

Job mobility in Australia

Nick Carroll and Jennifer Poehl**¹
Economic Research and Analysis Unit
Department of Employment and Workplace Relations
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Abstract

How important are different worker flows and what are the characteristics of those people who engage in job separations in Australia? This paper generates statistics on the level of job to job flows relative to other worker flows in Australia. The paper then investigates which groups are more likely to separate from their employers and how this varies depending on whether the move is voluntary or involuntary. This paper uses the first five waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey.² The key findings of the paper are that job to job flows are large and that the negative relationship between tenure and job separation appears to be the result of both person specific factors as well as match quality.

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¹ The corresponding author is Nick Carroll - email: Nicholas.carroll@dewr.gov.au, phone: (+612) 6121-7769.

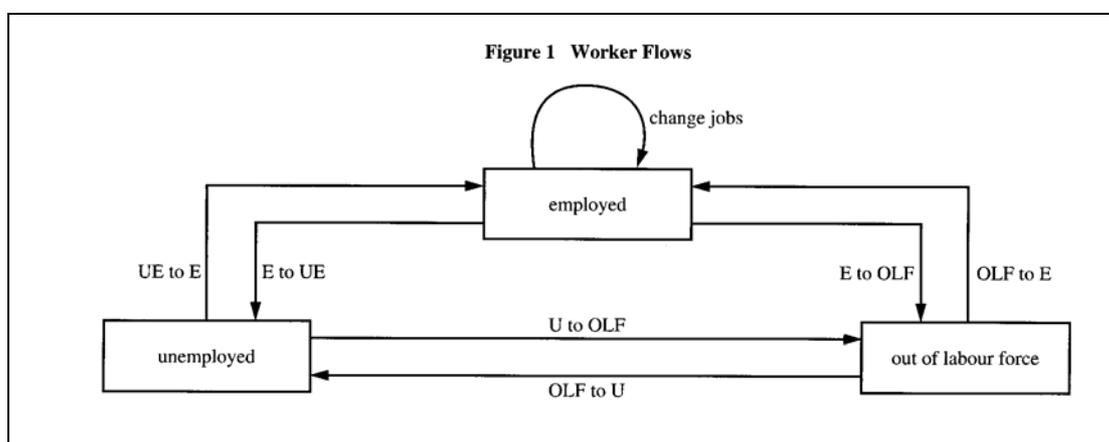
² This paper uses HILDA confidentialised data, but the views expressed are solely those of the author and neither the Australian Government nor the Melbourne Institute accept any responsibility for the accuracy or completeness of the research findings.

I. Introduction

The movement of workers from one labour market state or job to another, often referred to as worker flows, is one of the striking features of the labour market (see Davis et al (2006)). Worker flows play a critical role in market economies because they allow for and promote allocative efficiency by shuffling workers to society's highest-valued jobs. Worker flows allow flexibility in the labour market and the economy by presenting firms and employees with the potential to adapt more effectively to changing economic and personal circumstances.

Figure 1, drawn from Borland (1996), classifies worker flows into various categories. In any given time period people can shift between the labour market states of employment, unemployment and out of the labour force. In addition people who were employed at the beginning of a time period may remain in employment but shift to another job (employer) during the time period. Outflows of people from one job to another, or to other labour market states, may occur either as a result of a worker's decision to quit or a firm's decision to lay off the worker (Borland 1996).

Figure 1: Worker flows



Source: Borland (1996)

While in Australia the stylised facts about movements between labour market states are well established (see ABS (2007) and Dixon, Freebairn and Lim (2004)), due to data constraints there is a lack of comprehensive research into one of the key worker flows – job to job movements. However, US research has shown that job to job flows are a large and important driver of allocation. A recent US study by Fallick and

Fleischman (2004) found that 2.6 percent of employed people change employers each month. This is equal to the number of people who move from employment to out of the labour force, but it is more than twice the number of people that move from employment to unemployment. The study also showed that demographic characteristics such as age, gender and education influence job to job, separation and accession rates.

Previous studies have also examined more specifically the factors associated with job separations. More specifically, Farber (1999) reviews the evidence and reports that there is a negative relationship between tenure and job separation. While there is still some uncertainty in the literature, it appears part of this negative relationship is due to individual effects, and part of it is due to the nature of the job match. Blau and Kahn (1981) found that women on average quit more frequently than men. However, women's quit response to a given set of personal and job characteristics were found to be about the same as that for men. Similarly, Booth and Francesconi (2000) found that gender quit rate differences vanish once standard individual and job characteristics are controlled for.

The research questions that this paper seeks to answer are: how important are different worker flows and what are the characteristics of those people who are more likely to separate from their employer? This paper will document the level of job to job flows relative to other labour market flows. Using a variety of logit techniques, the paper then investigates which groups are more likely to separate from their employer, and then how this varies depending on whether the move is voluntary or involuntary. The paper uses the first five waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey.

In the past, worker flows in Australia have been analysed using ABS labour force data. However, these data does not capture job changes within employment and it does not allow for a comprehensive analysis of the factors that influence job separations, quits and layoffs. The HILDA survey on the other hand enables us to examine all worker flows (including job-to-job mobility) and lets us determine the demographic characteristics that influence separations, quits and layoffs.

We find that job to job flows are large (they make up nearly two thirds of all job accessions and job separations). This result is consistent with the international literature and highlights the degree to which there is a high level of dynamism in the labour market and that for most people there is a smooth transition between jobs (two thirds of individuals who separate from their employers are employed again by the next wave). The results derived from the econometric analysis indicate that people with longer tenure, in larger firms and who were unmarried are less likely to both quit and be laid off.

The first contribution that the paper makes is to apply the findings from the international literature on job to job mobility and job separations to Australia. Secondly, a gap in the job separations literature is examining whether time invariant unobserved individual specific factors explain the relationship between job satisfaction and quit rates. We find that time invariant characteristics do not lead to the association between job satisfaction and quit rates. Thirdly, we investigate whether past employer tenure explains the relationship between current tenure and separation rates, thereby shedding light on to whether it is a person or match specific effect that leads to the negative relationship between tenure and quit rates in Australia.

The analysis in this paper is made up of two sections. The first part of the paper presents the level of gross worker flows in the Australian labour market. In this section we use transition tables to examine the size of the average annual flows between labour market states and between employers. In the second part of the paper we undertake a micro-econometric analysis of the determinants of job mobility. In particular, we use a logit framework with job separation as the dependent variable and a range of explanatory variables, following Booth and Francesconi (2000).

II. Data

This paper uses the HILDA annual household panel survey to investigate worker flows in Australia over the period 2001-2005. The main focus of the survey is on economic and subjective well-being, labour market dynamics and family dynamics. The HILDA survey provides detailed information on respondent's labour market history, current employment situation, employer characteristics and demographic characteristics. This means that labour market flows including employment to

employment flows can be measured and the demographic characteristics that influence people to separate, quit and/or be laid off can be determined.

We use an unbalanced panel of matched observations for our analysis. That is, we examine the job and labour market status of individuals in neighbouring waves. We then use this information to calculate our estimates of labour market flows. Our explanatory variables are all measured in the initial wave.

