions from lower skill occupations are more likely to unemployment. Only about half of all job separations from elementary clerical, sales and service and labourer occupations were job-to-job transitions.

Table 5   Labour force destination of movers by occupation, persons who separated from a job in the year to February 2002 (%)

	Job-to-job transition				Job-to-joblessness transition		
Occupation of last job	Same occupation	Horizontal	Downward	Upward	Unemp	Out of labour force	All
Managers & administrators	49	3	24	0	10	14	100
Professionals	53	6	7	3	11	20	100
Associate professionals	45	5	16	7	10	18	100
Tradespersons	44	4	14	4	17	17	100
Advanced clerical & service	38	1	13	9	7	32	100
Inter. clerical, sales & service	31	9	10	12	14	23	100
Inter. production & transport	28	15	11	12	18	16	100
Elem. clerical., sales & service	23	3	4	22	20	28	100
Labourers	16	9	0	22	27	26	100
All	35	7	9	11	16	22	100

Source: ABS (2002)

Horizontal: transition to another occupation in the same major group; Downward: transition to another occupation in a lower major occupation group; Upward: transition to another occupation in a higher major occupation group.

Statistical models

The data described above are used to study two labour turnover processes—job separation and occupational mobility. The job separation is modelled as a two-state standard logit model and uses the traditional mover/stayer specification in which the latter state is considered the reference state (Borjas and Rosen 1980).[4] Separate models were estimated for males and females (Blau and Kahn 1981; Light and Ureta 1992; Lynch 1992; Royalty 1998; Frederiksen 2008). Each model included a number of explanatory variables, including age, marital status, state of residence[5], area of residence (metropolitan/regional), migrant status, highest non-school qualification, employee/employer status, full-time/part-time status, occupation and industry.

Frederiksen (2008) points to the bias in the gender variable from omitting variables that affect labour market segregation. The result of omitted variables can result in a false conclusion of statistical gender discrimination. To overcome this Frederiksen includes workplace characteristics in his model for the Danish labour market. Workplace characteristics are however not collected in the *Labour Mobility* data but instead we include occupation and industry variables which are collected.

The occupational mobility, including transitions to joblessness states, is modelled as a six-state multinomial logit model. The six states of this model include four employment and two non-employment states as defined in Table 4. The model is estimated with data on movers and hence any inference from the analysis will be restricted to this sub-population. It is assumed that the error

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[4] Since the focus of this research is on job separation and new entrants are considered neither stayers nor movers they are excluded from the analysis.

[5] Tasmania, the Australian Capital Territory and the Northern Territory are considered as a single entity as the population of each is relatively small.

structures of the job separation model and this model are independent.[6] Once again, separate models are estimated for males and females. All but one of the explanatory variables included in the job separation model are also included in this model. The excluded variable is occupation which in this model has been used to define the dependent variable. Additional explanatory variables included in the specification are the length of tenure in the last job and the reason for ceasing last job (job loser/job leaver).

As the coefficients from a multinomial logit model are often difficult to interpret, the partial or marginal effect of each explanatory variable is presented in this paper. Rather than calculating the marginal effect at the sample averages of the other explanatory variables, the mean of the marginal effects calculated over all individuals in the sample is calculated. Appendix A includes the mathematical description of the logit model and that of calculating the marginal effect.

Results

Job separation

Table A1 in the Appendix B contains the mean marginal effects of the explanatory variables on job separation. These effects were calculated by averaging over all sample values thereby completely purging the marginal effect of each explanatory variable (Verlinda 2006). Due to limited space the following discussion will be limited to results that are significant at 95 per cent or higher level.

The results show age is a significant influence on job separation and its effect is non-linear. The average probability of job separation decreases at a decreasing rate with age for both males and females. The result is consistent with the predictions from the job search model (Burdett 1978).

The higher probability of job separation for younger workers is an indication of the intense job shopping and job search activities early in a person's career. The result could also be a reflection of employers' behaviour. Employers constantly evaluate the match between jobs and employees, and in the case of younger workers because the uncertainty in the match is higher, employer initiated separations are also likely to be higher for them.

The probability of job separation is 20 per cent higher for male who arrived in Australia after 1997 from a main English-speaking country (MESC) than for an Australian-born, and it is 13 per cent higher if he came from a non-MESC. The effect is similar in size and direction for females. As the social security support initially available to new immigrants is limited, means that initially they are more likely to accept jobs that may be less than optimal with respect to their skills and qualification levels. The better English language skills of MESC immigrants enable them quicker access to essential local labour market information and hence allow them to be more intensive in their job search (and shopping). On the other hand, a non-MESC immigrant is more risk averse in terms of job search at least until they have improved their English language skills and have a better understanding of the operation of the local labour market.

The effect of marital status is significant only for females but the size of the effect is relatively small. Married women are more likely to separate from a job than unmarried women. Frederiksen (2008) finds marital status significant for both males and females but he finds the presence of children has an opposite effects—negative for men and positive for women.

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[6] Job separation and job turnover could be specified jointly as a two-equation structural model. However, there are difficulties in doing this with respect to the application in this paper. First, most two-stage structural models have a wage-like equation as part of the second stage which is generally estimated using ordinary least squares. In the application in this paper, the second stage has a non-linear specification with a polychotomous dependent variable. Second, while the occupation is an explanatory variable at the first stage, it is however used to define the dependent variable at the second stage.

Qualifications have a significant effect on job separation for females but not males.[7] For females, the probability of job separation generally increases with the level of qualification. The probability of job separation is more than 5 per cent higher for a female who has a higher education qualification than one who has no post-school qualification. Previous studies indicate conflicting results with respect to the effect of education on job separation. The findings of Blau and Kahn (1981) and Viscusi (1980) are consistent with the findings in this paper—insignificant effect for males and a positive effect for females. Donohue (1988) and Light and Ureta (1992) however find the effect of education to be negative for both males and females. Frederiksen (2008) finds small but opposite effects of education on job separation on males and females. As already noted comparisons between studies are fraught with difficulties because of the differences in the characteristics of the populations being studied. For example, many U.S. studies focus on the turnover experiences of only young people (e.g. Light and Ureta 1992; Royalty 1998; Donohue 1988; Topel and Ward 1992).

Part-time work increases the probability of job separation significantly for both males and females although the size of the effect is smaller for females. The probability of job separation is 11 per cent higher for a male part-time worker and 4 per cent higher for a female part-time worker than for a full-time worker. The larger effect for males could be because of the higher incidence of casual contracts, which are much easier to terminate, among male part-time workers than female part-time workers. For example, in 2001, 64 per cent of male part-time workers were on a casual contract compared to 52 per cent of female part-time workers (ABS 2001).

State of residence is also significant in explaining job separation although the results are rather mixed. For example, the probability of job separation significantly different only for males in Queensland compared to the reference state (New South Wales).

Occupation is significant in explaining job separation for both sexes. The average probability of job separation is generally higher for those employed in low-skill occupations. Although the association between occupation and qualification level is generally positive, the effect of these variables on job separation seems to be dissimilar. Further research examining the interaction effects may provide an explanation for the differences.

Occupation is significant in explaining job separation for both sexes. The probability of job separation is generally higher for people employed in low-skill occupations.

The effect of industry on job separation is mixed. Females employed in the education and health sectors have a significantly lower probability of job separation than those employed in the reference industry group (culture recreation and personal services). A large percentage of jobs in these two sectors are likely to be public sector jobs which have relatively high job security. Furthermore, the sectors include some of the largest feminised occupations of teachers and nurses. These occupations also happen to have high union density, a factor which is known to be associated with low levels of job separation (Booth and Francesconi 2000; Martin 2003) . Over the past decade, to overcome teacher and nurse shortages, policies have been put in place to improve retention in these occupations. These measures may also have had an effect on job separation.

Figure A1 in Appendix B shows the changes in the probability of job separation by age for four typical workers defined by sex and hours worked. It provides an alternative way to view the results from a multinomial logit model (Schmidt and Strauss 1975). For example, the probability of job separation is 15 percentage points higher for a typical male aged 25 years working part-time compared to one who is working full-time. This difference declines with age to about 8 percentage points for those aged 65 years. The differences in the probability for females are relatively smaller and reduce with age to almost zero at age 50 years.

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[7] Stromback (1988)) reported lower job separation rates among both male and female Australians with qualifications. However his analysis did not control for other factors.