Appendix 1 describes the mean and standard deviation of all derived variables used in the analysis. The key variables of interest for this study are the labour force status variable, the tenure variable, and the respondent's reason for leaving their employer between interviews. The labour market status variable is based on the ILO definition of unemployment (a respondent must be both available and looking for work). A person is defined as employed if they work for at least one hour in the reference week and someone not in the labour force must be neither employed nor unemployed. The tenure variable is based on the respondent's reported tenure with their current employer.

The quit and layoff variables used in this study are based on the respondent's self-reported reasons for leaving their last employer. The layoff variable equals one where a temporary job finishes, or an individual is laid off or made redundant, otherwise the layoff variable equals zero. The quit variable equals one for all other identifiable reasons (for example, retirement, better job, looking after children), and zero otherwise.

Most of the studies of gross worker flows examine flows on a quarterly or monthly basis. This paper examines gross worker flows on an annual basis since HILDA's rich range of explanatory variables are only available on an annual basis.³ We would therefore expect that the flows reported in this paper would be larger than those calculated using monthly data.⁴ The flows are calculated by merging consecutive

³ Future research on job to job mobility could examine the job calendar in HILDA to compute the results on a part month basis.

⁴ However, we would not expect the annual movements to be a factor of 12 larger. In particular, because people may make multiple moves in a year, this paper will not capture movements between

waves, whereby observations are only included if the individual responds in two neighbouring waves.⁵ The flows in this paper are expressed as percentage of the matched sample, or as a proportion of the matched sample in employment (unless otherwise stated). We begin by examining the whole population before separating our analysis by age, gender and a range of demographic characteristics.

III. Macro flows in the Australian Labour market

i. Key labour market flows concepts

This paper follows the standard gross flows literature (for example, Abowd and Zeilner (1985), ABS (2007), Borland (1996), Dixon, Freebairn and Lim (2004)). However, the innovation that this paper makes is to examine job to job mobility. Including job to job mobility flows there are another ten flows examined for the purposes of this paper, which are:

Employment in t to (new) Job in $t+1$	EJ
Unemployment in period t to Unemployment in period $t+1$	UU
Unemployment in t to (new) Job in $t+1$	UJ
Unemployment in t to Not in the Labour Force in $t+1$	UN
Employment in t to (same) Employment in $t+1$	EE
Employment in t to Not in the Labour Force in $t+1$	EN
Employment in t to Unemployment in $t+1$	EU
Not in the Labour Force in t to Not in the Labour Force in $t+1$	NN
Not in the Labour Force in t to Unemployment in $t+1$	NU
Not in the Labour Force in t to (new) Job in $t+1$	NJ

Based on the flows described above accessions are comprised of the EJ, NJ and UJ flows, while separations consist of the EJ, EN and EU flows. If we are interested in labour market mobility then the exclusion of the EJ flow will underestimate the level of accessions and separations in the labour market.

categories that are reversed over the course of the year. Likewise, some people may change jobs multiple times over the year, and we will capture only one of the movements in this study.

⁵ In the gross flows literature there is an important discussion about how attrition and other factors can make the matched sample unrepresentative of the population as a whole (see Abowd and Zellner (1985)). Given the high quality nature of HILDA and therefore the lower rate of attrition than in monthly and quarterly labour force surveys, we consider that this is a smaller issue in relation to our dataset. We have examined whether our results are sensitive to the matched sample by using the longitudinal weights in HILDA (which correct for attrition), and our results are unaffected (see Appendix 3).

ii. Job to job flows, separations and accessions

This section provides an overview of average gross worker flows for the period between 2001/02 and 2004/05. The results suggest that on average nearly 69 percent of people were employed in consecutive waves (see the first panel in table 1). Eleven percent of people changed employers in consecutive waves. This corresponds closely with the finding of the latest ABS Labour Mobility survey which showed that 12 percent of people aged 15 years and over who were working changed their employer/business in their main job over the past year (ABS 2006). The HILDA and ABS data suggest that employment to employment transitions have increased slightly over the last few years (Appendix 2 provides further detail about how worker flow rates have changed between 2001/02 and 2004/05).

Table 1: Gross flows between labour market states

		State in t+1			
		Same employer	New employer	Unemployed	Not in the labour force
State in t	As a percentage of the population (matched sample)				
	Employed	57.56	11.38	1.31	3.94
	Unemployed		2.12	1.12	1.06
	NLF		4.51	1.25	15.74
	As a percentage of the state in the first year				
	Employed	77.60	15.33	1.75	5.31
	Unemployed		49.67	25.79	24.55
	NLF		21.06	5.85	73.09
Notes: HILDA Release 5-1. 15-60 year olds. Average annual gross flows between 2001/02 and 2004/05. As a percent of the population.					

We also find that about 16 percent of people were not in the labour force in consecutive waves and slightly over 1 percent of people were unemployed in consecutive waves. The findings suggest that even though a large share of the population remains in their labour market state (or with their employer) from one year to the next, there is a significant share of people that engage in flows between years.

Looking at the separation figures, the results suggest that 22 percent of the employed leave their employer between one interview and the next (see the second panel in table 1). Of these people, 68 percent were with a new employer by the next interview date, about one quarter were not in the labour force and less than 8 percent were in unemployment. Looking at the accessions figures, we see that nearly 24 percent of

employed people at a certain period were not with their employer a year earlier. Of these people, 63 percent came from the employment pool and were new to their employer, one quarter came from not in the labour force and nearly 12 percent from unemployment. These figures suggest that job to job mobility is an important component of gross labour market flows within an economy.

The above results correspond with those obtained by Fallick and Fleischman (2004). They found that the number of people who change employers is about the same as the number of people who move from employment to out of the labour force and more than twice the number of people who move from employment to unemployment.

Having analysed the annual gross labour market flows in Australia, we now present a more detailed picture in table 2 of how demographic characteristics influence EJ flows, separations and accessions. Appendix 4 shows the EJ flows, separations and accessions rates for each sub-period.

The results in Table 2 show that young people and persons with year 12 education are more likely to engage in job to job movement, separations and accessions compared to older and more educated people. Women have higher separation rates but engage in EE flows at a similar rate to men. Our results correspond with those obtained by Fallick and Fleischman (2004) who found that EJ transitions, separations and accessions decrease with age and education. The ABS labour mobility survey also found that younger people tend to change their employer/business more than people in older age groups (ABS (2006)). Furthermore, Fallick and Fleischman (2004) found that women have a higher rate of separations and accessions but are less likely to change employers.

Table 2 also enables us to see which groups are most likely to have smooth transitions between employers, by examining what proportion of separations are EJ flows. We see that across most characteristics about two thirds of separations involve a smooth transition between employers between interviews. There are individuals with certain characteristics who are more likely to separate from employers and not move to another employer including: the disabled, mature-aged people and the self-employed.

Table 2: Job to job flows, accessions and separations (detailed results)

	EJ	Separations (EJ+EU+EN)	Accessions (EJ+UJ+NJ)
15 to 24	30.16	41.21	47.78
25 to 34	18.50	25.77	27.97
35 to 44	12.60	17.44	19.22
45 to 60	7.49	14.31	13.07
Male	14.93	20.79	22.16
Female	14.55	24.17	25.81
Married	10.39	17.01	17.21
Not Married	19.94	28.54	31.53
Australia	15.03	22.69	24.27
ESB immigrant	14.18	21.02	21.72
NESB immigrant	13.08	21.46	23.15
Degree	13.03	18.21	19.90
Diploma	12.23	19.11	20.23
Certificate	14.95	21.15	22.26
Year 12	20.01	27.78	30.40
No Qualifications	14.00	25.19	26.56
Disabled	13.43	26.16	25.14
Not disabled	14.94	21.82	23.71
City	15.47	22.69	24.49
Regional	13.40	21.75	22.75
self employed	7.59	15.02	15.76
employee	16.27	23.93	25.71
Low Job Satisfaction	26.25	38.53	24.50
High Job Satisfaction	13.16	20.09	23.59

Notes: HILDA Release 5-1. 15-60 year olds. Average rates between 2001/02 and 2004/05. EJ and Separation are measured as a percent of employment in the initial period, while accessions are measured as a percent of employment in the second period.

iii. Quits and layoffs

The previous section showed the magnitude of accessions and separations. This section looks at the proportion of separations that are voluntary (quits) and involuntary (layoffs). Table 3 shows that of the people that changed employers 76 percent quit and 24 percent were laid off. Eighty-two percent of people that moved from employment to not in the labour force quit compared to 18 percent that were laid off. Fifty-six percent of people that moved from employment to unemployment quit compared to 44 percent that were laid off.

Looking more closely at the composition of quits and layoff the results show that these quit rates are surprisingly similar for people with different demographic characteristics. For example, the difference in the quit rates for people that are either disabled or not disabled is less than one percentage points. However, the proportion of

employed people that have quit or have been laid off (the probability of separation multiplied by the quit/ layoff rate) is influenced by demographic characteristics.

We see that disabled people have a higher probability of quitting and being laid off compared to not disabled people (driven by the separation rate, rather than the composition of the separations). People that are not married are also more likely to quit and be laid off. Individuals born in Australia have a lower probability of being laid off or quitting their current job compared to people born outside of Australia. We also see that people who report low job satisfaction have a higher probability of quitting and being laid-off compared to people that report high job satisfaction.

Table 3: Separations by quit/ layoff

	Quit rate	Layoff rate
E:J flow	76.22	23.78
E:N flow	81.95	18.05
E:U flow	56.40	43.60
Not disabled	75.82	24.18
	(16.54)	(6.28)
Disabled	75.12	24.86
	(19.65)	(6.65)
Married	76.26	23.74
	(12.97)	(4.04)
Not-Married	75.36	24.64
	(21.51)	(7.03)
Born in Australia	76.27	23.73
	(17.31)	(5.38)
ESB immigrant	75.74	24.26
	(15.92)	(6.00)
NESB immigrant	71.17	28.83
	(15.27)	(6.19)
City	75.27	24.73
	(17.08)	(5.61)
Regional/Remote	76.48	23.52
	(16.63)	(5.12)
Low Job Satisfaction	78.58	21.42
	(30.28)	(8.25)
High Job Satisfaction	74.86	25.14
	(15.04)	(5.05)
Total	76.00	24.00

Notes: The figures in brackets have been derived by multiplying the separation and the quit rate, and the separation and the layoff rate.

IV. The determinants of job mobility in Australia

While the first part of the paper analysed the size of the flows between labour market states and employers, this part of the paper uses a range of logit estimation techniques to examine why some individuals are more likely to quit and be laid off, and whether the group of people that quits employment is similar to those job-seekers that are laid off.

i. Selection of variables

There is a wide range of potential variables that may relate to the probability of individuals moving from one job to another. Indeed there is a large body of literature that discusses the probability of job separation (see Farber (1999)). Following this literature a range of [labour market] demand, supply and matching variables are included in our analysis.

A worker initiated job separation (a quit) would be expected to occur where the utility of moving employers is greater than the utility of staying in the same job. The key issues will then be the discounted value of the income stream in the new state relative to the discounted value of the income stream in the current job, any costs of moving jobs, plus the net utility of the two states.

One of the key determinants of the difference in income between the present job and future jobs is the level of firm specific human capital. We would expect that the greater the level of firm specific human capital, the lower the rate of turnover is going to be. This is because it becomes more costly for an individual to leave their current employer (Stoikov and Raimon 1968). At the same time, tenure has been shown to be positively correlated with the acquisition of firm specific human capital (Bingley and Westergaard-Nielsen (2003)). Tenure is therefore expected to be negatively correlated with an employee's turnover probability. Other aspects that determine the costs of moving and the net utility of the states include personal characteristics (such as age, gender, country of birth), non-wage income that may be dependent on location, marital status and family structure, and risk aversion.

An employer initiated job separation (a layoff) will be expected to occur where the discounted value of profit from retaining the employee is less than the discounted

value of profit from laying the worker off. We would expect that this will be dependent on the nature of the job and the business (occupational, industry and firm size controls), the level of firm specific human capital, and the degree to which new information about the quality of the worker is revealed (potentially inversely related tenure).

An important determinant of whether quits or layoffs occur is whether individuals and firms face large shocks that change the benefits of maintaining a match. Therefore key determinants of job separation rates will be factors or shocks that change the relative benefits of maintaining a match. These factors or shocks could include changes in family status, changes in market conditions and changes in preferences.

As well as demand and supply characteristics, it is important to consider characteristics that may increase the matching rates between employers and employees. In particular, job availability (geographic industry density) and employee availability (whether the firm is in a large urban area) may be important in determining the arrival rate of job offers and jobseekers.

ii. Methods

This paper uses a logit framework to investigate the factors associated with separations, quits and layoffs (see Greene (2003)). The paper begins by using a standard logit framework to look at the factors associated with separations:

$$\ln \Omega(x) = \ln \frac{\Pr(Y = 1 | x)}{1 - \Pr(y = 1 | x)} \quad (1)$$

The paper then extends this result by using a multinomial logit framework to include layoffs and quits (job and non-job related) into the analysis:

$$\ln \Omega_{mb}(x) = \ln \frac{\Pr(y = m | x)}{\Pr(y = b | x)} = x\beta_{mb} \quad \text{for } m=1 \text{ to } J \quad (2)$$

Where b is the base category (comparison group).

Finally, the paper moves to look at the impact of job satisfaction on the probability of changing employer using a conditional logit framework to control for time invariant

characteristics (based on Chamberlain (1980)). Chamberlain (1980) shows the joint likelihood for each set of T_i observations conditioned on the number of ones in the set is:

$$P(Y_{i1} = y_{i1}, Y_{i2} = y_{i2}, \dots, Y_{iT_i} = y_{iT_i} \mid \sum_{t=1}^{T_i} y_{it}, data) = \frac{\exp(\sum_{t=1}^{T_i} y_{it} x'_{it} \beta)}{\sum_{\sum_{t=1}^{T_i} d_{it} = S_i} \exp(\sum_{t=1}^{T_i} d_{it} x'_{it} \beta)} \quad (3)$$

The function in the denominator is summed over the set of all different sequences of T_i zeros and ones that have the same sum as $S_i = \sum_{t=1}^{T_i} y_{it}$. By conditioning on the sum of the t observations, we remove the heterogeneity term.