In contrast, Frederiksen (2008) finds the effect of age on the probability of job separation to be U-shaped for the private sector of the Danish labour market with minimum probability at about 45 years. It is unclear why the results in current paper are at variance those of Frederiksen but may it may have something to do with the structural and institutional differences between the Australian and the Danish labour markets. Moreover the data used in the two studies have quite different scopes. As will be shown below, when job separations are differentiated by destination then the U shaped pattern does emerge but only for those who exit the labour force.

Occupational mobility

The occupational mobility model describes job-to-job and job-to-joblessness transitions of people separating from jobs. It is specified as a six-state multinomial logit model, with four employment states and two non-employment states. The six states are defined in section 3. Separate models are estimated for males and females.

The models include all explanatory variables included in the job separation model, except occupation. Occupation is used to define the dependent variable in this model. Additional explanatory variables included in the model are the length of tenure in the last job and the reason for job separation (job loser/job leaver). The results of estimating these models are included in Tables A2 and A3 in the Appendix B. They contain the mean marginal effects of the explanatory variables.

The results show age has a significant effect on occupational mobility but its size and direction varies with the destination state. The probability of job-to-job transition to the same occupation follows an inverted U-shape when plotted against age. In contrast, the probability of leaving the labour force is U-shaped. This means that people in the middle of the age distribution have the highest probability of transition to the same occupation and lowest probability of leaving the labour force.

The interrelationship between the immigrant status and occupational mobility are complex. Once again, the results vary by gender, time of arrival in Australia and the country of origin. The pattern of occupational mobility of immigrants from MESCs is generally similar to that of the Australian-born but that of non-MESC immigrants is different in a number of respects.

Non-MESC males are generally less likely to experience 'downward' as well as an 'upward' occupational change and they are more likely to become unemployed.

Non-MESC females who arrived after 1997 are less likely to stay in the same occupation after job separation compared to the Australian-born. They are also more likely to leave the labour force but their behaviour in terms of transition to unemployment is not any different to that of the Australian-born. Those who arrived prior to 1997 are however more likely to become unemployed.

These results indicate that immigrants do tend to move up the occupational ladder following a period of adjustment after arrival. These adjustments are more significant for non-MESC immigrants and are generally related to improvement in their English language skills and the knowledge of the local labour market. The results also reflect the changing nature of the Australian migration programme, which has increasingly become skill-focussed over the last decade. The consequence of this is that the average skill level of migrants entering Australia has increased.

Unmarried men are less likely than married men to stay in the same occupation following job separation and they are more likely to become unemployed. In contrast, unmarried women are more likely to make 'horizontal' and 'downward' occupational changes than married women. They are also more likely to become unemployed and less likely to leave the labour force. The latter result is clearly related to the fact that married women are more likely to have children and thus more likely to leave the labour force.

The state of residence is generally not significant in explaining occupational mobility. It is only significant with respect to transition to unemployment for females. The reasons for these state differences are unclear but may be related to the peculiarities of the local labour market.

Males and females living in metropolitan areas are more likely to stay in the same occupation after job separation than those in non-metropolitan areas. Males in non-metropolitan areas are more likely to change jobs to another occupation in the same major group. This may be a consequence of 'thin' markets in regional areas.

Qualifications are significant in explaining some types of occupational mobility for both males and females. In general, persons holding higher level qualifications are more likely to make a job-to-job change in the same occupation. Males with qualifications are less likely to become unemployed and women with qualifications are less likely to leave the labour force.

Surprisingly, qualifications have no significant effect on 'upward' occupational mobility for males. The effect is only significant at the bachelor level for females.

Finally, the effect of certificate I/II level qualifications is not significant on occupational mobility, except in terms of leaving the labour force. A person holding a certificate I/II qualifications has a significantly lower probability of leaving the labour force than one who has no qualifications. An implication of this could be that qualifications, even those at the lowest level, are important in keeping people attached to the labour force.

These results suggest the association between education and job turnover is even more complex than reported by Royalty (1998) who found that the gender difference in the turnover behaviour was mainly because of the behaviour of less educated women. This extra level of complexity becomes evident when education is distinguished by different levels of qualification and a distinction is made between different types of job-to-job and job-to-joblessness turnover. For example, without differentiating between the different types of joblessness states, it would not have been possible to show the significance of qualifications on women's exit from the labour force and their insignificance in terms of transition to unemployment.

A person in a part-time job is less likely to make a job-to-job transition in the same occupation than one in a full-time job—the probability of transition is 18 per cent lower for a male and 14 per cent lower for a female. On the other hand, part-time male workers are more likely to make 'horizontal' and 'upward' job changes. They are also less likely to become unemployed, although, like females, they are more likely to leave the labour force.

Length of tenure in the previous job is significant in explaining some aspects of occupational mobility. Short tenure in the previous job for men is generally associated with a higher probability of unemployment but a lower probability of leaving the labour force. For women, it is associated with higher probability of remaining in the same occupation and lower probability of leaving the labour force.

Finally, the reason for job separation is highly significant in explaining occupational mobility of both males and females. Job losers are less likely to find employment in the same occupation after job separation than job leavers. They are also more likely to become unemployed and leave the labour force. Male job losers also have a lower probability of an 'upward' occupational change. These results are consistent with those in Theodossiou (2002) who also investigated the factors affecting job-to-joblessness turnover by reason for job separation. Booth and Francesconi (2000) however find only small gender differences in the average job leaving (worker initiated) and job promotion probabilities but they find layoff (employer initiated) probabilities significantly higher for women.

Table 5 shows the predicted probabilities of transition to the various destination states for eight 'typical' workers defined by sex, hours of work and reason for ceasing last job. As before, these probabilities are calculated by fixing all other explanatory variables at their sample averages. The

table shows the gender differences in the probability of joblessness are generally substantial, with higher probability of joblessness for females. Only in the case of job losers from full-time jobs is the difference in the probability relatively insignificant. The probability of joblessness for a male who lost his part-time job is 57.2 per cent compared to a 64.3 per cent for a female. These probabilities are substantially lower for a person who voluntarily leaves a full-time job—17 per cent for males and 24.5 per cent for females.

Table 5 Predicted probabilities of occupational mobility for males and females by hours worked and reason for job separation

	Occupational change					Out of labour force
	No change	Horizontal change	Downward change	Upward change	Unemployment	
Male	*0.380*	*0.071*	*0.114*	*0.124*	*0.168*	*0.143*
Job leaver, full-time	0.562	0.057	0.095	0.117	0.091	0.079
Job loser, full-time	0.250	0.059	0.116	0.070	0.338	0.167
Job leaver, part-time	0.314	0.090	0.099	0.245	0.081	0.171
Job loser, part-time	0.119	0.080	0.103	0.126	0.260	0.312
Female	*0.335*	*0.080*	*0.102*	*0.098*	*0.140*	*0.245*
Job leaver, full-time	0.486	0.087	0.096	0.086	0.086	0.159
Job loser, full-time	0.229	0.068	0.101	0.085	0.259	0.259
Job leaver, part-time	0.315	0.077	0.091	0.119	0.078	0.321
Job loser, part-time	0.126	0.051	0.081	0.099	0.199	0.444

The variations in the probabilities in Table 5 by age are plotted in Figures A2 to A13 in Appendix B. The figures show that occupational changes are more likely for younger people (see Figures A5-A9), while a job change in the same occupation is most likely for a person aged about 45 years (see Figures A2 and A3). In particular, an upward occupational job change is most likely for a person aged between 20 and 25 years, which is when many students leave their student jobs for jobs more closely related to their completed qualifications (see Figures A8 and A9).

Figure A10 shows that the probability of unemployment is almost constant for males until about age 50 years, although it is much higher for job losers than job leavers. For females, the probability of unemployment gradually increases until about age 27 years before declining (see Figure A11). Finally, irrespective of gender, hours of work or reason for ceasing job persons aged about 35 years are least likely to leave the labour force (see Figures A12 and A13).

Conclusion

This paper has investigated the determinants of recent job turnover in Australia. Unlike many other studies on turnover, this study considered turnover as a two-stage sequential process—job separation followed by occupational mobility. The latter process included transition to employment as well as unemployment states.

The analysis demonstrates the importance of human capital, hours of work and reason for job separation in the explanation of individual turnover behaviour. Some of these results are consistent with economic theories on turnover proposed in the literature and also empirical findings from previous studies.

The study shows the reason for differential effect of qualifications on job separation for men and women needs further investigation. Qualifications tend to increase the probability of job separation for women. A plausible explanation suggested for this by Royalty (1998) is that education increases the outside options available to women, options that may be more variable but potentially more lucrative. Qualifications also reduce the probability of unemployment for men and they improve the attachment to the labour force for women. Other studies have shown that unemployment experiences tend to lead to further episodes of joblessness (e.g. Theodossiou 2002; Heckman and

Borjas 1990). Thus qualifications, even at the lowest level, has the potential to reduce the risk of 'scarring' and skill atrophy which can occur after frequent bouts of joblessness.

An aspect of the results in this paper that have not been investigated elsewhere relate to the effect of immigrant status of an individual on job turnover. This is important for Australia as it has a significant migration programme. The analysis showed the importance of looking at different dimensions of immigrant status—time of arrival and country of origin—in determining job turnover. Although the country of origin could be signalling discrimination against migrants from non-MESC in the labour market, it is more likely to be related to English language skills. This is demonstrated by the fact that the labour market position of migrants from non-MESC migrants improve over time.

This study has reiterated the importance of differentiating between different job and non-job destinations when studying labour turnover. It has identified the characteristics of people and jobs that are associated with higher job turnover. Given that people who have a high probability of turnover are likely to be sorted into jobs with lower training or capital intensity (Barron, Black and Loewenstein 1993), the results from this research provide useful information for public policy on training and education.

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Appendix A

The mathematical description of the multinomial logit model can be found in many standard texts on discrete choice models (e.g. Wooldridge 2002). In a multinomial logistic specification with P states the probability of transition to transition to state m is given by:

$$P(y = m \mid \mathbf{x}) = \exp(\mathbf{x\beta}_m) \left/ \left[1 + \sum_{j=1}^{P-1} \exp(\mathbf{x\beta}_j) \right] \right. \tag{1}$$

and the probability of transition to the base state n by:

$$P(y = n \mid \mathbf{x}) = 1 \left/ \left[1 + \sum_{j=1}^{P-1} \exp(\mathbf{x\beta}_j) \right] \right. \tag{2}$$

where $\mathbf{x}$ represents a vector of demographic, educational and labour market explanatory variables and β is a vector of associated parameters. $P = 2$ for the job separation model and it equals 6 for the occupational mobility model. The vector $\mathbf{x}$ of explanatory variables is also different for each model. Both models are estimated using maximum likelihood.

The coefficients from such a model are difficult to interpret. The rate of change of the probability of an outcome due to a given explanatory variable x_k depends not only on the coefficient β_k, but also on the level of the probability from which the change is measured. There is no direct correspondence between any given coefficient's magnitude (and even the sign in the case of multinomial model) and that of its associated partial derivative (Dolton and Kidd 1998; Greene 2003). In other words it depends on the value of each x_k that is used to calculate the probability level.

Therefore the partial or marginal effect is often calculated. It is calculated at the sample averages of the other explanatory variables. However when there are a large number of categorical explanatory variables, an individual with the average characteristics may not be realistic. More recently the mean of the marginal effect calculated over all individuals in the sample have been reported as an alternative statistic (Greene 2003; Wilkins 2004). The mean marginal provides an estimate of the average change in the probability of making a transition from the base state to another given state for a small change in an explanatory with all other variables remaining constant.

The marginal effect of a continuous variable x_k on outcome m, for a person i with characteristic vector $\mathbf{x}^i$, is given by:

$$M_{m,k}^i = \frac{\partial P(y = m \mid \mathbf{x}^i)}{\partial x_k} = P(y = m \mid \mathbf{x}^i) \left[\beta_{k,m} - \sum_{j=1}^{P} \beta_{k,j} P(y = j \mid \mathbf{x}^i) \right] \tag{3}$$

and the mean marginal is simply the average over the whole sample:

$$\overline{M}_{1,k} = (1/n) \sum_{i=1}^{P} M_{m,k}^i \tag{4}$$

where n is the sample size. The mean marginal values across outcome categories sum to zero, and therefore the mean marginal for the base state outcome is equal to $-\overline{M}_{1,k}$.

The marginal[8] effect of a discrete variable x_k, taking the value a, on outcome m, for a person i with characteristic vector $\mathbf{x}_k^i$ is given by:

$$M_{m,k}^i = \mathrm{P}(y = m \mid \mathbf{x}_k^{\mathbf{i}}, x_k = a) - \mathrm{P}(y = m \mid \mathbf{x}_k^{\mathbf{i}}, x_k = b) \tag{5}$$

where $\mathbf{x}_k^i$ excludes the variable x_k and b is the reference category relative to which all other effects are evaluated. The mean marginal is calculated using (4).

Boot strap methods are generally used to calculate the standard error of the mean marginal statistic.

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[8] Strictly speaking this in not a marginal effect as it measures the effect of a categorical variable changing from one category to another.

Appendix B

Table A1   Mean marginal effects: job separation

Explanatory variable	Males		Females	
	Estimate	Std. error[c]	Estimate	Std. error
Age	-0.0094**	0.0018	-0.0115**	0.0022
Age^2	0.0001**	0.0000	0.0001**	0.0000
Arrival after 1997 & MESC[a]	0.1971**	0.0354	0.2153**	0.0410
Arrival 1988-1997 & MESC	0.0215	0.0244	0.0053	0.0286
Arrival before 1988 & MESC	0.0235*	0.0132	0.0145	0.0155
Arrival after 1997 & non-MESC	0.1274**	0.0342	0.1352**	0.0405
Arrival 1988-1997 & non-MESC	0.0060	0.0180	-0.0139	0.0199
Arrival before 1988 & non-MESC	-0.0043	0.0122	-0.0149	0.0146
Born in Australia (ref)				
Not married	0.0136*	0.0084	0.0230**	0.0087
Married (ref)				
VIC	-0.0022	0.0090	0.0096	0.0098
QLD	0.0331**	0.0096	0.0569**	0.0107
SA	-0.0025	0.0110	0.0226*	0.0124
WA	0.0095	0.0108	0.0399*	0.0117
TAS, NT, ACT	0.0118	0.0111	0.0393**	0.0133
NSW (ref)				
Non-metropolitan	-0.0017	0.0076	-0.0162*	0.0085
Metropolitan (ref)				
Postgraduate	0.0128	0.0173	0.0624**	0.0206
Bachelor degree	0.0215*	0.0127	0.0546**	0.0126
Adv. diploma or diploma	0.0004	0.0141	0.0497**	0.0139
Certificate III/IV	0.0133	0.0095	0.0589**	0.0150
Certificate I/II	0.0203	0.0143	0.0287**	0.0116
No post-school qualification (ref)				
Non-employee	-0.1067**	0.0082	-0.1050**	0.0127
Employee (ref)				
Part-time	0.1128**	0.0120	0.0388**	0.0079
Full-time (ref)				
Managers & administrators	-0.0980**	0.0168	-0.0818**	0.0252
Professionals	-0.0952**	0.0163	-0.1113**	0.0188
Associate professionals	-0.0929**	0.0153	-0.0634**	0.0189
Trades	-0.0907**	0.0139	-0.0822**	0.0270
Advanced clerical & service	-0.0634*	0.0382	-0.1066**	0.0189
Intermediate clerical, sales & service	-0.0562**	0.0155	-0.0329**	0.0156
Intermediate production & transport	-0.0393**	0.0146	-0.0564*	0.0285
Elementary clerical, sales & service	-0.0774**	0.0163	-0.0615**	0.0178
Labourers (ref)				
Agriculture & mining	0.0249	0.0186	0.0264	0.0273
Manufacturing	-0.0139	0.0150	0.0314	0.0204
Utilities & construction	0.0322**	0.0155	-0.0520*	0.0269
Wholesale trade	0.0322*	0.0192	0.0030	0.0247
Retail trade & accommodation	0.0305**	0.0152	-0.0008	0.0156
Transport & storage	0.0373**	0.0187	-0.0006	0.0271
Property, business[b] & communication	0.0650**	0.0157	0.0294*	0.0171
Government admin. & defence	-0.0118	0.0189	-0.0270	0.0221
Education	0.0056	0.0208	-0.0384**	0.0184
Health & community services	-0.0061	0.0208	-0.0589**	0.0166
Culture, rec. & personal (ref)				
Sample size	17,457		14,718	
Per cent movers in sample	21.8		24.4	
Likelihood ratio	1409.0 (df = 40)		1061.6 (df = 40)	
Generalised R^2	0.0775		0.0696	
Maximum re-scaled R^2	0.1191		0.1038	

*90% of bootstrap intervals exclude zero.