All the results in this section of the paper are either presented as odds ratios or relative risk ratios. In essence, a ratio greater [less] than 1 implies that as the variable increases in size the odds (or relative risk), the relative odds of the event occurring increases [decreases].

iii. Factors associated with job separation

Table 4 shows the factors that influence job separations by gender (using equation (1) above). While the explanatory variables change the probability of separations in the same direction for men and women, the magnitudes are different at the 1 percent level of significant. We can therefore reject the hypothesis that the coefficients for men and women are the same and hence we do not pool our data-set.

Most of the results in table 4 are consistent with the results found in previous empirical studies on job separations. Table 4 shows that people with longer tenure (and therefore potentially with more firm specific human capital) have lower exit probabilities. According to the results a one year increase in employer tenure decreases the odds for men and women to separate from their employer by 7 percent and 6 percent respectively. People in smaller firms have higher separation rates (they are about 20 percent more likely to leave their employer than comparable person in a larger firm). We also see that people with more work experience (holding age constant) have lower separation rates. Furthermore, people who are members of unions, married individuals and people in the public sector all have lower separation rates than comparable people who are not union members, married or working in the public sector.

Table 4: What factors are associated with job separations?

	(1) Male - all	(2) Male – 15-44	(3) Fem. - all	(4) Fem. – 15-44
disabled	1.440** [5.64]	1.273** [3.05]	1.454** [5.67]	1.253** [2.67]
marry	0.865** [2.58]	0.965 [0.55]	0.903* [2.02]	0.946 [0.92]
union	0.703** [5.74]	0.708** [4.84]	0.692** [5.80]	0.721** [4.45]
Tenure in current job	0.932** [10.36]	0.878** [12.04]	0.940** [8.65]	0.923** [7.83]
Work experience	0.972** [5.73]	0.955** [7.04]	0.989** [2.81]	0.975** [4.24]
Private sector	1.357** [3.49]	1.308** [2.64]	1.288** [3.77]	1.259** [2.92]
Firm 1 to 19	1.206* [2.40]	1.297** [2.94]	1.170* [2.09]	1.221* [2.27]
Firm 20 to 49	1.246** [2.98]	1.245** [2.63]	1.234** [2.97]	1.295** [3.14]
Firm 50 to 199	1.052 [0.64]	1.081 [0.87]	0.972 [0.36]	1.022 [0.24]
Regional/ remote	0.978 [0.38]	0.991 [0.14]	0.898* [2.02]	0.897 [1.76]
35-44 years	0.946 [0.68]	1.226* [2.27]	0.693** [5.19]	0.798** [2.86]
Time	yes	yes	yes	yes
Individual	yes	yes	yes	yes
Occupation & industry	yes	yes	yes	yes
Observations	14391	9700	13043	8739
Pseudo R-squared	0.11	0.12	0.09	0.08

Notes: Binomial logit. Dependent variable is separated from employer between waves. The population is people aged 15-60 years who were in HILDA for two consecutive waves who were employed in the initial wave. Coefficients are presented as odds ratios. Standard errors are clustered by xwaveid. t statistics are presented in brackets. ** significant at the 1% level. * significant at the 5% level. The base category is non-disabled, non-married, non-union-member, in the public sector, in a firm >200 people, in a city, aged 15-34 years. Individual controls include education, wage and state.

We now set out to determine the factors that are associated with quits and layoffs separately. A multinomial logit estimation is undertaken to determine the factors that influence quits and layoffs whereby the dependent variable takes a value of 1 (if no separation), 2 (if quit) and 3 (if layoff) – see table 5.

The results in table 5 suggest that most of the characteristics that lower the quitting probability are similar for men and women. The characteristics that are associated with a lower probability of quitting for both genders include being employed in the public sector, being a union member, having longer employer tenure and having more work experience. Employer tenure has a slightly smaller effect on women’s compared to men’s quitting odds. A one year increase in employer tenure decreases the quit

probability for men and women by 12 percent and 7 percent respectively. However, the results also show that being disabled has only a significant effect on men's but not on women's quitting probability (although the coefficients are of a similar size). The results suggest that disabled men are 27 percent more likely to quit their job compared to not disabled men.

Table 5: What factors are associated with quits and layoffs?

	(1) Male - quit	(2) Male – layoff	(3) Female -quit	(4) Fem. – layoff
disabled	1.268* [2.42]	1.203 [1.28]	1.184 [1.72]	1.630** [2.96]
marry	1.042 [0.51]	0.740* [2.35]	1.032 [0.43]	0.720* [2.42]
union	0.699** [4.04]	0.887 [0.92]	0.803** [2.61]	0.510** [3.57]
Tenure in current job	0.883** [10.15]	0.855** [6.26]	0.932** [6.02]	0.861** [4.57]
Work experience	0.969** [4.05]	0.967** [2.73]	0.985* [2.18]	0.971* [2.11]
Private sector	1.651** [3.67]	1.417 [1.71]	1.531** [4.44]	0.726 [1.80]
Firm 1 to 19	1.258* [2.12]	1.196 [1.07]	1.207 [1.78]	1.124 [0.61]
Firm 20 to 49	1.195 [1.74]	1.144 [0.88]	1.480** [4.01]	1.067 [0.35]
Firm 50 to 199	1.098 [0.86]	0.882 [0.73]	1.106 [0.92]	1.038 [0.19]
Regional/ remote	1.006 [0.08]	0.881 [1.02]	0.870 [1.90]	0.750* [2.04]
age35t44	0.969 [0.29]	1.413 [1.95]	0.698** [3.88]	1.276 [1.33]
Time	yes	yes	yes	yes
Individual	yes	yes	yes	yes
Occupation & industry	yes	yes	yes	yes
Observations	9155	9155	8116	8116
Pseudo R-squared	0.10		0.07	

Notes: Multinomial logit. Dependent variable takes a value if 1 remained with the same employer, 2 if quit employer, 3 if laid off from employer. The population is people aged 15-44 years who were in HILDA for two consecutive waves who were employed in the initial wave. Coefficients are presented as relative risk ratios. Standard errors are clustered by *xwaveid*. t statistics are presented in brackets. ** significant at the 1% level. * significant at the 5% level. The base category is non-disabled, non-married, non-union-member, in the public sector, in a firm >200 people, in a city, aged 15-34 years. Individual controls include education, wage and state.

The characteristics that are associated with being laid off are again broadly similar for both genders. Men's and women's odds of being laid off decrease when they are

married, have longer employer tenure and more work experience. Contrary to that, the union variable is only significant to women's but not to men's layoff probability. Women that are union member are 49 percent less likely to be laid off compared to women who are not part of a union. Another interesting finding is that being female and disabled is positively and significantly associated with being laid off which is not the case for disabled men. The results suggest that disabled women are 63 percent more likely to be laid off compared to not disabled women.

The test for the independence of irrelevant alternatives suggested that the independence assumption was not violated. Confirming the result that quits and layoffs should be treated separately we investigated using a likelihood ratio test whether the constraint that quits and layoffs were identical and found that at the 5 percent level we could not reject the hypothesis that they were different.