** 95% of bootstrap intervals exclude zero.

(a) Includes the UK, Ireland, Canada, New Zealand, South Africa and USA

(b) Includes finance and insurance.

(c) Bootstrap standard errors based on approximately 800 replications.

Table A2   Mean marginal effects: job turnover—males

	Occupational change								Unemployment		Exit from labour force	
	No change		Horizontal change		Downward change		Upward change					
Explanatory variable	Est.	Std. err.[b]	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.
Age	0.0211**	0.0041	0.0032	0.0022	0.0035	0.0029	0.0016	0.0029	-0.0032	0.0032	-0.0262**	0.0027
Age2	-0.0003**	0.0001	-0.0001*	0.0000	-0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004**	0.0000
Arrival after 1997 & MESC[a]	-0.0703	0.0440	0.0675	0.0431	0.0065	0.0367	0.0534	0.0435	0.0038	0.0455	-0.0609	0.0379
Arrival 1988-1997 & MESC	-0.0266	0.0479	0.0540	0.0431	0.0352	0.0470	-0.0228	0.0415	-0.0159	0.0409	-0.0239	0.0417
Arrival prior 1988 & MESC	-0.0372	0.0296	0.0059	0.0174	0.0119	0.0226	0.0043	0.0239	0.0195	0.0278	-0.0045	0.0249
Arr. after 1997 & non-MESC	-0.0818	0.0500	0.0094	0.0305	0.0170	0.0386	-0.0536**	0.0268	0.0419	0.0484	0.0672	0.0531
Arr. 1988-97 & non-MESC	-0.0478	0.0397	0.0177	0.0261	-0.0614**	0.0192	-0.0029	0.0345	0.0520	0.0393	0.0423	0.0370
Arr. prior '88 & non-MESC	0.0063	0.0306	0.0077	0.0198	-0.0314*	0.0177	-0.0610**	0.0207	0.0516*	0.0297	0.0268	0.0258
Born in Australia (ref)												
Not married	-0.0745**	0.0178	-0.0011	0.0104	-0.0171	0.0131	0.0183	0.0133	0.0588**	0.0156	0.0156	0.0152
Married (ref)												
VIC	0.0183	0.0218	-0.0096	0.0126	0.0239	0.0155	0.0037	0.0156	-0.0244	0.0195	-0.0118	0.0179
QLD	0.0073	0.0221	-0.0011	0.0127	0.0039	0.0146	0.0021	0.0160	-0.0037	0.0190	-0.0084	0.0173
SA	-0.0195	0.0273	0.0122	0.0164	0.0082	0.0178	-0.0042	0.0200	-0.0179	0.0245	0.0212	0.0234
WA	0.0131	0.0247	-0.0057	0.0141	0.0119	0.0177	0.0017	0.0178	-0.0152	0.0207	-0.0058	0.0189
TAS, NT, ACT	0.0342	0.0292	-0.0199	0.0139	0.0269	0.0194	0.0205	0.0210	-0.0636**	0.0209	0.0020	0.0208
NSW (ref)												
Non-metropolitan	-0.0655**	0.0177	0.0227**	0.0106	0.0073	0.0120	-0.0025	0.0128	0.0238*	0.0145	0.0141	0.0138
Metropolitan (ref)												
Postgraduate	0.0702*	0.0414	0.0390	0.0348	-0.0040	0.0283	0.0176	0.0392	-0.1049**	0.0291	-0.0178	0.0369
Bachelor degree	0.1159**	0.0268	-0.0154	0.0145	-0.0025	0.0178	0.0307	0.0207	-0.1061**	0.0206	-0.0226	0.0223
Adv. diploma or diploma	0.0800**	0.0339	-0.0303	0.0175	-0.0045	0.0232	0.0423	0.0286	-0.0540*	0.0286	-0.0335	0.0268
Certificate III/IV	0.0733**	0.0198	-0.0215**	0.0102	0.0155	0.0145	0.0086	0.0148	-0.0638**	0.0151	-0.0121	0.0169
Certificate I/II	-0.0149	0.0314	-0.0133	0.0170	0.0740**	0.0266	0.0391	0.0245	-0.0140	0.0266	-0.0709**	0.0244
No post-school qual. (ref)												
Non-employee	0.0144	0.0297	-0.0159	0.0148	-0.0039	0.0217	-0.0106	0.0232	-0.0328	0.0245	0.0488**	0.0259
Employee (ref)												
Part-time	-0.1797**	0.0197	0.0256**	0.0123	-0.0033	0.0146	0.0938**	0.0164	-0.0429**	0.0150	0.1065**	0.0168
Full-time (ref)												
Agriculture & mining	0.0017	0.0452	-0.0136	0.0261	0.0251	0.0216	0.0372	0.0347	-0.0575	0.0381	0.0072	0.0345
Manufacturing	-0.0491	0.0378	-0.0107	0.0238	0.0831**	0.0203	0.0192	0.0275	-0.0215	0.0351	-0.0211	0.0293
Utilities & construction	0.0294	0.0401	-0.0133	0.0251	0.0503**	0.0191	-0.0008	0.0269	-0.0474	0.0365	-0.0182	0.0312
Wholesale trade	-0.0012	0.0440	-0.0182	0.0263	0.1103**	0.0274	0.0186	0.0330	-0.0884**	0.0389	-0.0210	0.0352
Retail & accommodation	-0.0380	0.0363	-0.0439**	0.0216	0.0887**	0.0189	0.0332	0.0247	-0.0423	0.0343	0.0024	0.0272
Transport & storage	-0.0499	0.0458	0.0241	0.0302	0.0749**	0.0247	0.0600*	0.0335	-0.0645	0.0402	-0.0446	0.0322
Prop., business[b] & comm.	0.0316	0.0357	-0.0328	0.0222	0.0523**	0.0174	0.0046	0.0254	-0.0289	0.0355	-0.0268	0.0287
Government & defence	-0.1097**	0.0477	0.0216	0.0371	0.0807**	0.0305	0.0226	0.0406	-0.0703	0.0486	0.0553*	0.0439
Education	-0.0753	0.0523	-0.0097	0.0339	0.0680**	0.0333	-0.0555*	0.0315	-0.0165	0.0555	0.0891	0.0504
Health & community services	0.1271**	0.0577	-0.0508**	0.0267	0.0746**	0.0336	-0.0883**	0.0265	-0.1021**	0.0465	0.0395	0.0465
Culture, rec. & personal (ref)												

Table A2   Mean marginal effects: job turnover—males (contd.)

| | Occupational change | | | | | | | | Unemployment | | Exit from labour force | |
| Explanatory variable | No change | | Horizontal change | | Downward change | | Upward change | | | | | |
	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.
Last job tenure: <= 1 mths	-0.0058	0.0317	-0.0059	0.0166	-0.0451**	0.0198	-0.0158	0.0222	0.1096**	0.0270	-0.0370*	0.0228
Last job tenure: 2 to 3 mths	-0.0228*	0.0316	-0.0031	0.0165	-0.0407**	0.0187	-0.0097	0.0191	0.0908**	0.0262	-0.0145	0.0229
Last job tenure: 3 to 6 mths	-0.0321	0.0210	0.0037	0.0128	-0.0111	0.0167	0.0299	0.0181	0.0862**	0.0181	-0.0766**	0.0184
Last job tenure: 6 to 12 mths	0.0326	0.0297	-0.0010	0.0174	-0.0165	0.0191	-0.0167	0.0202	0.0404	0.0246	-0.0389	0.0252
Last job tenure: 1 to 2 yrs	0.0243	0.0212	-0.0079	0.0119	-0.0039	0.0161	0.0096	0.0160	0.0450**	0.0186	-0.0671**	0.0184
Last job tenure: >2 yrs (ref)												
Job loser	-0.2455**	0.0160	-0.0017	0.0092	0.0202*	0.0120	-0.0661**	0.0118	0.2029**	0.0141	0.0901**	0.0127
Job leaver (ref)												
Sample size (n = 3770)	1374		233		379		457		693		634	
Per cent in sample	36.4		6.2		10.1		12.1		18.4		16.8	
Likelihood ratio (df = 190)	1775.1											
Generalised R^2	0.3755											
Maximum re-scaled R^2	0.3904											

* 90% of bootstrap intervals exclude zero.

** 95% of bootstrap intervals exclude zero.

(a) Includes the UK, Ireland, Canada, New Zealand, South Africa and USA

(b) Includes finance and insurance.

(c) Bootstrap standard errors based on approximately 800 replications.

Table A3   Mean marginal effects: job turnover—females

	Occupational change								Unemployment		Exit from labour force	
	No change		Horizontal change		Downward change		Upward change					
Explanatory variable	Est.	Std. err.[c]	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.
Age	0.0153**	0.0045	0.0009	0.0025	0.0032	0.0028	0.0007	0.0030	0.0031	0.0030	-0.0233**	0.0066
Age^2	-0.0002	0.0001	0.0000	0.0000	-0.0001	0.0000	0.0000	0.0000	-0.0001	0.0000	0.0003**	0.0001
Arrival after 1997 & MESC[a]	-0.0016	0.0551	0.0744**	0.0488	0.0104	0.0413	-0.0041	0.0397	-0.0116	0.0456	-0.0676	0.0955
Arrival 1988-1997 & MESC	0.0602	0.0654	-0.0617	0.0144	-0.0115	0.0328	0.0066	0.0438	-0.0278	0.0479	0.0342	0.0985
Arrival prior 1988 & MESC	-0.0090	0.0344	-0.0047	0.0204	0.0429*	0.0253	-0.0428*	0.0213	-0.0101	0.0247	0.0236	0.0558
Arr. after 1997 & non-MESC	-0.1161**	0.0476	-0.0227	0.0316	-0.0059	0.0402	-0.0244	0.0375	0.0213	0.0483	0.1478**	0.1145
Arr. 1988-97 & non-MESC	-0.0176	0.0452	-0.0069	0.0270	-0.0203	0.0248	-0.0149	0.0279	0.0749**	0.0340	-0.0151	0.0787
Arr. prior '88 & non-MESC	-0.0322	0.0322	-0.0065	0.0207	0.0146	0.0234	-0.0343	0.0220	0.0525**	0.0289	0.0058	0.0555
Born in Australia (ref)												
Not married	0.0245	0.0169	0.0285**	0.0103	0.0230**	0.0107	0.0167	0.0121	0.0685**	0.0131	-0.1611**	0.0312
Married (ref)												
VIC	-0.0026	0.0228	-0.0045	0.0140	0.0161	0.0159	-0.0052	0.0160	0.0377**	0.0176	-0.0414*	0.0406
QLD	0.0192	0.0238	-0.0123	0.0142	-0.0043	0.0143	0.0039	0.0163	0.0277*	0.0171	-0.0342	0.0407
SA	-0.0353	0.0281	0.0074	0.0178	0.0267	0.0199	-0.0038	0.0193	-0.0048	0.0207	0.0098	0.0516
WA	-0.0104	0.0256	-0.0100	0.0155	0.0042	0.0170	-0.0053	0.0177	0.0388**	0.0191	-0.0174	0.0443
TAS, NT, ACT	0.0165	0.0284	-0.0055	0.0178	-0.0080	0.0173	0.0121	0.0203	-0.0035	0.0189	-0.0115	0.0485
NSW (ref)												
Non-metropolitan	-0.0586**	0.0187	0.0054	0.0106	0.0201*	0.0125	0.0136	0.0130	0.0226	0.0140	-0.0032	0.0306
Metropolitan (ref)												
Postgraduate	0.1639**	0.0433	-0.0484**	0.0154	-0.0403*	0.0199	0.0656*	0.0385	-0.0128	0.0317	-0.1279**	0.0702
Bachelor degree	0.0941**	0.0236	-0.0222*	0.0121	-0.0244*	0.0131	0.0870**	0.0195	-0.0185	0.0176	-0.1159**	0.0431
Adv. diploma or diploma	0.0854**	0.0307	-0.0164	0.0160	0.0180	0.0210	0.0240	0.0201	-0.0305	0.0199	-0.0805**	0.0531
Certificate III/IV	0.0033	0.0299	0.0060	0.0197	0.0441**	0.0223	0.0287	0.0207	0.0032	0.0228	-0.0852**	0.0447
Certificate I/II	0.0210	0.0249	0.0322*	0.0188	0.0204	0.0180	0.0180	0.0171	-0.0270	0.0180	-0.0646**	0.0480
No post-school qual. (ref)												
Non-employee	0.0121	0.0366	-0.0420	0.0172	0.0355	0.0306	-0.0454**	0.0204	0.0123	0.0303	0.0276	0.0637
Employee (ref)												
Part-time	-0.1401**	0.0160	-0.0122	0.0099	-0.0090	0.0117	0.0289**	0.0117	-0.0222*	0.0126	0.1547**	0.0331
Full-time (ref)												
Agriculture & mining	-0.0381	0.0558	-0.0063	0.0343	-0.0140	0.0356	0.0870**	0.0411	0.0133	0.0340	-0.0419	0.0855
Manufacturing	-0.1382**	0.0392	-0.0220	0.0275	-0.0024	0.0245	0.0794**	0.0271	0.0255	0.0281	0.0578	0.0702
Utilities & construction	0.0495	0.0735	-0.0230	0.0358	-0.0166	0.0408	0.0231	0.0420	0.0432	0.0473	-0.0761	0.0878
Wholesale trade	-0.0973*	0.0517	0.0144	0.0360	-0.0409	0.0282	0.0787**	0.0382	0.0603	0.0419	-0.0154	0.0877
Retail & accommodation	-0.0654**	0.0340	-0.0274	0.0222	-0.0063	0.0209	0.1070**	0.0187	0.0687**	0.0222	-0.0766**	0.0595
Transport & storage	-0.0734	0.0541	0.0322	0.0410	0.0491	0.0406	0.0948**	0.0417	-0.0009	0.0357	-0.1018*	0.0824
Prop., business[b] & comm.	-0.0241	0.0345	-0.0165	0.0228	0.0168	0.0225	0.0278	0.0177	0.0296	0.0224	-0.0336	0.0621
Government & defence	-0.1036**	0.0465	0.0296	0.0366	0.0290	0.0362	0.0457*	0.0294	-0.0185*	0.0286	0.0179	0.0917
Education	-0.1003**	0.0388	-0.0016	0.0282	0.0070	0.0299	-0.0287**	0.0158	0.0585	0.0302	0.0652	0.0915
Health & community services	0.0182	0.0366	-0.0194	0.0234	-0.0216	0.0229	0.0191	0.0180	0.0140	0.0250	-0.0104	0.0832
Culture, rec. & personal (ref)												

Table A3   Mean marginal effects: job turnover—females (contd.)

| Explanatory variable | Occupational change | | | | | | | | Unemployment | | Exit from labour force | |
| | No change | | Horizontal change | | Downward change | | Upward change | | | | | |
	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.	Est.	Std. err.
Last job tenure: <= 1 mths	0.0861**	0.0338	0.0015	0.0183	-0.0003	0.0208	-0.0394**	0.0182	0.0082	0.0212	-0.0562*	0.0518
Last job tenure: 2 to 3 mths	0.0607*	0.0300	0.0103	0.0181	-0.0019	0.0174	0.0151	0.0209	0.0322	0.0211	-0.1164**	0.0486
Last job tenure: 3 to 6 mths	0.0766**	0.0242	0.0183	0.0141	-0.0106	0.0139	-0.0160	0.0150	0.0489*	0.0183	-0.1172**	0.0405
Last job tenure: 6 to 12 mths	0.0423	0.0307	-0.0109	0.0156	0.0152	0.0192	-0.0148	0.0203	0.0477*	0.0241	-0.0795**	0.0538
Last job tenure: 1 to 2 yrs	0.0348	0.0211	-0.0089	0.0127	0.0229	0.0155	0.0017	0.0164	0.0082	0.0166	-0.0587**	0.0408
Last job tenure: >2 yrs (ref)												
Job loser	-0.2100**	0.0167	-0.0222**	0.0100	-0.0028	0.0119	-0.0117	0.0122	0.1418**	0.0149	0.1049**	0.0298
Job leaver (ref)												
Sample size (n = 3770)	1134		264		313		377		468		995	
Per cent in sample	31.9		7.4		8.8		10.6		13.2		28.0	
Likelihood ratio (df = 190)	1195.8											
Generalised R^2	0.2859											
Maximum re-scaled R^2	0.2972											

* 90% of bootstrap intervals exclude zero.