The results in tables 4 and 5 might either be due to selection factors or a causal explanation. We measure our explanatory variables in the period prior to the move and therefore they are unlikely to be endogenous. However, it may be the case that rather than a causal explanation that there is a selection interpretation of the variables. In particular, it may be the case that some people have a strong preference to avoid employer separations, and these people also select into our explanatory variables (such as marriage, working in the public sector, and working for large firms).

iv. Extensions

Until this point the results from the paper have broadly confirmed that research results from the US and Europe can be applied to Australia. People in larger firms, with fewer individual barriers who have been in their current job for longer periods of time are less likely to leave their present employer. We now extend the analysis to examine the role of job satisfaction, previous employer tenure, and job related versus non-job related quit reasons on people's separation probability.

In specification (1) of table 6 we include job satisfaction in a logit where the dependent variable equals 1 if a person has separated from their employer and 0 otherwise. Job satisfaction was not included in earlier results because there is an argument that it is endogenous. However, job satisfaction is of interest, because if it

has a positive effect on the probability of remaining with an employer then it suggests that individual factors play a role in the separation probability and that they are not solely driven by demand side factors.

The results from specification (1) show that job satisfaction has a large effect on the probability of leaving an employer. People reporting high job satisfaction (at 9 or 10 out of 10) compared to people reporting low job satisfaction (at 5 or below) have a 66 percent lower odds of leaving their employer over the year. People reporting medium job satisfaction (between 6 and 8) have a 56 percent lower odds of leaving their employer over the following year. These results coincide with previous studies that have found that job satisfaction is an important determinant of voluntary job mobility (Akerlof et al (1988) and Freeman (1978)).

One problem with specification (1) is that people who generally are more dissatisfied with work may be more likely to change jobs regularly. We therefore undertake a fixed effects logit where we control for time invariant heterogeneity. Interestingly, when we control for time invariant heterogeneity there is little change in the relationship between job satisfaction and the probability of a job separation. Thus, suggesting it is not driven by dissatisfied people leaving employers more regularly. Another interesting finding is that when controlling for time invariant heterogeneity, the impact of being a union member on employer separation drops in magnitude and significance. This suggests that union members have lower turnover rates because of the unobserved characteristics of individuals who choose to be union members.

The next extension we investigate is what is driving the relationship between tenure and probability of an individual separating from their employer. A key issue in the literature is whether this relationship is driven by some individuals having higher moving costs and therefore having a lower probability of moving employers, or whether it is driven by the fact that tenure is an indicator of employer and employee match quality.⁶

⁶ It could be argued that the negative relationship between tenure and separation probability is driven by employer quality being positively correlated with tenure and negatively correlated with separation probability. Therefore potentially, it may be employer, as well as individual and match quality characteristics that lead to the negative relationship.

In order to distinguish between these competing explanations we examine the role of tenure in the previous job (holding overall work experience and current tenure constant). If the result is driven by individual preferences then we would expect that previous tenure would be significant (where previous employer tenure reflects individual preferences).⁷ However, if the result is driven solely by the match in the current position then we would expect that this coefficient would be insignificant.

The results show that previous employer tenure is significant and that people who had longer tenure in their previous job (holding the current job constant) have a lower exit rate from their current employer. Indeed for every year that the individual spent with their previous employer, the odds of leaving their current employer drops by about 4 percent (holding overall work experience and current tenure constant). This suggests that both individual preferences for moving employer and match specific factors are important. The relevance of individual preferences in determining an individual's mobility coincides with the results obtained by Farber (1999). He found that the probability of a job ending is strongly related to the number of prior jobs held, controlling for tenure on the current job.

Specification (3) in table 6 includes those people whose previous employer tenure is not given in HILDA (with an appropriate dummy variable included). Interestingly, when we only include those people with a valid previous employer tenure record (result available from authors) the coefficient on previous employer becomes larger and more significant, while tenure with current employer becomes insignificant. This provides further evidence that the negative relationship between tenure and job separation is the result of person-specific, rather than match-specific factors.

Our final extension examines whether our results change when non-job related quits are removed (see specification (4) of table 6). When we only examine job related quits we would expect that the job-related variables would increase in magnitude (because they would be expected to have a larger effect on job-related reasons for quits than non-job related reasons for quits). Interestingly for most of the coefficients

⁷ It could be argued that there may be positive correlation in match quality across jobs, and so potentially previous tenure may act as a proxy for match quality in the current job as well. This would be the case where employee initiated quits only occur where the match quality in the new position is better than the match quality in the previous position.

examined the influence of variables on all quits were similar to those for job related quits (including disability status, marital status, tenure and work experience). However, we see that the impact of being in the private sector has a greater influence on job-related quits, which could be due to the selection of people into the private sector (as discussed above).

Table 6: Extensions and robustness checks

	(1) Job Sat - move	(2) FE JS – move	(3) Past tenure - move	(4) Job quits
disabled	1.205* [2.30]	1.123 [0.89]	1.355** [3.36]	1.172 [1.49]
marry	0.976 [0.36]	1.183 [0.83]	0.96 [0.54]	1.031 [0.36]
union	0.714** [4.62]	0.899 [0.81]	0.698** [4.39]	0.734** [3.30]
Tenure in current job	0.879** [11.79]		0.899** [8.28]	0.881** [10.23]
Work experience	0.955** [7.06]		0.959** [5.68]	0.981* [2.28]
Private sector	1.292* [2.51]		1.456** [3.14]	1.743** [3.90]
Firm 1 to 19	1.352** [3.39]		1.197 [1.74]	1.366** [2.69]
Firm 20 to 49	1.258** [2.74]		1.133 [1.29]	1.271* [2.17]
Firm 50 to 199	1.075 [0.79]		1.021 [0.20]	1.181 [1.40]
high job satisfaction	0.339** [12.79]	0.245** [10.67]		
Med. job satisfaction	0.441** [11.22]	0.417** [7.95]		
Tenure in previous job			0.959* [2.10]	
Time & individual	Yes	No	Yes	Yes
Fixed effects	No	Yes	No	No
occupation & industry	Yes	No	Yes	Yes
Observations	9700	3975	7178	8926
Pseudo R-squared	0.14	0.04	0.12	0.09

Notes: Specifications (1), (2), (3) a logit where dependent variable=1 if moved job, 0 otherwise. Specification (2) controls for time invariant heterogeneity. Specification (4) a multinomial logit where dependent variable takes a value if 1 remained with the same employer, 2 if job-related quit reason, 3 if not job-related quit reason, 4 if laid off from employer. Only coefficients in specification (4) relating to category 2 shown. The population is men aged 15-44 years who were in HILDA for two consecutive waves who were employed in the initial wave. Coefficients are presented as odds/ relative risk ratios. Standard errors are clustered by xwaveid. t statistics are presented in brackets. ** significant at the 1% level. * significant at the 5% level. The base category is non-disabled, non-married, non-union-member, in the public sector, in a firm >200 people, in a city, aged 15-34 years and individual controls include education, wage and state (for specifications (1), (3), (4)).

We also see from table 6 that people in small firms were more likely to quit for job-related reasons than people in larger firms (compared to the case for all quits). Indeed, people in small firms had 37 percent higher odds of quitting their employer over the course of a year for job-related reasons than an otherwise comparable person in a large firm (>200 people).