** 95% of bootstrap intervals exclude zero.

(a) Includes the UK, Ireland, Canada, New Zealand, South Africa and USA

(b) Includes finance and insurance.

(c) Bootstrap standard errors based on approximately 800 replications.
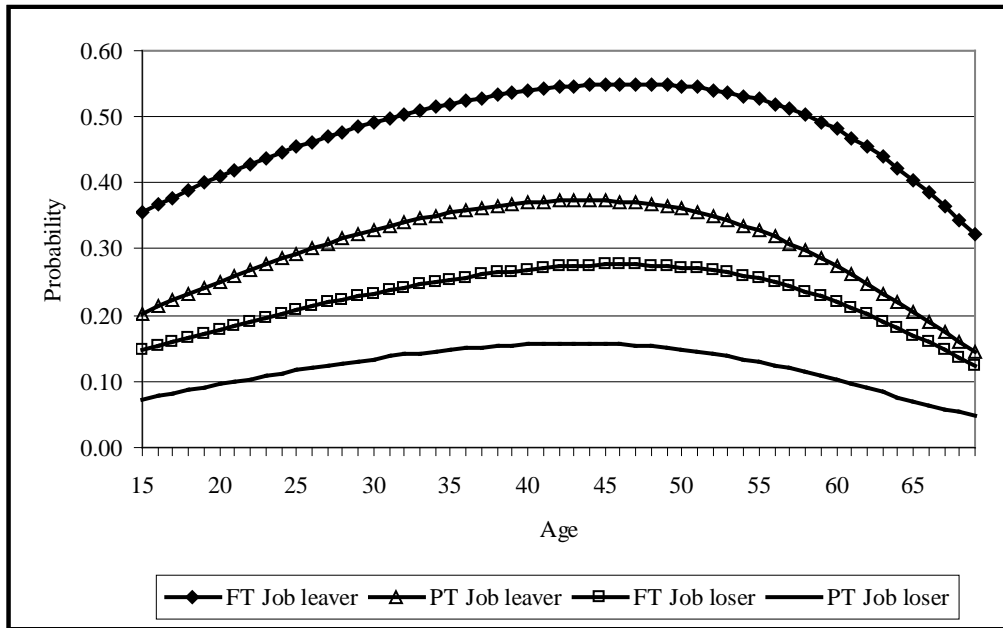
Figure A1   Predicted probability of job separation by age for four typical workers distinguished by sex and hours of work
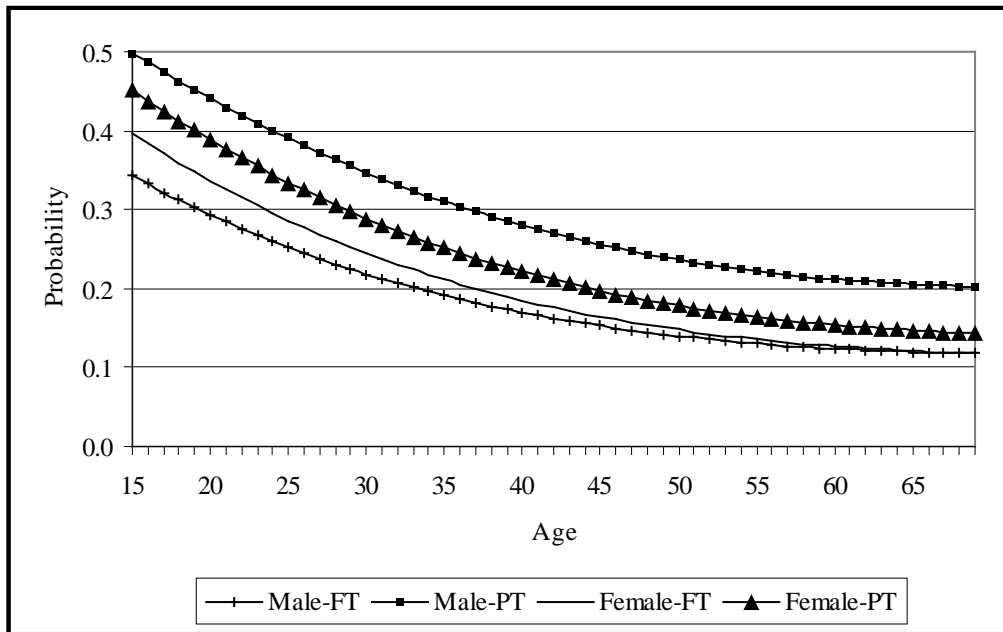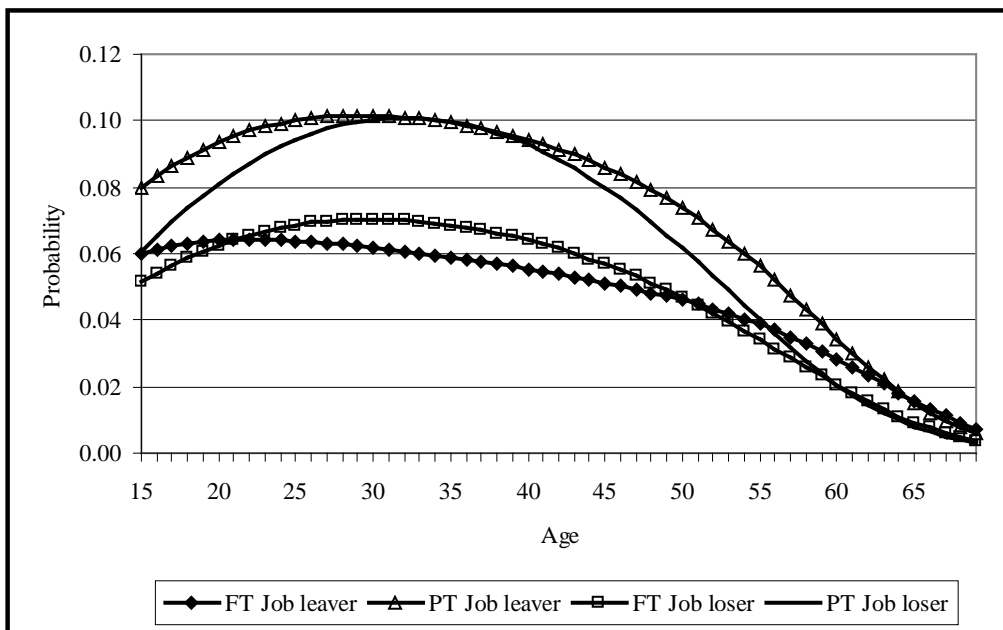