V. Conclusion

The key finding from this paper is that job to job flows are large (they make up over half of all accessions and separations). This result is consistent with the international literature and highlights the degree to which there is a high level of dynamism in the labour market and that for most people there is a smooth transition between jobs. The more formal econometric part of the paper found, using a variety of logit techniques, that people with shorter tenure, in larger firms, who were unmarried and less educated were more likely to both quit and be laid off. The paper highlighted the degree to which similar characteristics are associated with both layoffs and quits.

The analysis was extended to examine the role of job satisfaction, previous employer tenure and job related versus non-job related quit reasons on people's separation probability. It was revealed that job satisfaction has a large and negative effect on people's probability of leaving their employer. The analysis also showed that previous employer tenure is significant and negatively related to future job-to-job mobility. This suggests that individual preferences are an important determinant of the separation probability. Another finding was that there were some minor differences in the quit rates when non-job related quits were removed from the analysis.

The research undertaken in this paper could be extended in a number of ways. One extension could involve using the job calendar in HILDA to examine the sub-monthly flows to gain a more comprehensive picture of worker flows on a month to month basis. A further extension involves examining which job seekers are most at risk of spells of unemployment (and not in the labour force) following job separation. Another extension could involve examining the factors and demographic characteristics that influence job mobility within firms (such as promotions), as done in Booth and Francesconi (2000).

Finally, future research could also investigate whether worker flows are wage and productivity enhancing. In particular, research could investigate how important labour market flexibility is for firms when facing economy-wide and specific shocks. This research would require information on both firm and individual characteristics and their changes. Unfortunately as HILDA is a person-level panel data-set it is not possible to investigate this issue with this source. However, if Linked Employee-Employer Data was to become available it may become possible to examine the impact that labour market dynamics have on productivity, wages and output.

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Appendix 1: Variable Description, Means and Standard Deviations

Variable name	Variable Description	Mean	Standard Deviation
Degree	=1 if respondent's highest qualification is a degree	0.1883	0.3908
Diploma	=1 if respondent's highest qualification is a diploma	0.0829	0.2757
Certificate	=1 if respondent's highest qualification is a certificate	0.2017	0.4012
Year 12	=1 if respondent's highest qualification is year 12	0.1414	0.3484
No qualification	=1 if respondent's highest qualification is no qualification	0.3853	0.4865
Australian born	=1 if respondent born in Australia	0.7693	0.4210
ESB immigrant	=1 if respondent born in an English-speaking country	0.1039	0.3050
NESB immigrant	=1 if respondent born in a Non-English speaking country	0.1268	0.3323
Manager	=1 if respondent's occupation is Manager	0.0552	0.2283
Professional	=1 if respondent's occupation is Professionals	0.2189	0.4133
Trades	=1 if respondent's occupation is Trades People	0.0706	0.2562
Services	=1 if respondent's occupation is Service Workers	0.1247	0.3303
Production	=1 if respondent's occupation is Production Workers	0.0470	0.2116
Elementary	=1 if respondent's occupation is Elementary Workers	0.0588	0.2352
Labourers	=1 if respondent's occupation is Labourers	0.0516	0.2211
Agriculture	=1 if respondent's industry is Agriculture	0.0320	0.1759
Mining	=1 if respondent's industry is Mining	0.0082	0.0904
Manufacturing	=1 if respondent's industry is Manufacturing	0.0668	0.2496
Construction	=1 if respondent's industry is Construction or Utility	0.0482	0.2141
Wholesale	=1 if respondent's industry is Wholesale	0.0240	0.1530
Retail	=1 if respondent's industry is Retail	0.1154	0.3194
Transport	=1 if respondent's industry is Transport	0.0249	0.1558
Services	=1 if respondent's industry is Services	0.1012	0.3016
Government	=1 if respondent's industry is Government	0.1623	0.3686
Fixed contract	=1 if respondent is on fixed contract	0.0472	0.2119
Casual contract	=1 if respondent is on casual contract	0.1249	0.3306
Permanent contract	=1 if respondent is on permanent contract	0.3380	0.4728
Dismiss probability	Self-reported probability of being dismissed (1-100)	5.4303	16.2162
Probability of finding better job	Self-reported probability of finding an equally good or better job	32.0169	39.9219
Private sector	=1 if respondent is in the private sector	0.4676	1.9798
Public sector	=1 if respondent is in the public sector	0.1346	0.3412
Firm 1-19	=1 if respondent's firm employs 1 to 19 people	0.2049	0.4010
Firm 20-49	=1 if respondent's firm employs 20 to 49 people	0.1749	0.3798
Firm 50-199	=1 if respondent's firm employs 50 to 199 people	0.1242	0.3280
Firm 200+	=1 if respondent is in a firm that employs 200 people	0.1033	0.3043
Job Satisfaction	Self-reported job satisfaction (1-10)	4.7900	3.9656
Low job satisfaction	=1 if reported job satisfaction at 5 or below	0.4487	0.4971
High job satisfaction	=1 if reported job satisfaction at 6 or above	0.5513	0.4971
Occupation tenure	Self-reported occupational tenure (years)	5.8958	9.4250
Employer tenure	Self-reported employer tenure (years)	4.2723	7.5219
0-1 tenure	=1 if respondent's employer tenure between 0 to 1 year	0.1986	0.3990
1-3 tenure	=1 if respondent's employer tenure between 1 to 3 years	0.1197	0.3246
3-6 tenure	=1 if respondent's employer tenure between 3 to 6 years	0.0990	0.2984
6-10 tenure	=1 if respondent's employer tenure between 6 to 10 years	0.0715	0.2577
10-20 tenure	=1 if respondent's employer tenure 10-20 years	0.0873	0.2822
20-30 tenure	=1 if respondent's employer tenure 20 - 30 years	0.0357	0.1854
30-40 tenure	=1 if respondent's employer tenure 30 - 40 years	0.0105	0.1017
40+ tenure	=1 if respondent's employer tenure over 40 years	0.0181	0.0654
Trade union	=1 if a trade union member	0.1629	0.3693
Non-trade union	=0 if not a trade union member	0.4637	0.4986
Employed	=1 if in employment for 1 or more hours per week	0.6270	0.4835
Unemployed	=1 if not employed/ looking for and available for work	0.0368	0.1879