Figure A2   Predicted probabilities of job-to-job transition to same occupation by age for four typical male workers distinguished by reason for job separation and hours of work
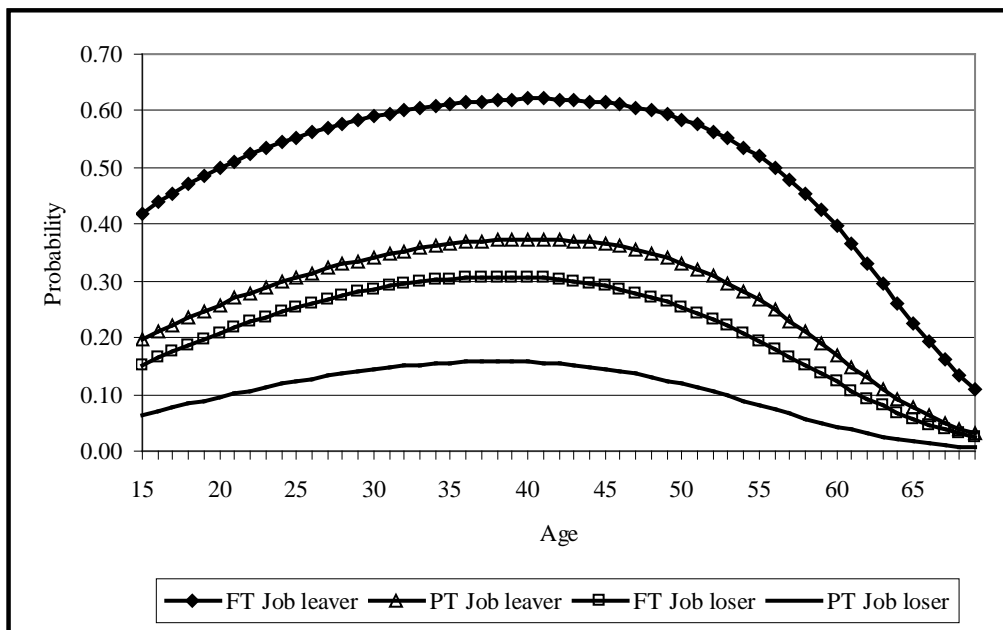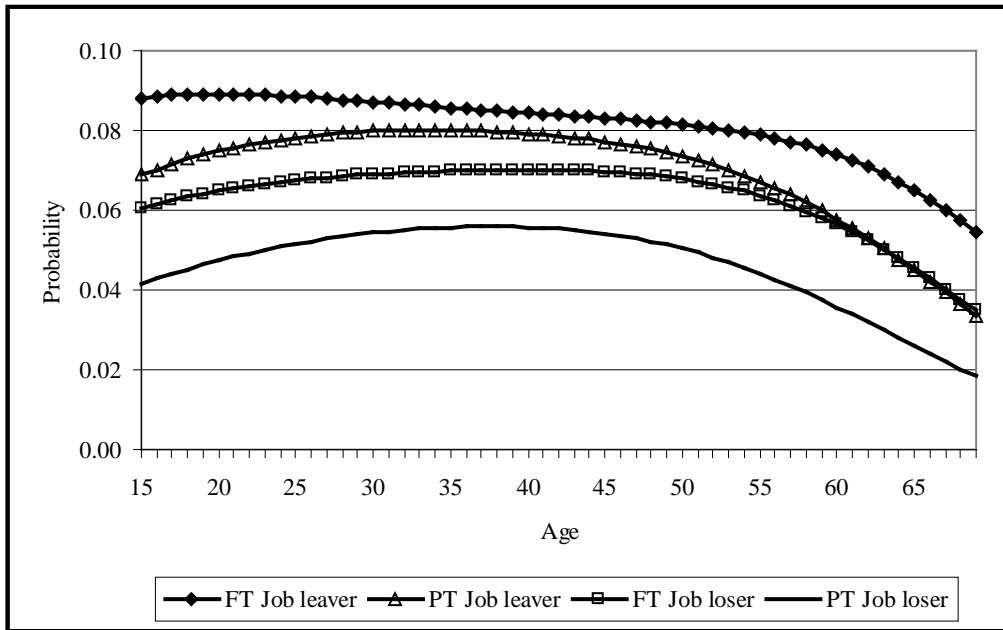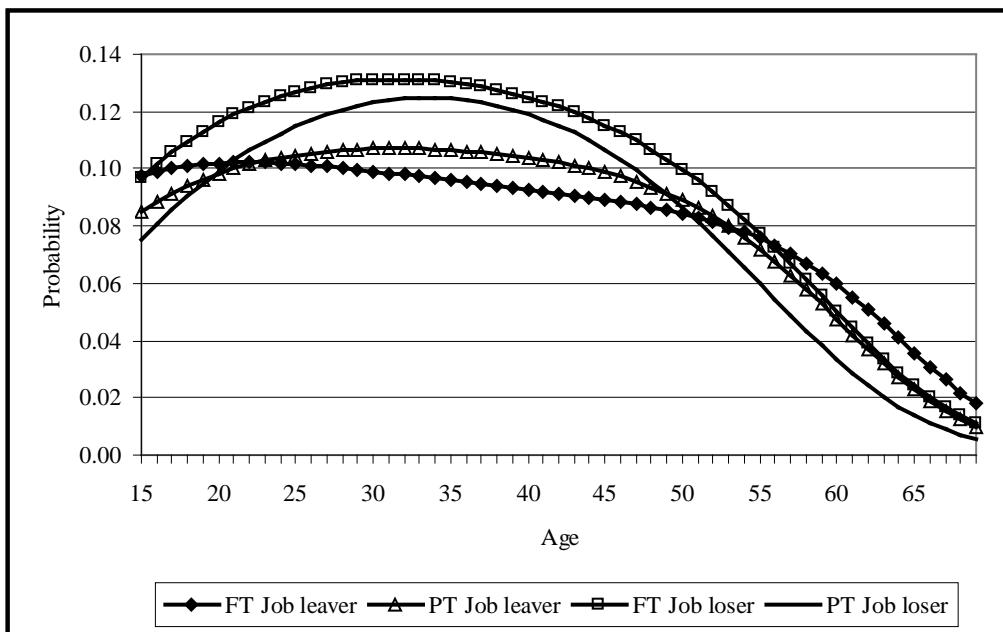
Figure A3   Predicted probabilities of job-to-job change to same occupation by age for four typical female workers distinguished by reason for job separation and hours of work

Figure A4   Predicted probabilities of 'horizontal' job change by age for four typical male workers distinguished by reason for job separation and hours of work
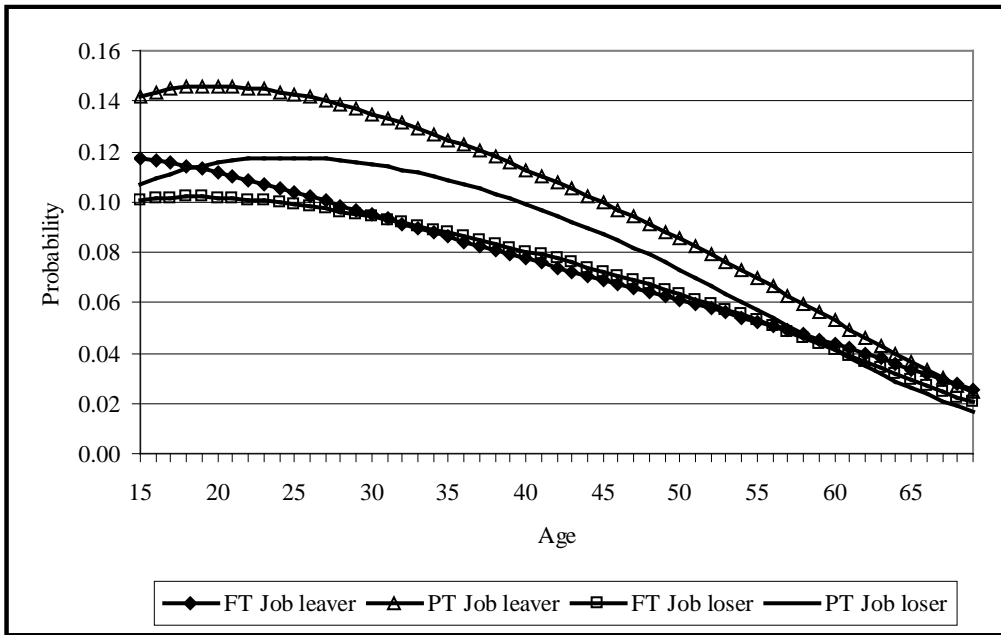
Figure A5   Predicted probabilities of 'horizontal' job by age for four typical female workers distinguished by reason for job separation and hours of work