Not in labour force	=1 if neither employed nor unemployed	0.3362	0.4724
Work experience	Self-reported work experience (years)	19.3655	14.7944
Married	=1 if respondent married	0.5146	0.4995
Not married	=1 if respondent not married	0.4854	0.4995
Age	Age (years)	29.8802	18.5807
15-24 years	=1 if respondent between 15 to 24 years	0.1711	0.3764
25-34 years	=1 if respondent between 25 to 34 years	0.1723	0.3775
35-44 years	=1 if respondent between 35 to 44 years	0.2066	0.4048
45-60 years	=1 if respondent between 45 to 60 years	0.2562	0.4365
Male	=1 if respondent Male	0.4744	0.4994
Female	=1 if respondent Female	0.5256	0.4993
Disabled	=1 if respondent self-reports a disability	0.2403	0.4269
Not disabled	=1 if respondent self-reports no disability	0.7597	0.4269
Employee	=1 if an employee in an employment relationship	0.5124	0.4996
Self-employed	=1 if respondent self-employed	0.1146	0.3185
City	=1 if respondent living in major cities	0.6186	0.4857
Regional	=1 if respondent living in regional areas	0.3599	0.4800
Remote	=1 if respondent living in remote areas	0.0215	0.1449
Wage	Respondents Real hourly wage rate (A\$2001)	19.8565	19.9148
Log wage	Log (wage)	2.8243	0.5594
Occupation change	=1 if respondent changed occupation	0.1164	0.3205
EE	=1 if respondent worked for same employer	0.4199	0.4935
EJ	=1 if respondent changed employer	0.0767	0.2660
Layoff	=1 if respondent was laid off	0.0204	0.1412
Quit	=1 if respondent quit	0.0623	0.2412
Job related quit	=1 if respondent quit for a job related reason	0.0533	0.2243
Non-job related quit	=1 if respondent quit for other reasons	0.0082	0.0900
Notes: based on the unweighted pooled HILDA dataset. Missing observations are excluded from the means and standard deviations. If the condition is not met then the variable equals 0. Dummy variables for missing values are included in the regressions.			

Appendix 2: Changes in flow rates over time

Figure A21: Labour market flow between 2001/02 and 2004/05

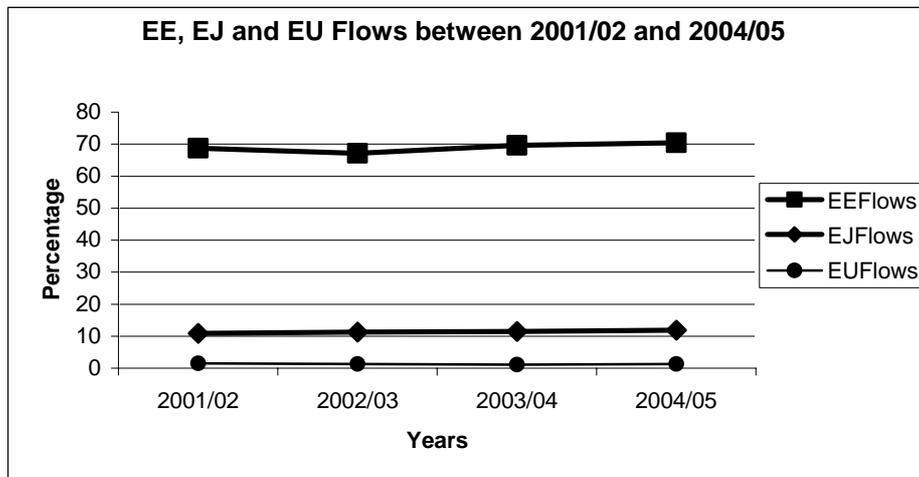


Figure A22: Labour market flows between 2001/02 and 2004/05

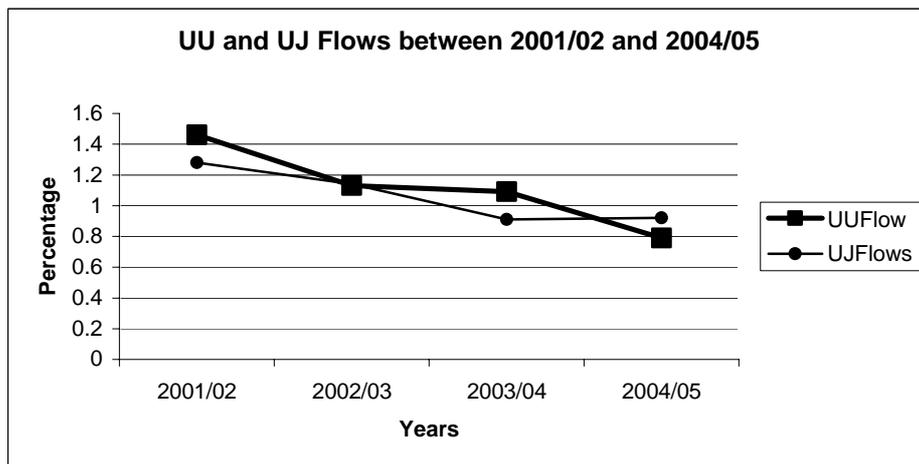


Figure A23: Labour market flows between 2001/02 and 2004/05

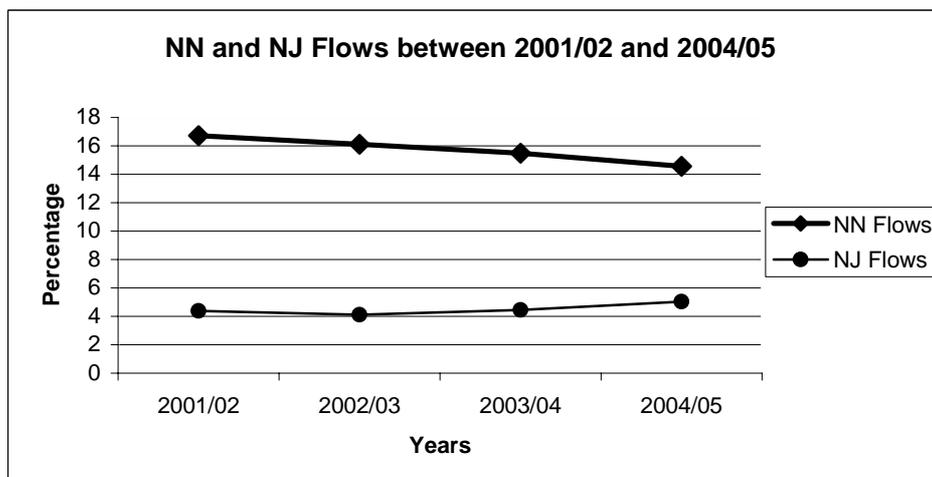
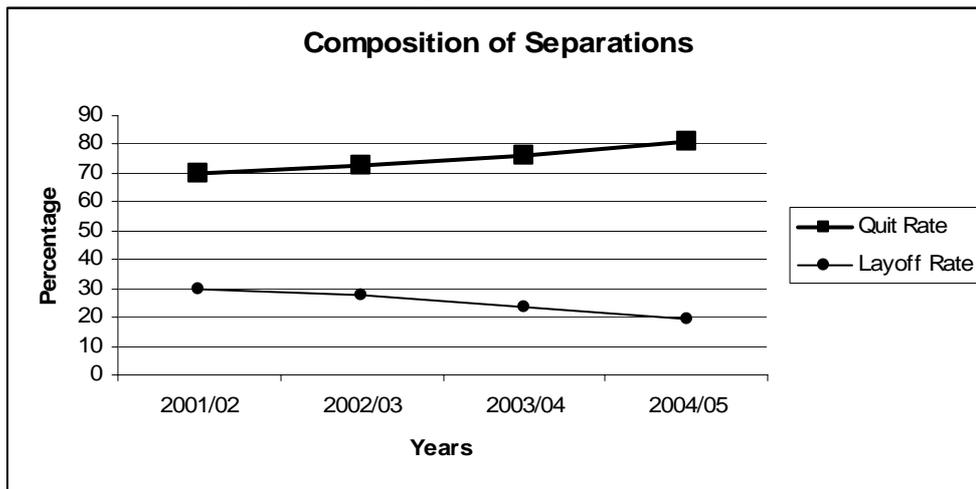


Figure A24: Composition of Separations between 2001/02 and 2004/05



Appendix 3: Gross flow rates with longitudinal weights

Table 1: Gross flows between labour market states

		State in t+1			
		Same employer	New employer	Unemployed	Not in the labour force
State in t	As a percentage of the population				
	Employed	57.56	11.38	1.31	3.94
	Unemployed		2.12	1.12	1.06
	NLF		4.51	1.25	15.74
	As a percentage of the state in the first year				
	Employed	77.60	15.33	1.75	5.31
	Unemployed		49.67	25.79	24.55
NLF		21.06	5.85	73.09	
Notes: 15-60 year olds. Average annual gross flows between 2001/02 and 2004/05. As a percent of the population.					

Table 1a: Gross flows between labour market states*

		State in t+1			
		Same employer	New employer	Unemployed	Not in the labour force
State in t	As a percentage of the population				
	Employed	58.15	11.44	1.29	3.79
	Unemployed		2.17	1.20	1.00
	NLF		4.11	1.22	15.63
	As a percentage of the state in the first year				
	Employed	77.86	15.32	1.73	5.08
	Unemployed		49.66	27.46	22.88
NLF		19.61	5.82	74.57	
Notes: 15-60 year olds. Average annual gross flows between 2001/02 and 2004/05. As a percent of the population. *Adjusted for weights.					

Appendix 4: Details accession/ separation rates by year

Table A41: Employment transition by demographic characteristics from 2001 to 2002 (percent of employment)

Characteristics	EJ	Separation (EJ +EU+EN)	Accessions (EJ +UJ+NJ)
Age			
15 to 24	30.81	59.72	57.71
25 to 34	19.15	42.58	42.10
35 to 44	11.93	33.04	33.66
45 to 60	6.93	28.90	29.19
Gender			
Male	14.52	27.35	27.17
Female	14.52	29.87	28.63
Marital Status			
Married	9.77	19.88	22.44
Not Married	20.72	32.22	34.74
Country of Birth			
Australia	14.55	24.42	23.60
English Speaking	14.85	54.75	55.06
Non-English speaking	13.70	52.77	52.52
Education			
Degree	14.34	37.42	37.93
Diploma	12.81	55.80	56.47
Certificate	13.83	39.36	39.66
Year 12	20.02	49.61	49.38
No Qualifications	12.58	35.35	33.93
Health Status			
Disabled	11.73	50.61	49.07
Not disabled	14.89	23.78	23.06
Remoteness			
City	15.48	27.12	26.37
Regional	12.81	30.71	30.17
Employment Status			
Employee	15.93	25.54	24.64
Self-employed	8.65	37.86	37.76
Job Satisfaction			
Low Job Satisfaction	25.15	58.22	55.95
High Job Satisfaction	12.86	21.87	21.27

Table A42: Employment transition by demographic characteristics from 2002 to 2003 (percent of employment, yearly)

Characteristics	EJ	Separation (EJ +EU+EN)	Accessions (EJ +UJ+NJ)
Age			
15 to 24	29.96	56.98	54.41
25 to 34	17.94	41.78	40.99
35 to 44	12.82	33.35	33.57
45 to 60	7.48	27.68	28.02
Gender			
Male	15.11	27.28	26.92
Female	14.07	28.58	27.37
Marital Status			
Married	10.38	22.86	22.51
Not Married	19.78	33.86	32.59
Country of Birth			
Australia	15.00	24.25	23.32
English Speaking	13.50	53.07	53.13
Non-English speaking	12.79	51.63	51.59
Education			
Degree	11.93	34.26	34.71
Diploma	12.27	54.72	54.55
Certificate	15.45	39.00	39.19
Year 12	20.21	49.06	48.17
No Qualifications	13.92	35.39	33.99
Health Status			
Disabled	13.33	51.63	49.19
Not disabled	14.80	23.10	22.39
Remoteness			
City	15.17	26.06	25.39
Regional	13.70	30.77	29.83
Employment Status			
Employee	16.58	25.60	24.56
Self-employed	6.17	35.40	35.58
Job Satisfaction			
Low Job Satisfaction	23.51	56.63	54.41
High Job Satisfaction	13.33	21.78	21.09

Table A43: Employment transition by demographic characteristics from 2003 to 2004 (percent of employment, yearly)

Characteristics	EJ	Separation (EJ +EU+EN)	Accessions (EJ +UJ+NJ)
Age			
15 to 24	29.73	56.31	53.67
25 to 34	18.50	42.82	42.73
35 to 44	12.67	33.35	33.92
45 to 60	7.46	28.04	28.17
Gender			
Male	14.98	27.40	27.04
Female	14.38	29.09	27.85
Marital Status			
Married	10.57	23.56	23.28
Not Married	19.35	33.40	32.01
Country of Birth			
Australia	15.18	24.52	23.57
English Speaking	13.42	54.02	53.91
Non-English speaking	12.22	52.74	52.91
Education			
Degree	13.01	35.46	35.57
Diploma	11.76	54.00	54.74
Certificate	14.38	38.39	38.36
Year 12	20.66	49.47	48.86
No Qualifications	14.06	36.39	34.96
Health Status			
Disabled	14.33	47.72	45.60
Not disabled	14.77	23.46	22.76
Remoteness			
City	15.41	26.44	25.75
Regional	13.45	30.96	30.04
Employment Status			
Employee	16.28	25.35	24.36
Self-employed	7.42	38.07	37.90
Job Satisfaction			
Low Job Satisfaction	29.35	61.78	59.66
High Job Satisfaction	12.77	21.35	20.64

Table A44: Employment transition by demographic characteristics from 2004 to 2005 (percent of employment, yearly)

Characteristics	EJ	Separation (EJ +EU+EN)	Accessions (EJ +UJ+NJ)
Age			
15 to 24	30.12	54.47	54.81
25 to 34	18.39	41.28	44.38
35 to 44	12.96	32.58	36.40
45 to 60	8.09	26.64	29.97
Gender			
Male	15.12	26.50	28.22
Female	15.23	28.52	29.64
Marital Status			
Married	10.83	22.75	24.74
Not Married	19.92	32.61	33.38
Country of Birth			
Australia	15.40	23.89	24.48
English Speaking	14.94	52.48	57.10
Non-English speaking	13.60	51.62	56.13
Education			
Degree	12.82	32.79	36.46
Diploma	12.08	52.12	56.98
Certificate	16.15	37.86	41.14
Year 12	19.14	47.08	50.48
No Qualifications	15.43	36.24	37.83
Health Status			
Disabled	14.34	44.53	47.22
Not disabled	15.31	23.27	23.99
Remoteness			
City	15.82	26.01	27.01
Regional	13.65	29.71	31.85
Employment Status			
Employee	16.28	25.48	25.48
Self-employed	8.11	35.89	40.29
Job Satisfaction			
Low Job Satisfaction	26.97	60.02	60.55
High Job Satisfaction	13.66	21.32	22.14