Figure A6   Predicted probabilities of 'downward' job change by age for four typical male workers distinguished by reason for job separation and hours of work
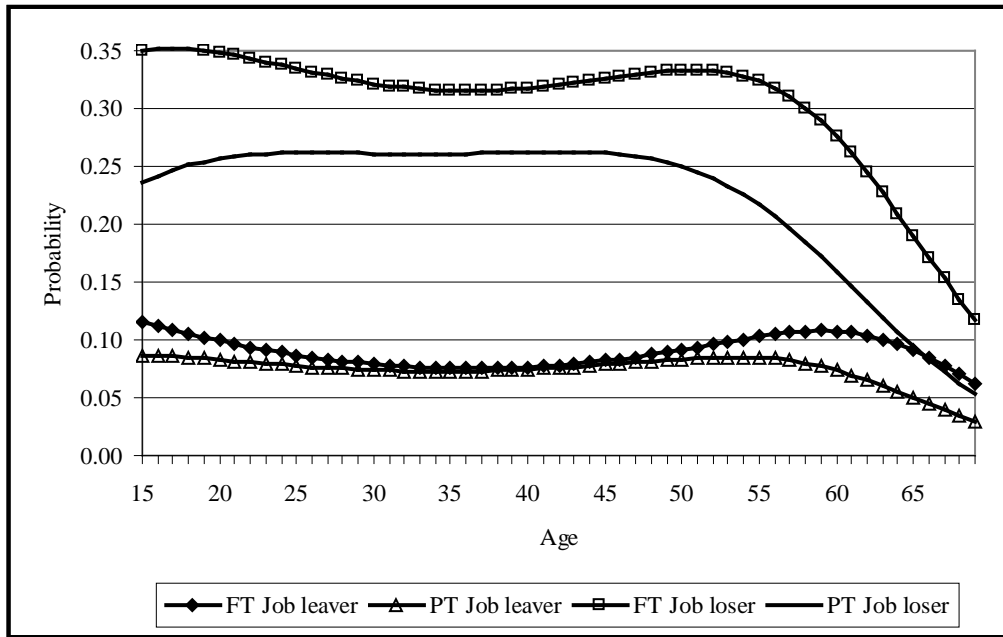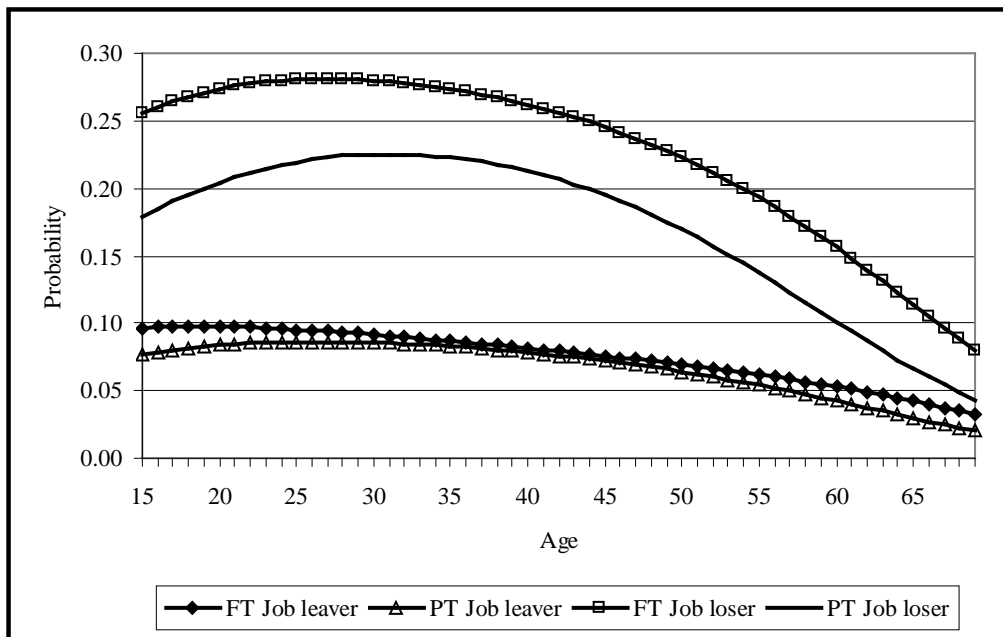

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Figure A7   Predicted probabilities of 'downward' job change by age for four typical female workers distinguished by reason for job separation and hours of work

Figure A8   Predicted probabilities of 'upward' job change by age for four typical male workers distinguished by reason for job separation and hours of work
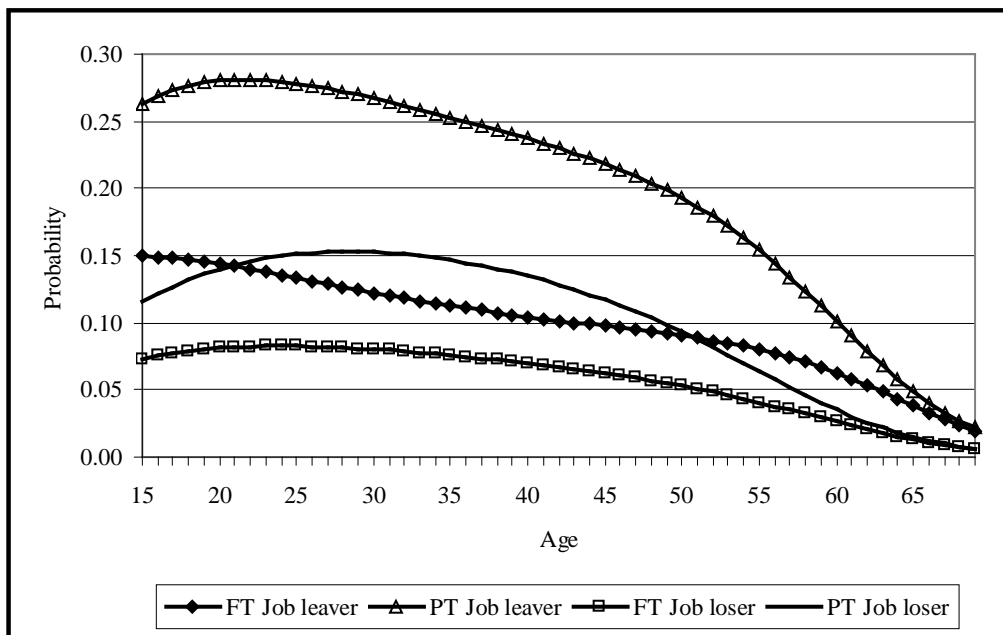
Figure A9   Predicted probabilities of 'upward' job change by age for four typical female workers distinguished by reason for job separation and hours of work
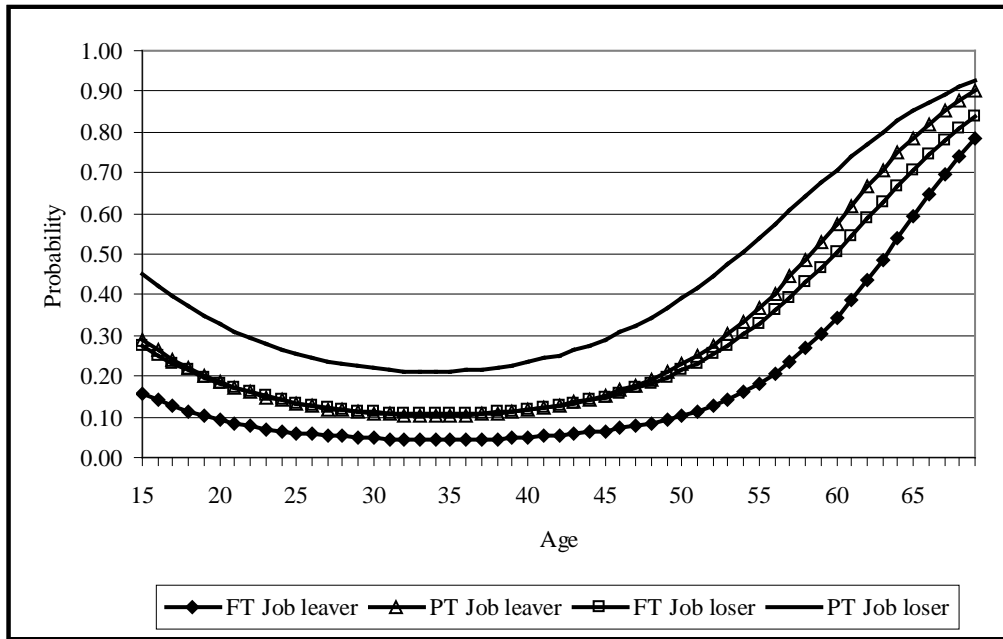
Figure A10   Predicted probabilities of transition to unemployment by age for four typical male workers distinguished by reason for job separation and hours of work

Figure A11   Predicted probabilities of transition to unemployment by age for four typical female workers distinguished by reason for job separation and hours of work

Figure A12   Predicted probabilities of leaving the labour force by age for four typical male workers distinguished by reason for job separation and hours of work

Figure A13   Predicted probabilities of leaving the labour force by age for four typical female workers distinguished by reason for job separation and hours of work